



DATE: May 16, 2023

TO: Senate

FROM: Dr. Dwight Deugo, Vice-Provost and Associate Vice-President (Academic), and Chair, Senate Quality Assurance and Planning Committee

RE: Master of Biotechnology (MBiotech)
New Program Approval

SQAPC Motion

THAT SQAPC recommends to SENATE the approval of the proposed Master of Biotechnology as presented to commence in Fall 2024.

Senate Motion

THAT Senate approve the proposed Master of Biotechnology as presented to commence in Fall 2024.

Background

The Master of Biotechnology is a professional program and focuses on the science, communication, business strategies, entrepreneurship and regulatory considerations associated with biotechnology. The proposed program will provide the necessary tools for entrepreneurial activity in biotechnology, and encourage the translation of life-science knowledge into practical applications and career opportunities. This is a full cost recovery program being offered through the department of Biology.

Attachments

- Discussant Report
- External Reviewers' Report
- Internal Reviewer's Report
- Unit response to the External Reviewers' Report and Implementation plan
- Dean's response to the External Reviewers' Report
- External Reviewer Biographies
- Courseleaf Entries
- Letters of Support
- Self-Study with Appendices (Volume I)
- Faculty CVs (Volume II)

Quality Assurance Framework and Carleton's Institutional Quality Assurance Process (IQAP)

Upon the above motion being passed by Senate, the required documentation will be submitted to the Quality Council for its review and a decision on whether the Master of Biotechnology will be authorized to commence.

Discussant Report New Program Review

Name: Matthew Holahan

Program(s) being reviewed: Master of Biotechnology

Date of report: March 31, 2023

Your discussant report along with the self-study, external reviewers' report, unit response and implementation plan and Dean's response will all be forwarded to SQAPC for review and consideration. This report is circulated only to SQAPC and is not made public however, it can be subject to FIPPA requests.

Review of self-study (Volume I)

I read the Volume 1 in some detail as I presumed that was part of my involvement. In this regard, you can take or leave my comments:

1. The program is stated to be "full cost recovery" but there is also a statement "the program is intended to generate net new revenue". Just curious as to the financial outcomes from this program.
2. Do the authors think that this program offered at Carleton University will attract international students away from the well established UTM program? It seems that the program, as written in a few places, might be geared toward recruiting students from the undergraduate Carleton Biotech program. There are several statements throughout that make me feel the MSc is intended to give Carleton Undergrads more opportunity to get into a related MSc program. In this case, the pool of applicants might consist more of local students rather than international. What are the recruitment strategies?
3. Related to point 2, it is stated that workers in the federal government will represent one of the target groups. I wonder if the group has determined how many federal government workers have life sciences backgrounds. If not, is there another way for this target group to gain admission to the program (second point of entry)?
4. I have a similar point as the external reviewers related to EDI. How are the grant writing course materials designed to target women? I suggest more information on EDI strategies to be incorporated into Volume 1 not reliant on the Faculty of Science.
5. Having the core course taught by a to be hired instructor should be very carefully thought out. This individual will need to have expertise in Biotech and have the ability to provide admin support. I realize an issue was raised by the external reviewer on this so I will make further comments below. However, this being the core course, a shortfall is a module or section on ethics. Bioethics is really critical in Biotech and getting this information to the students in their core course is going to be essential. The planned hire needs to have expertise in bioethics. I also think that the calendar description for BIOL 5001 should not include "a different topic will be selected each year". If this is a core course, it should contain core topics that are consistent from year to year, particularly if a CI will have to cover this.
6. Has the core team considered bringing someone in from Engineering? I would think someone from that field would be a great addition.
7. For some of the smaller courses that are already being offered (e.g., BIOL 6500), would a larger enrollment be detrimental to the course offering?

Review of External Reviewer's Report

The external reviewers noted that the program is very broad and could be focused more on the strengths of the participating faculty members. I agree that I often found there were a lot of topics being covered by this program and it could be focused onto a specific few strengths. Related to this, the notion that students can develop practical skills in other subfields depending on their interests seems to overbroaden the scope of this program. Perhaps in later years when the program expands, this will be feasible but at the start, it might be best to focus a bit more on what fields this program has strengths in from the faculty participation.

I also agree with the concerns raised concerning the core course 5900 and 5901. The Biotechnology Instructor teaches BIOL 5900 & BIOL 5901, and is responsible for coordinating outreach, networking, biennial report for the program. This is a lot and that individual will need to have very particular qualifications. The Dean responded by allowing a teaching release for this individual to perform admin duties which seems to undermine their main objective of teaching. BIOL 5900 and BIOL 5901 will be taught by a designated Instructor (new hire) for the program. **A contract instructor may be required for these two core courses when the regular instructor is on sabbatical.** I think it might be better to have a core faculty member in charge of these courses as they are fundamental and critical for success of the program.

Review of Unit Response and Implementation Plan

The responses to reviewers were all noted as agreed to unconditionally except for one that was agreed to if resources were available. In general, all responses and actions make sense. I have some concerns about the response to the workload for the new hire. The response states that the new instructor will be provided teaching release during their first term to develop course material. This implies that the program will be delayed in starting. How will the release affect program start up and delivery in the first year?

I am also curious about the dearth of EDI-related content in Volume 1, the reviewer comment and the response ("At this time, there are no formal EDI targets for student admissions. However, the participants and the Department of Biology fully endorse the university's commitment to foster and support EDI initiatives."). This would certainly not be an acceptable statement for Tri-council funding policies on EDI so I feel it would be worthwhile to consider some EDI-related issues in the response. IN this regard, NSERC has published some very good guidelines when considering EDI in Discovery Grant proposals. A lot of this information is not relevant but the applicants might want to reflect on this dearth of EDI-related content and make an effort to include some statements: [NSERC - NSERC guide on integrating equity, diversity and inclusion considerations in research \(nserc-crsng.gc.ca\)](https://www.nserc-crsng.gc.ca/IntegratingEquityDiversityInclusion/IntegratingEquityDiversityInclusion-eng.aspx).

The final comment I have on the responses center on the marketing strategies. Essentially, the response is to build a website. My main concern is the ability of this program to recruit international students. I am sure there will be good uptake from local students with them mainly from the Biotech undergrad program at Carleton. The bigger challenge will be to increase visibility at the international stage and attract students away from Toronto. I am not sure a website would be the most effective tool.

Unit Response and Implementation Plan: Summary of Recommendations

External Reviewer Recommendation	Discussant's concern	Discussant Recommendation
1) There is one designated new instructor hire for this program. However, there appears to be a lot of	Unit has indicated: The new instructor will be provided teaching release during their first term to develop course material.	The unit will need to address how a teaching release for a core

<p>administrative duties associated with this hire (course development, admissions, program review, teaching). One cannot expect a new hire to be familiar with the administrative workings of a new program. One cannot expect a new hire to be familiar with the administrative workings of a new program. There are potential work-arounds. Perhaps devote one administrative assistant to this program. There is a need to formalize the administration of this program. Another option is to give a course reduction to a faculty member to initially run the admin duties with the expectation that in 2-3 years the new hire would then take over the duties. The Primary Board of Biotechnology might be expanded for certain tasks (e.g. with the addition of an additional faculty member for admissions, and the addition of an external industry member for program assessment). WEAKNESS</p>	<p>Concerned that this will delay the start of the program. Also, if instructor takes a leave, a CI is proposed to take over.</p>	<p>instructor will impact the start of the program. Also, if this individual goes on sabbatical, can a contract instructor truly cover all of these duties?</p>
<p>7) Are there EDI targets for admissions? SEE Comment #14 below. OPPORTUNITY</p>	<p>At this time, there are no formal EDI targets for student admissions. However, the participants and the Department of Biology fully endorse the university's commitment to foster and support EDI initiatives. Concern is that there is no genuine inclusion of how EDI issues will be addressed or how diverse student populations will be recruited.</p>	<p>The unit should amend their response and Volume 1 to specifically address this concern and provide some specific indication as to how EDI will be incorporated.</p>
<p>8) A strong marketing strategy is critical (webpage, International office, new media presence, science fairs, personal networks, etc.). As quickly as possible develop a marketing strategy with FGS and the program leads. Stress what is unique about this program. What will the student get out of this compared to a regular MSc? Many similar programs across Canada can be studied for strategies. Our discussions indicated that the program had already identified this as a priority area and was developing strategies (science fairs, website format, etc). OPPORTUNITY</p>	<p>As noted, this is a top priority during the launch phase of the program and beyond. Once we have formal approval, we will begin the process of building out the program web site and marketing initiatives. I fear this will not reach international students and be strong enough incentive for international students to seek out admission.</p>	<p>The unit should consider other methods for attracting international students.</p>

Recommendation of program outcome**1) Recommended to commence****Additional comments**

It struck me that there could be a perceived conflict of interest. Dr. DeRosa is both Dean of the Faculty of Science and a faculty member appointed to the program. As Dean, she possesses the authority to approve resources for new programs such as teaching releases, space and operating funds. It might be worthwhile for SQAPC to discuss whether her approval of resources for a program that she is a member of provides a perceived advantage.

External Reviewer Report.

Submitted Monday Nov. 21, 2022

Masters in Biotechnology: Carleton University

Virtual Meetings Oct. 17, 18 and 19, 2022

External Reviewers

Dr. Michael J. Bidochka, Brock University

Dr. Peter Dunfield, University of Calgary

Internal Reviewer

Dr. David McMullin, Carleton University

The Masters in Biotechnology proposed at Carleton University is a self-funded program that involves the faculty of Science as well as the Technology and Innovation Management program supported by Agriculture Canada as well as biotechnology companies in the vicinity of Ottawa. The program is for one year full time or, two years part time. The program is class-based with experiential learning that allows students to explore biotechnological innovation in a laboratory setting.

Program objectives

STRENGTH: The objectives are clear and the program is well-delineated in relationship to similar programs offered elsewhere in the immediate Ottawa-Montreal region. The limited number of offerings of a similar nature and the unique geopolitical nature of Ottawa as the nation's capital suggest that the program will be well subscribed. The mission statements are student-centric and based on the development of employable skills.

There was some confusion about the actual degree awarded, which was usually described in the documents as a "Master of Biotechnology". We assume that official student certificates will contain this designation or "MBiotech" rather than Master of Science (MSc), or Master of Arts (MA) in Biotechnology, but this should be clarified.

The program is very broadly focused, e.g. on "providing sustainable solutions to address basic needs of society". Obviously biotechnology is broad and covers multiple sectors, and no program can adequately cover all aspects of biotechnology. **OPPORTUNITY:** The program could consider stressing the strengths of the current teaching/research faculty and their ongoing collaborations (e.g. in plant biotechnology, including connections with Agriculture and Agrifood Canada and local plant biotechnology startups), and bring these to the fore in their advertising efforts.

Program requirements

STRENGTH: The program has the full support of the faculty of science as well as administration and staff. This appears to be a “grass-roots” program that is being developed from the faculty with the support of administration.

STRENGTH: The virtual meetings were very well attended and none of the queries appeared to disclose any major faults of the program. The program outcomes were well stated in that it educates and encourages graduate students in entrepreneurial endeavors in biotechnology. There is one capstone course (BIOL 5901) that is a flexible project-based course. This course would be completed in conjunction with a faculty member, a Research Scientist at Agriculture, and Agrifood Canada, or a partner biotechnology company in the capital region.

OPPORTUNITY: The program suggests that it may cater to at least two different, not mutually exclusive, streams of students: (i) students that wish to develop a biotechnology based product and (ii) students that wish to gain experience in the biotechnology industry and potentially gain employment with cooperating biotechnology companies. There is also a strong connection to the Technology Innovation Management program (TIM) at Carleton.

The requirements of the program involve classes in biotechnology, science communication (e.g. grant writing), innovation from a business perspective, perspectives from local biotechnology professionals (BIOL 5900) and an internship or project-based course (BIOL 5901). All courses are already in place except BIOL 5900 and 5901, which are required and are the keystones of the program. The aim of BIOL 5900 is to "have local biotechnology professionals share their experiences with students and present problems that will be addressed by the class." 5901 is an experiential, project based course.

STRENGTH: Most courses are already in place, including a graduate biotechnology course (BIOL 5001) and several courses offered by Technology Innovation Management. The incorporation of these previously-developed offerings will help get the program started, and the support of TIM diversifies the base of the program from just biological sciences. **OPPORTUNITY:** However, 5900 and 5901 will be the most critical determinants of the success of the program. They are at the moment not well defined, and obviously should be the major focus of program development in the first few years. The program instructor should carefully study similar programs available across the country. There is not yet any indication of how the requirements for completing the experience-based 5901 course can be standardized across what are likely to be very disparate environments. This is a general problem with Masters degrees but is likely to be exaggerated here. Standardized output forms (e.g. program/departmental exit seminar, final report of a certain length and format, etc.) should be carefully defined.

The curriculum map is well laid out. The extended 2-year option is likely to be attractive to students already employed in industry and desiring to supplement their skills.

Assessment of Teaching and Learning

A suitable plan for assessment and review is in place.

Consider adding a student representative and an external industry/agency representative on the Primary Board of Biotechnology for the creation of program reports (not admissions).

Admission requirements

The admission requirements are clearly stated. Both domestic and international students would pay the same tuition since this is a self-funded program. The tuition for international students would be less than they would normally pay for a grad program but it would be more for domestic students. CONCERN: Should there be an incentive for domestic students?

The Primary Board of Biotechnology is responsible for Admissions. CONCERN: This Board may require an additional member or two depending on the volume of applications received.

CONCERN: Admission strategies are not yet clarified. This may become a concern as more applications are received. Issues may include: Will students be chosen who fit the pool of available internships? Or will efforts be made to accommodate student preferences after they are admitted? Will students be aware of placement opportunities when applying? Can they bring their own idea? One assumes that the 5901 instructor is the final arbiter of project placements, but there is a potential for conflict here considering the variability of placements.

Resources

STRENGTH: The virtual tours of the laboratories suggests that there is a sufficient number of very qualified faculty members that would be involved in this program. There was full support of faculty that would allow experiential learning opportunities. The initial number of students that would be admitted into the program stands at 20. This is a reasonable number of students that could be accommodated. There already exists adequate resources and one addition biotechnology faculty member is proposed and that individual would design and teach BIOL 5900 and BIOL 5901 as well as responsibility for outreach, networking and biennial report for the program.

In the short term there are enough internship placements available with departmental faculty, and the faculty have excellent ideas about modular, training-intensive projects that can be completed successfully in a defined window of time. It is likely that in the longer term, students will prefer industrial or government placements to working in a faculty lab, as this is a key factor that distinguishes this program from a normal-stream MSc. OPPORTUNITY: The development of a pool of potential placement opportunities with external supervisors, that can be filled on an annual basis, should be a priority of the faculty member tasked with the development of BIOL 5901.

Quality and other indicator

STRENGTH: The faculty taken together have shown a commitment to teaching, research and in some cases to administration. There is no doubt that the program and the participating faculty will ensure the intellectual quality of the student experience.

The involvement of external partners (industry and government agencies) is in the development stage and cannot yet be assessed. This will be critical for the quality and success of the program.

Summary Recommendations

1. WEAKNESS: There is one designated new instructor hire for this program. However, there appears to be a lot of administrative duties associated with this hire (course development, admissions, program review, teaching). One cannot expect a new hire to be familiar with the administrative workings of a new program. There are potential work-arounds. Perhaps devote one administrative assistant to this program. There is a need to formalize the administration of this program. Another option is to give a course reduction to a faculty member to initially run the admin duties with the expectation that in 2-3 years the new hire would then take over the duties. The Primary Board of Biotechnology might be expanded for certain tasks (e.g. with the addition of an additional faculty member for admissions, and the addition of an external industry member for program assessment).
2. CONCERN: Developing a network of external industrial/private/public sector partners could stretch over several years. In the 3-4 years before the first interim review this process is unlikely to be complete.
3. OPPORTUNITY: In the short term there are enough internship placements available with the faculty, and the faculty have excellent ideas about modular, training-intensive projects that can be completed successfully in a defined window of time. However, it is likely that many (most?) students who choose this program over a normal MSc will prefer a situation where they will interact directly with an industrial partner. The best options for faculty projects are likely those where an external industrial sponsor is involved. It should be ensured that the student can interact with the sponsor in some way.
4. OPPORTUNITY: Try to get formal letters of commitment from local partner organizations (e.g. to host interns, provide workshops, etc.). At the moment the potential partnerships are not well defined. There is a substantial list of biotechnology companies and a format for interaction with biotechnology companies is available through HUB350.
5. OPPORTUNITY: Possibly make use of existing Co-op partners. Delineate what would be the benefit of this program compared to doing a Co-op year at a company/government agency.
6. CONCERN: Admission strategies: Will students be chosen who fit the pool of available internships? Or will efforts be made to accommodate student preferences after they are admitted? What will occur if the student is unhappy with their placement opportunity? Will they be aware of the opportunities before applying? Can they bring their own idea and follow up on that?
7. OPPORTUNITY: Are there EDI targets for admissions? SEE Comment #15.

8. OPPORTUNITY: A strong marketing strategy is critical (webpage, International office, new media presence, science fairs, personal networks, etc.). As quickly as possible develop a marketing strategy with FGS and the program leads. Stress what is unique about this program. What will the student get out of this compared to a regular MSc? Many similar programs across Canada can be studied for strategies. Our discussions indicated that the program had already identified this as a priority area and was developing strategies (science fairs, website format, etc).
9. OPPORTUNITY: There does not appear to be any devoted lab space or administrative support available for potential student start-ups. STRENGTH: However, Carleton has an Innovation Hub and MITACS entrepreneurial grants could support students who have research projects that are not aligned with faculty research programs. Students could have access to TIM scholarships.
10. STRENGTH: Involvement of TIM and the Business program at Carleton. Consider expanding the TIM component. Extra 0.5 credit
11. STRENGTH: The program is self-funded and will not involve provincial government financial support; thus circumventing time consuming bureaucracy.
12. CONCERN: The program will compete with other institutes that have a Biotechnology graduate program. It is suggested that long-term benchmarking against UTM, McGill programs is assessed. Study these for marketing strategies. What would success look like after 3-4 years? 6-8 years? Set some goals. Long term success will depend on building a reputation among alumni. Evaluate the “employability” of graduates. Keep track of student outcome statistics
13. STRENGTH: There is opportunity to form collaborations with diverse companies- but it appears that these relationships have not been formalized.
14. OPPORTUNITY: The interviews with students suggested that they knew very little of the new program but during discussion many students were quite interested in the program. There is an opportunity to use web media localized at Carleton, at first, in order to recruit interested students. This would also allow faculty to encourage “top” students to apply to this program.
15. OPPORTUNITY: By engaging local biotechnology companies the program may be able to procure donor awards for students; perhaps targeting indigenous students or visible minorities.
16. OPPORTUNITY: At least once a year, the biotechnology program should invite a speaker who is an expert in biotechnology. Where is biotechnology going? What is Canada’s involvement? What opportunities lay in the horizon?

Overall, this program is an opportunity for Carleton University to access both domestic and international students interested in biotechnology and to increase the profile of Carleton in the biotechnology sector. There is also an opportunity to contribute to the biotechnology profile of Canada. There were few major criticisms of the program.

Dr. Michael J. Bidochka, Brock University

Dr. Peter Dunfield, University of Calgary

Internal Reviewer Site Visit Report

Name: _____

Program(s) being reviewed: _____

Date of visit: _____

Please provide brief comments on the site visit and particularly anything you feel should be brought to the attention of the Vice-Provost and Associate Vice-President (Academic):

Master of Biotechnology
Unit Response to External Reviewers' Report & Implementation Plan
Programs Being Reviewed: Graduate Program

Note: This document is forwarded to Senate, the Quality Council and posted on the Vice- Provost's external website.

Introduction & General Comments

Please include any general comments regarding the External Reviewers' Report.

For each recommendation **one** of the following responses must be selected:

Agreed to unconditionally: used when the unit agrees to and is able to take action on the recommendation without further consultation with any other parties internal or external to the unit.

Agreed to if additional resources permit: used when the unit agrees with the recommendation, however action can only be taken if additional resources are made available. Units must describe the resources needed to implement the recommendation and provide an explanation demonstrating how they plan to obtain those resources. In these cases, discussions with the Deans will normally be required and therefore identified as an action item.

Agreed to in principle: used when the unit agrees with the recommendation, however action is dependent on something other than resources. Units must describe these dependencies and determine what actions, if any, will be taken.

Not agreed to: used when the unit does not agree with the recommendation and therefore will not be taking further action. A rationale must be provided to indicate why the unit does not agree (no action should be associated with this response).

Calendar Changes

If any of the action items you intend to implement will result in calendar changes, please describe what those changes will be. To submit a formal calendar change, please do so using the Courseleaf system.

Hiring

Where an action item requires additional hiring (faculty or staff) the owner should at minimum include the Dean of the faculty and member of the unit.

UNIT RESPONSE AND IMPLEMENTATION PLAN

Programs Being Reviewed: Master of Biotechnology

Prepared by (name/position/unit/date): Myron Smith, January 20, 2023

External Reviewer Recommendation & Categorization	Unit Response (choose only one for each recommendation): 1- Agreed to unconditionally 2- Agreed to if additional resources permit (describe resources) 3- Agreed to in principle 4- Not agreed to Rationales are required for categories 2, 3 & 4	Action Item	Owner	Timeline	Will the action described require calendar changes? (Y or N)
<p>1) There is one designated new instructor hire for this program. However, there appears to be a lot of administrative duties associated with this hire (course development, admissions, program review, teaching). One cannot expect a new hire to be familiar with the administrative workings of a new program. One cannot expect a new hire to be familiar with the administrative workings of a new program. There are potential work-arounds. Perhaps devote one administrative assistant to this program. There is a need to formalize the administration of this program. Another option is to give a course reduction to a faculty member to initially run the admin duties with the expectation that in 2-3 years the new hire would then take over the duties. The Primary Board of Biotechnology might be expanded for certain tasks (e.g. with the addition of an additional faculty member for admissions, and the addition of an external industry member for program assessment).</p> <p>WEAKNESS</p>	<p>Agreed to unconditionally</p>	<p><i>The new instructor will be provided teaching release during their first term to develop course material. During the first 3 years the new instructor will be mentored and assisted in administrative duties by the faculty member (M.L. Smith) responsible for BIOL5001 (Figure 1 of Volume 1 document). The associated workload for M.L. Smith will be part of the regular administrative workload assigned to Department of Biology faculty members. The Primary Board of Biotechnology is also tasked with oversight of administering the program in the initial stages. Thus, direct support and guidance will be provided to the new instructor by experienced faculty members.</i></p> <p><i>A new instructor is essential for delivery of this program – the instructor must be in place as we launch the new program; if not, the program cannot go forward. The</i></p>	<p><i>M.L. Smith (Professor, Biology)</i></p>	<p><i>2023 - 2026</i></p>	<p><i>N</i></p>

		<p><i>successful instructor candidate will hold a Ph.D. in 'life sciences', with expertise, either through educational or industry experience, in biotechnology. Based on applicant pools for recent hires in related areas (e.g. Molecular Microbiology), we are confident that excellent candidates are available to fill this new instructor position. When we are notified of program approval, we will immediately form a hiring committee and advertise, with an expectation to fill the position within 6-8 months. The actual date for filling this position is thus dependent upon the timing of the approval process. Our plan includes 20% of an existing full-time 7PE administrator (Section G1 of Volume 1 document). An excellent administrator is in place to help with the the program. We feel that the proposed administrative support is sufficient for the new Master of Biotechnology program.</i></p>			
<p>2) Developing a network of external industrial/private/public sector partners could stretch over several years. In the 3-4 years before the first interim review this process is unlikely to be complete. CONCERN</p>	<p>Agreed to unconditionally</p>	<p><i>This is correct. The network will involve an ongoing, dynamic process within the new program. We already have within our network an established core of government researchers (beyond those listed in Appendix 6 of Volume 1 document), and industrial partners (bottom of Section A.1., Volume 1). We look forward to enhancing this network through outreach and research interactions via the new program.</i></p>	<p><i>Faculty appointed to program (Table D1 of Volume 1 document)</i></p>	<p><i>Life of program</i></p>	<p><i>N</i></p>

<p>3) In the short term there are enough internship placements available with the faculty, and the faculty have excellent ideas about modular, training-intensive projects that can be completed successfully in a defined window of time. However, it is likely that many (most?) students who choose this program over a normal MSc will prefer a situation where they will interact directly with an industrial partner. The best options for faculty projects are likely those where an external industrial sponsor is involved. It should be ensured that the student can interact with the sponsor in some way. OPPORTUNITY</p>	<p>Agreed to unconditionally</p>	<p><i>This opportunity is one of the incentives for the proposed new program. There is a sustained interest by our partners (both government and private sector) to engage in training, and to recruit, Highly Qualified Personnel. A goal for the new program is to enhance collaborations in applied life sciences.</i></p>	<p><i>Faculty appointed to program (Table D1 of Volume 1 document)</i></p>	<p><i>Life of program</i></p>	<p><i>N</i></p>
<p>4) Try to get formal letters of commitment from local partner organizations (e.g. to host interns, provide workshops, etc.). At the moment the potential partnerships are not well defined. There is a substantial list of biotechnology companies and a format for interaction with biotechnology companies is available through HUB350. OPPORTUNITY</p>	<p>Agreed to unconditionally</p>	<p><i>This is indeed an excellent opportunity. Letters of commitment are already in place through joint industry-partner grants (e.g. Mitacs) involving our faculty appointed to this program (Table D1 of Volume 1 document). We anticipate expanding on these formal interactions.</i></p>	<p><i>Faculty appointed to program (Table D1 of Volume 1 document)</i></p>	<p><i>Life of program</i></p>	<p><i>N</i></p>
<p>5) Possibly make use of existing Co-op partners. Delineate what would be the benefit of this program compared to doing a Co-op year at a company/government agency. OPPORTUNITY</p>	<p>Agreed to unconditionally</p>	<p><i>Yes, this is an opportunity, and we will reach out and coordinate our efforts with the Carleton University Co-op office. Our co-op placements in Biology are currently through our undergraduate programs – there are no co-op options formalized within our graduate programs. We have not overlooked the Co-op office as resource that is clearly aligned with the objectives of this new graduate program.</i></p>	<p><i>Primary Board of Biotechnology (Section C of Volume 1 document)</i></p>	<p><i>Life of Program</i></p>	<p><i>N</i></p>

<p>6) Admission strategies: Will students be chosen who fit the pool of available internships? Or will efforts be made to accommodate student preferences after they are admitted? What will occur if the student is unhappy with their placement opportunity? Will they be aware of the opportunities before applying? Can they bring their own idea and follow up on that? CONCERN</p>	<p>Agreed to unconditionally</p>	<p><i>These are excellent points.</i></p> <p><i>Opportunities will be communicated through the recruitment process and program advertisements. Students will have an option of developing their own idea or working with faculty participants on existing biotechnology initiatives. We will endeavor to accommodate student preferences using the following approaches.</i></p> <p><i>The program information (website, brochures, etc.) will include a list of opportunities and participant area of interest/expertise. This information will enable students to assess whether their area of interest can be accommodated within our program.</i></p> <p><i>The student application will require a 'statement of interest', a CV and an official transcript of courses taken. This background information will enable us to evaluate whether the student skill set and area of interest are appropriate for the program.</i></p>	<p><i>Primary Board of Biotechnology (Section C of Volume 1 document)</i></p>	<p><i>Life of Program</i></p>	<p><i>N</i></p>
<p>7) Are there EDI targets for admissions? SEE Comment #14 below. OPPORTUNITY</p>	<p>Agreed to unconditionally</p>	<p><i>At this time, there are no formal Equality, Diversity and Inclusion (EDI) 'targets' for student admissions. However, the participants and the Department of Biology fully endorse the university's commitment to foster and support EDI initiatives. We have an EDI committee within Biology that</i></p>	<p><i>Faculty appointed to program (Table D1 of Volume 1 document)</i></p>	<p><i>Life of Program</i></p>	<p><i>N</i></p>

	<p><i>is very active in education and discussion of EDI issues, in student recruitment and retention, and in all aspects of new faculty hiring. We agree with the Program Reviewers that our program will provide opportunities for young scientists of diverse backgrounds to excel in the field of biotechnology and we will educate and act on EDI. For example, our new course (required) for the program, BIOL 5900 [1.0 credit] Problems and Opportunities in Biotechnology, will include a module on the importance of incorporating ethical and EDI considerations in biotechnology initiative (please see Appendix 2, Vol I for course description). We recognize that the relatively high tuition of this professional program will potentially present a barrier for some students. Increasingly, we see funding opportunities to address EDI concerns (see reviewers' point 14) and we look forward to launching funding initiatives to enable student access to the program. Already, several participants in this program have obtained grants that support diverse students in applied sciences (such as through ENGAGE/Alliance, MITACs, Ontario Genomics, etc.) and we will continue to obtain funding to help support underrepresented students. Another plan that will ameliorate potential financial barriers is to solicit paid internships from companies in our growing private sector partner network. These and other anticipated funding opportunities will provide avenues to address EDI. We recognize that acting on ethical and EDI concerns is important for sustainable</i></p>			
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		<i>success of our program and for anticipated spin-off companies.</i>			
<p>8) A strong marketing strategy is critical (webpage, International office, new media presence, science fairs, personal networks, etc.). As quickly as possible develop a marketing strategy with FGS and the program leads. Stress what is unique about this program. What will the student get out of this compared to a regular MSc? Many similar programs across Canada can be studied for strategies. Our discussions indicated that the program had already identified this as a priority area and was developing strategies (science fairs, website format, etc).</p> <p>OPPORTUNITY</p>	Agreed to unconditionally	<p><i>Yes, this is a top priority during the launch phase of the program and beyond. Once we have formal approval, we will begin the process of building out the program web site and marketing initiatives. Our plan is to advertise the unique and applied attributes of this new program broadly and with special attention to diverse communities. For example, we will provide program information to remote communities in Canada and to international partners. This will help meet our commitments to EDI (reviewers' point 7, above). We will prioritize obtaining student funding from private sector partner companies and funding agencies to provide incentives and opportunities to economically disadvantaged groups (point 7, above).</i></p>	<p><i>Primary Board of Biotechnology (Section C of Volume 1 document)</i></p>	<p><i>2023 - 2025</i></p>	<p><i>N</i></p>
<p>9) There does not appear to be any devoted lab space or administrative support available for potential student start-ups. STRENGTH: However, Carleton has an Innovation Hub and MITACS entrepreneurial grants could support students who have research projects that are not aligned with faculty research programs. Students could have access to TIM scholarships. OPPORTUNITY</p>	Agreed to unconditionally	<p><i>Yes, there are opportunities here to grow the entrepreneurial activity within Carleton University and regionally. The university has ongoing funding initiatives for entrepreneurial activities and recently established an innovation hub (Kanata North Hub 350). Communal and PI laboratory space is available within the</i></p>	<p><i>Primary Board of Biotechnology (Section C of Volume 1 document)</i></p>	<p><i>Life of Program</i></p>	<p><i>N</i></p>

		<i>Biology Department to accommodate early stages of spin-off company development. The City of Ottawa has recognized the importance of fostering entrepreneurial activities and provides access to start-up facilities such as the Invest Ottawa Bayview Yards. The above demonstrate a trend within the university and region that aligns with our program's goals.</i>			
10) Involvement of TIM and the Business program at Carleton. STRENGTH: Consider expanding the TIM component. Extra 0.5 credit	Agreed to if additional resources permit (describe resources)	<i>We agree that collaboration across business and science disciplines is an exciting opportunity and a strength of our proposed program. TIM and the Biology Department are excited to work together in this venture. Our plan is to strengthen collaborations between biotechnology and TIM as we move through the initial phase of the new program.</i>	<i>Primary Board of Biotechnology (Section C of Volume 1 document)</i>	<i>2024 and beyond</i>	<i>N</i>
11) The program will compete with other institutes that have a Biotechnology graduate program. It is suggested that long-term benchmarking against UTM, McGill programs is assessed. Study these for marketing strategies. What would success look like after 3-4 years? 6-8 years? Set some goals. Long term success will depend on building a reputation among alumni. Evaluate the “employability” of graduates. Keep track of student outcome statistics. CONCERN	Agreed to unconditionally	<i>These are excellent points that are key to sustainable success of the Master of Biotechnology program. We will track two aspects of success: 1) student enrolment/graduation, and 2) student and participant satisfaction. Monitoring enrolment/graduation rates is relatively straight forward: as laid out in E.3. of Volume 1, we aim to accommodate at least 20 students in the program. The second goal will require sustained commitment to maintain communication channels.</i>	<i>Primary Board of Biotechnology (Section C of Volume 1 document)</i>	<i>2023 and beyond</i>	<i>N</i>

		<i>Satisfaction of PI participants (government labs, private industry, potential employers, etc.) will be monitored during the planned annual meetings (Section B.3. of Volume 1 Document). We will track in-program student satisfaction via surveys. We recognize that keeping track of alumni is more difficult but will endeavor to maintain contact as part of our networking initiatives, including sending out invitations for alumni to present at annual meetings.</i>			
12) There is opportunity to form collaborations with diverse companies. STENGTH: But it appears that these relationships have not been formalized.	Agreed to unconditionally	<i>Formal relationships are, in fact, now established among faculty, students, PDFs and companies. We feel these relationships are somewhat limited in scope and a goal of the proposed program is to enhance collaborative networks. We look forward to growing these collaborations once the program is launched.</i>	<i>Faculty appointed to program (Table D1 of Volume 1 document)</i>	<i>Life of Program</i>	<i>N</i>
13) The interviews with students suggested that they knew very little of the new program but during discussion many students were quite interested in the program. There is an opportunity to use web media localized at Carleton, at first, in order to recruit interested students. This would also allow faculty to encourage “top” students to apply to this program. OPPORTUNITY	Agreed to unconditionally	<i>Yes, we recognize this opportunity and look forward to capitalizing once the program is given the green light.</i>	<i>Faculty appointed to program (Table D1 of Volume 1 document)</i>	<i>2023 and beyond</i>	<i>N</i>
14) By engaging local biotechnology companies the program may be able to procure donor awards for students; perhaps targeting indigenous students or visible minorities. OPPORTUNITY	Agreed to unconditionally	<i>Yes, this is indeed an exciting opportunity that will be acted upon. Several participants are developing alternative funding strategies – for e.g. through crowdfunding platforms such as Carleton’s</i>	<i>Primary Board of Biotechnology (Section C of</i>	<i>2023 and beyond</i>	<i>N</i>

		<i>FutureFunder (e.g. Sustainable Food Production).</i>	<i>Volume 1 document)</i>		
15) At least once a year, the biotechnology program should invite a speaker who is an expert in biotechnology. Where is biotechnology going? What is Canada's involvement? What opportunities lay in the horizon? OPPORTUNITY	Agreed to unconditionally	<i>This is an excellent idea that can be implemented during our annual meetings. In addition, the Faculty of Science organizes an meeting each year, Life Sciences Day, that accommodates biotechnology outreach opportunities.</i>	<i>Primary Board of Biotechnology (Section C of Volume 1 document)</i>	<i>2023 and beyond</i>	<i>N</i>

**Master of Biotechnology
Dean's Response
Programs Being Reviewed: Graduate Program
Date: January 20, 2023
Version:**

Instruction

The table below has been pre-populated with the external reviewer recommendations. Please complete the Dean's Response column by providing a separate response to each of the external reviewers' recommendations, as required by the QAF (5.3.1).

Dean's Response	
Programs Being Reviewed: Master of Biotechnology	
Prepared by: Maria DeRosa, March 14, 2023	
External Reviewer Recommendation & Categorization	Dean's response A response is required for each recommendation listed.
<p>1) There is one designated new instructor hire for this program. However, there appears to be a lot of administrative duties associated with this hire (course development, admissions, program review, teaching). One cannot expect a new hire to be familiar with the administrative workings of a new program. One cannot expect a new hire to be familiar with the administrative workings of a new program. There are potential work-arounds. Perhaps devote one administrative assistant to this program. There is a need to formalize the administration of this program. Another option is to give a course reduction to a faculty member to initially run the admin duties with the expectation that in 2-3 years the new hire would then take over the duties. The Primary Board of Biotechnology might be expanded for certain tasks (e.g. with the addition of an additional faculty member for admissions, and the addition of an external industry member for program assessment). WEAKNESS</p>	<p>I have reviewed the recommendation by the External Reviewers and the unit's response and the action plan. I support the combination of the teaching release in the first year, mentoring, and 20% time of an existing administrator. I have approved the required resources for the action plan.</p>

<p>2) Developing a network of external industrial/private/public sector partners could stretch over several years. In the 3-4 years before the first interim review this process is unlikely to be complete. CONCERN</p>	<p>I have reviewed the recommendation by the External Reviewers and the unit's response and the action plan. The external reviewers' concern has been addressed by the unit.</p>
<p>3) In the short term there are enough internship placements available with the faculty, and the faculty have excellent ideas about modular, training-intensive projects that can be completed successfully in a defined window of time. However, it is likely that many (most?) students who choose this program over a normal MSc will prefer a situation where they will interact directly with an industrial partner. The best options for faculty projects are likely those where an external industrial sponsor is involved. It should be ensured that the student can interact with the sponsor in some way. OPPORTUNITY</p>	<p>I have reviewed the recommendation by the External Reviewers and the unit's response and the action plan. I unconditionally agree with the recommendation by the external reviewers and the action plan by the unit.</p>
<p>4) Try to get formal letters of commitment from local partner organizations (e.g. to host interns, provide workshops, etc.). At the moment the potential partnerships are not well defined. There is a substantial list of biotechnology companies and a format for interaction with biotechnology companies is available through HUB350. OPPORTUNITY</p>	<p>I have reviewed the recommendation by the External Reviewers and the unit's response and the action plan. I completely agree with the recommendation by the external reviewers and the letters that are already in place are encouraging.</p>
<p>5) Possibly make use of existing Co-op partners. Delineate what would be the benefit of this program compared to doing a Co-op year at a company/government agency. OPPORTUNITY</p>	<p>I have reviewed the recommendation by the External Reviewers and the unit's response and the action plan. I unconditionally agree with the recommendation by the external reviewers and the action plan by the unit. In my office, I have dedicated resources (ODS office of External Affairs) for grad co-op opportunities.</p>
<p>6) Admission strategies: Will students be chosen who fit the pool of available internships? Or will efforts be made to accommodate student preferences after they are admitted? What will occur if the student is unhappy with their placement opportunity? Will they be aware of the opportunities before applying? Can they bring their own idea and follow up on that? CONCERN</p>	<p>I have reviewed the questions about admission strategies raised by the external reviewers and the answers and action plan by the unit, which addressed these concerns.</p>

<p>7) Are there EDI targets for admissions? SEE Comment #14 below. OPPORTUNITY</p>	<p>I have reviewed the question from the external reviewers and the answer by the unit. Carleton, including Faculty of Science, is fully committed to fostering and supporting EDI initiatives.</p>
<p>8) A strong marketing strategy is critical (webpage, International office, new media presence, science fairs, personal networks, etc.). As quickly as possible develop a marketing strategy with FGS and the program leads. Stress what is unique about this program. What will the student get out of this compared to a regular MSc? Many similar programs across Canada can be studied for strategies. Our discussions indicated that the program had already identified this as a priority area and was developing strategies (science fairs, website format, etc). OPPORTUNITY</p>	<p>I have reviewed the recommendation by the External Reviewers and completely agree with the unit's action plan.</p>
<p>9) There does not appear to be any devoted lab space or administrative support available for potential student start-ups. STRENGTH: However, Carleton has an Innovation Hub and MITACS entrepreneurial grants could support students who have research projects that are not aligned with faculty research programs. Students could have access to TIM scholarships. OPPORTUNITY</p>	<p>I have reviewed the recommendation by the External Reviewers and the unit's response and the action plan. I have dedicated resources in my office for outreach for new opportunities for students, including this new proposed program.</p>
<p>10) Involvement of TIM and the Business program at Carleton. STRENGTH: Consider expanding the TIM component. Extra 0.5 credit</p>	<p>I have reviewed the recommendation by the External Reviewers and the unit's response and the action plan. Our initiative is to increase the number of TIM courses for students in this new program, and it is my plan to allocate some funding (generated by this program) to support this initiative.</p>
<p>11) The program will compete with other institutes that have a Biotechnology graduate program. It is suggested that long-term benchmarking against UTM, McGill programs is assessed. Study these for marketing strategies. What would success look like after 3-4 years? 6-8 years? Set some goals. Long term success will depend on building a reputation among alumni. Evaluate the “employability” of graduates. Keep track of student outcome statistics. CONCERN</p>	<p>I completely agree with the recommendation made by the external reviewers and also the action plan by the unit.</p>

<p>12) There is opportunity to form collaborations with diverse companies. STENGTH: But it appears that these relationships have not been formalized.</p>	<p>I have reviewed the recommendation by the External Reviewers and the unit's response and the action plan. I'm also aware of established such collaborations.</p>
<p>13) The interviews with students suggested that they knew very little of the new program but during discussion many students were quite interested in the program. There is an opportunity to use web media localized at Carleton, at first, in order to recruit interested students. This would also allow faculty to encourage "top" students to apply to this program. OPPORTUNITY</p>	<p>I have reviewed the recommendation by the External Reviewers and the unit's response and the action plan. We are looking forward to such opportunities.</p>
<p>14) By engaging local biotechnology companies the program may be able to procure donor awards for students; perhaps targeting indigenous students or visible minorities. OPPORTUNITY</p>	<p>I have reviewed the recommendation by the External Reviewers and the unit's response and the action plan. I completely agree with the recommendation.</p>
<p>15) At least once a year, the biotechnology program should invite a speaker who is an expert in biotechnology. Where is biotechnology going? What is Canada's involvement? What opportunities lay in the horizon? OPPORTUNITY</p>	<p>I have reviewed the recommendation by the External Reviewers and the unit's response and the action plan. We have been doing it through various events, and will make our further efforts for enhancing it.</p>

External Reviewer Biographies

New MA in Biotechnology



Dr. Peter Dunfield
University of Calgary

Dr. Peter Dunfield obtained his PhD in microbiology at McGill University in 1997. He then worked as a research group leader at the Max-Planck Institute for Terrestrial Microbiology in Marburg, Germany, where his group studied the environmental methane cycle. Later he was a senior research scientist at the Institute for Geological and Nuclear Sciences in New Zealand, where he developed a new research lab to investigate biotechnological applications of extremophilic bacteria. Throughout his 20 years in academia and research he has authored over 85 publications and received numerous awards including an Alberta Innovates-Technology Futures New

Faculty Award and a German Academic Exchange Service (DAAD) Visiting Scholar Award. Dr. Dunfield's current research focuses primarily on bacteria that consume methane (natural gas), and how these can be used in biotechnology applications such as: biofiltration for carbon credits, bioremediation of environmental toxins, and bioconversion of methane to value-added products.



Dr. Michael Bidochka
Brock University

Dr. Bidochka is a Registered Specialist Microbiologist with the Canadian College of Microbiologists. He is Professor of Biological Sciences at Brock University, Associate Chair of Biological Sciences and Director of Biotechnology at Brock University. Dr. Bidochka serves on the Editorial Board for FEMS (Federation of the European Microbiological Society). He is also a co-author of a first year Biology textbook published by McGrawHill Canada. Dr. Bidochka has over 100 peer-reviewed publications notably including papers in PNAS and Science. His lab has trained students from Mexico, China, Spain, India, Switzerland and Brazil. Dr. Bidochka has held an NSERC research grant continuously for the past 20 years. Dr. Bidochka is the recipient of the Brock University Distinguished Research and Creative Activity Award as well as the Brock University Faculty Award for Excellence

in Teaching. In the past 10 years his research focus has changed. Previously, he has been involved in research on the molecular biology, population genetics and other aspects of fungi that are pathogens of insects. However, it was recently discovered that several of these fungi that are insect pathogens are also endophytes. They reside within plants and provide plants with several benefits. His current research interests revolve around the benefits to the plant with these symbiotic associations, nutrient exchange between plant and fungus, analyzing genes that allow for endophytic association and plant responses (including immune responses) to endophytic colonization.

New Program Proposal

Date Submitted: 05/20/22 2:52 pm

Viewing: **TBD-2153 : Master of Biotechnology**

Last edit: 05/24/22 11:08 am

Last modified by: brucemckay

[Changes proposed by: sandrabauer](#)

In Workflow

1. BIOL ChairDir GR
2. SCI Dean
3. GRAD Dean
4. PRE GRAD FCC
5. GRAD FCC
6. GRAD FBoard
7. PRE SCCASP
8. SCCASP
9. SQAPC
10. Senate
11. CalEditor

Approval Path

1. 05/24/22 11:09 am
Bruce McKay
(brucemckay): Approved
for BIOL ChairDir GR
2. 05/31/22 3:56 pm
Yiqiang Zhao
(yiqiangzhao): Approved
for SCI Dean
3. 05/31/22 5:11 pm
Sandra Bauer
(sandrabauer): Approved
for GRAD Dean
4. 05/31/22 5:12 pm
Sandra Bauer
(sandrabauer): Approved
for PRE GRAD FCC
5. 06/02/22 4:13 pm
Sandra Bauer
(sandrabauer): Approved
for GRAD FCC
6. 06/20/22 11:32 am
Sandra Bauer
(sandrabauer): Approved
for GRAD FBoard

Effective Date 2023-24

Workflow majormod

Program Code TBD-2153

Level Graduate

Faculty	Faculty of Science
Academic Unit	Department of Biology
Degree	
Title	Master of Biotechnology

Program Requirements

Master of Biotechnology (4.0 credits)

1. 3.0 credits in:		3.0
BIOL 5001 [0.5]	Topics in Biotechnology	
BIOL 5900 [0.0]	Problems and Opportunities in Biotechnology	
BIOL 5901 [0.0]	Development of a Novel Biotechnology Product	
BIOL 6500 [0.5]	Advanced Science Communication	
2. 0.5 credit from:		0.5
TIMG 5001 [0.5]	Principles of Technology Innovation Management	
TIMG 5002 [0.5]	Technology Entrepreneurship	
TIMG 5003 [0.5]	Issues in Technology Innovation Management	
3. 0.5 credit from:		0.5
BIOL 5004 [0.5]	Advances in Applied Biochemistry	
BIOL 5121 [0.5]	Advances in Protein Engineering	
BIOL 5515 [0.5]	Bioinformatics	
BIOL 5516 [0.5]	Applied Bioinformatics	
BIOL 6402 [0.5]	Principles of Toxicology	
CHEM 5109 [0.5]	Advanced Applications in Mass Spectrometry	
FOOD 5102 [0.5]	Food Biotechnology	
HLTH 5350 [0.5]	New Health Technologies	
Total Credits		4.0

New Resources	No New Resources
Summary	Add new program: Master of Biotechnology
Rationale	NP
Transition/Implementation	n/a - new program

Program reviewer comments	sandrabauer (06/02/22 4:12 pm): P&P approved by e-vote May 30, 2022. sandrabauer (06/20/22 11:32 am): GFB approved by evote 22.06.17
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New Program Proposal

Date Submitted: 05/20/22 2:52 pm

Viewing: **R-GR-ADMREQT : M.Biotechnology
Admission Requirements**

Last edit: 05/20/22 2:52 pm

Last modified by: sandrabauer

[Changes proposed by: sandrabauer](#)

In Workflow

1. BIOL ChairDir GR
2. SCI Dean
3. GRAD Dean
4. PRE GRAD FCC
5. GRAD FCC
6. GRAD FBoard
7. PRE SCCASP
8. SCCASP
9. SQAPC
10. Senate
11. CalEditor

Approval Path

1. 05/24/22 11:05 am
Bruce McKay
(brucemckay): Approved
for BIOL ChairDir GR
2. 05/31/22 3:56 pm
Yiqiang Zhao
(yiqiangzhao): Approved
for SCI Dean
3. 05/31/22 5:11 pm
Sandra Bauer
(sandrabauer): Approved
for GRAD Dean
4. 05/31/22 5:12 pm
Sandra Bauer
(sandrabauer): Approved
for PRE GRAD FCC
5. 06/02/22 4:13 pm
Sandra Bauer
(sandrabauer): Approved
for GRAD FCC
6. 06/20/22 11:32 am
Sandra Bauer
(sandrabauer): Approved
for GRAD FBoard

Effective Date	2023-24
Workflow	majormod
Program Code	R-GR-ADMREQT
Level	Graduate

Faculty	Faculty of Science
Academic Unit	Department of Biology
Degree	
Title	M.Biotechnology Admission Requirements

Program Requirements

Admission

Bachelor of Science (or equivalent) in a life sciences field, with B+ or higher in major subjects and B- or higher overall.

New Resources	No New Resources
Summary	Add admission requirements for M.Biotechnology
Rationale	New program
Transition/Implementation	N/A - new program

Program reviewer comments **sandrabauer (06/02/22 4:13 pm):** P&P approved by e-vote May 30, 2022.
sandrabauer (06/20/22 11:31 am): GFB approved by evote 22.06.17

Master of Biotechnology Associated Minor Modifications

BIOL 5900	Problems and Opportunities in Biotechnology
BIOL 5901	Development of a Novel Biotechnology Product



Carleton
University

Faculty
of Science

FACULTY OF SCIENCE
3230 HERZBERG LABORATORIES
CARLETON UNIVERSITY
1125 COLONEL BY DRIVE
OTTAWA, ONTARIO, K1S 5B6

May 21, 2023

Re: Letter of Support for the M. Biotech program

To whom it may concern,

I am delighted to offer my unconditional and enthusiastic support for the proposed Master of Biotechnology (MBiotech) program.

The Faculty of Science sees a real opportunity for Carleton to emerge as a leader in training and talent development in the life sciences. The MBiotech is a key part of this strategy. The proposed program is designed to meet the increasing demand in biotechnology in the broadest sense including all technological applications using "biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use." The program will fill an important training gap in Ontario's Biotechnology and Life Sciences ecosystem by equipping graduates with specialized technical knowledge as well as training in science communication, business strategies, entrepreneurship, and regulatory considerations associated with biotechnology. This unique skill set will help prepare our students for work in the thriving bio-economy. A recent Biotalent Canada report outlined how Canada's bio-economy is likely to require 65,000 additional workers by 2029. Given the acute need for talent in this area, both in Canada and internationally, the launch of this program within the next year is particularly timely. The proposed program has also received strong support from sister units, such as Chemistry, Health Science, and also from FED and Sprott. For all these reasons, I therefore strongly support the proposal of this new program.

Sincerely,

Maria DeRosa, Ph.D.
Dean, Faculty of Science
Carleton University

May 24, 2023

Dr. Bruce McKay
Chair, Department of Biology
Dr. Myron Smith
Professor, Department of Biology
Carleton University

Dear Professors McKay and Smith,

I am pleased to offer my support for the proposed Master of Biotechnology program. As a professional graduate program that focuses on the science, communication, business strategies, entrepreneurship, and regulatory considerations associated with biotechnology, the Master of Biotechnology leverages the strengths of existing structures at Carleton to offer a program that is unique to our immediate geographic area (eastern Ontario and western Quebec). It will appeal to both international students and professional domestic students, especially including public sector employees looking to expand their expertise in biotechnology. The mission of the Master of Biotechnology program is “to provide students with the skills, knowledge and confidence to translate their background knowledge in life science into career opportunities, including start-up companies”. This mission represents both a pressing service Carleton can provide to the community and an exciting training opportunity that we can provide for our students.

Carleton’s location in the capital region and connections with the federal government especially provide an audience for this degree, as people currently working in a government context may want to develop expertise in “regulatory, patent, or biotechnology policy, or in transforming government initiatives into financially self-sustaining enterprises”. For example, the Master of Biotechnology seeks to leverage unique opportunities to involve Federal agencies such as National Research Council Canada (NRC), Agriculture and Agri-Food Canada (AAFC), Canadian Food Inspection Agency (CFIA) and Health Canada to provide valuable expertise and input to the program.

Additionally, the Master of Biotechnology will draw on a growing list of private biotechnology companies in the Ottawa region. The expanding network of biotechnology companies that have research connections with Carleton Biotechnologists includes Spartan Bioscience, Entomo Farms, Ashton Brewery, The Growcer, Fieldless Farms, Buchipop, FarmForest, FoodCycler, Canopy Growth, DNA Genotek, NuvoBio Corp., Turnstone Biologics, Virica Biotech, Abbott Point of Care, Siemens Healthineers, and Spiderwort.

In its 2020-2025 Strategic Integrated Plan, Carleton University committed itself to strive to “*be known nationally and internationally for its research and teaching in programs that respond to the needs of society today and which anticipate the needs of the future.*” The proposed Master of Biotechnology program addresses these concerns in the broadest possible sense, because the nature of biotechnology today plays a role in addressing nearly all basic needs. From the proposal: “Biotechnology can address issues around food security (e.g., indoor farming), clean water and sanitation (bioremediation),

sustainable energy (biofuels), shelter (local, sustainable building materials), clothing (natural fibers), health (pharmaceuticals, diagnostics), and social needs (happiness, useful employment)". This is an impressive list of possible impacts on our society and thus clearly encapsulates Carleton's mission to *"prepare students for an ever-changing world"*.

The Faculty of Graduate and Postdoctoral Affairs (FGPA) strongly supports this new, leading edge professional graduate program that will continue to grow our academic excellence and provide students with an exceptional learning experience. FGPA is committed to supporting students in the Master of Biotechnology program.

Sincerely yours,



Patrice Smith
Dean, Faculty of Graduate and Postdoctoral Affairs
Carleton University



Office of the Vice-Provost and
Associate Vice-President
(Academic)

Institutional Quality Assurance Process

Master of Biotechnology

Volume I

June 13, 2022 [\(revised April 27, 2023\)](#)

**Myron Smith, Professor,
Department of Biology**

Program Lead

Date

**Bruce McKay, Chair,
Department of Biology**

Chair/Director

Date

Maria DeRosa, Dean of Science

Patrice Smith, Dean of Graduate and Postdoctoral Affairs

Dean(s):

Date

Committees Reviews and Approvals

Vice-Presidents' Academic Research Committee (executive summary)	
Provost's Budget Working Group (executive summary)	
Curriculum Committee	
Faculty Board	
Senate Committee on Curriculum, Admissions on Studies Policy	
Senate Quality Assurance and Planning Committee	
Senate	
Quality Council	

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A. The Program

A.1. Program overview

The proposed Master of Biotechnology is a professional graduate program that focuses on the science, communication, business strategies, entrepreneurship, and regulatory considerations associated with biotechnology. It is designed to be a 'full cost recovery' program; costs are covered entirely by student tuitions. The program is aimed at international and domestic students with a life-science background (BSc or equivalent), including public sector workers who would like more expertise in biotechnology. The focus will be on biotechnology in the broadest sense, defined as any "technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use" (Convention on Biological Diversity, Article 2. Use of Terms, United Nations. 1992).

The proposed program will provide the necessary tools for entrepreneurial activity in biotechnology, and encourage the translation of life-science knowledge into practical applications and career opportunities. The program is student centered: students will develop practical skills in biotechnology that they can apply to agriculture, forestry, environment, food, health, industry, etc., depending on their individual interests. The program will integrate local biotechnology companies and government agencies and thus will build on, and develop new, technology opportunities and business networks in eastern Ontario. Emphasis will be placed on providing students with the tools to establish their own start-up companies. Good technology is sustainable, and we will promote an appreciation for long-range planning, off-target effects, ethical issues, and life-cycle analyses of technologies. Within the program there are opportunities for engaging Indigenous history, knowledge and culture, and to promote an understanding of ethnobotany and ethnopharmacology, and a cosmocentric view of life to address modern problems such as global warming, overexploitation of resources, and widespread conversion and loss of wild areas¹. As a professional program, the Master of Biotechnology will endeavor to offer courses outside of 'normal work hours' and during the summer terms, where possible, and the program is intended to generate net new revenue. We aim to mobilize resources, already present on campus, in science and business, and regionally within the public and government sectors, to spur economic growth.

The proposed Master of Biotechnology program is unique in eastern Ontario and western Québec. No graduate programs in biotechnology are offered by Queen's University, nor by University of Ottawa. McGill University offers an Applied Master of Biotechnology at the MacDonald Campus. Their 16-month program is course-based with a research project component. Concordia University offers a one-year Graduate Diploma in Biotechnology through the Department of Biology. This program is also course-based. Further afield, the Master of Biotechnology at University of Toronto Mississauga (UTM) has been very successful for nearly 25 years. The program comprises one year of course work followed by 8 – 12 months of internship at a biotechnology company in the Toronto region. Biotechnology is a mature science and there are many biotechnology centers and advanced degree programs offered across the world. The potential for addressing problems using biotechnology is nearly limitless, however, and we feel that the regional market is wide open for this initiative.

¹ Arnason J, Cuerrier A, and Smith ML (2022) Ethnobotany and ethnopharmacology in the Americas. *Botany* 100(2):v. <https://doi.org/10.1139/cjb-2021-0189>

Our proposed program is distinctive in leveraging Carleton's expertise in applied life sciences, business, entrepreneurship and innovation. Our location in the nation's capital region provides unique opportunities to involve Federal agencies such as National Research Council Canada (NRC), Agriculture and Agri-Food Canada (AAFC), Canadian Food Inspection Agency (CFIA) and Health Canada in providing expertise and input into our program. Workers in the federal government represent one of our target groups; people currently working in a government context may want to develop expertise in regulatory, patent, or biotechnology policy, or in transforming government initiatives into financially self-sustaining enterprises. In addition, there is a growing list of private biotechnology companies in the Ottawa region that can play a role in our program. The expanding network of biotechnology companies that have research connections with Carleton Biotechnologists includes Spartan Bioscience, Entomo Farms, Ashton Brewery, The Growcer, Fieldless Farms, Buchipop, FarmForest, FoodCycler, Canopy Growth, DNA Genotek, NuvoBio Corp., Turnstone Biologics, Virica Biotech, Abbott Point of Care, Siemens Healthineers, and Spiderwort. We plan to leverage these regional assets through guest speakers, internships (where possible) and recruitment events for our students. We will invite these regional biotechnology companies to pose problems that will form the bases of problem-based learning exercises for our students.

A.2. Mission and strategic directions

The mission of the Master of Biotechnology program is to provide students with the skills, knowledge and confidence to translate their background knowledge in life science into career opportunities, including start-up companies. Our goals are well aligned with the statements of Institutional Vision, Mandate and Aspirations in the 2017-2020 Strategic Mandate Agreement between Carleton and the Province of Ontario, and with Carleton's previous (2013-2018) and current (2020-2025) Strategic Integrated Plans.

The program also aligns well with Carleton programs that foster student entrepreneurship and sustainable living. The Master of Biotechnology program will drive innovation, community engagement and skills development. It will enable students to succeed in the rapidly evolving economy. The program will provide interdisciplinary training in marketable skills that will foster economic activity within our community and beyond. It will take advantage of training from multiple departments and faculties and involve regional entrepreneurs and government agencies. Graduates will create sustainable solutions to societal problems. We have an opportunity through this initiative to establish Carleton University as the hub of biotechnology in eastern Ontario.

The Master of Biotechnology program will foster leadership skills, interdisciplinary knowledge and creative risk-taking. For example, the program will expand current innovative work in food production, bio-based disease controls, and sustainable building materials. The program will focus student attention on providing sustainable solutions to address basic needs of society. More specifically, the Master of Biotechnology relates to all three 'Strategic Directions' within Carleton's Strategic Integrated Plan (2020-2025) as follows.

Theme 1: *Carleton University will be known nationally and internationally for its research and teaching in programs that respond to the needs of society today and which anticipate the needs of the future.*

There is no question that biotechnology has, and will continue to have, a profound impact on society. The rapid development of mRNA vaccines for COVID19 is a case in point and there are many other applications of biotechnology to climate change, waste management, food security and other pressing societal challenges.

The proposed Master of Biotechnology program will develop biotechnology expertise in the broadest sense, including in technological areas of agri-forestry, environment, health, and industry. The program will provide a background in business, communications, regulatory concepts and entrepreneurship so that graduates expand their career opportunities, whether by starting their own company, joining existing ventures or pursuing a career in government or academia. In the broadest sense, biotechnology can play a role in addressing nearly all basic needs. For example, biotechnology can address issues around food security (e.g. indoor farming), clean water and sanitation (bioremediation), sustainable energy (biofuels), shelter (local, sustainable building materials), clothing (natural fibers), health (pharmaceuticals, diagnostics), and social needs (happiness, useful employment).

The 2008 study entitled ‘Splicing the data – the critical role of human resources in Canada’s bio-economy – A labour market report’² points out that Biotechnology has a long history in Canada and has experienced 77% growth in company numbers over the previous 20 years. The study found that Biotechnology companies are located across Canada and all report shortages in skilled workers, often necessitating outsourcing.

A 2018 study by BIOTECCanada³ indicates that the shortage in Highly Qualified Personnel for biotechnology in Canada persists. The highly technical aspects of biotechnology require advanced skills obtained through university training. Required skills identified in the report by employers point out a need for biotechnology knowledge combined with marketing, communications, research and familiarity with regulatory affairs.

More recently, yet, a report by BioTalent Canada from 2021⁴ demonstrates a significant need for talent in this area, including 65,000 new jobs to support Canada’s bio-economy by 2029. Given the government’s current funding priority of \$2.2B for bioscience infrastructure over the next 7 years, even these numbers could be on the low-end.

And finally, on March 31, 2022 the Government of Ontario published an ambitious biotechnology plan: ‘Taking life sciences to the next level – Ontario’s strategy: Learn how Ontario is aiming to establish ourselves as a global biomanufacturing and life sciences hub.’⁵

² [https://www.biotalent.ca/wp-content/uploads/2019/02/Splicing the data ENG July15 08.pdf](https://www.biotalent.ca/wp-content/uploads/2019/02/Splicing_the_data_ENG_July15_08.pdf)

³ <https://www.obio.ca/obio-backup/obio1/2018/10/biotecanada-and-deloitte-release-results-of-biotechnology-industry-data-survey>

⁴ <https://www.biotalent.ca/reports/close-up-on-the-bio-economy-national-report/>

⁵ <https://www.ontario.ca/page/taking-life-sciences-next-level-ontarios-strategy>

Given the above federal and provincial initiatives, a rapid launch of the Master of Biotechnology program would be ideal. Carleton's location, research strengths and existing undergraduate Biotechnology programs are key to the success of this initiative.

Theme 2: *Carleton University will be known as a university that promotes research excellence and connectedness. It will be recognized as a leader in research that focuses both on tangible outcomes and the development of knowledge with longer-term impacts.*

Our program will also address a communicated need by local biotechnology companies for employees with training in quality assurance. Our goal is to enable students to translate their science knowledge into practical outcomes, to gain employment and address societal needs. Our graduates will be prepared for existing opportunities and will have the skillsets required to create new commercial activity in the sector.

Students in the program will pursue innovative solutions to real-world problems of local companies and their own start-up initiatives through problem-based learning. The program will enhance interactions across faculties at Carleton and community connectivity and provide alignment with our existing undergraduate biotechnology programs at Carleton. We will provide opportunities for students to network with regional companies and agencies, to innovate and make societal impacts. Course assignments will include applied aspects such as writing grant proposals (BIOL 5900, BIOL 6500) to further their entrepreneurial activities. For example, students will be guided through application process to obtain funding through the Business Strategy Internships (BSI) program at Mitacs⁶. This Mitacs program can provide grants of \$10K to \$15K for students to develop/innovate and help Canadian organizations to thrive. Similarly, we will incorporate grant writing into our course material to provide targeted opportunities for women entrepreneurs⁷. These applied activities are designed to give our students a 'head start' in their technology business careers.

Theme 3: *Carleton University will be nationally and internationally known for being student-centred, linking its academic endeavors and student supports to empower students as productive and engaged citizens in an increasingly diverse world.*

The proposed program will develop highly qualified personnel in bio-business and entrepreneurship. The program structure is student centered with experiential learning at the core. The program is modeled around translating ideas into practical outcomes. Wellness is promoted by engaging in useful and valued roles in society. The proposed program will encourage and cultivate leadership and innovation in solving societal problems. Likewise, sustainable design is good business practice and can be informed by ecology and evolutionary theory. Sustainability concepts will be integral to the Biotechnology course progression.

⁶https://discover.mitacs.ca/innovationgoals/?gclid=CjwKCAiAyPyQBhB6EiwAFUuakgreXWCwZfvKOZX6J1c61s3ADxm5CSwVCegkq5DpMX4clSyP0FompBoCWfcQAvD_BwE

⁷ <https://www.tradecommissioner.gc.ca/businesswomen-femmesdaffaires/funding-financement.aspx?lang=eng>

The proposed Master of Biotechnology program is unique to eastern Ontario. We anticipate strong interest in this program because of career opportunities in the biotechnology sector and because there is an absence of similar programs in eastern Ontario. We are also encouraged by the sustained, enthusiastic in-take of students into our undergraduate programs in Biotechnology. Carleton has offered undergraduate Biotechnology programs in Biology and Biochemistry since 1984 – among the first in Canada. The BSc Biotechnology programs consistently have enrollments of 60 – 100 students. Since 2018 we have increased our investment in BSc Biotechnology: we hired a dedicated Instructor and launched new specialized Biotechnology courses. One responsibility of the Instructor is to connect our students with the local biotechnology community. Based on informal student feedback, these investments have been a great success: students are very enthusiastic and we are developing strong community connections, including student internships at National Research Council Canada (NRC).

The Ottawa region has several biotechnology companies and government agencies that focus on biotechnology research [e.g.s Agriculture and Agrifood Canada (AAFC) and NRC] and/or are involved in regulatory oversight of biotechnology (e.g.s Canadian Food Inspection Agency (CFIA) and Health Canada). However, there is a gap in training opportunities in eastern Ontario. No graduate level programs in Biotechnology are offered by Queen’s University or University of Ottawa. Algonquin College and Collège La Cité offer advanced diploma and bachelor’s degree, respectively, in biotechnology but these programs are more similar to our BSc Biotechnology degrees.

Further indication that there will be strong interest in our proposed Master’s program is based on the success of the Master of Biotechnology at University of Toronto Mississauga (UTM). UTM receives approximately 175 applicants each year but caps their intake at 42 students per year. Our BSc Biotechnology graduates must apply to distant programs such as this one at UTM if they want to pursue their studies in this area. We aim to capitalize on our location in Ottawa to build a biotechnology network connecting the private sector, our students and government agencies. In addition to regional and national talent, we feel there is the opportunity to attract self-funded, top-notch international students into the full-time program.

A.3. Relationship to other academic programs at Carleton

We anticipate a positive impact by the Master of Biotechnology program other units. The proposed program has minimal overlap in content or target clientele with other units; aside from the proposed Master of Biotechnology, there are no other graduate programs at Carleton in biotechnology. We expect to see a positive impact in graduate course enrolments in Biology and our sister units (see proposed set of courses, Appendix 1, 2). Our Biotechnology students, having a strong background in life sciences, will contribute a unique perspective to courses in Technology Innovation Management (TIM). Inclusion of TIMG courses in our program is aimed at providing students with expertise in business, entrepreneurial and management. We are very excited to strengthen our interactions with TIM and feel that linking closely with TIM will enhance our technology-business networks across faculties at Carleton. Faculty in TIM are very

supportive of our biotechnology initiatives, as indicated in the attached statement of support (Appendix 5).

Biotechnology students will gain expertise in their specific areas of interest through elective courses in sister units within the Faculty of Science (CHEM, FOOD and HLTH). An applied perspective by our biotechnology students will enrich student experience in courses offered by these sister units. Feedback from sister units has been very supportive, with strong recognition by faculty members of potential synergistic interactions [e.g. email below from Dr. Jeff Smith (with permission)]. More broadly, the Master of Biotechnology is congruent with initiatives within Science such as 'Carleton Front Door' and 'Life Sciences Day', an annual event that serves to connect researchers within Science to each other and with the broader community. Our biotechnology students will greatly enhance these types of events and will benefit from opportunities to meet regional entrepreneurs and representatives of companies and government agencies.

"This sounds really cool, I'm glad that you are putting this together. I'm wondering if there is any room for more "omics" based topics using mass spec (lipidomics/proteomics/metabolomics)? It sounds like the curriculum is set, but CHEM 5109 Advanced Application in Mass Spectrometry deals with the use of MS in biotechnology extensively. The CMSC is also chock-full of biotechnology. Happy to help/be involved if it would be symbiotic with what you have planned thus far.

Cheers,
Jeffrey C. Smith, Ph.D.
Director, Carleton Mass Spectrometry Centre"

Finally, we expect additional graduate recruitment opportunities through the Master of Biotechnology since our students may wish to further their education through TIM, MBA and other graduate programs at Carleton.

B. Program Learning Outcomes and Assessment

B.1. Program learning outcomes and degree level expectations

Table B.1: Learning outcomes and degree level expectations

Learning Outcomes	Degree Level Expectations Met ⁸
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⁸ The Council of Ontario Universities has established a framework of Degree Level Expectations (DLEs) that specify what students should know, and be able to do, after successfully completing degree program.

Graduate

The DLEs at the graduate level are represented by the following six categories:

1. Depth and breadth of knowledge
2. Research and scholarship
3. Level of application of knowledge

Develop practical skills in biotechnology that can be applied to agriculture, forestry, environment, food, health, industry, and other subfields, depending on student's individual interests.	1, 2, 3, 7
Translate life-science knowledge into practical applications, career opportunities and entrepreneurial activities.	3, 4, 5, 6, 7
Build on, and develop new, technology opportunities and business networks in eastern Ontario.	4, 6, 7
Acquire an appreciation for long-range planning, off-target effects, ethical issues, and life-cycle analyses of technologies.	1, 2, 4, 6, 7

B.2. Program structure and curriculum map

Program structure

The program will be capped at 20 students per year (including part-time students). Students entering the program are required to hold a BSc or equivalent in a life-science field. Under consultation with participating departments, courses will be scheduled, where possible, in evenings, weekends, and during the summer. The program comprises 4 credits to be completed over 1 year (full time) or 2 years (part time). It is anticipated that international students will be eligible for student visas if they enroll as full-time students in the 4-credit program over 1 year. The 2-year option will be attractive to government or private sector professionals who wish to register as part time students to upgrade their academic credentials.

The Master of Biotechnology program will require a total of 4 credits as outlined below (also see Appendix 1).

3.0 credits in:

-
4. Level of communication skills
 5. Awareness of the limits of knowledge
 6. Professional capacity/autonomy
 7. Carleton's Experiential Learning DLE
 - a) effective use of experiential learning to explain and critique concepts and theories in the area of study.
 - b) the ability to reflect and self-evaluate to demonstrate learning growth and development.
 - c) the ability to communicate knowledge, skills and information in various formats effective for a targeted audience and to make explicit connections between what is communicated (content) and methods of communications.
 - d) the ability to make adaptations and apply knowledge, skills, theoretical concepts and methodologies to new experiences and to solve problems.

Additional information on the DLEs can be found at: <http://carleton.ca/viceprovost/wp-content/uploads/QAF-DLE-UGG.pdf>

BIOL 5001 [0.5 credit] Topics in Biotechnology
 BIOL 5900 [1.0 credit] New course, problems and opportunities in Biotechnology
 BIOL 5901 [1.0 credit] New capstone course on novel biotechnology product
 BIOL 6500 [0.5 credit] Advanced Science Communication

0.5 credit from:

TIMG 5001 [0.5 credit] Principles of Technology Innovation Management
 TIMG 5002 [0.5 credit] Technology Entrepreneurship
 TIMG 5003 [0.5 credit] Issues in Technology Innovation Management

0.5 credit from:

BIOL 5004 Advances in Applied Biochemistry
 BIOL 5121 Advances in Protein Engineering
 BIOL 5515 Bioinformatics
 BIOL 5516 Applied Bioinformatics
 BIOL 6402 Principles of Toxicology
 CHEM 5109 Advanced Applications in Mass Spectrometry
 FOOD 5102 Food Biotechnology
 HLTH 5350 New Health Technologies

Briefly, the themes of these courses are as follows (see Appendix 2 for more course details):

- BIOL 5001 presents an overview of biotechnology.
- BIOL 6500 [0.5 credit] Advanced Science Communication will focus on development of websites and public relations (e.g. blog writing, networking), funding opportunities (e.g. grant writing) and case studies.
- TIMG courses focus on technology, management and innovation from a business perspective.
- The aim of BIOL 5900 is to have local biotechnology professionals share their experiences with students and present problems that will be addressed by the class.
- BIOL 5901 will be a flexible project-based course that, depending on the student goals, will involve developing prototypes in Biology research labs, in-depth analysis and constructing of a business plan, or internships in regional biotechnology companies.

Program curriculum map

Table B.2: Program curriculum map summary

Learning Outcomes	Program Components⁹	Level¹⁰ (I, R, M)	Activities and Artifacts⁴
Develop practical skills in biotechnology that can be	Core courses: BIOL 5001,	I/R	

⁹ Program components should include those core courses, elective courses, options (co-op, internship, mention Français, international experience), and other program requirements (language requirement, international experience) which contribute most directly to the achievement of the particular learning outcome.

¹⁰ Level of delivery of each program component related to the particular learning outcome: I = introductory; R = Reinforcement; M = Mastery (relevant to the expected outcome at the degree level).

⁴ Activities can include presentations, group work, performance, role play, etc. Artifacts can include exams, papers, reports, portfolios, cases, etc.

applied to agriculture, forestry, environment, food, health, industry, and other subfields, depending on student's individual interests.	BIOL 5900, BIOL 5901, BIOL 6500. TIMG 500X 0.5 credit in listed electives	R M R M	<i>Business pitch, business proposals, grant writing, BLOG writing, oral presentations, critical discussion, group work</i>
Translate life-science knowledge into practical applications, career opportunities and entrepreneurial activities.	Core courses: BIOL 5001 BIOL 5900, BIOL 5901 TIMG 500X 0.5 credit in listed electives	I R M R R	<i>Business pitch, business proposals, grant writing, technique development, business strategy</i>
Build on, and develop new, technology opportunities and business networks in eastern Ontario.	Core courses: BIOL 5001 BIOL 5900, BIOL 5901 BIOL 6500 TIMG 500X	I M M I R	<i>Workshops with business entrepreneurs, Internships, independent research projects</i>
Acquire an appreciation for long-range planning, off-target effects, ethical and EDI issues, and life-cycle analyses of technologies.	Core courses: BIOL 5001, BIOL 5900, BIOL5901, TIMG 500X	I/R M M R	<i>Written and oral business proposals, Workshops, business strategy sessions</i>

Table B.3 Program Curriculum Map

Curriculum Map

I = Concepts are introduced

R = Concepts are reinforced

M = Concepts are mastered

Program Components	LO1	LO2	LO3	LO4
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	<i>Course number or description</i>				
	BIOL 5001 [0.5 credit] Topics in Biotechnology	<i>I/R</i>	<i>I</i>	<i>I</i>	<i>I/R</i>
	BIOL 5900 [1.0 credit] Problems and opportunities in Biotechnology	<i>R</i>	<i>I/R</i>	<i>M</i>	<i>M</i>
	BIOL 5901 [1.0 credit] Capstone course on novel biotechnology product	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
	BIOL 6500 [0.5 credit] Advanced Science Communication	<i>R</i>		<i>I</i>	
	TIMG 5001 [0.5 credit] Principles of Technology Innovation Management	<i>R</i>	<i>R</i>	<i>R</i>	<i>R</i>
	TIMG 5002 [0.5 credit] Technology Entrepreneurship	<i>R</i>	<i>R</i>	<i>R</i>	<i>R</i>

TIMG 5003 [0.5 credit] Issues in Technology Innovation Management	<i>R</i>	<i>R</i>	<i>R</i>	<i>R</i>
BIOL 5004 Advances in Applied Biochemistry	<i>M</i>	<i>R</i>		
BIOL 5121 Advances in Protein Engineering	<i>M</i>	<i>R</i>		
BIOL 5515 Bioinformatics	<i>M</i>	<i>R</i>		
BIOL 5516 Applied Bioinformatics	<i>M</i>	<i>R</i>		
BIOL 6402 Principles of Toxicology	<i>M</i>	<i>R</i>		
CHEM 5109 Advanced Applications in Mass Spectrometry	<i>M</i>	<i>R</i>		

FOOD 5102 Food Biotechnology	<i>M</i>	<i>R</i>		
HLTH 5350 New Health Technologies	<i>M</i>	<i>R</i>		

B.3. Program learning outcomes assessment plan

In this section we outline our plan to assess learning outcomes in Master of Biotechnology. Program Components (Section B3, above) will be assessed by faculty members responsible for the courses. For example, the Instructor (planned new hire) will assess BIOL 5900 and BIOL 5901 with input, where appropriate, from internship supervisors and the ‘Primary Board of Biotechnology’ (Section C). Faculty members (Table D1) will assess progress in other courses based on subdiscipline standards. Course assessments vary depending on the type of activity in the course and can include evaluation of written and oral communication, graded papers, written exams, panel evaluations and internship supervisor reports.

Informal program assessments will take place during annual meetings (Section C, Program Oversight) of the ‘Primary Board of Biotechnology’ and program participants (See Table D1 and Appendix 6). Formal assessments of specific Learning Outcomes will be done by the Primary Board, with input from participants, according to the following schedule:

Learning Outcomes	2023-24	2024-2025	2025-26	2026-27	2027-28
LO1	-	X	-	X	-
LO2	X	-	X	-	X
LO3	X	-	X	-	X
LO4	-	X		X	

A brief program report will be written every two years, starting in 2025, by the Instructor of BIOL 5901 (capstone course) and, following submission of the written document, communicated through annual meetings to biotechnologists involved in the program. The biennial report will also invite feedback from regional biotechnology companies, government researchers and students.

B.4. Program Essential Requirements

➤ Once the program leads have identified the learning outcomes for the program, the Office of the Vice-Provost and Associate Vice-President (Academic) will facilitate the consultation with the Paul Menton Centre on the program's essential requirements. The standard text below must be included after the program-specific statement in the self-study. Once the learning outcomes have been reviewed by PMC, a statement will be provided to complete this section.

PREAMBLE

Program essential requirements are defined by the Ontario Human Rights Commission as "the knowledge and skills that must be acquired or demonstrated in order for a student to successfully meet the learning objectives of that... program." The program essential requirements are components that contribute to the achievement of the learning outcomes of the program.

Excerpt from the Ontario Human Rights Commission report: [The opportunity to succeed: Achieving barrier-free education for students with disabilities - Post-secondary education](#)

Appropriate accommodations should not lead to lowered standards or outcomes: rather, an appropriate accommodation will enable the student to successfully meet the essential requirements of the program, with no alteration in standards or outcomes, although the manner in which the student demonstrates mastery, knowledge and skills may be altered.

The aim of accommodation in a post-secondary educational context is to provide equal opportunities to all students to enjoy the same level of benefits and privileges and meet the requirements for acquiring an education. Based on these principles, an accommodation will be considered appropriate where it will result in equal opportunity to attain the same level of performance, or enjoy the same level of benefits and privileges experienced by others, or if it is proposed or adopted for the purpose of achieving equal opportunity and meets the individual's disability-related needs. - See more at:

<http://www.ohrc.on.ca/en/opportunity-succeed-achieving-barrier-free-education-students-disabilities>

Paul Menton Centre

The Paul Menton Centre is responsible for assessing requests for academic accommodation of students with disabilities through evaluations that are carried out on an individual basis, in accordance with human rights legislation and University policy, and with the support of relevant, professional/medical documentation. Students will only receive academic accommodation if the functional limitations of their disability impact directly on their academic performance.

The program essential requirements of the Master of Biotechnology Program have been reviewed in consultation with the Paul Menton Centre to ensure capacity for reasonable academic accommodation of students with disabilities, in accordance with the Carleton University Academic Accommodation Policy. The learning outcomes can be attained as outlined in the program description with the use of appropriate academic accommodations.

C. Governance

The 'Primary Board of Biotechnology' will comprise three biotechnologists and the Chair of the Department of Biology (*ex officio*) and Associate Chair of Graduate Studies, Department of Biology (*ex officio*). The three biotechnologists include: 1) the Biotechnology Instructor (teaches BIOL 5900 & BIOL 5901, and is responsible for coordinating outreach, networking, biennial report for the program), 2) the faculty member who is responsible for BIOL 5001, and 3) one other member from faculty appointed to the program (Table D.1). The faculty members appointed to the program comprise a diverse group of scientists, entrepreneurs, business experts, and educators, and the Primary Board make-up will encourage Carleton's aspirations of Equity, Diversity and Inclusion.

A new instructor is essential for delivery of this program – the instructor must be in place as we launch the new program; if not, the program cannot go forward. The successful instructor candidate will hold a Ph.D. in 'life sciences', with expertise, either through educational or industry experience, in biotechnology. Based on applicant pools for recent hires in related areas (e.g. Molecular Microbiology), we are confident that excellent candidates are available to fill this new instructor position. When we are notified of program approval, we will immediately form a hiring committee and advertise, with an expectation to fill the position within 6-8 months. The actual date for filling this position is thus dependent upon the timing of the approval process.

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The new instructor will be provided teaching release during their first term to develop course material. During the first 3 years the new instructor will be mentored and assisted in administrative duties by the faculty member (M.L. Smith) responsible for BIOL5001 (Figure 1). The associated workload for M.L. Smith will be part of the regular administrative workload assigned to Department of Biology faculty members. The Primary Board of Biotechnology is also tasked with oversight of administering the program. Thus, direct support and guidance will be provided to the new instructor by experienced faculty members. In addition, our plan includes 20% of an existing full-time 7PE administrator (Section G1). An excellent administrator is in place to help with the program.

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The Primary Board of Biotechnology will oversee a written report and convene an annual meeting of participants to discuss progress within the program. This annual meeting will be used for outreach and networking as well, by inviting biotechnology students, and biotechnologists from regional industry and government.

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Final approval of administrative actions will be brought through the Faculty Board, Department of Biology, as per normal process.

Governance of Master of Biotechnology Diploma (see schematic below):

A) Admissions

- i) Applications arrive in Administration Office, Department of Biology
- ii) Applications assessed by 'Primary Board of Biotechnology' (see explanation below)
- iii) Admissions offers forwarded by Administration Office, Department of Biology

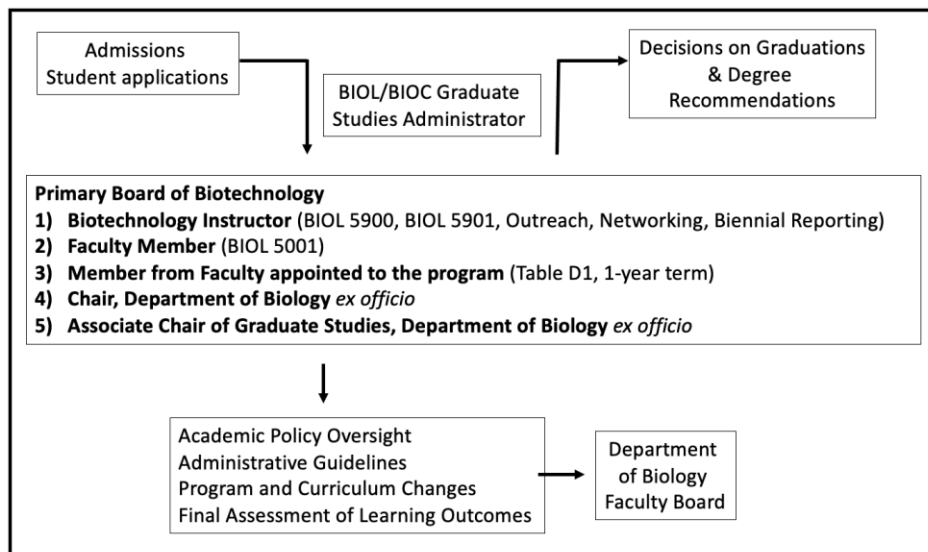
B) Graduations

- i) Applications to graduate arrive in Administration Office, Department of Biology
- ii) Applications assessed by 'Primary Board of Biotechnology'
- iii) Admissions offers forwarded by Administration Office & Chair, Department of Biology

Program Oversight

Academic Policy Oversight, Administrative Guidelines, Program and Curriculum Changes, and Assessment of Program Learning Outcomes will be done by the 'Primary Board of Biotechnology' with input from faculty in Table D.1.

Figure 1. Schematic of Governance Structure for Master of Biotechnology



D. The Faculty

D.1. Faculty appointed to the unit or program

Table D.1 represents a diverse group of faculty members based on rank, EDI, and biotechnology expertise. We do not anticipate retirements of faculty members on this list within the next five years. The focus of this program will be on biotechnology in the broadest sense, training students to explore an entrepreneurial mindset with their life sciences background. Further hires of faculty members within the university that have an interest in biotechnology are therefore anticipated, but are not essential for the program. In regard to new-hires, the Department of Biology is committed to promoting equity, diversity, and inclusion in our programs. We aspire for our learning spaces to be supportive and affirming for all people regardless of their race, gender, gender identity, sexual orientation, culture, religion, and socioeconomic status.

We anticipate that the number of participants in the program will grow as we establish a strong regional network of biotechnologists. For example, we will likely see increased interactions with researchers in the Faculty of Engineering that work on biomedical devices, environmental engineering and other areas.

We will build upon this strong core of participants to attract a diverse and high-quality student body. Table D.1 and Appendix 6 highlight the diversity of research and professional interests of Faculty members appointed to the program and External Advisors, respectively. Faculty members associated with the Master of Biotechnology program have well-established and independent research programs funded through tri-council grants. Likewise, External Advisors from Agriculture and Agrifood Canada (AAFC), for example, are established researchers that operate well-equipped laboratories (see Appendix 6).

Being primarily a course-based program, the Master of Biotechnology is not dependent on external research funds; it is designed to be entirely self-funded through student tuition. Nevertheless, we expect our networking initiatives with regional businesses and government will facilitate funding opportunities for students and faculty members through NSERC Alliance Missions Grants, Mitacs, Good Food Institute (GFI) and other special sources. As part of BIOL 5901, students may take part in internships within our Carleton research laboratories and regional biotechnology companies but internships are not required for completion of the course or program. Faculty members in Biology and Biochemistry at Carleton have an excellent track record in training HQP. Overall, the Master of Biotechnology program will enhance our research strengths at Carleton and grow partnerships and commercial activity in biotechnology in the national capital region.

Table D.1. Faculty appointed to the unit or program

Name	Faculty Name	Rank	M/F	Appointment Status	Supervision Privileges	Area of Specialization	Anticipated Role
Avis, Tyler	CHEM	Professor	M	Tenure	D	Food & Plant Microbiology	FOOD 5102
DeRosa, Maria	CHEM	Professor	F	Tenure	D	Applied nanochemistry	Internships
Golshani, Ashkan	BIOL	Professor	M	Tenure	D	Functional Genomics	Internships
Hepworth, Shelley	BIOL	Professor	F	Tenure	D	Plant Biology & Development	BIOL 6500, 6300 & Internships
McKay, Bruce	BIOL	Professor	M	Tenure	D	Gene Regulation	Internships
Rowland, Owen	BIOL	Professor	M	Tenure	D	Plant Biotechnology	BIOL 6500, 6300 & Internships
Smith, Jeff	CHEM	Professor	M	Tenure	D	Mass Spec/Natural Products	BIOL5004, CHEM 5109 & Internships
Smith, Myron	BIOL	Professor	M	Tenure	D	Applied Microbial Genetics	BIOL 5001 & Internships
Willmore, Bill	BIOC	Professor	M	Tenure	D	Protein Biochemistry	BIOL 5004, 5121, 6402 & Internships
Bailetti, Tony	TIM	Assoc Prof	M	Tenure	D	Technology Entrepreneurship	TIMG 5002
Biggar, Kyle	BIOC	Assoc Prof	M	Tenure	D	Functional Proteomics	BIOL 5004 & Internships
Bruin, Jenny	BIOL	Assoc Prof	F	Tenure	D	Pathogenesis of Diabetes	BIOL 6500 & Internships
Muegge, Steven	TIM	Assoc Prof	M	Tenure	D	Tech Innovation Management	TIMG 5001
Rodrigue, Nicolas	BIOL	Assoc Prof	M	Tenure	D	Molecular Evolution & Bioinfo	BIOL 5515, 5516 & Internships
Tanev, Stoyan	TIM	Assoc Prof	M	Tenure	D	Innovation & Business Medical Devices	TIMG innovation projects

Westerlund, Mika	TIM	Assoc Prof	M	Tenure	D	Technology Innovation Mgmt	TIMG 5003
Wong, Alex	BIOL	Assoc Prof	M	Tenure	D	Microbe Molecular Interactions	BIOL 5515, 5516 & Internships
Cullingham, Catherine	BIOL	Assist Prof	F	Preliminary	CD	Plants, Path, Pest & Genomics	BIOL 5901 & Internships
Dakin, Roslyn	BIOL	Assist Prof	F	Preliminary	CD	Animal Behaviour & Adaptation	BIOL 5XXX 'Biol Data Sci in R'
MacMillan, Heath	BIOL	Assist Prof	M	Preliminary	CD	Comparative Animal Physiology	BIOL 6500 & Internships
Nguyen, Vivian	ENSC	Assist Prof	F	Preliminary	CD	Resource Mgmt & Food Security	BIOL 6500

*D=full privileges; M=full privileges at master's level only; CD=co-supervision privileges at doctoral level, full privileges at master's level; CDM=co-supervision privileges only at both doctoral and master's level; CM=co-supervision privileges at master's level, no privileges at doctoral level

D.2. Faculty research funding

Table D.2: Operating Research Funding by Source and Year

Year	Source						Totals
	Tri-Council	Internal	Canadian	US	International	Other	
2018	\$ 481,745	\$ 265,000	\$ 476,245	\$ 64,441		\$ 231,000	\$ 1,518,431
2019	\$ 1,182,026	\$ 15,000	\$ 100,982	\$ 50,000		\$ 20,000	\$ 1,368,008
2020	\$ 1,219,938	\$ 479,500	\$ 197,125	\$ 38,400	\$ 10,000	\$ 10,000	\$ 1,954,963
2021	\$ 928,638	\$ 166,828	\$ 1,649,292	\$ 212,481	\$ 14,500	\$ 546,446	\$ 3,518,184
2022	\$ 610,000	\$ 617,594	\$ 2,925,247	\$ 202,564		\$ 1,608,023	\$ 5,963,428
TOTALS	\$ 4,422,347	\$ 1,543,922	\$ 5,348,891	\$ 567,885	\$ 24,500	\$2,415,469	\$ 14,323,013

D.3. Distribution of thesis supervision

The Master of Biotechnology is primarily a course-based program and supervisory loads will be relatively low compared to other graduate programs in science. Students will require supervisors to oversee internships (done within the BIOL 5901 course), although internship placements are not guaranteed nor required for completion of the program. Internship supervision by faculty members is voluntary. Internships will be arranged via networking opportunities within the program and will take place within our research laboratories on campus, or off campus with a biotechnology company or government research laboratory.

Table D.3. Distribution of thesis supervision

Faculty Name	Rank	Completed*				Current*			
		Undergraduate	Master's	PhD	PDF	Undergraduate	Master's	PhD	PDF
Tyler Avis	Full Prof	31	14	2	2	2	1	2	0
DeRosa, Maria									
Golshani, Ashkan	Full Prof	20	6	6	2	2	2	3	1
Hepworth, Shelley	Full Prof	54	13	6	3	4	1	1	1
McKay, Bruce	Full Prof	46 (+11)	5	3	3	2	3	2	0
Rowland, Owen	Full Prof	82	23	4	4	2	2	2	0
Smith, Jeffrey	Full Prof	45	13	3	1	2	3	4	0
Smith, Myron	Full Prof	110	37 (+2)	9	7	5	1	2	0
Willmore, Bill									
Bailetti, Tony	Assoc Prof	NA	156	0	NA	1	13	0	NA
Biggar, Kyle	Assoc Prof	24	2	0	1	5	1	4	1
Bruin, Jenny	Assoc Prof	14	2	0	0	1	2	5	0
Muegge, Steven	Assoc Prof	23	9 (+78)	0	0		2 (+8)	0	0
Rodrigue, Nicolas									
Tanev, Stoyan	Assoc Prof	5	5	1	0	0	1	0	0
Westerlund, Mika	Assoc Prof	92	42(+126)	1	NA	NA	3 (+4)	1(+1)	NA
Wong, Alex	Assoc Prof	33	16	3	0	2	4	3	1
Cullingham	Assist Prof	5	0	0	0	3	4	0	0
Roslyn Dakin	Assist Prof	7	0	0	0	3	4	1	0
MacMillan, Heath	Assist Prof	22	4	0	1	9	3	4	3

Nguyen, Vivian	Assist Prof	5	3	0	0	1	4	4	1
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* numbers in parentheses are supervisions on research projects in non-thesis programs.

D.4. Current teaching assignments

Table D.4: Distribution of Teaching Assignments						
*Note: data for 22-23 not available at this time						
Name	Courses Taught	Credit Value	2022-2023	2021-2022	2020-2021	Notes
AVIS, Tyler	FOOD 3005 Food Microbiology	0.5	*	x	x	
Professor	FOOD 5102 Food Biotechnology	0.5	*	x		
	Total			1.0	0.5	
DEROSA, Maria	CHEM 5501 Analytical Appr to Chem Prob	0.25	*		x	
Professor	CHEM/FOOD 5801 Seminar I	0.5	*		x	
	CHEM 5805 Seminar in Toxicology	0.5	*		x	
	CHEM 5901 Adv Topics in Organic Chem	0.25	*		x	
	CHEM 5903 Adv Topics in Phys/Theo Chem	0.25	*		x	
	Total				2.5	
GOLSHANI, Ashkan	BIOL 2303 Microbiology	0.5	*			
Professor	BIOL 4106 Advances in Molecular Biology	0.5	*			
	BIOL 4303 Advances in Microbiology	0.5	*			
	BIOL 5105 Methods in Molecular Genetics	0.5	*			
	ENVE 2002 Microbiology	0.5	*			

		Total				
HEPWORTH, Shelley	BIOL 3201 Cell Biology	0.5	*	x		
Professor	BIOL 3202 Principles of Developmental Biology	0.5	*	x		
	BIOL 6300 Advanced Plant Biology	0.5	*	x		
	Total			1.5		
McKAY, Bruce	BIOC 3103 Practical Biochemistry I	0.5	*		x	
Professor	BIOL 4109 Molecular Genetics Lab	0.5	*	x	x	
	BIOL 5106 Lab Tech in Molecular Genetics	0.5	*	x	x	
	Total			1.0	1.5	
ROWLAND, Owen	BIOL 3104 Molecular Genetics	0.5	*	x		
Professor	BIOC 4203 Advanced Metabolism	0.5	*	x		
	BIOL 6300 Advanced Plant Biology	0.5	*	x		
	Total			1.5		
SMITH, Jeffrey Charles	CHEM 2302 Analytical Chemistry I	0.5	*		x	
Professor	CHEM 2303 Analytical Chemistry II	0.5	*		x	
	CHEM 5005 Physical Organic Chemistry	0.25	*		x	
	CHEM 5111 Adv Topics Biomolecular Sci	0.25	*	x		
	CHEM 5705 Ecotoxicology	0.5	*		x	
	CHEM 5802 Seminar II	1.0	*	x	xx	
	CHEM 5903 Adv Topics in Phys/Theo Chem	0.25	*	x		
	Total			1.5	2.75	
SMITH, Myron	BIOL 3102 Mycology	0.5	*	x	x	
Professor	BIOL 3301 Biotechnology II	0.5	*	x	x	
	BIOL 5001 Topics in Biotechnology	0.5	*	x	x	
	Total			1.5	1.5	
WILLMORE, Bill	BIOC 3101 General Biochemistry I	0.5	*		x	

Professor	BIOC 3102 General Biochemistry II	0.5	*		x	
	BIOL 5002/CHEM 5800 Seminar in Biochemistry I	0.5	*		x	
	BIOL 5004/CHEM 5806 Advances Applied Biochemistry	0.5	*			
	BIOL 5502 Special Topics in Biology	0.5	*	x	x	
	BIOL 6102/CHEM 6800 Seminar in Biochemistry II	0.5	*		x	
	Total			0.5	2.5	
BAILETTI, Tony	TIMG 5103 Advanced Topics in Technology Innovation Management	0.5	*	x		
Associate Professor	TIMG 5201 Technology and Wealth	0.5	*	x		
	Total			1.0		
BIGGAR, Kyle	BIOC 3202 Biophysical Tech & Application	0.5	*	x	x	
Associate Professor	BIOC 4001 Methods in Biochemistry	0.5	*	x		
	Total			1.0	0.5	
BRUIN, Jenny	BIOC 4009 - Biochemistry of Disease	0.5	*		x	
Assistant Professor	BIOL 4201 - Adv Cell Culture & Tissue Eng	0.5	*	xx	xx	
	BIOL 6500 - Advanced Science Communication	0.5	*	xx		
	Total			1.0	1.0	
MUEGGE, Steven	TIMG 5001 - Principles of Tech Innov Mgmt	0.5	*	xx	xx	
Associate Professor	TIMG 5004 - Resrch Meth in Tech Innov Mgmt	0.5	*	x		
	TIMG 5103 - Adv Tps: Tech Innovation Mgmt	0.5	*		x	
	TIMG 5201 - Technology and Wealth	0.5	*		x	
	Total			1.0	1.0	
RODRIGUE, Nicolas	BIOC/BIOL/COMP 3008 - Bioinformatics	0.5	*			

Associate Professor	BIOL 4104 Evolutionary Genetics	0.5	*			
	BIOL 5201 Evolutionary Bioinformatics	0.5	*			
	Total					
TANEV, Stoyan	TIMG 5005 - CustomerValue Creation TechFrm	0.5	*	x	x	
Associate Professor	TIMG 5103 Adv Tps: Tech Innovation Mgmt	0.5	*	x	x	
	TIMG 5303 ML for Tech Entrepreneurship	0.5	*	x	x	
	Total					
WESTERLUND, Mika	TIMG 5003 Issues in Tech Innovation Mgmt	0.5	*			
Associate Professor	TIMG 5101 Integrated Product Development	0.5	*			
	Total					
WONG, Alex	BIOL 3303 Experimental Microbiology	0.5	*	x	x	
Associate Professor	BIOL 3902 Topics in Biology I	0.5	*	x		
	BIOL 5516 Applied Bioinformatics	0.5	*		x	
	BIOL 5526 Next-generation Sequence Data	0.5	*	x		
	Total			1.5	1.0	
CULLINGHAM, Catherine	BIOL 2104 Introductory Genetics	0.5	*	x		
Assistant Professor	BIOL 4103 Population Genetics	0.5	*	x	x	
	BIOL 5526 Next-generation Sequence Data	0.5	*	x		
	Total			1.5	0.5	
DAKIN, Roslyn	BIOL1105 Biological Methods	0.5	*	x	x	
Assistant Professor	BIOL3804 Social Evolution	0.5	*	x		
	BIOL5407 Biostatistics I	0.5	*		x	
	BIOL5502 Special Topics in Biology	0.5	*	x		

		Total		1.5	1.0	
MACMILLAN, Heath	BIOL 2001 Animals: Form and Function	0.5	*	x		
Assistant Professor	BIOL 4318 Adaptations to Extreme Environ	0.5	*	x	x	
	BIOL 6500 Advanced Science Communication	0.5	*	x		
	Total			1.5	0.5	
NGUYEN, Vivian	ISAP 3002 Applied Interdisciplinary Research		*	x		
Assistant Professor	Total			0.5		
<i>*Note: data for 22-23 not available at this time</i>						

D.5. Contract instructors

We anticipate minimal need for contract instructors for the Master of Biotechnology program based on the following.

Core courses:

BIOL 5001 Topics in Biotechnology is currently offered every year by a faculty member of the Biology Department as part of their regular teaching load. BIOL 5900 and BIOL 5901 will be taught by a designated Instructor (new hire) for the program. **A contract instructor may be required for these two core courses when the regular instructor is on sabbatical.** The required course, BIOL 6500 Advanced Science Communication, is a team-taught graduate course within Biology that is offered every year.

Electives in TIM: Master of Biotechnology students are required to complete 0.5 credits from three possible courses offered by TIM (Technology, Management & Innovation Program). In case one TIMG course is not offered, either of the other two can be used, so we do not anticipate additional contract instructor resources for courses in TIM. We are interested in developing strong interactions with TIM through our Master of Biotechnology program and will make the most of our joint resources. We have discussed the possibility of resource sharing with TIM when we experience increasing numbers of students in Master of Biotechnology.

Electives in Science: Students are required to complete one 0.5 credit course from a list of eight graduate science courses (BIOL, CHEM, FOOD, or HLTH). These courses are offered regularly. We anticipate that Master of Biotechnology students will distribute fairly evenly across these science electives and will not overburden any given course. There is a good diversity of course offerings in this section such that we do not anticipate a need for contract instructors – in the case where one course is not available, students will be able to select other courses of interest so as to complete the program.

E. Program Admission and Enrolment

E.1. Admission requirements

Entry into the Master of Biotechnology program requires completion of a B.Sc. or equivalent in a life sciences program (e.g. biology, microbiology, biochemistry, biotechnology, health sciences, agriculture, etc.). In accordance with policy in the Department of Biology, students also require a B+ in major subjects and B- or higher overall. We are interested in biotechnology in the broadest sense and welcome students with a diversity of expertise and interests. Our aim is to have students translate their life science background into biotechnology careers (Learning Outcome 2). Our program will further develop practical skills (LO1, LO3), to think creatively to solve problems, to develop an entrepreneurial mindset and develop viable biotechnology businesses. We are keen to attract students with background in ecology, evolution, biostatistics and other areas outside of 'mainstream' biotechnology – in addition to potential business applications in these disciplines, these students will contribute to a general understanding of the importance of sustainability in long-range planning and life-cycle analyses (LO4).

The participants and the Department of Biology fully endorse the university's commitment to foster and support EDI initiatives. We have an EDI committee within Biology that is very active in education and discussion of EDI issues, in student recruitment and retention, and in all aspects of new faculty hiring. We are confident that this new program will provide opportunities for young scientists of diverse backgrounds to excel in the field of biotechnology, and we will educate and act on EDI. For example, our new course (required) for the program, BIOL 5900 [1.0 credit] Problems and Opportunities in Biotechnology, will include a module on the importance of incorporating ethical and EDI considerations in biotechnology initiatives. We recognize that the relatively high tuition of this professional program will potentially present a barrier for some students. Increasingly, we see funding opportunities to address EDI concerns and we look forward to launching funding initiatives to enable student access to the program. Already, several participants in this program have obtained grants that support diverse students in applied sciences (such as ENGAGE/Alliance, MITACs, Ontario Genomics, etc.) and we will continue obtaining funding to support underrepresented students. Another plan that will ameliorate potential financial barriers is to solicit paid internships from companies in our growing private sector partner network. These and other anticipated upcoming funding opportunities will provide avenues to address EDI. We recognize that acting on ethical and EDI concerns is important for sustainable success of our program and for anticipated spin-off companies.

Once we have formal approval, we will begin the process of building out the program web site and marketing initiatives. Our plan is to advertise the unique and applied attributes of this new program broadly and with special attention to diverse communities. For example, we will provide program information to remote communities in Canada and to international partners. This will help meet our commitments to EDI. We will prioritize obtaining student funding from private sector partner companies and funding agencies to provide incentives and opportunities to economically disadvantaged groups.

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E.2. Class sizes and course and program capacity

The projected five-year intake of students into the Master of Biotechnology program is 10 students/year for years 1 – 3, and 20 students/year beyond year 3. The program governance structure (please see Section C) provides for ample oversight capacity on these projected enrolments. We have capacity in the required and elective courses for these additional MBiotech students based on the following analysis:

Class size capacities for required courses (3.0 credits)

BIOL 5001 [0.5 credit] Topics in Biotechnology. This is an existing course with enrolments of 2 – 5 students per year over the past 3 years. The capacity of this course is currently set at 25 and will accommodate the additional maximum of 20 MBiotech students without restructuring.

BIOL 5900 [1.0 credit] Problems and Opportunities in Biotechnology (new course). This course will focus on experiential learning in problem solving and use workshops and lectures to analyze opportunities and challenges in biotechnology. The course will be structured to accommodate class sizes of up to 30 students.

BIOL 5901 [1.0 credit] Development of a Novel Biotechnology Product (new capstone course). This experiential learning course will be managed by the new hire (MBiotech Instructor). The course will comprise class sessions, with 30-student capacity, along with an independent, project-based component

that will be done with participant oversight (see Table D.1 for Faculty members appointed to the program) or as internships in regional biotechnology companies and agencies.

BIOL 6500 [0.5 credit] Advanced Science Communication. This is an existing course that is team-taught by faculty within the Ottawa-Carleton Institute of Biology (OCIB). The class enrolments have been about 5 students/year over the past 3 years. Cap size is currently set at 15. We plan to offer additional sections of BIOL 6500 to accommodate 20 MBiotech students/year.

Class size capacities for elective courses (1.0 credit)

We have consulted with Technology Innovation Management (TIM) and they have assured us that there is capacity within TIMG courses for our MBiotech students (please see Appendix 1 for program courses and Appendix 2 for course descriptions). Likewise, we have consulted with Department / Institute Chairs and course instructors about capacity in science elective courses. MBiotech students have 8 science elective courses from which to choose; we anticipate that any given science elective course will take in 2-5 MBiotech students and this is well within the course capacities.

Consideration of 'piggybacked' courses.

The required MBiotech courses are only offered as graduate courses. Of the elective courses, only two are also offered as undergraduate level courses: CHEM 5109 is also offered as CHEM 4304 but has different requirements, and HLTH 5350 is also offered as HLTH 4102 but has different requirements. Therefore, should students elect to take CHEM 5109 and HLTH 5350 these courses would be subject to approval by the various stages in workflow.

E.3. Projected enrolment

Projected enrolment goals are based on the resources set out in this document at ten students from years 1 -3 and a 20-student cap after year 3.

F. Student Experience and Satisfaction

F.1. Student orientation, advising, and mentoring

The Master of Biotechnology will be heavily focused on orientation, advising and mentoring. Orientation will occur when students enter the program through a special meeting that covers introductions, goals of the program, EDI and encouragement of open and respectful dialog. Orientation will continue within BIOL 5001, the 'introductory course' for the program that provides a basic overview of topics such as soft skills vs hard skills, business opportunities, calculated risk-taking, ethical issues and funding strategies. Advising students and mentoring on special projects, business proposals, possible internships, etc. will also be integral to BIOL 5900 and BIOL 5901. Advising and mentoring will also be done through invited guest speakers within courses and through special workshop events involving regional biotechnology companies. Special meetings/workshops will occur at least twice per year and will serve as networking events for students and regional biotechnology interests. Students and associates will be invited to take part in science outreach events such as 'Carleton Front Door' and 'Life Sciences Day'. Outreach to students and the community will be enhanced by a Carleton website for

Biotechnology. On-line materials and notices will be provided to program students through Brightspace, including practical resources, opportunities and events.

F.2. Career paths of graduates

The Master of Biotechnology is a professional program that focusses on training students for rewarding careers in biotechnology. Students will be strongly guided toward an entrepreneurial mindset and encouraged to develop start-up companies. The program will also serve the regional biotechnology industry as a problem-solving resource: our students will be tasked with addressing regional technological challenges facing companies. We expect our engagement with regional industry partners and government agencies will provide recruitment opportunities for our students. In addition to careers in established organizations and the development of start-up companies, we expect some students will choose to continue with their advanced studies in areas such as science, law, policy, communication, business, economics, engineering and academia. The Master of Biotechnology will provide a 'gateway' to these related areas of advanced studies.

G. Resources

G.1. Support and technical staff

Approximately 20% of time of one existing level 7PE administrator will be allocated to provide administrative support to the proposed program, including admission support (see Figure 1. Schematic of Governance Structure for Master of Biotechnology). Occasional support staff resources may be required for internship, product development, and special products. For example, access to the Biology Greenhouse facility would be coordinated through the Greenhouse Manager. The Department of Biology has the capacity to accommodate this additional administrative load with resources already in hand.

G.2. Space

Office space for Instructor (new hire) is required through the Department of Biology. Classroom space is required, although courses will be scheduled during evenings, weekends and summers, where possible, to improve student accessibility and reduce classroom pressure. Designated graduate student meeting rooms within the Department of Biology are available for special events, workshops and networking events.

a. Laboratory facilities

Faculty members and partners from private industry and government laboratories that choose to supervise internships will provide space in their respective laboratories, as appropriate. These facilities are managed by the Principal Investigator of the laboratory and include equipment and space to carry out research in the 'Area of Specialization' of participants (Table D1 and Appendix 6).

b. Unit/program and affiliated research facilities

Depending on needs, availability and, for example, internship topic, research facilities available to Master of Biotechnology program students include: Common Molecular Biology Laboratory,

Greenhouses, Growth Chambers, Insect Rearing Facilities, Mass Spectroscopy Facility, high-throughput DNA sequencing, B2-level Microbiology Laboratory, and Teaching & Research Garden. It should be emphasized that research facilities are only required for student internships within the Master of Biotechnology program and that these internment placements are not guaranteed: they require approval by participating biotechnologists (Table D1) and regional biotechnology companies. Research supervisors can evaluate their existing resources as part of the decision on whether to host interns. Some students in this program will have a history of interactions through undergraduate co-op placement and BSc Biotechnology programs at Carleton. The Master of Biotechnology, therefore, integrates well with our existing programs. Other students will be recruited into this new program from the international and national pool of life scientists.

c. University and unit/program computer facilities and computing resources

In some cases, students may elect to work on computational projects in areas such as bioinformatics and will require access to computer servers that are available through Principle Investigators and partner agencies such as Genome Canada and Compute Canada. Many of our faculty members have ongoing research in biostatistics, computational biology and bioinformatics, and find that we have the required access to computer facilities.

G.3. Library Resources

Carleton University was among the first in Canada to establish undergraduate Biotechnology programs (since 1984). As a result, access to biotechnology books and periodicals through our library is excellent. Library staff are supportive and knowledgeable on biotechnology as evident by workshops and resources developed for our recently introduced/revamped undergraduate courses in biotechnology (BIOL 2301, BIOL 3301, BIOL 4301).

The Report from the Library is included as **Appendix 4** of the self-study.

PREAMBLE

The Library report is prepared by the librarian or subject specialist responsible for the subject area(s) covered by the program, using a common template developed from guidelines established by the Ontario Council of University Libraries. The main purpose of the report is to specify whether any new resources or services are necessary in order to support the program, for example, whether the Library needs to purchase new books or subscribe to new journals or electronic resources.

The librarians and subject specialists preparing the reports rely on their own professional experience with collecting resources in the subject areas in order to make assessments about whether there are gaps in the collection that need to be filled in order to provide the appropriate teaching and research support for new, modified, or reviewed programs. They consult various sources for information about published resources in the subject area, including the database maintained by the Library's main monographs vendor, publishers' lists and websites, handbooks and guides to the literature, the library collections of universities that offer the program, various specialized sites relevant to the subject from professional societies and organizations, as well as basic information available in tools such as Google Scholar or generally on the web. They also generally consult faculty members (e.g., the Library representative or the department chair) to discuss their assessment of the strengths and gaps. The Library makes a clear distinction between those resources which are essential to the program and those which are simply "nice to have." Generally speaking, the reports list only the essential resources, with costing obtained from the vendors or agents from which the Library would obtain the materials: each item is listed and costed individually and the total amount is recorded in the report.

The report also provides context by providing information about the following, when possible or applicable: percentage of top-ranked journals which the Library subscribes to in the subject area(s); how much funds have been spent in the past fiscal year on e-resources, journals, and printed books in support of the subjects covered by the program; how much funds have been spent in the past 8 years on printed monographs for the program; specialized collections in archives, maps, data, and government information; instruction, teaching, and practicums carried out by Library staff in the classroom or in the Library; highlights from the Library website (e.g., links for subject and course guides and to online tutorials); research partnerships between the Library and the department or program; research consultations; help desk visits; and selected detailed statistical information about the Library.

H. Development of the Self-Study

Methods: Documents were circulated and written feedback was provided by development team members (listed below). The Executive Summary was circulated among all faculty members of the Department of Biology and discussed during two departmental board meetings. Chairs/Directors of sister units were provided with copies of the executive summary for comment and approval. Biotechnologists included as participants in Table D.1, D.3 and Appendix 6 self-identified as potential contributors and provided information and feedback.

The Master of Biotechnology development team members are listed below:

Myron Smith (Biology Dept. and Institute of Biochemistry) – program lead, conception, proposal writing.
Yiqiang Zhao (Associate Dean, Science) – liaising, advising and editing of proposal.
Maria DeRosa (Dean, Science) – oversight, approval of concept.
Bruce McKay (Chair, Biology Dept.) – review of governance and proposal, support of concept.
Owen Rowland (Biology Dept. and Institute of Biochemistry) – review of governance of program.
Jeffrey Smirle (Faculty of Science) – advising, editing proposal.
Eileen Harris (Program Assessment, Office of Vice Provost) – advice on Learning Outcomes.
Jenny Bruin (Biology Dept. & Institute of Biochemistry) – review of Learning Outcomes.
Kyle Biggar (Biology Dept. and Institute of Biochemistry) – review of Learning Outcomes.
Iain Lambert (Biology Dept. and Institute of Biochemistry) – editing/input on executive summary.
Shelley Hepworth (Biology Dept. and Institute of Biochemistry) – editing/input on executive summary.
Dan Siddiqi (Associate Dean (Programs, FGPA) and Sandra Bauer (Program Officer, FGPA) provided advice and feedback in the process of developing the self-study.

Appendix 1. Proposed Calendar Program Description

Master of Biotechnology (4.0 credits)

1. 3.0 credits in:		3.0
BIOL 5001 [0.5]	Topics in Biotechnology	
BIOL 5900 [0.0]	Problems and Opportunities in Biotechnology	
BIOL 5901 [0.0]	Development of a Novel Biotechnology Product	
BIOL 6500 [0.5]	Advanced Science Communication	
2. 0.5 credit from:		0.5
TIMG 5001 [0.5]	Principles of Technology Innovation Management	
TIMG 5002 [0.5]	Technology Entrepreneurship	
TIMG 5003 [0.5]	Issues in Technology Innovation Management	
3. 0.5 credit from:		0.5
BIOL 5004 [0.5]	Advances in Applied Biochemistry	
BIOL 5121 [0.5]	Advances in Protein Engineering	
BIOL 5515 [0.5]	Bioinformatics	
BIOL 5516 [0.5]	Applied Bioinformatics	
BIOL 6402 [0.5]	Principles of Toxicology	
CHEM 5109 [0.5]	Advanced Applications in Mass Spectrometry	
FOOD 5102 [0.5]	Food Biotechnology	
HLTH 5350 [0.5]	New Health Technologies	
Total Credits		4.0

Appendix 2. Proposed Calendar Course Descriptions

* = proposed new course

BIOL 5001 [0.5 credit] (BIO 5101)

Topics in Biotechnology

A course concerned with the use of biological substances and activities of cells, genes, and enzymes in manufacturing, agricultural, and service industries. A different topic will be selected each year.

Includes: Experiential Learning Activity

Prerequisite(s): a course in cell physiology or biochemistry, or permission of the instructor and permission of the director or associate director of OCIB.

***BIOL 5900 [1.0 credit]**

Problems and Opportunities in Biotechnology (new course)

Identification of problems, solutions and opportunities in regional biotechnology industries.

Lectures and workshops explore challenges of regional start-up and established biotechnology companies. [Importance of Ethics and Equity, Diversity and Inclusion \(EDI\) for biotechnology are discussed.](#)

Includes: Experiential Learning Activity

Prerequisite(s): permission of the Department and good standing in a Carleton University biology or biochemistry graduate program.

***BIOL 5901 [1.0 credit]**

Development of a Novel Biotechnology Product (new course)

Capstone course. Under faculty supervision, students will either design and develop a start-up venture in their area of interest, or carry out an internship with a regional biotechnology company. Theory of business and entrepreneurship will be reinforced throughout.

Includes: Experiential Learning Activity

Prerequisite(s): permission of the Department and good standing in a Carleton University biology or biochemistry graduate program.

BIOL 6500 [0.5 credit]

Advanced Science Communication

The theory and practice of effective science communication. Topics may include: writing for, presenting to, and engaging with diverse audiences, as well as graphic design and data visualization, social and digital media, and knowledge mobilization.

Includes: Experiential Learning Activity

Prerequisite(s): permission of the director or associate director of OCIB.

TIMG 5001 [0.5 credit]

Principles of Technology Innovation Management

Develops a common level of knowledge among students on topics in product and service development, technology entrepreneurship, and commercialization. These topics build on the literature in the fields of project management, leadership, industrial marketing, managerial economics and organizational behaviour.

Precludes additional credit for TIMG 5001 (no longer offered).

TIMG 5002 [0.5 credit]**Technology Entrepreneurship**

Key theories and models of technology entrepreneurship. Topics include the nature of technology products, collaborative experimentation and production of new products, assets, and their attributes, and the firm's asset ownership rights.

Precludes additional credit for TTMG 5002 (no longer offered).

TIMG 5003 [0.5 credit]**Issues in Technology Innovation Management**

Key readings relevant to technology innovation management. Topics include the introduction of new products to the global market, technology sourcing, intellectual property rights, industry trends, technology and ethics, new business opportunities and product identification, industry characteristics, regulation, international competition, ecosystems, economic development, and open source.

Precludes additional credit for TTMG 5003 (no longer offered)

BIOL 5004 [0.5 credit] (BIO 5104)**Advances in Applied Biochemistry**

A practical hands-on course in the field of Biochemistry. This course is run in a laboratory and will train students in highly specialized technique(s) in Biochemistry. The students will run experiments, gather data, assess and analyze the results and present the findings as a seminar.

Includes: Experiential Learning Activity

Also listed as CHEM 5806

BIOL 5121 [0.5 credit] (BIO 5121)**Advances in Protein Engineering**

An advanced lecture, discussion and seminar course covering the theory, development and current techniques of protein and enzyme engineering. Topics to be discussed may also include applications in biotechnology, nanotechnology and new frontiers in basic and applied research.

Prerequisite(s): permission of the director or associate director of OCIB.

BIOL 5515 [0.5 credit] (BNF 5106)**Bioinformatics**

Major concepts and methods of bioinformatics. Topics may include genetics, statistics and probability theory, alignments, phylogenetics, genomics, data mining, protein structure, cell simulation and computing.

Includes: Experiential Learning Activity

BIOL 5516 [0.5 credit] (BNF 5107)**Applied Bioinformatics**

Introduction to programming for students in the life sciences. Through lectures, assignments, and independent projects, students will learn about basic concepts and techniques in programming, including variables, control structures, subroutines, and input/output. No previous knowledge of bioinformatics or programming is required.

Includes: Experiential Learning Activity

Prerequisite(s): permission of the director or associate director of Ottawa-Carleton Institute for Biology.

BIOL 6402 [0.5 credit] (BIO 9101, CHM 8156, TOX 8156)

Principles of Toxicology

The basic theorems of toxicology with examples of current research problems. The concepts of exposure, hazard and risk assessment will be defined and illustrated with experimental material from some of the more dynamic areas of modern research.

Also listed as CHEM 5708.

Prerequisite(s): permission of the director or associate director of OCIB.

CHEM 5109 [0.5 credit] (CHM 8302)

Advanced Applications in Mass Spectrometry

Detailed breakdown of the physical, electrical and chemical operation of mass spectrometers. Applications in MS ranging from the analysis of small molecules to large biological macromolecules. Descriptions of the use of mass spectrometry in industry as well as commercial opportunities in the field.

Also offered at the undergraduate level, with different requirements, as CHEM 4304, for which additional credit is precluded.

FOOD 5102 [0.5 credit]

Food Biotechnology

Developments in biotechnology related to food production and quality. Traditional food biotechnology and novel biotechnological methods related to the production of food; the use of traditional food crops in other bio-industries. Aspects of microbiology and genetic engineering.

HLTH 5350 [0.5 credit]

New Health Technologies

Overview of new and emerging health technologies, including medical and assistive devices, diagnostics and screening, genetics, reproduction, tissue regeneration, imaging, and health informatics. Health technology assessment methods and issues. Regulatory, ethical and social implications; considerations in the developing world.

Includes: Experiential Learning Activity

Also offered at the undergraduate level, with different requirements, as HLTH 4102, for which additional credit is precluded.

Appendix 3. Proposed Calendar Admissions Requirements

Admission

Bachelor of Science (or equivalent) in a life sciences field, with B+ or higher in major subjects and B- or higher overall.

Appendix 4. Library Report



Institutional Quality Assurance Process

Library Report for Master of Biotechnology

New Program

Date: April 27, 2022

Compiled by: George Duimovich, Collections Librarian, Science, Engineering & Design Team

Submitted to: Sandra Bauer, Program Officer, Faculty of Graduate and Postdoctoral Affairs

cc Amber Lannon, University Librarian
Laura Newton Miller, Head of Collections & Assessment
Sally Sax, Head of Electronic Resources & Acquisitions
Patti Harper, Head of Research Support Services



Overview and Recommendations

An analysis of Carleton University Library's information resources and services in support of the program demonstrates that the Library does not require additional funds to support it.

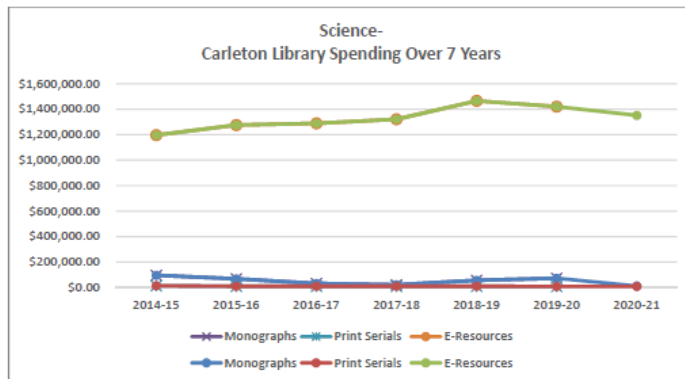
Library Collections

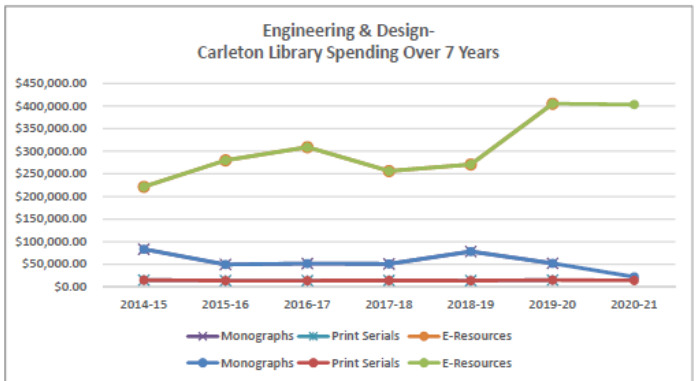
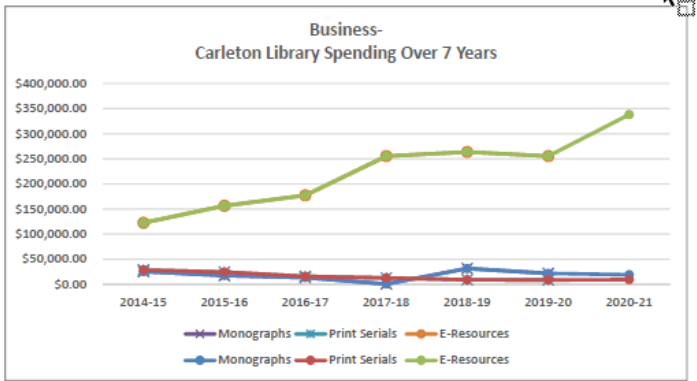
Subject Specific

The Library's collection includes specific resources to support the Master of Biotechnology program. These include 20 of the top-ranked 20 journals in Journal Citation Reports as well as top 19 of 20 journals from Google Scholar classified under the subject categories of Biotechnology & Microbiology as well as Biotechnology respectively. In addition, the Library's collections of journals in related programs are also strong in Science, Communication, Business and Entrepreneurship (in particular, collections supporting Sprott School of Business & the Technology Innovation Management (TIM) program).

During the 2020-2021 academic year, the Library's spending for collection in all areas was about \$9.2 million. 86% of the entire collections budget is spent on electronic resources. About \$5.1 million was spent on general electronic resources which benefit all subject areas.

In addition to that amount, the following shows the amounts spent on electronic resources (databases, journals, ebook packages, indexes), print journals, and monographs (individual orders) related to Faculty of Science, Business and Engineering for the past seven years:





The policy for materials that the Library collects for *Biotechnology* may be found at various related subject collection profiles including: [Biochemistry](#), [Biology](#), [Business](#), and [Chemistry](#).

Teaching, Learning, and Research

The information-literate student is one who is able to access information efficiently, critically assess it, assimilate and synthesize it effectively. The Library's programs and services are grounded in Ontario's Quality Assurance Framework.

The Librarian works collaboratively with faculty to address students' information competencies through a number of methods, including the following.

Instruction, Teaching, and Practicums

A total of 437 in-class instruction sessions were provided by Library staff in all subject areas during 2020-21, and a total of 11,532 students attended those sessions. This was also supplemented by almost 200 videos created with approximately 10,000 views. The Librarian designs classes and practicum opportunities to meet the needs of specific assignments and course requirements while addressing broad learning objectives.

Both our Health Sciences and Business liaison librarians have jointly supported courses at the undergrad level directly related to biotechnology (BIOL 2301 / 4301).

The Library offers workshops for graduate students in research and writing through the Faculty of Graduate and Postdoctoral Affairs (FGPA). FGPA hosts Grad Navigate: a hub of graduate-specific workshops and services that assist graduate students in navigating different aspects of their graduate school experience and developing professional skills. Examples include (but are not limited to) workshops about copyright, citation management, research data management, NVIVO, scholarly journal writing, research impact, and data visualization.

Learning Support – Provided Online

The Library website (library.carleton.ca) is designed to support each step of the research process: identifying, accessing, borrowing, evaluating, and citing resources. Google Analytics recorded over 1.1 million visits to the Library website during 2020-21. Library users can now easily conduct a comprehensive search of the entire collection using the Omni search interface.

Highlights of the Library website include:

- Subject guides including: [Biology](#), [Biochemistry](#), [Biotechnology](#), [Business](#), [Chemistry](#), and [Entrepreneurship](#)
- Course guides including: [BIOL 2301](#), [BIOL 2301 - SWOT](#), [BIOL 4301](#), [BIOL 4301 - SWOT](#)

Research Partnerships

Active research is the foundation of a strong academic program, and an increasingly important part of student learning and development. The Library provides resources, services, and expertise to facilitate the Carleton research community at all levels and through all stages of the research process. This research support is provided at key service points, and through consultations and more formal collaborations.

Services

Individual Research Consultations

Library staff provided 3372 individual research consultations in 2020-21 for all faculties. Consultations can be scheduled for quantitative and qualitative research, as well as for GIS support.

Research Help – Desks & CHAT

Onsite research help is provided through two service points: a Research Help desk on the main floor of the Library and a help desk in Archives and Special Collections (ASC). These two service points had a total of 5257 visits in 2019-20. Although visits to these service points were disrupted during the 2020-21 pandemic, research help continues to be available through email (603 research help questions answered) and through our extended online Ask a Librarian CHAT service, which answered 2213 Carleton patron questions in 2020-21.

Results from recent user surveys show that the Library performs well in providing off-campus access to resources and services, and that these resources help people to be successful at university. The Library also does well at providing accurate answers to questions and providing course reserves that help both faculty and students.

General Information about the Library

Carleton Library consists of five stories, totaling over 214 thousand square feet. Two floors are dedicated to silent study, while three others allow for quiet conversation. As of the Fall of 2019, the Library had a total of 2400 seats for students. This included 179 public computers and 41 bookable group study rooms. User surveys show the need for more group and silent spaces with outlets for power, and so renovations throughout the Library in the past few years continue to focus on new study space for students.

The Discovery Centre is a 9,500 square foot collaborative workspace for undergraduate research. This dynamic learning environment is outfitted with ergonomic, accessible and stylish furniture as well as state-of-the-art technology. This multi-purpose space can be adapted to suit a wide range of needs.

The New Sun Joy Maclaren Adaptive Technology Centre provides Carleton University students with disabilities, who have been referred by centrally on campus, to a pleasant comfortable place to do university work using technology adapted to their needs.

As of Spring 2020, the Library's collection includes approximately 1.2 million print monographs, 1.5 million e-books, and over 200,000 e-journals in a wide range of subjects and disciplines. In addition, the Library has substantial collections of government documents and other resources, maps, data, rare books and other special research collections, printed journals, archives, theses, multimedia resources (audio, DVD, streaming video), musical scores, computer games, emerging technology, as well as licensed access to over 300 full-text and indexing databases in a broad range of subjects. For a snapshot of details, see Appendix.

Collection librarians work together with the Head of Collections & Assessment to build and maintain the Library's collection by developing collection policies that guide the systematic selection of materials. The Library also provides a request form on its website where a user may suggest a book or other item for purchase.

In order to enhance its purchasing power (particularly for electronic resources), the Library is an active member of two major cooperative partnerships: the Ontario Council of University Libraries (OCUL), a consortium of the 21 academic libraries in the province; and the Canadian Research



Knowledge Network (CRKN), a consortium of 75 academic libraries across the country. Carleton Library is also a member of HathiTrust, which gives students, staff, and faculty access to a digital repository of millions of books, serials, and other materials from research institutions and libraries from around the world.

The Library's annual acquisitions budget for the 2021-2022 fiscal year is \$7.6 million, and its staffing and operating budget is \$13.4 million.

The Library acquisitions budget is not protected from inflation, exchange rates, or cuts, which often challenges the Library's ability to provide all the necessary resources in support of teaching, learning, and research at Carleton. Consideration of the funds necessary for the Library's acquisitions budget is part of the academic planning and Quality Assurance processes for new programs. The Library is dedicated to regular assessment of its resources and services. Staff use an assortment of qualitative and quantitative techniques to evaluate collections and services in order to make sound decisions within budget parameters.

The Library strongly supports the principles and practices of open access. The University's institutional repository, CURVE, was established in 2011 and is maintained by the Library. It includes not only a growing archive of the broad intellectual output of the University, but also digitized versions of most of the theses accepted at Carleton since 1955 – and as of 2014 houses all new Carleton theses deposited electronically. The Library contributes to CURIE, the University's program to provide funding for faculty and researchers who are publishing in open access journals, and also hosts 10 OA journals online using the Open Journal Systems management and publishing system.

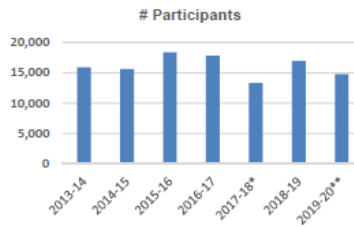
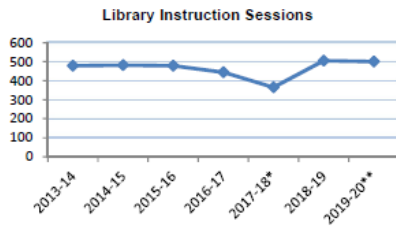
AT A GLANCE: CARLETON UNIVERSITY LIBRARY

Statistics as of May 1, 2020 except where indicated; ** new system implementation & pandemic; * labour disruption

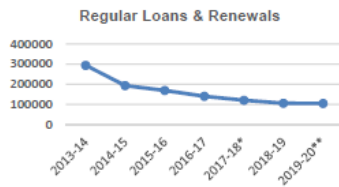
Highlights Through Pandemic Closures May 2020- April 2021

- HathiTrust Emergency Temporary Access Service- Total Items checked out: 19,618
 - # items checked out through curbside- 3358
 - # items checked out through mail- 379
 - # scan on demand- Fall 2020 onward- 220
 - E-journal downloads (2020): 2,419,141
 - E-book total item requests (2020): 828,852
 - Library web visits: 1,123,134
 - Individual research consultations- 3372
 - Ask a Librarian CHAT service questions- 2213
- In-class instruction sessions- 437 sessions; 11,532 people
 - Instruction videos created- 197; 9917 views

Teaching, Learning, & Research

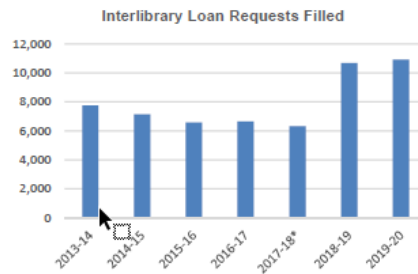
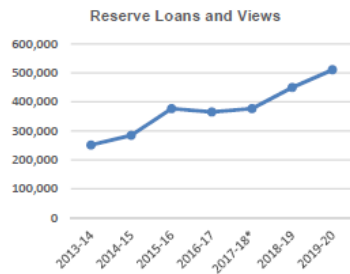


Research Experience

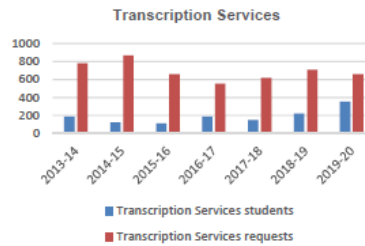
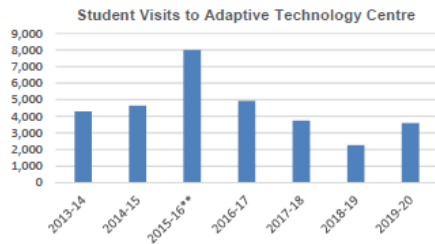


Highlights:

- CURVE - Carleton's Institutional Repository
- Open Access Funding for Faculty, Staff, & Students
- Research Data Management Training
- Open Access Awards for Graduate Students
- Discovery Centre for Undergraduate Research & Engagement
- Professional Skills Training for Graduate Students



Student Learning Experience



Highlights:

- Over 1.9 million visits in a year
 - 2,400 seats
 - 179 workstations
- 41 bookable group study rooms
- Group & graduate study rooms
- Innovative Study areas
- Adaptive Technology Centre
- 24 hour, 5 days per week access
- Book Arts Lab, an experiential learning space

Organizational Excellence



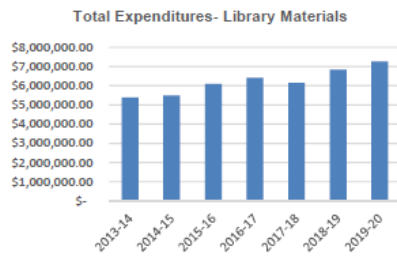
Rankings & Comparisons:

Globe & Mail 2019 Canadian University Report	
Average	Library Resource Spending
Maclean's - Comprehensive Universities (2021)	
8th/15	Library Expenses
10 th /15	Library Acquisitions
Carleton Service Satisfaction- Students (2018)	
8.2/10	Overall satisfaction- Library
Carleton Service Satisfaction- Employees (2019)	
8.7/10	Overall satisfaction- Library

Collection Facts:

- o 1.2 million print monographs
- o Over 1690 linear metres of manuscripts & archives
- o 87% of total collection budget allocated to e-resources
- o Over 1.5 million e-books
- o Over 200,000 e-journals

Expenditures:



Library collection expenditures (2017/18)	Carleton = \$6,137,366 National Average = \$11,672,014
Library collections expenditure as a percentage of University budget (2017/18)	Carleton = 1.36% National Average = 1.91%
Library collections expenditures per FTE student enrolment (2017/18)	Carleton= \$222.30 National Average= \$435.32

Appendix 5. Statements of Support

STATEMENT OF SUPPORT FROM SISTER UNIT

I

RE: {Briefly describe proposal for which support is being sought}

The Biology Department is proposing a new graduate program in Biotechnology. This professional program will focus on the science, communication, business strategies, entrepreneurship, and regulatory considerations associated with biotechnology. We would like to engage broadly with the Chemistry Department, initially by including in our program the CHEM course under the line item below.

**0.5 credit from BIOL 5004 Advances in Applied Biochemistry,
BIOL 5121 Advances in Protein Engineering,
BIOL 5515 Bioinformatics,
BIOL 5516 Applied Bioinformatics,
BIOL 6402 Principles of Toxicology,
FOOD 5102 Food Biotechnology,
CHEM 5109 Advanced Applications in Mass Spectrometry,
HLTH 5350 New Health Technologies**

I support this change unconditionally.

I do not support this change.

I support this change, with the following reservations:

Signature: *Robert Burk*

Name: Robert Burk

Title: Chair

Academic unit: Chemistry

Date: March 29, 2022

Notes:

STATEMENT OF SUPPORT FROM SISTER UNIT

RE: {Briefly describe proposal for which support is being sought}

The Biology Department is proposing a new graduate program in Biotechnology. This professional program will focus on the science, communication, business strategies, entrepreneurship, and regulatory considerations associated with biotechnology. We would like to engage broadly with the Food Sciences, initially by including in our program the FOOD course under the line item below.

0.5 credit from BIOL 5004 Advances in Applied Biochemistry,
BIOL 5121 Advances in Protein Engineering,
BIOL 5515 Bioinformatics,
BIOL 5516 Applied Bioinformatics,
BIOL 6402 Principles of Toxicology,
FOOD 5102 Food Biotechnology, or
HLTH 5350 New Health Technologies

I support this change unconditionally.

I do not support this change.

I support this change, with the following reservations:

Signature: *M DeRosa*

Name: Maria DeRosa

Title: Chair

Academic unit: Chemistry

Date: Feb 14, 2021

Notes:

STATEMENT OF SUPPORT FROM SISTER UNIT

RE: {Briefly describe proposal for which support is being sought}

The Biology Department is proposing a new graduate program in Biotechnology. This professional program will focus on the science, communication, business strategies, entrepreneurship, and regulatory considerations associated with biotechnology. We would like to engage broadly with the Department of Health Sciences, initially by including in our program the HLTH course under the line item below.

0.5 credit from BIOL 5004 Advances in Applied Biochemistry,
BIOL 5121 Advances in Protein Engineering,
BIOL 5515 Bioinformatics,
BIOL 5516 Applied Bioinformatics,
BIOL 6402 Principles of Toxicology,
FOOD 5102 Food Biotechnology, or
HLTH 5350 New Health Technologies

I support this change unconditionally.

I do not support this change.

I support this change, with the following reservations:

The Department of Health Sciences strongly supports the new Master's of Biotechnology program and looks forward to strengthening cross-disciplinary interactions within the Faculty of Science. We agree with the inclusion of HLTH 5350 as an optional course within the proposed Master's of Biotechnology program, recognizing that this course is aimed primarily at the HSTP students and that the Department of Health Science reserves the right to cap the course enrollment. We believe that this should not be a problem for the proposed Master's of Biotechnology program since HLTH 5350 is one of seven options under a 0.5 credit line item in the program.

Signature:



Name: Martin Holcik

Title: Professor and Chair

Academic unit: Department of Health Sciences

Date: February 22, 2021

On 2021-02-19, 4:25 PM, "Steven Muegge" <smuegge@sce.carleton.ca> wrote:

[External Email]

Hello Myron. TIM is delighted to support the proposed Master of Biotechnology diploma. I have attached the completed Statement of Support from Sister Unit to include with your supporting documents.

If you need anything else, please let us know. Happy to provide.

I'm excited to welcome your first cohort!

Sincere best wishes,
Steve

===

Steven Muegge, PhD
Director, Technology Innovation Management (TIM) program
Carleton University, Ottawa, Canada
<https://timprogram.ca>

STATEMENT OF SUPPORT FROM SISTER UNIT

RE:

The Biology Department is proposing a new graduate program in Biotechnology. This professional program will focus on the science, communication, business strategies, entrepreneurship, and regulatory considerations associated with biotechnology. We would like to engage broadly with the Technology Innovation Management (TIM) program, initially by including in our program TIM courses under the line item below.

**0.5 credit from TIMG 5001 [0.5 credit] Principles of Technology Innovation Management,
TIMG 5002 [0.5 credit] Technology Entrepreneurship, or
TIMG 5003 [0.5 credit] Issues in Technology Innovation Management**

I support this change unconditionally.

I do not support this change.

I support this change, with the following reservations:

Signature: *Steven Muegge*

Name: Steven Muegge

Title: Director, Technology Innovation Management (TIM) Program

Academic units: Faculty of Engineering & Design (FED) and Sprott School of Business

Date: 2/19/21

Notes:

I

From: Jeff Smith <JeffCSmith@CUNET.CARLETON.CA>
Date: Thursday, January 20, 2022 at 11:23 AM
To: Myron Smith <MyronSmith@CUNET.CARLETON.CA>
Cc: Karl Wasslen <KarlWasslen@cmail.carleton.ca>
Subject: FW: New Master of Biotechnology program

Hi Myron,

This sounds really cool, I'm glad that you are putting this together...I'm wondering if there is any room for more "omics" based topics using mass spec ([lipidomics/proteomics/metabolomics](#))? It sounds like the curriculum is set, but CHEM 5109 Advanced Application in Mass Spectrometry deals with the use of MS in biotechnology extensively...The CMSC is also chock-full of biotechnology.

Happy to help/be involved if it would be symbiotic with what you have planned thus far.

Cheers,

Jeff

[Jeffrey C. Smith, Ph.D.](#)
Director, [Carleton Mass Spectrometry Centre](#)
Vice President, [Canadian Society for Mass Spectrometry](#)
[Professor, Department of Chemistry, Institute of Biochemistry](#)
[and Chemical and Environmental Toxicology Program](#)
[Steacie Building, Carleton University](#)
1125 Colonel By Drive
Ottawa, ON K1S 5B6
Phone: (613) 520-2600 x2408

Appendix 6. List of External Advisory Board

Name	Name	Rank	Appointment Status	Supervision Privileges	Area of Specialization	Anticipated Role
Pickell , Laura	HLTH	Instructor I	N/A	N/A	Health Science & Mol Genet	HLTH 5350
Smirle, Jeffrey	Science	Manager, Office of the Dean	N/A	N/A	Partnerships & Innovation	liaison
Bailetti, Eduardo	TIM	Contract Instructor	N/A	N/A	Tech Entrepreneurship	TIMG 5002
Parent, Jean-Sebastien	AAFC/BIOL	Adjunct Res	N/A	CDM	Crop Improvement	Internships
Samanfar, Bahram	AAFC/BIOL	Adjunct Res	N/A	CDM	Crop Breeding & Genomics	Internships
Subramaniam, Gopal	AAFC/BIOL	Adjunct Res	N/A	CDM	Plant Pathology & Genomics	Internships



Carleton
UNIVERSITY
Canada's Capital University

Office of the Vice-Provost and
Associate Vice-President (Academic)

Institutional Quality Assurance Process

New Program Approval

Master of Biotechnology

Volume 2: *Curricula vitae*

CURRICULUM VITAE

TYLER J. AVIS

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1. PERSONAL INFORMATION

Name: Tyler John AVIS
Associate Professor
Food Science Program

Address: Department of Chemistry
207G Steacie Building
Carleton University
1125 Colonel By Drive
Ottawa, ON
Canada, K1S 5B6

Ph. (office): 1-613-520-2600 ext. 3121
E-mail: tyler.avis@carleton.ca
Website: <https://carleton.ca/avislab/>
Languages: English and French

2. EDUCATION

- Ph.D. Plant Biology, 2001
Faculty of Agriculture and Food Sciences, Université Laval and Laurentian
Forestry Centre, Natural Resources Canada
- M.Sc. Plant Biology, 1996
Faculty of Agriculture and Food Sciences, Université Laval
- B.Sc.A. Agronomy, 1994
Faculty of Agriculture and Food Sciences, Université Laval

3. EMPLOYMENT

3.1. ACADEMIC EMPLOYMENT

Full Professor	Department of Chemistry and Institute of Biochemistry Carleton University (Ontario)	2020-present
Associate Professor	Department of Chemistry and Institute of Biochemistry Carleton University (Ontario)	2012-2020
Assistant Professor	Department of Chemistry and Institute of Biochemistry Carleton University (Ontario)	2008-2012
Adjunct Professor	Department of Soil and Agri-Food Engineering Université Laval (Québec)	2008-present
Adjunct Professor	Department of Plant Science Université Laval (Québec)	2008-2012
Research Associate	Department of Plant Science Université Laval (Québec)	2006-2008
Postdoctoral Researcher	Horticulture Research Center Mycology Laboratory Université Laval (Québec)	2005-2006
Research Professional	Department of Plant Science Université Laval (Québec),	2000-2001

3.2. OTHER EMPLOYMENT (INDUSTRY)

Director of Operations and Head Scientist (Microbiology)	AZYMax Inc. Québec (Québec)	2002-2005
Postdoctoral Researcher	PureCell Technologies Inc. (now known as PurGenesis) Trois-Rivières and Montmagny (Québec)	2001-2002

4. PROFESSIONAL HONOURS

4.1. DISTINGUISHED SERVICE

- The International Society for Molecular Plant-Microbe Interactions (IS-MPMI): **In Recognition of Outstanding Services** as 2009 Congress Local Organization Committee Member for the XIV International Congress on Molecular Plant-Microbe Interactions. Award presented July 2009, Quebec City, Canada.

The Congress attracted 950 participants, generated tourist spending of approximately 1.8 million dollars according to the *Office du tourisme du Québec*, and received the **Event of the Year** prize from the *Cercle des ambassadeurs*.

Source: <https://cercledeambassadeurs.com/en/past-conferences/2010/>

4.2. TEACHING AWARD

- **2012 Excellence in Teaching Award.** Faculty of Science, Carleton University.

4.3. STUDENT SCHOLARSHIPS

- Natural Sciences and Engineering Research Council of Canada (NSERC): Postgraduate Scholarships (PGS D), Ph.D., 1997
- *Fonds québécois de recherche sur la nature et les technologies* (FQRNT): Graduate studies, Ph.D., 1997
- Université Laval: Graduate studies, Ph.D., 1997
- Université Laval: Graduate studies, M.Sc., 1994
- NSERC: Undergraduate Student Research Award (USRA), 1994
- NSERC: Undergraduate Student Research Award (USRA), 1992

4.4. STUDENT HONORS, AWARDS, AND PRIZES

- Dean's list, Faculty of Graduate Studies, Université Laval (1997-1998)
- Dean's list, Faculty of Graduate Studies, Université Laval (1996-1997)
- Recipient of prize from *Bulletin des agriculteurs*: Excellence in academics (1995)
- Recipient of prize from *Finissants bio-agronomie promotion 64*: Graduate studies (1994)
- Recipient of prize from *Hoechst International*: Phytoprotection (1994)

5. PUBLICATIONS

5.1. SUMMARY

Refereed Scholarly Publications:

H-index = 29, i10-index = 41, Citations = 2779 (Google Scholar, May 11, 2022)

Summary count:

Papers in refereed journals	54
Papers submitted or in revisions in refereed journals	2
Books and book chapters	2
Presentations	57
Technical/Specialized Publications	7

5.2. BOOKS EDITED

1. Antoun, H., Avis, T.J., Brisson, L.F., Prévost, D., and Trépanier, M. (eds). 2010. Biology of Plant-Microbe Interactions. Volume 7. International Society for Molecular Plant-Microbe Interactions, St. Paul, MN (*Invited Editor*).

5.3. CHAPTERS IN EDITED BOOKS

1. Bélanger, R.R. and Avis, T.J. 2002. Ecological Processes and Interactions Occurring in Leaf Surface Fungi. In: Phyllosphere Microbiology, S.E. Lindow, E.I. Hecht-Poinar, and V.J. Elliot (eds). APS Press. Pages 193-207.

5.4. ARTICLES IN REFEREED JOURNALS

Note: Student/PDF HQP = **Bold**
Principal investigator/Lead author = Underlined

5.4.1. Articles in refereed scientific journals (published)

1. **Ramlawi, S., Aitken, A., Abusharkh, S., McMullin, D.R., and Avis, T.J.** 2021. Arthropeptide A, an antifungal cyclic tetrapeptide from *Arthrobacter psychrophenicus* isolated from disease suppressive compost. Nat. Prod. Res. DOI: 10.1080/14786419.2021.2018434.
2. **Ramlawi, S., Abusharkh, S., Carroll, A., McMullin, D.R., and Avis, T.J.** 2021. Biological and chemical characterization of antimicrobial activity in *Arthrobacter* spp. isolated from disease suppressive compost. J. Basic Microbiol. 61: 745-756.

3. **Ramlawi, S., Chiu, J.O., Cloutier, A., and Avis, T.J.** 2021. Suppression of Fusarium dry rot of potato using beneficial bacterial treatments. *J. Plant Pathol.* 103: 269-281.
4. **Cloutier, A., Tran, S., and Avis, T.J.** 2020. Suppressive effect of compost bacteria against grey mold and Rhizopus rot on strawberry fruit. *Biocontrol Sci. Technol.* 30: 143-159.
5. **Mantil, E., Buznytska, I., Daly, G., Ianoul, A., and Avis, T.J.** 2019. Role of lipid composition in the interaction and activity of the antimicrobial compound fengycin with complex membrane models. *J. Membr. Biol.* 252: 627–638
6. **Rahimi-Khameneh, S., Hsieh, S., Xu, R., Avis, T.J., Li, S., Smith, D., Dutta, B., Gitaitis, R.D., and Tambong, J.T.** 2019. Pathogenicity and a TaqMan real-time PCR for specific detection of *Pantoea allii*, a bacterial pathogen of onions. *Plant Dis.* 103: 3031-3040.
7. **Mantil, E., Crippin, T., and Avis, T.J.** 2019. Supported lipid bilayers using extracted microbial lipids: domain redistribution in the presence of fengycin. *Colloids Surf. B: Biointerfaces* 178: 94-102.
8. **Luo, M., Purdy, H., and Avis, T.J.** 2019. Compost bacteria provide antifungal activity against grey mold and *Alternaria* rot on bell pepper fruit. *Botany* 97: 221-230.
9. **Mantil, E., Crippin, T., and Avis, T.J.** Domain redistribution within ergosterol-containing model membranes in the presence of the antimicrobial compound fengycin. *Biochim. Biophys. Acta – Biomembranes* 1861: 738-747.
10. **Kurniawan, O., Wilson, K., Mohamed, R., and Avis, T.J.** 2018. *Bacillus* and *Pseudomonas* spp. provide antifungal activity against gray mold and *Alternaria* rot on blueberry fruit. *Biol. Control* 126: 136-141.
11. **DeFilippi, S., Groulx, E., Megalla, M., Mohamed, R., and Avis, T.J.** 2018. Fungal competitors affect production of antimicrobial lipopeptides in *Bacillus subtilis* strain B9-5. *J. Chem. Ecol.* 44: 374-383.
12. **Micalizzi, E.W., Mack, J.N., White, G.P., Avis, T.J., and Smith, M.L.** 2017. Microbial inhibitors of the fungus *Pseudogymnoascus destructans*, the causal agent of white-nose syndrome in bats. *PLoS ONE* 12: e0179770.
13. **Mantil, E., Crippin, T., Ianoul, A., and Avis, T.J.** 2017. Experiment parameters leading to optimal bilayers for total internal reflection fluorescence microscopy visualization. *Microsc. Microanal.* 23: 97-112.
14. **Mohamed, R., Groulx, E., DeFilippi, S., Erak, T., Tambong, J.T., Tweddell, R.J., Tsopmo, A., and Avis, T.J.** 2017. Physiological and molecular characterization of compost bacteria antagonistic to soilborne plant pathogens. *Can. J. Microbiol.* 63: 411-426.
15. **Lai, E.P.C., Iqbal, Z., and Avis, T.J.** 2016. Combating antimicrobial resistance in foodborne microorganisms. *J. Food Protect.* 79: 321-336.
16. **Xu, R., Falardeau, J., Avis, T.J., and Tambong, J.T.** 2016. HybProbes-based real-time PCR assay for specific identification of *Streptomyces scabies* and *Streptomyces europaescabiei*, the potato common scab pathogens. *Lett. Appl. Microbiol.* 62: 153-159.
17. **Mantil, E., Daly, G., and Avis, T.J.** 2015. Effect of tea tree (*Melaleuca alternifolia*) oil as a natural antimicrobial agent in lipophilic formulations. *Can. J. Microbiol.* 61: 82-88.

18. **On, A., Wong, F., Ko, Q., Tweddell, R.J., Antoun, H., and Avis, T.J.** 2015. Antifungal effects of compost tea microorganisms on tomato pathogens. *Biol. Control* 80: 63-69.
19. **Liu, J., Hagberg, I., Novitsky, L., Hadj-Moussa, H., and Avis, T.J.** 2014. Interaction of antimicrobial cyclic lipopeptides from *Bacillus subtilis* influences their effect on spore germination and membrane permeability in fungal plant pathogens. *Fungal Biol.* 118: 855-861.
20. **Wise, C., Falardeau, J., Hagberg, I., and Avis, T.J.** 2014. Cellular lipid composition affects sensitivity of plant pathogens to fengycin, an antifungal compound produced by *Bacillus subtilis* strain CU12. *Phytopathology* 104: 1036-1041.
21. Katzenback, B.A., Holden, H.A., **Falardeau, J., Childers, C., Hadj-Moussa, H., Avis, T.J., and Storey, K.B.** 2014. Regulation of the *Rana sylvatica* brevinin-1SY antimicrobial peptide during development and in dorsal and ventral skin in response to freezing, anoxia and dehydration. *J. Exp. Biol.* 217: 1392-1401.
22. **Kolaei, E.A., Cenatus, C., Tweddell, R.J., and Avis, T.J.** 2013. Antifungal activity of aluminum-containing salts against the development of carrot cavity spot and potato dry rot. *Ann. Appl. Biol.* 163: 311-317.
23. **Falardeau, J., Wise, C., Novitsky, L., and Avis, T.J.** 2013. Ecological and mechanistic insights into the direct and indirect antimicrobial properties of *Bacillus subtilis* lipopeptides on plant pathogens. *J. Chem. Ecol.* 39: 869-878 (*Invited Paper*).
24. Bojanowski, A., Avis, T.J., Pelletier, S., and **Tweddell, R.J.** 2013. Management of potato dry rot. *Postharvest Biol. Technol.* 84: 99-109.
25. Alrahmany, R., Avis, T.J., **Tsopmo, A.** 2013. Treatment of oat bran with carbohydrases increases soluble phenolic acid content and influences antioxidant and antimicrobial activities. *Food Res. Int.* 52: 568-574.
26. Agil, R., Gaget, A., Gliwa, J., Avis, T.J., Willmore, W.G., and **Hosseinian, F.** 2013. Lentils enhance probiotic growth in yogurt and provide added benefit of antioxidant protection. *LWT – Food Sci. Technol.* 50: 45-49.
27. **Wise, C., Novitsky, L., Tsopmo, A., and Avis, T.J.** 2012. Production and antimicrobial activity of 3-hydroxypropionaldehyde from *Bacillus subtilis* strain CU12. *J. Chem. Ecol.* 38: 1521-1527.
28. **Iqbal, Z., Lai, E.P.C., and Avis, T.J.** 2012. Antimicrobial effect of polydopamine coating on *Escherichia coli*. *J. Mater. Chem.* 22: 21608-21612.
29. **Dionne, A., Tweddell, R.J., Antoun, H., and Avis, T.J.** 2012. Effect of non-aerated compost teas on damping-off pathogens of tomato. *Can. J. Plant Pathol.* 34: 51-57.
30. **Iqbal, Z., Lai, E.P.C., and Avis, T.J.** 2012. Development of polymer-modified magnetic nanoparticles and quantum dots for *Escherichia coli* binding test. *Microchim. Acta* 176: 193-200.
31. **Kolaei, E.A., Tweddell, R.J., and Avis, T.J.** 2012. Antifungal activity of sulfur-containing salts against the development of carrot cavity spot and potato dry rot. *Postharvest Biol. Technol.* 63: 55-59.

32. Mimee, B., Avis, T.J., **Boivin**, S., Jabaji, S., and Tweddell, R.J. 2011. Effect of iron and nitrogen on the development of *Helminthosporium solani* and in the suppression of silver scurf on potato tubers. *Can. J. Plant Pathol.* 33: 506-511.
33. Won, A., Khan, M., Gustin, S., Akpawu, A., Seebun, D., Avis, T.J., Leung, B., Hitchcock, A., and Ianouli, A. 2011. Investigating the effects of L- to D-amino acid substitution and deamidation on the activity and membrane interactions of antimicrobial peptide anoplin. *Biochim. Biophys. Acta - Biomembranes* 1808: 1592-1600.
34. **Koné**, S.B., **Dionne**, A., Tweddell, R.J., Antoun, H., and Avis, T.J. 2010. Suppressive effect of non-aerated compost teas on foliar fungal pathogens of tomato. *Biol. Control* 52: 167-173.
35. Avis, T.J., Martinez, C., and Tweddell, R.J. 2010. Integrated management of potato silver scurf (*Helminthosporium solani*). *Can. J. Plant Pathol.* 32: 287-297.
36. Walton, J.D., Avis, T.J., Alfano, J.R., Gijzen, M., Spanu, P., Hammond-Kosack, K., and Sánchez F. 2009. Effectors, effectors *et encore des* effectors: the XIV International Congress on Molecular-Plant Microbe Interactions, Quebec. *Mol. Plant-Microbe Interact.* 22: 1479-1483.
37. **Mvuemba**, H.N., **Green**, S.E., Tsopmo, A., and Avis, T.J. 2009. Antimicrobial efficacy of cinnamon, ginger, horseradish and nutmeg extracts against spoilage pathogens. *Phytoprotection* 90: 65-70.
38. Avis, T.J., Rioux, D., Simard, M., Michaud, M., and Tweddell, R.J. 2009. Ultrastructural alterations in *Fusarium sambucinum* and *Heterobasidion annosum* treated with aluminum chloride and sodium metabisulfite. *Phytopathology* 99: 167-175.
39. Cheng, Y.L., Avis, T.J., Bolduc, S., Zhao, Y.Y., Anguenot, R., Neveu, B., Labbé, C., Belzile, F., and Bélanger, R.R. 2008. Recombinant protein secretion in *Pseudozyma flocculosa* and *Pseudozyma antarctica* with a novel signal peptide. *Biosci. Biotechnol. Biochem.* 72: 3158-3166.
40. Avis, T.J., Gravel, V., Antoun, H., and Tweddell, R.J. 2008. Multifaceted beneficial effects of rhizosphere microorganisms on plant health and productivity. *Soil Biol. Biochem.* 40: 1733-1740.
41. Avis, T.J., Anguenot, R., Neveu, B., Bolduc, S., Cheng, Y.L., Zhao, Y.Y., Labbé, C., Belzile, F., and Bélanger, R.R. 2008. Usefulness of heterologous promoters in the *Pseudozyma flocculosa* gene expression system. *Biosci. Biotechnol. Biochem.* 72: 456-462.
42. Avis, T.J. 2007. Antifungal compounds that target fungal membranes: applications in plant disease control. *Can. J. Plant Pathol.* 29: 323-329.
43. Pedneault, K., Angers, P., Avis, T.J., Gosselin, A., and Tweddell, R.J. 2007. Fatty acid profiles of polar and non-polar lipids of *Pleurotus ostreatus* and *Pleurotus cornucopiae* var. 'citrinopileatus' grown at different temperatures. *Mycol. Res.* 111: 1228-1234.
44. Avis, T.J., Michaud, M., and Tweddell, R.J. 2007. Role of lipid composition and lipid peroxidation in the sensitivity of fungal plant pathogens to aluminum chloride and sodium metabisulfite. *Appl. Environ. Microbiol.* 73: 2820-2824.

45. Avis, T.J., Martinez, C., and Tweddell, R.J. 2006. Effect of chlorine atmospheres on the development of rhizopus rot and gray mold on stored strawberry fruit. *Can. J. Plant Pathol.* 28: 526-532.
46. Martinez, C., Avis, T.J., Simard, J.-N., Labonté, J., Bélanger, R.R., and Tweddell, R.J. 2006. The role of antibiosis in the antagonism of different bacteria towards *Helminthosporium solani*, the causal agent of potato silver scurf. *Phytoprotection* 87: 69-75.
47. Avis, T.J., Cheng, Y.L., Zhao, Y.Y., Bolduc, S., Neveu, B., Anguenot, R., Labbé, C., Belzile, F., and Bélanger, R.R. 2005. The potential of *Pseudozyma* yeast-like epiphytes for the production of heterologous recombinant proteins. *Appl. Microbiol. Biotechnol.* 69: 304-311.
48. Trépanier, M., Bécard, G., Moutoglis, P., Willemot, C., Gagné, S., Avis, T.J., and Rioux, J.-A. 2005. Arbuscular-mycorrhizal fungi are obligatorily dependent on their plant host for palmitic acid synthesis. *Appl. Environ. Microbiol.* 71: 5341-5347.
49. Caron, S.J., Avis, T.J., Boekhout, T., Hamelin, R.C., and Bélanger, R.R. 2005. Fingerprinting techniques as tools towards molecular quality control of *Pseudozyma flocculosa*. *Mycol. Res.* 109: 335-341.
50. Avis, T.J. and Bélanger, R.R. 2002. Mechanisms and means of detection of biocontrol activity of *Pseudozyma* yeasts against plant-pathogenic fungi. *FEMS Yeast Res.* 2: 5-8.
51. Avis, T.J., Hamelin, R.C., and Bélanger, R.R. 2001. Approaches in molecular characterization of fungal biocontrol agents: some case studies. *Can. J. Plant Pathol.* 23: 8-12.
52. Avis, T.J., Caron, S.J., Boekhout, T., Hamelin, R.C., and Bélanger, R.R. 2001. Molecular and physiological analysis of the powdery mildew antagonist *Pseudozyma flocculosa* and related fungi. *Phytopathology* 90: 249-254.
53. Avis, T.J. and Bélanger, R.R. 2001. Specificity and mode of action of the antifungal fatty acid cis-9-heptadecenoic acid produced by *Pseudozyma flocculosa*. *Appl. Environ. Microbiol.* 67: 956-960.
54. Avis, T.J., Boulanger, R.R., and Bélanger, R.R. 2000. Synthesis and biological characterization of (Z)-9-heptadecenoic and (Z)-6-methyl-9-heptadecenoic acids: fatty acids with antibiotic activity produced by *Pseudozyma flocculosa*. *J. Chem. Ecol.* 26: 987-1000.

5.4.2. Articles in refereed scientific journals (submitted, in preparation or in revisions)

55. **Barghouth, Z., Khazzam, E., Ramlawi, S., Wong, A., Smith, M.L., and Avis, T.J.** Microbial compost tea properties affecting inhibition of plant pathogens and suppression of strawberry gray mold (*Botrytis cinerea* Pers.). *Biocontrol Sci. Technol.* (submitted).
56. **Barghouth, Z., Ramlawi, S., and Avis, T.J.** Biochemical insights into the antimicrobial properties of *Bacillus* lipopeptides on fungal plant pathogens. *Can. J. Plant Pathol.* (***Invited Paper*** - in preparation).

5.5. ABSTRACTS PUBLISHED IN CONFERENCE PROCEEDINGS

1. Avis, T.J. 2021. Biochemical insights into the antimicrobial properties of membrane-targeting compounds on fungal plant pathogens. CPS-EOR 2021 symposium - CanFunNet 2021 joint with Great Lake Mycology (*Invited Keynote Speaker*)
2. **Khazzam**, E., **Barghouth**, Z., **Ramlawi**, S., Smith, M.L., and Avis, T.J. 2019. Suppressive effect of compost teas on grey mould of strawberry. Canadian Phytopathological Society-Eastern Ontario Regional Meeting, December 6, 2019, Ottawa, Ontario.
3. **Meyer**, S., and Avis, T.J. 2019. Evaluation of the antagonistic activity of forestry compost bacteria on carrot pathogens. Canadian Phytopathological Society-Eastern Ontario Regional Meeting, December 6, 2019, Ottawa, Ontario.
4. **Ramlawi**, S., **Abusharkh**, S., **Carroll**, A., and Avis, T.J. 2019. Antagonistic effect of *Arthrobacter* spp. on growth of fungal plant pathogens. Canadian Phytopathological Society-Eastern Ontario Regional Meeting, December 6, 2019, Ottawa, Ontario.
5. **Mantil**, E., **Crippin**, T., and Avis, T.J. 2017. Antimicrobial effects of fengycin in model membranes composed of plant pathogen lipid extracts. CPS-EOR Meeting, November 17, 2017, Ottawa, Ontario.
6. **Groulx**, E., **Bujaki**, T., Wong, A., Rodrigue, N., Smith, M.L., and Avis, T.J. 2017. Whole genome phylogeny and analysis of cyclic lipopeptide biosynthesis genes in plant pathogen antagonistic strains of *Bacillus*. CPS-EOR Meeting, November 17, 2017, Ottawa, Ontario.
7. **DeFilippi**, S., and Avis, T.J. 2017. Differential production of antimicrobial lipopeptides by *Bacillus subtilis* B9-5 in the presence of plant pathogens. CPS-EOR Meeting, November 17, 2017, Ottawa, Ontario.
8. **Mantil**, E., **Crippin**, T., and Avis, T.J. 2016. Identification of key intrinsic membrane components involved in the antimicrobial activity of fengycin on plant pathogens. CPS-EOR Meeting, November 18, 2016, Ottawa, Ontario.
9. **Groulx**, E., Tsopmo, A., and Avis, T.J. 2016. Influence of fungal competitors on the production of the antimicrobial lipopeptide fengycin by *Bacillus subtilis* strain B9-5. CPS-EOR Meeting, November 18, 2016, Ottawa, Ontario.
10. **Hsieh**, S., Xu, R., Avis, T.J., and Tambong, J.T. 2016. Genome analysis and pathogenicity of a new potential biothreat, *Pantoea allii*, to onion production in Canada. CPS National Meeting, June 12-15, 2016, Moncton, New Brunswick.
11. Rioux, D., Blais, M., Lagacé, M., Simard, M., **Tsae**, P.K., Avis, T.J., Bilodeau, G., Tweddell, R., Wilson, R., Broadhurst, B. et Saville, B.J. 2015. Encre des chênes rouges : observations microscopiques de l'interaction *Phytophthora ramorum* et différents hôtes potentiels Société de protection des plantes du Québec, Réunion annuelle, June 17-18, 2015 Beaupré (Québec), Canada.
12. **Mantil**, E., **Daly**, G., and Avis, T.J. 2014. Antimicrobial efficacy of tea tree oil and its components on the growth of bacteria, yeast and molds. International Union of Microbiological Societies Congresses, Montreal, Canada, July 27 – August 1, 2014.

13. **Mohamed, R., Groulx, E., and Avis, T.J.** 2014. Distribution of antimicrobial lipopeptides in *Bacillus* and *Pseudomonas* spp., two genera with antagonistic effects against plant pathogens. International Union of Microbiological Societies Congresses, Montreal, Canada, July 27 – August 1, 2014.
14. Katzenback, B.A., Holden, H.A., **Falardeau, J.**, Childers, C.L., Avis, T.J., and **Storey K.B.** 2014. *Rana sylvatica* brevinin-1SY: regulation of an antimicrobial peptide in response to environmental stress. Canadian Society of Zoologists. Montreal, Quebec, Canada. May 27, 2014.
15. Katzenback, B.A., Holden, H.A., **Falardeau, J.**, Childers, C.L., **Hadj-Moussa, H.**, Avis, T.J., and **Storey, K.B.** 2013. Regulation of the antimicrobial peptide brevinin-1SY in the skin of *Rana sylvatica* in response to environmental stress. CRYO2013, 50th Annual Meeting, Society for Cryobiology, Bethesda, Maryland, July 28-31, 2013.
16. **Wise, C., Falardeau, J., Novitsky, L., and Avis, T.J.** 2013. Role of lipid composition in the sensitivity of plant pathogens to fengycin, an antimicrobial lipopeptide produced by *Bacillus subtilis*. 63rd Annual Conference of the Canadian Society of Microbiologists (CSM) June 17th – 20th, 2013, Carleton University, Ottawa, Ontario.
17. **Mohamed, R., Erak, T., Mimee, B., Tweddell, R.J., and Avis T.J.** 2013. Antagonism of bacteria isolated from composts against *Verticillium dahliae*, causal agent of strawberry Verticillium wilt. 63rd Annual Conference of the Canadian Society of Microbiologists (CSM) June 17th – 20th, 2013, Carleton University, Ottawa, Ontario.
18. **Buznytska, I., Ianoul, A., and Avis, T.J.** 2013. Antimicrobial effects of silver nanocubes. 63rd Annual Conference of the Canadian Society of Microbiologists (CSM) June 17th – 20th, 2013, Carleton University, Ottawa, Ontario.
19. **Tsopmo, A., Alrahmany, R., and Avis, T.J.** 2013. Antioxidant properties of oat bran phenolic acid rich extracts and effect of the growth of *Escherichia coli* and *Bacillus subtilis*. 63rd Annual Conference of the Canadian Society of Microbiologists (CSM) June 17th – 20th, 2013, Carleton University, Ottawa, Ontario.
20. Katzenback, B.A., Holden, H.A., **Falardeau, J.**, Childers, C.L., **Hadj-Moussa, H.**, Avis, T. J., **Storey, K.B.** 2013. Regulation of the antimicrobial peptide brevinin-1SY in the skin of *Rana sylvatica* in response to environmental stress. 63rd Annual Conference of the Canadian Society of Microbiologists (CSM) June 17th – 20th, 2013, Carleton University, Ottawa, Ontario.
21. **Wise, C., Novitsky, L., Tsopmo, A., and Avis, T.J.** Production of 3-hydroxypropionaldehyde by *Bacillus subtilis* strain CU12. Annual Meeting of the Canadian Phytopathological Society, 2012. June 24-27, 2012. Niagara Falls (Ontario), Canada.
22. **Kolaei, E.A., Tweddell, R.J., and Avis, T.J.** Exploitation of the antifungal activity of aluminum-containing salts for the control of carrot cavity spot. Annual Meeting of the Canadian Phytopathological Society, 2012. June 24-27, 2012. Niagara Falls (Ontario), Canada.
23. **Kolaei, E.A., Tweddell, R.J., and Avis, T.J.** Sulfur-containing salts for the control of carrot cavity spot and potato dry rot. Annual Meeting of the Canadian Phytopathological Society, 2012. June 24-27, 2012. Niagara Falls (Ontario), Canada.

24. **Wise, C., Novitsky, L., and Avis, T.J.** 2011. Antifungal compounds from *Bacillus subtilis* strain CU12. Annual Meeting of the American Phytopathological Society Northeastern Division. October 12-14, 2011, New Brunswick, New Jersey. *Phytopathology* 102: S1.8.
25. **Tsae, P.K., Rioux, D., Simard, M., Lagacé, M., and Avis, T.J.** 2011. Assessment of the potential of *Phytophthora ramorum* to infect roots of red oak and balsam fir. Annual Meeting of the American Phytopathological Society Northeastern Division. October 12-14, 2011, New Brunswick, New Jersey. *Phytopathology* 102: S1.8.
26. **Dionne, A., Trépanier, M., Avis, T.J., Tweddell, R.J., and Antoun, H.** 2011. Effect of compost teas on damping-off disease and mycorrhization. Rhizosphere 3 International Conference. September 25-30, 2011. Perth, Western Australia.
27. **Iqbal, Z., Lai, E.P.C., and Avis, T.J.** 2011. Application of polymer-modified magnetic nanoparticles for selective removal of *Escherichia coli* and bisphenol A in environmental waters. 57th International Conference on Analytical Sciences and Spectroscopy/3rd Canada-China Analytical Chemistry Conference (joint meeting). August 29-31, 2011, Toronto, Ontario.
28. **Cenatus, C., Tweddell, R.J., and Avis, T.J.** 2011. Inhibitory effect of aluminum salts on mycelial growth of postharvest pathogens and development of potato dry rot. 2010 Joint Annual Meeting, Canadian Phytopathological Society and American Phytopathological Society Pacific Division. June 20-23, 2010. Vancouver (British Columbia), Canada. *Can. J. Plant Pathol.* 33: 271.
29. **Mvuemba, H.N., Tweddell, R.J., Tsopmo, A., and Avis, T.J.** 2011. Antimicrobial efficacy of ginger extracts against spoilage pathogens. 2010 Joint Annual Meeting, Canadian Phytopathological Society and American Phytopathological Society Pacific Division. June 20-23, 2010. Vancouver (British Columbia), Canada. *Can. J. Plant Pathol.* 33: 287
30. **Green, S.E., Tweddell, R.J., Tsopmo, A., and Avis, T.J.** 2011. Antimicrobial efficacy of cinnamon extracts against spoilage pathogens. 2010 Joint Annual Meeting, Canadian Phytopathological Society and American Phytopathological Society Pacific Division. June 20-23, 2010. Vancouver (British Columbia), Canada. *Can. J. Plant Pathol.* 333: 278.
31. **Martin-Lapierre, A., Mimee, B., Avis, T.J., et Tweddell, R.J.** 2010. Caractérisation microbiologique de différents composts réprimant le développement de la verticilliose du fraisier. Société de protection des plantes du Québec (SPPQ), 102^e réunion annuelle, June 1-3, 2010. Oka (Québec), Canada. (*SPPQ 1st Prize – Best Student Presentation Award*)
32. **Dionne, A., Mimee, B., Tweddell, R.J., Antoun, H., et Avis, T.J.** 2010. Effets des thés de compost sur les agents pathogènes causant la fonte des semis de la tomate. Société de protection des plantes du Québec, 102^e réunion annuelle, June 1-3, 2010. Oka (Québec), Canada.
33. **Bernier-English, V., Avis, T.J., Mimee, B., Antoun, H., and Tweddell, R.J.** 2009. Compost amendment, a potential alternative to soil fumigation for the control of strawberry verticillium wilt. Annual Meeting of the American Phytopathological Society Northeastern Division. October 28-30, 2009, Québec (Québec), Canada.
34. **Bernier-English, V., Avis, T.J., Mimee, B., Antoun, H., et Tweddell, R.J.** 2009. Effet de la fumigation et de l'application de compost sur l'incidence de la verticilliose du fraisier. Société

- de protection des plantes du Québec, 101^e réunion annuelle, October 22-23, 2009. Drummondville (Québec), Canada.
35. **Bernier-English**, V., Avis, T.J., Mimee, B., Antoun, H., and Tweddell, R.J. 2009. Effect of soil fumigation and compost application on strawberry verticillium wilt. 2009 American Phytopathological Society Meeting. August 1-5, 2009, Portland, Oregon. *Phytopathology* 99: S11.
 36. **Bernier-English**, V., Avis, T.J., Mimee, B., Antoun, H., and Tweddell, 2009. R.J. Effect of different compost extracts on the mycelial growth of *Verticillium dahliae*. Annual Meeting of the Canadian Phytopathological Society, 2009. June 22-25, 2009. Winnipeg (Manitoba), Canada. *Can. J. Plant Pathol.* 31 : 478.
 37. **Koné**, S.B., **Dionne**, A., Tweddell, R.J., Antoun, H., and Avis, T.J. 2008. Effet suppressif des thés de compost non aérés sur les champignons pathogènes foliaires de la tomate. Société de protection des plantes du Québec, 100^e réunion annuelle, November 21-22, 2008. Québec (Québec), Canada.
 38. **Dionne**, A., **Koné**, S.B., Tweddell, R.J., Antoun, H., and Avis, T.J. 2008. Effet suppressif des thés de compost non-aérés sur la croissance mycélienne des champignons pathogènes racinaires de la tomate. Société de protection des plantes du Québec, 100^e réunion annuelle, November 21-22, 2008. Québec (Québec), Canada.
 39. Avis, T.J., Rioux, D., Michaud, M., Simard, M., and Tweddell, R.J. 2008. Inhibitory effect of aluminium chloride and sodium metabisulfite on *Heterobasidion annosum*. Ninth International Congress on Plant Pathology. Torino, Italy. August 24-29, 2008.
 40. Avis, T.J., Simard, M., Michaud, M., Rioux, D., and Tweddell, R.J. 2008. Inhibitory effect of aluminium chloride and sodium metabisulfite on *Fusarium sambucinum*. Ninth International Congress on Plant Pathology. Torino, Italy. August 24-29, 2008.
 41. **Koné**, S.B., **Dionne**, A., Tweddell, R.J., Antoun, H., and Avis, T.J. 2008. Effect of nonaerated compost teas on foliar pathogens of tomatoes. American Phytopathological Society Centennial Meeting, Minneapolis, MN. July 26-30, 2008. *Phytopathology* 98: S84.
 42. **Dionne**, A., **Koné**, S.B., Tweddell, R.J., Antoun, H., and Avis, T.J. 2008. In vitro effect of nonaerated compost teas on soilborne pathogens of tomatoes. American Phytopathological Society Centennial Meeting, Minneapolis, MN. July 26-30, 2008. *Phytopathology* 98: S47.
 43. **Boivin**, S., Avis, T.J., Maios, C.M., Jabaji-Hare, S., and Tweddell, R.J. 2008. Effect of Fe, Cu, Mn, Zn and Mo on the development of *Helminthosporium solani* and potato silver scurf. Annual Meeting of the American Phytopathological Society Northeastern Division. October 10-12, 2007, Cape May, New Jersey. *Phytopathology* 98: S206.
 44. Avis, T.J., Michaud, M., **Le Goaziou**, A., and Tweddell, R.J. 2007. Role of lipid composition and lipid peroxidation in the sensitivity of fungal plant pathogens to antimicrobial salts. Canadian Society for Microbiologists 57th Annual Conference, June 17-20 2007, Québec (Québec), Canada.
 45. **Nyiransengiyumva**, C., Avis, T.J., and Tweddell, R.J. 2007. Effet du Ca, K, Mg et P sur la croissance mycélienne et la production de conidies viables chez le champignon *Helminthosporium solani*. Société de protection des plantes du Québec, 99^e réunion annuelle, May 31-June 1 2007. Rivière-du-Loup (Québec), Canada.

46. **Boivin, S.**, Avis, T.J., Maios, C.M., Jabaji-Hare, S., and Tweddell, R.J. 2007. Influence du Fe, Cu, Mn, Zn et Mo sur le développement *in vitro* de *Helminthosporium solani* et le développement de la gale argentée de la pomme de terre. Société de protection des plantes du Québec, 99^e réunion annuelle, May 31-June 1 2007. Rivière-du-Loup (Québec), Canada.
47. Avis, T.J., Michaud, M., and Tweddell, R.J. 2006. Influence of sodium metabisulfite on growth and fatty acid composition in potato pathogens. 2006 American Phytopathological Society Meeting. Québec (Québec), Canada. Phytopathology 96: S7.
48. Avis, T.J., Martinez, C., Gravel, V., and Tweddell, R.J. 2006. Effect of gaseous chlorine on the development of decay pathogens and quality of stored strawberry fruit. 2006 American Phytopathological Society Meeting. Québec (Québec), Canada. Phytopathology 96: S7.
49. Avis, T.J., Martinez, C., Boivin, K., and Tweddell, R.J. 2006. Effect of gaseous chlorine on spore and mycelium viability of *Botrytis cinerea* and *Rhizopus stolonifer*. 2006 American Phytopathological Society Meeting. Québec (Québec), Canada. Phytopathology 96: S8.
50. **Boivin, S.**, Avis, T.J., et Tweddell, R.J. 2006. Effet du Fe, du Cu, et du Mo sur *Helminthosporium solani*, agent responsable de la tache argentée de la pomme de terre. Société de protection des plantes du Québec (SPPQ), 98^e réunion annuelle, 2006. Victoriaville (Québec), Canada. Phytoprotection 87: 93-94. (*1st Prize – SPPQ Scholarship Award*)
51. **Nyiransengiyumva, C.**, Avis, T.J., and Tweddell, R.J. 2006. Effect of P and K on mycelial growth of *Helminthosporium solani in vitro*. Annual Meeting of the Canadian Phytopathological Society, 2006. Québec (Québec), Canada. Can. J. Plant Pathol. 28: 360.
52. **Boivin, S.**, Avis, T.J., and Tweddell, R.J. 2006. Effect of Fe, Cu, and Mo on mycelial growth of *Helminthosporium solani*, the causal agent of potato silver scurf. Annual Meeting of the Canadian Phytopathological Society, 2006. Québec (Québec), Canada. Can. J. Plant Pathol. 28: 345.
53. Boulanger, R., McNally, D., Wurms, K., Avis, T.J., and Bélanger, R.R. 2000. Synthesis and characterization of toxic compounds in biological control. Pacificchem 2000, December 14-19, 2000, Honolulu, Hawaii. Chemical and Engineering News. Vol. 78.
54. Caron, S.J., Avis, T.J., Hamelin, R.C., and Bélanger, R.R. 2000. Molecular identification of *Pseudozyma flocculosa*, a powdery mildew biocontrol agent, leading to a quality control test. Annual Meeting of the APS-NE division. Cape-Cod, Mass. November 1-3, 2000.
55. Avis, T.J., Labbé, C., Hale, J., and Bélanger, R.R. 1999. Mode of action and specificity of the powdery mildew biocontrol agent *Pseudozyma flocculosa*: a biochemical study. First International Powdery Mildew Conference. Avignon, France. August 29 - September 2, 1999.
56. Caron, S.J., Avis, T.J., Hamelin, R.C., and Bélanger, R.R. 1999. DNA fingerprinting of the biocontrol agent *Pseudozyma flocculosa*: towards a commercial-scale quality control test. Phytopathology 89: S12.
57. Bélanger, R.R. and Avis, T.J. 1998. Biological control of powdery mildews. International Congress of Plant Pathology. Symposium: Ecological Basis of Biological Control. Edinburgh, U.K. August 9-15, 1998.

5.6. TECHNICAL COMMUNICATIONS AND SPECIALIZED PUBLICATIONS

1. **Dionne**, A., Tweddell, R.J., Avis, T.J., and Antoun, H. Effect of compost tea on damping-off disease of tomato and mycorrhizae *Glomus irregular*. Microbial Horticulture Workshop. Université Laval. February 16-17, 2012. Québec (Québec), Canada.
2. **Dionne**, A., Mimee, B., Tweddell, R.J., Antoun, H., et Avis, T.J. Effet des thés de compost sur les agents pathogènes. 2e Forum sur la recherche et l'innovation en serriculture. CRAAQ / Syndicat des producteurs en serre du Québec / MAPAQ / Université Laval. October 28, 2010. Québec (Québec), Canada.
3. **Dionne**, A., **Koné**, S.B., Antoun, H., Tweddell, R.J., et Avis, T.J. 2008. Les thés de compost et la lutte biologique. Pamphlet 7. Horti-Plus, Fédération des sociétés d'horticulture et d'écologie du Québec.
4. **Boivin**, S., Avis, T.J., and Tweddell, R.J. 2006. Effect of Fe, Cu, and Mo on mycelial growth of *Helminthosporium solani*, the causal agent of potato silver scurf. Journée Centre Sève 2006. Mont Saint-Hilaire, Québec.
5. **Boivin**, S., Avis, T.J., Jabaji-Hare, S., et Tweddell, R.J. 2006. Influence de la rotation des cultures sur l'incidence de la tache argentée de la pomme de terre. Journée champêtre de la pomme de terre 2006. Saint-Ubalde, Québec.
6. **Boivin**, S., Avis, T.J., Jabaji-Hare, S., et Tweddell, R.J. 2006. Contrôle de la tache argentée. Un moyen de lutte toujours d'actualité: la rotation. Producteur Plus 15: 67-70.
7. Trépanier, M., Bécard, G., Moutoglis, P., Willemot, C., Gagné, S., Avis, T.J., and Rioux, J.-A. 2005. Why arbuscular-mycorrhizal fungi must live in symbiosis. *Journal Highlights*. ASM News 71: 537.

6. RESEARCH GRANTS

6.1. GOVERNMENT OR EXTRA-UNIVERSITY

Applicant(s)	Source*/Program	Title	Amount [†]	Period
T.J. Avis	NSERC Discovery Grant (individual)	Mode of action of membrane-targeting antimicrobials	\$282,000 (100%) <i>Currently held</i>	2020-2026
T.J. Avis	NSERC Discovery Grant (individual)	Mode of action of membrane-targeting antimicrobials	\$140,000 (100%) <i>Previously held</i>	2015-2020
A. Wong A.A. Abizaid T.J. Avis O. Rowland M.L. Smith	NSERC Research Tools and Instruments	Workstation for high throughput genetic and phenotypic assays	\$108,868 (20%) <i>Previously held</i>	2014-2015
T.J. Avis	CFI Infrastructure Operating Fund (IOF)	Infrastructure Operating Fund	\$24,999 (100%) <i>Previously held</i>	2014
T.J. Avis	NSERC Engage Grant (Industrial partner: SHAV shower bar corp.)	Antimicrobial effectiveness of tea tree oil in cosmetic formulations	\$24,250 (100%) <i>Previously held</i>	2013
T.J. Avis	CFI/ORF Leaders Opportunity Fund	Platform for the study of bioactive compounds in health and environmental sciences	\$375,295 (100%) <i>Previously held</i>	2012-2013
T.J. Avis	NSERC Discovery Grant (individual)	Mode of action of membrane-targeting antimicrobials	\$135,000 (100%) <i>Previously held</i>	2010-2015

Applicant(s)	Source*/Program	Title	Amount [†]	Period
D. Rioux R. Wilson T.J. Avis S. Brière	NRCan/OMNRF Collaborative Research Agreement (with CFIA and Carleton University)	Evaluating the potential of <i>Phytophthora ramorum</i> to infect roots of red oak and balsam fir in eastern Canada	\$139,000 (40%) <i>Previously held</i>	2010-2013
R.J. Tweddell T.J. Avis H. Antoun	NSERC Collaborative Research and Development (CRD) Grants (Industrial partners: Les Fraises de l'Île d'Orléans and Berger Peat Moss)	Reduction of pesticides through the use of composts for sustainable production of strawberries	\$471,600 (40%) <i>Previously held</i>	2007-2011
H. Antoun T.J. Avis R.J. Tweddell	MAPAQ Support program for innovation in agrifoods	Factors influencing the appearance of beneficial microbial communities in compost teas used as biological fungicides	\$117,000 (50%) <i>Previously held</i>	2007-2011

* **Source legend:**

NSERC: Natural Sciences and Engineering Research Council of Canada
NRCan: Natural Resources Canada
OMNRF: Ontario Ministry of Natural Resources and Forestry
CFIA: Canadian Food Inspection Agency
CFI: Canadian Foundation for Innovation
ORF: Ontario Research Fund
MAPAQ: Quebec Ministry of Agriculture, Fisheries and Food

[†] Number in parentheses indicates percentage of the funding directly applicable to my research

6.2. CARLETON UNIVERSITY

Applicant(s)	Source/Program	Title	Amount	Period
O. Rowland M.L. Smith S. Hepworth H. MacMillan T.J. Avis S. Boyle Z. Colbert J. Erochko C. Cruickshank J. Zelenski	Multidisciplinary Research Catalyst Fund	Sustainable Communities	\$30,000 (10%) <i>Previously held</i>	2019-2020
T.J. Avis	Start-up Grant	Food Microbiology	\$60,000 (100%) <i>Currently held</i>	2008-present

7. TEACHING

7.1. COURSES TAUGHT

7.1.1. Undergraduate courses

- W2009:** FOOD 1001-Introduction to Food Science
- W2010:** FOOD 1001-Introduction to Food Science; FOOD 3005-Food Microbiology
- F2010/W2011:** FOOD 1001-Introduction to Food Science; FOOD 3005-Food Microbiology
- F2011/W2012:** FOOD 1001-Introduction to Food Science; FOOD 3005-Food Microbiology
- F2012/W2013:** FOOD 1001-Introduction to Food Science; FOOD 3005-Food Microbiology
- F2013/W2014:** FOOD 1001-Introduction to Food Science; FOOD 3005-Food Microbiology
- F2015/W2016:** FOOD 1001-Introduction to Food Science; FOOD 3005-Food Microbiology
- F2016/W2017:** FOOD 1001-Introduction to Food Science; FOOD 3005-Food Microbiology
- F2017/W2018:** FOOD 1001-Introduction to Food Science; FOOD 3005-Food Microbiology
- F2018/W2019:** FOOD 1001-Introduction to Food Science; FOOD 3005-Food Microbiology
- F2019/W2020:** FOOD 1001-Introduction to Food Science; FOOD 3005-Food Microbiology
- F2020/W2021:** FOOD 3005-Food Microbiology
- F2021/W2022:** FOOD 3005-Food Microbiology

7.1.2. Graduate courses

- F2012:** FOOD 5102-Food Biotechnology
- F2013:** FOOD 5102-Food Biotechnology
- F2015:** FOOD 5102-Food Biotechnology
- F2017:** FOOD 5102-Food Biotechnology
- F2019:** FOOD 5102-Food Biotechnology
- F2021:** FOOD 5102-Food Biotechnology

7.1.3. Course evaluations (all designated courses)

Course	Term/ Year	Respondents/ Enrolment	Questions 1-13			Question 4*		
			Mean Score	Dept/ Subject Score [†]	Faculty Score [†]	Mean Score	Dept/ Subject Score [†]	Faculty Score [†]
FOOD 1001	Winter 2009	23/35	4.67	4.58	4.35	4.52	4.44	4.12
FOOD 1001	Winter 2010	19/43	4.87	4.59	4.41	4.68	4.46	4.18
FOOD 3005	Winter 2010	6/6	4.99	4.59	4.41	5.00	4.46	4.18
FOOD 3005	Fall 2010	15/18	4.97	4.66	4.45	4.93	4.49	4.25
FOOD 1001	Winter 2011	19/37	4.89	4.66	4.45	4.95	4.49	4.25
FOOD 3005	Fall 2011	10/18	4.83	4.70	4.48	4.50	4.56	4.28
FOOD 1001	Winter 2012	14/28	4.83	4.70	4.48	4.64	4.56	4.28
FOOD 3005	Fall 2012	8/14	4.95	4.69	4.42	5.00	4.63	4.23
FOOD 1001	Winter 2013	28/50	4.73	4.69	4.42	4.54	4.63	4.23
FOOD 3005	Fall 2013	9/14	4.91	4.50	4.42	4.89	4.33	4.22
FOOD 1001	Winter 2014	17/39	4.65	4.50	4.42	4.59	4.33	4.22
FOOD 3005	Fall 2015	16/27	4.72	4.25	4.36	4.75	4.07	4.16
FOOD 1001	Winter 2016	25/62	4.81	4.25	4.36	4.76	4.07	4.16
FOOD 3005	Fall 2016	7/19	4.87	4.27	4.38	4.71	4.03	4.16
FOOD 1001	Winter 2017	19/51	4.88	4.27	4.38	5.00	4.03	4.16
FOOD 3005	Fall 2017	10/19	4.94	4.27	4.40	5.00	4.10	4.18
FOOD 1001	Winter 2018	18/47	4.97	4.27	4.40	5.00	4.10	4.18
FOOD 3005	Fall 2018	7/13	4.90	4.39	4.42	5.00	4.24	4.20
FOOD 1001	Winter 2019	25/49	4.76	4.39	4.42	4.76	4.24	4.20
Overall (average)			4.85	4.47	4.41	4.80	4.30	4.20

* Question 4: How do you assess your instructor's performance in imparting course material to students?

† Department/Subject and Faculty scores are means of Fall and Winter terms for a given academic year.

7.2. SUPERVISION**7.2.1. Summary**

Summary count:

PDF	2
Ph.D. students	4
M.Sc. students	15
Undergraduate students	59

7.2.2. Postdoctoral Fellows (PDF)

Name	Years Supervised or Co-Supervised	Project	Scholarship or Funding	Present Position
Zafar Iqbal	Co-Supervised 2011-2015	Detection and control of foodborne pathogens	Self-funded	Associate Professor, Bangladesh Agricultural University, Mymensingh, Bangladesh
Yao Tuo	Co-Supervised 2007	Plant Growth-Promoting Rhizobacteria	Self-funded	Associate Professor, College of Grassland Science, Gansu Agricultural University, Lanzhou, China

7.2.3. Ph.D. students

Name	Years Supervised or Co-Supervised	Project	Scholarship or Funding	Present Position
Bei Zhang	Supervised 2022-present	Molecular approaches to characterize <i>Salmonella</i> serovars	Funded by CFIA	Ph.D. student, Carleton
Elisabeth Mantil	Supervised 2014-2018	Mode of action of antimicrobial lipopeptides	Internal funding	Science Analyst (Postdoc), CFIA

Name	Years Supervised or Co-Supervised	Project	Scholarship or Funding	Present Position
Antoine Dionne	Co-supervised 2009-present	Factors affecting antimicrobial properties of compost teas used as biopesticides	<i>FRQNT</i>	Part-time Ph.D. student, Université Laval; Plant pathologist, MAPAQ
Souleymane Koné	Co-supervised (<i>Cotutelle</i>) 2007- withdrawn	Antimicrobial properties of compost teas	Islamic Development Bank	Unknown

7.2.4. M.Sc. students

Name	Years Supervised or Co-Supervised	Project	Funding	Present Position
Jennifer Villacres	Supervised 2022 - present	Antimicrobial mode of action in live cells	Internal funding	M.Sc. student, Carleton
Stéphanie Meyer	Supervised 2019 - present	Factors influencing antibiosis in beneficial bacteria	Internal funding	M.Sc. student, Carleton
Serine Ramlawi	Supervised 2019 - present	Lipopeptide-induced leakage in live cells	Internal funding	M.Sc. student, Carleton
Stefanie DeFilippi	Supervised 2017- withdrawn	Fengycin-induced leakage in model biomembranes	Internal funding	Project Officer - Poverty Reduction - Good Food Box - Rideau-Rockcliffe Community Resource Centre
Thomas Bujaki	Co-supervised 2016-2018	Bioinformatics and computational biology of molecular evolution	Internal funding	Ph.D. student, Carleton
Emma Groulx	Supervised 2015-2017	Genome analysis of antimicrobial producing bacteria	Internal funding	Biologist, Health Canada

Name	Years Supervised or Co-Supervised	Project	Funding	Present Position
Elisabeth Mantil	Supervised 2013-2014 (Fast-track to Ph.D.)	Effects of lipopeptides on fungal membrane biochemistry	Internal funding	Science Analyst (Postdoc), CFIA
Rowida Mohamed	Supervised 2013-2015	Ecophysiological distribution of lipopeptides in bacteria	Internal funding	Ph.D. student, Carleton
Cody Wise	Supervised 2011-2013	Effects of lipopeptides on fungal membrane biochemistry	Internal funding	Science Student Success Officer, Carleton
Phepafatso Tsae	Supervised 2010-2012	Evaluation of tree susceptibility to an exotic plant pathogen	OMNR-NRCan	Ph.D. student, Carleton
Andréanne Martin-Lapierre	Co-supervised 2009-2011	Microbial antagonists from composts suppressive to strawberry wilt	Internal funding	Biologist, Wildlife Zoo, Saint-Félicien
Antoine Dionne	Co-supervised 2007-2009	Factors affecting antimicrobial properties of compost teas used as biopesticides	<i>FRQNT</i>	Part-time Ph.D. student, Université Laval; Plant pathologist, MAPAQ, Québec
Valérie Bernier-English	Co-supervised 2007-2009	Antifungal agents in suppressive composts	NSERC-IPS 1	R&D Manager, Ferme Onesime Pouliot, Québec
Sophia Boivin	Co-supervised 2005-2007	Influence of chemical soil properties and crop rotation on the development of potato silver scurf	NSERC-IPS 1	Interim Director, MAPAQ, Québec
Chantal Nyiransengiyumva	Co-supervised 2005-2007	Influence of chemical soil properties on mycelial growth and sporulation of <i>Helminthosporium solani</i> <i>in vitro</i>	Rwandan Government Scholarship	Market Access Analyst, Canadian Food Inspection Agency, Ottawa

7.2.5. Undergraduate students

Name	Years Supervised or Co-Supervised	Program or University	Honours thesis or Funding	Present Position
Kiri Loganathan	Supervised 2022-present	Food Science and Nutrition	Internal funding	Undergraduate student, Carleton
Michael Shaikhet	Supervised 2022-present	Biochemistry	Dean's Summer Research Internship	Undergraduate student, Carleton
Sebastian Gomez	Supervised 2022-present	Food Science and Nutrition	NSERC USRA	Undergraduate student, Carleton
Jennifer Villacres	Supervised 2022	Biochemistry and Biotechnology	Internal funding	MSc student, Carleton
Sydney Massine	Supervised 2021-2022	Food Science and Nutrition	FOOD 4908	Undergraduate student, Carleton
Sebastian Gomez	Supervised 2021-2022	Food Science and Nutrition	FOOD 4908	Undergraduate student, Carleton
Jonathan Ononiwu	Supervised 2021-2022	Food Science and Nutrition	I-CUREUS	Undergraduate student, Carleton
Zina Barghouth	Supervised 2021-2022	Food Science and Nutrition	I-CUREUS	MSc student, McGill
Caitlin Kehoe	Supervised 2021-2022	Food Science	Dean's Summer Research Internship	Undergraduate student, Carleton
Sebastian Gomez	Supervised 2021-2022	Food Science and Nutrition	Walker Award (Summer Research)	Undergraduate student, Carleton
Emma Khazzam	Supervised 2020-2021	Food Science and Nutrition	FOOD 4908	MSc student, Wageningen University, The Netherlands
Stella Liang	Supervised 2020-2021	Food Science and Nutrition	FOOD 4908	MSc student, UBC
Jacqueline Chiu	Supervised 2020-2021	Food Science and Nutrition	FOOD 4908	MSc student, Guelph
Sawsan Abusharkh	Supervised 2020-2021	Food Science and Nutrition	FOOD 4908	Undergraduate student, Carleton
Zina Barghouth	Supervised 2020-2021	Food Science and Nutrition	FOOD 4908	MSc student, McGill
Sawsan Abusharkh	Supervised 2018-present	Food Science and Nutrition	I-CUREUS	Undergraduate student, Carleton

Name	Years Supervised or Co-Supervised	Program or University	Honours thesis or Funding	Present Position
Emma Khazzam	Supervised 2019-present	Food Science and Nutrition	Volunteer	MSc student, Wageningen University
Zina Barghouth	Supervised 2019-2020	Food Science and Nutrition	Volunteer	MSc student, McGill
Alexa Carroll	Supervised 2019-2020	Food Science and Nutrition	FOOD 4908	MSc student, McGill
Sawsan Abusharkh	Supervised 2018-present	Food Science and Nutrition	NSERC USRA	Undergraduate student, Carleton
Emma Khazzam	Supervised 2019-present	Food Science and Nutrition	Internal funding	MSc student, Wageningen University
Jacqueline Chiu	Supervised 2018	Food Science and Nutrition	Internal funding	MSc student, Guelph
Sawsan Abusharkh	Supervised 2018-2019	Food Science and Nutrition	I-CUREUS	Undergraduate student, Carleton
Ashley Cloutier	Supervised 2018-2019	Food Science and Nutrition	FOOD 4908	Senior Lab Technician, Agri-Neo, Toronto
Lydia Djira	Supervised 2018-2019	Food Science and Nutrition	FOOD 4908	Unknown
Emma Khazzam	Supervised 2018-2019	Food Science and Nutrition	Volunteer	MSc student, Wageningen University
Emily Russell	Supervised 2018	Health Sciences	Dean's Summer Research Internship	MPK student, University of Toronto
Jacqueline Chiu	Supervised 2018	Food Science and Nutrition	Dean's Summer Research Internship	MSc student, Guelph
Ashley Cloutier	Supervised 2018	Food Science and Nutrition	Internal funding	Senior Lab Technician, Agri-Neo, Toronto
Shirley Tran	Supervised 2017-2018	Food Science and Nutrition	FOOD 4908	Administrative Support Officer, Immigration and Refugee Board of Canada

Name	Years Supervised or Co-Supervised	Program or University	Honours thesis or Funding	Present Position
Meiqing Luo	Supervised 2017	Food Science and Nutrition	Walker Award (Summer Research)	Policy Analyst, Public Health Agency of Canada,
Oniel Kurniawan	Supervised 2017	Food Science and Nutrition	FOOD 4908	Unknown
Karly Wilson	Supervised 2016-2017	Food Science and Nutrition	FOOD 4908	Lead Project Officer, Indigenous Services Canada
Hannah Purdy	Supervised 2016-2017	Food Science and Nutrition	FOOD 4908	Coordinator, SE Health
Stefanie DeFilippi	Supervised 2016	Food Science and Nutrition	FOOD 4908	Project Officer - Poverty Reduction - Good Food Box - Rideau-Rockcliffe Community Resource Centre
Trinda Crippin	Supervised 2016	Biology	BIOL 4908	Lab Coordinator, Carleton
Hannah Purdy	Supervised 2016	Food Science and Nutrition	Internal funding	Coordinator, SE Health
Merna Megalla	Supervised 2015-2016	Food Science and Nutrition	FOOD 4908	Dental School, Toronto
Daniella McLean	Supervised 2015-2016	Food Science and Nutrition	FOOD 4908	R&D Analytical Chemist, Biolab Pharma
Stefanie DeFilippi	Supervised 2015-2016	Food Science and Nutrition	I-CUREUS	Project Officer- Poverty Reduction - Good Food Box - Rideau-Rockcliffe Community Resource Centre
Yahima Hernández Rojo	Supervised 2015-2016	Food Science and Nutrition	FOOD 4908	Unknown
Trinda Crippin	Supervised 2015-2016	Biology	I-CUREUS	Lab Coordinator, Carleton
Emma Groulx	Supervised 2014-2015	Food Science and Nutrition	FOOD 4908	Biologist, Health Canada
Grace Daly	Supervised 2014-2015	Biochemistry	BIOC 4908	Environmental Scientist, Golder

Name	Years Supervised or Co-Supervised	Program or University	Honours thesis or Funding	Present Position
Meiqing Luo	Supervised 2014	Food Science and Nutrition	Dean's Summer Research Internship	Undergraduate student, Carleton
José Nimo Cabrera	Supervised 2014	Biology	Dean's Summer Research Internship	Unknown
Merna Megalla	Supervised 2014	Food Science and Nutrition	NSERC USRA	Dental School, Toronto
Emma Groulx	Supervised 2014	Food Science and Nutrition	Internal funding	Biologist, Health Canada
Grace Daly	Supervised 2014	Biochemistry	Walker Award (Summer Research)	Environmental Scientist, Golder
Justin Falardeau	Supervised 2014	Food Science and Nutrition	NSERC USRA	Ph.D. student, UBC
Iryna Buznytska	Supervised 2013-2014	Biochemistry	BIOC 4908	Administrative Assistant, Indigenous Services Canada, Montreal
Emma Groulx	Supervised 2013-2014	Food Science and Nutrition	Volunteer	Biologist, Health Canada
Justin Falardeau	Supervised 2013	Food Science and Nutrition	I-CUREUS	Ph.D. student, UBC
Iryna Buznytska	Supervised 2013	Biochemistry	Internal funding	Administrative Assistant, Indigenous Services Canada, Montreal
Elisabeth Mantil	Supervised 2013	Food Science and Nutrition	Internal funding	Science Analyst (Postdoc), CFIA
Grace Daly	Supervised 2013	Biochemistry	Internal funding	Environmental Scientist, Golder
Justin Falardeau	Supervised 2013	Food Science and Nutrition	NSERC USRA	Ph.D. student, UBC
Ingrid Hagberg	Supervised 2012-2013	Food Science and Nutrition	FOOD 4908	A/Senior Compliance Officer, Canadian Food Inspection Agency, Ottawa

Name	Years Supervised or Co-Supervised	Program or University	Honours thesis or Funding	Present Position
Francis Wong	Supervised 2012-2013	Food Science and Nutrition	FOOD 4908	Unknown
Tamara Erak	Supervised 2012-2013	Integrated Science	INSC 4908	Dental Medicine, Midwestern, Glendale, Arizona
Jiajie Liu	Supervised 2012	Food Science and Nutrition	Walker Award (Summer Research)	Project coordinator (stem cell research), The Hospital for Sick Children, Toronto
Justin Falardeau	Supervised 2012-2014	Food Science and Nutrition	NSERC USRA	Ph.D. student, UBC
Hanane Hadj-Moussa	Supervised 2012-2013	Biology	Dean's Summer Research Internship	Ph.D. student, Carleton
Jiajie Liu	Supervised 2012-2013	Food Science and Nutrition	Volunteer	Project coordinator (stem cell research), The Hospital for Sick Children, Toronto
Justin Falardeau	Supervised 2012	Food Science and Nutrition	I-CUREUS	Ph.D. student, UBC
Laura Novitsky	Supervised 2011-2012	Food Science and Nutrition	FOOD 4908	Project Manager, BWXT Nuclear Energy Canada
Anna On (née Gawronski)	Supervised 2011-2012	Food Science and Nutrition	FOOD 4908	Senior Regulatory Affairs Officer, Health Canada
Ehsan Arya Kolaei	Supervised 2011-2013	Neuroscience	NEUR 4908	Senior Data Integrity Officer, Eastern Ontario Regional Laboratory Association, Ottawa
Rowida Mohamed	Supervised 2011-2014	Food Science and Nutrition	Volunteer	Ph.D. student, Carleton
Yichen Du	Supervised 2011	Food Science and Nutrition	Volunteer	Unknown
Rowida Mohamed	Supervised 2011	Food Science and Nutrition	FOOD 4908	Ph.D. student, Carleton

Name	Years Supervised or Co-Supervised	Program or University	Honours thesis or Funding	Present Position
Laura Novitsky	Supervised 2011	Food Science and Nutrition	Walker Award (Summer Research)	Project Manager, BWXT Nuclear Energy Canada
Ehsan Arya Kolaei	Supervised 2009-2011	Biology	Volunteer	Senior Data Integrity Officer, Eastern Ontario Regional Laboratory Association, Ottawa
Cody Wise	Co-supervised 2010-2011	Biology	BIOL 4908	Science Student Success Officer, Carleton
Rowida Mohamed	Supervised 2010-2011	Food Science and Nutrition	Volunteer	Ph.D. student, Carleton
Cynthia Cenatus	Supervised 2010-2011	Food Science and Nutrition	FOOD 4908	Science teacher, All Saints High School, Kanata
Laura Novitsky	Supervised 2010	Food Science and Nutrition	Walker Award (Summer Research)	Project Manager, BWXT Nuclear Energy Canada
Flavia Nicolescu	Supervised 2010	Food Science and Nutrition	Dean's Summer Research Internship	Unknown
Queenie Ko	Supervised 2010	Biochemistry (COOP)	Internal funding	Scientist II, Linkage Bioscience, San Ramon, California
Élodie Alaguiry	Co-supervised 2010	Université de la Réunion, France	Home university scholarship	Unknown
Cynthia Cenatus	Supervised 2009	Food Science and Nutrition	Volunteer	Science teacher, All Saints High School, Kanata
Sarah Green	Supervised 2009	La Cité Collégiale (Ottawa)	Honours student	Unknown

Name	Years Supervised or Co-Supervised	Program or University	Honours thesis or Funding	Present Position
Hortense Mvuemba	Supervised 2008-2009	Food Science and Nutrition	FOOD 4908	Community Engagement Advisor, Conseil des écoles catholiques du Centre-Est
Émilie Dubé-Tremblay	Co-supervised 2008	Université Laval	Internal funding	Unknown
Véronique Racine	Co-supervised 2008	CÉGEP Sainte-Foy, Québec	Student internship	Unknown
Kim Roger Bergeron	Supervised 2008	CÉGEP Lévis-Lauzon, Québec	Student internship	Animal health technician, CERVO Brain Research Centre, Québec
Karine Gaudette	Supervised 2008	CÉGEP Lévis-Lauzon, Québec	Student internship	Biotechnology professional, Maxxam, Saint-Hubert, Québec
Valérie Bernier-English	Co-supervised 2007	Université Laval	NSERC-USRA	R&D Manager, Ferme Onesime Pouliot, Québec
Jérémy Théolier	Co-supervised 2007	Université de Brest, France	Home university scholarship	Research professional, Institute of Nutrition and Functional Foods, Université Laval
Lise Grandin	Co-supervised 2007	Université de Brest, France	Home university scholarship	Quality and risk management engineer, Clinifutur, La Réunion
Julien Fecherolle	Co-supervised 2007	Université de Brest, France	Home university scholarship	Assistant Departmental Delegate, Agence Régionale de Santé Occitanie - Délégation départementale du Gers, France

Name	Years Supervised or Co-Supervised	Program or University	Honours thesis or Funding	Present Position
Anaïs Le Goaziou	Co-supervised 2007	Université de Brest, France	Home university scholarship	Quality control engineer, Lactalis, France
Sandra Le Tourneux	Co-supervised 2007	CÉGEP Lévis-Lauzon, Québec	Student internship	Unknown

7.3. THESES EXAMINED/THESES COMMITTEES

7.3.1. Honours thesis committees

- Food Science and Nutrition: 78 since 2011
- Chemistry: 6 since 2009
- Biochemistry: 17 since 2009
- Integrated Science: 4 from 2009-2013

7.3.2. Master thesis committees

Department Committee Member:

- Kimberlynn MacDonald: Mass spectrometry-based metabolomics to decipher strain specific *Microcystis* cyanopeptide profiles. Prof. McMullin, 2020.
- Ryan Abdul-Rahman Girgrah: Smad transcription factor expression in anoxia-tolerant *Trachemys scripta elegans* and dehydration-tolerant *Xenopus laevis*: a comparative study. Prof. Storey, 2015.
- Christina Khoury: Seabuckthorn berries as a novel source of prebiotic in yogurt model. Prof. Hosseinian, 2012.
- Xinlong Xia: Development of magnetic molecularly imprinted polymer nanoparticles for rapid and selective removal of endocrine disrupting compounds from aqueous environment. Prof. Lai, 2012.
- Andrea Romanowski: Determination of antioxidant potential of human milk peptides and amino acids and effects of tryptophan on bacterial growth in formula. Prof. Tsopmo, 2011.
- Yu Yang: Development of trace analysis methods by spectrofluorimetry. Prof. Lai, 2011.

External Committee Member (other departments, Carleton)

- Fatima Haider: Fungal metabolites: toxicity against agricultural pests and pathogens. Prof. Smith. Department of Biology, 2019.
- Emily Giroux: Using RNA-Seq to identify oospore wall-specific Carbohydrate-Active Enzyme (CAZy) coding genes of *Pythium ultimum* var. *ultimum*, an oomycete plant pathogen. Prof. Lévesque and Prof. Smith. Department of Biology, 2017.
- James Austin Markell: Accumulation of single nucleotide polymorphism (SNP) mutations in *Escherichia coli* grown under food production relevant conditions and their importance in outbreak strain epidemiology. Prof. Blais and Prof. Wong. Department of Biology, 2017.
- Christine Childers: Regulation of skeletal Muscle Glycolysis During Dehydration in the Aestivating African Clawed Frog, *Xenopus laevis*. Prof. Storey. Department of Biology, 2014.
- Samantha Frasz: The development and Comparison of Quantitative PCR Assays and Enzyme-linked Immunosorbent Assays as Rapid Detection Methods for Specific Foliar Endophytes. Prof. Miller, Prof. Seifert, and Prof. Smith. Department of Biology, 2014.
- Amarpreet Chahal: The production of hydrocarbons and other lipids by *Trichoderma koningii*, *Penicillium janthinellum* and their mixed species culture grown aerobically on four different carbon substrates. Prof. Rowland and Prof. Monreal. Department of Biology, 2012.
- Altaf Mahmud: An investigation of the relationship between dietary fiber, fecal bacterial composition and colon cancer. Prof. Storey and Prof. Brooks, Department of Biology, 2012.
- Craig Brooks: Regulation of NF- κ B and p53 in the liver and skeletal muscle of the freeze tolerant wood frog, *Rana sylvatica*. Prof. Storey, Department of Biology, 2009.

External Committee Member (other universities)

- Mathieu Bouchard-Rochette: *Bacillus pumilus* and *Bacillus subtilis* to control grey mold in greenhouse tomatoes and cucumbers. Prof. Tweddell. Department of Phytology, Université Laval, 2020 (M.Sc.).
- Nicholas Foran: Bacterial antagonists as a biological solution for control of potato late blight disease. Prof. Gravel, Department of Plant Science, McGill University, 2016.
- Angélique Bojanowski: Antifungal compounds and antagonistic activity of *Pseudomonas* strains against *Helminthosporium solani*, causal agent of potato silver scurf. Prof. Tweddell, Department of Phytology, Université Laval, 2011.
- Andréa Jinek: Susceptibility of leaves from six East Canadian tree species to *Phytophthora ramorum*. Prof. Rioux, Department of Phytology, Université Laval, 2009.

- Guillaume Clément-Mathieu: Influence of glycolipid biosynthesis on the growth and antagonistic activity of *Pseudozyma* spp. Prof. Bélanger, Department of Phytology, Université Laval, 2008.

7.3.3. Ph.D. thesis committees

External Committee Member (other departments, Carleton)

- Ying Wang: Investigating the role of BLADE-ON-PETIOLE 1 and 2 with clade ITGACG-motif binding basic leucine zipper transcription factors in the regulation of development and defense in *Arabidopsis thaliana*. Prof. Hepworth, Department of Biology 2021.
- Bodunde Oyetoran: Investigating the role of BLADE-ON-PETIOLE (BOP) genes and hydrophobic cell wall polymer suberin in *Arabidopsis thaliana* defense against bacterial and fungal pathogens Prof. Smith and Prof. Hepworth, Department of Biology 2021.
- Kristina Shostak: Secret arsenal of a cereal killer - cryptic activation of secondary metabolism biosynthesis in *Fusarium graminearum* Prof. Subramaniam and Prof. Vierula, Department of Biology 2020.
- Christine Childers: Regulation of Skeletal Muscle Glycolysis During Dehydration in the Aestivating African Clawed Frog, *Xenopus laevis*. Prof. Storey. Department of Biology, 2019.
- Gregg Ribodeau: Systematics and molecular pathogenesis of oomycetes with emphasis on flagellar genes. Prof. Smith and Prof. Lévesque. Department of Biology, 2013.
- Wayne Knee: Host specificity and species boundaries of beetle associated mites. Prof. Forbes, Department of Biology, 2011.
- Anastasia Krivoruchko: Turtle anoxia – biochemistry and gene regulation in an anaerobic extremist. Prof. Storey, Department of Biology, 2010.

External Committee Member (other universities)

- Maxime Delisle-Houde: Evaluation of salts and plant extracts to control the bacteria *Pseudomonas cichorii* and *Xanthomonas campestris* pv. *vitians* on lettuce. Prof. Tweddell, Department of Phytology, Université Laval, 2021.
- Louis Cossus: Influence of phytopathogens on the production of lipopeptides and the proteome of *Bacillus subtilis*. Prof. Arnaud Droit, Department of Molecular Medicine, Université Laval, 2021
- Karine Pedneault: Study of extractible compounds in mushrooms indigenous to Quebec. Prof. Tweddell, Department of Phytology, Université Laval, 2007.

7.3.4. Comprehensive examinations committees (Ph.D.)

- Annamaria Ruscito: Comprehensive Exam I (Research Presentation). A self-assembling RNA aptamer-based graphene oxide sensor for the turn-on detection of theophylline in serum. Department of Chemistry, 2016.
- Christine Childers: Comprehensive Exam (Research Proposal). Global effects of phosphorylation in skeletal muscle of the dehydrated African clawed frog, *Xenopus laevis*. Department of Biology, 2016.
- Sara Jodayree: Comprehensive Exam II (Research Proposal). Use of soluble dietary fiber in combination with vitamins E, B12, B6, and folate to improve animal neuronal function and survival in mouse model of amyotrophic lateral sclerosis disease. Department of Chemistry, 2014.
- David McMullin: Comprehensive Exam II (Research Proposal). Discovery of new bioactive secondary metabolites from xerophilic fungal species obtained from cold, extreme Canadian environments. Department of Chemistry, 2013.
- Sara Jodayree: Comprehensive Exam I (Research Presentation). Effects of diet energy level and tomato powder consumption on antioxidant status in rats. Department of Chemistry, 2012.
- David McMullin: Comprehensive Exam I (Research Presentation). Multi-mycotoxin analysis of maize silage by LC-MS/MS. Department of Chemistry, 2012.
- Maureen McKeague: Comprehensive Exam II (Research Proposal). Reengineering bacteria to follow and detoxify deoxynivalenol. Department of Chemistry, 2011.
- Aynur Gunenc: Comprehensive Exam I (Research Presentation). Determination of alkylresorcinol metabolites in human urine by gas chromatography–mass spectrometry. Department of Chemistry, 2010.
- Francisco Ucan-Marin: Comprehensive Exam II (Research Proposal). Endocrine disruption effects of the pesticide emamectin benzoate in young captive Atlantic salmon (*Salmo salar*) via dietary exposure. Department of Chemistry, 2009.

8. SERVICE TO THE UNIVERSITY (INCLUDING COMMITTEE WORK)

8.1. DEPARTMENT

8.1.1. Committee work

- Selection Committee Member: Cluster hire (three Professors in Chemistry) (2021)
- Selection Committee Chair: Department of Chemistry Chair (2019)
- Selection Committee Member: Food Science and Chemistry Laboratory Coordinator (2019)
- Selection Committee Chair: Professor in Food Science (Food Toxicology) (2017)
- Selection Committee Member: Director of the Institute of Biochemistry (2016)
- Tenure and Promotion Committee Member: Department of Chemistry (2016)
- Selection Committee Chair: CRC Tier 1 Professor in Food Analysis and Safety (2015-2016)
- Review Team Member and Interim Chair: Cyclical Program Review, Food Science and Nutrition (B.Sc. Honours), Institutional Quality Assurance Process (2015)
- Selection Committee Member: Department of Chemistry Chair (2013)
- Selection Committee Member: Food Science and Chemistry Laboratory Coordinator (2010)
- Selection Committee Member: Food Science and Nutrition Instructor (2010)
- Selection Committee Member: Food Science and Chemistry Laboratory Coordinator (2009)

8.1.2. Other service and responsibilities

- FOOD 4908 – Food Science Research Project (coordinator) (2020-2021).
- FOOD 4907 – Food Science Honours Essay and Research Proposal (coordinator) (2020-2021).
- FOOD 4908 – Food Science Research Project (coordinator) (2018-2019).
- FOOD 4907 – Food Science Honours Essay and Research Proposal (coordinator) (2018-2019).
- FOOD 4908 – Food Science Research Project (coordinator) (2016-2017).
- FOOD 4907 – Food Science Honours Essay and Research Proposal (coordinator) (2016-2017).
- Faculty Liaison: Development of a Concentration in Food Science and Nutrition for the graduate programs (M.Sc. and Ph.D.) in Chemistry (2014-2015).
- FOOD 4907 – Food Science Honours Essay and Research Proposal (acting coordinator) (2014-2015).
- FOOD 4908 – Food Science Research Project (acting coordinator) (2014-2015).
- FOOD 4907 – Food Science Honours Essay and Research Proposal (coordinator) (2011-2012).
- FOOD 4908 – Food Science Research Project (coordinator) (2008-2012).
- Member: Congratulations Call Campaign – Food Science and Nutrition (2009, 2010, 2011)
- Member: Food Science and Nutrition – Chemistry Department presentation, CU Day (2009, 2010)
- Faculty Liaison: Undergraduate Recruitment (Food Science and Nutrition) – Faculty appointments with prospective students (and parents) to discuss the Food Science and Nutrition Program (2008-present)
- Faculty Liaison: Undergraduate Affairs (Food Science and Nutrition) – when called upon by the Chair/Associate Chair Undergraduate Affairs, I am highly involved in guiding/advising students on courses, registration, etc. in the Food Science and Nutrition Program (2008-present).

8.2. OTHER DEPARTMENTS/INSTITUTES

8.2.1. Directorship

- Director: Institute of Biochemistry (2020-2023)

8.2.2. Committee work

- Committee Member: Institute of Biochemistry – Curriculum Review Committee (2010-2012)
- Council Member: Integrated Science Institute – Carleton University (2008-2017)

8.3. FACULTY

8.3.1. Committee work

- Committee Member: Science Committee on Admissions and Studies (CAS) (2010-2020)

8.3.2. Other service and responsibilities

- Outreach presenter: Science Café (Faculty of Science) – Chemical Pesticides: panacea or poison? (2008)

8.4. UNIVERSITY

8.4.1. Committee work

- Committee Member (Science): Learning Outcomes Assessment (Pilot Project) - Office of the Provost and Vice-President (Academic) (2013)

9. SERVICE TO THE PROFESSION AND SOCIETY

9.1. OFFICES IN LEARNED SOCIETIES

- University Faculty Representative: Canadian Society of Microbiologists (2017-present)
- Symposium Committee Chair: American Phytopathological Society – Northeastern Division (2013-2014)
- Local Organization Committee: Chair – Applied and Environmental Microbiology Program Committee. 63rd Annual Conference of the Canadian Society of Microbiologists, June 17-20, 2013, Ottawa, Canada
- Symposium Committee Member: American Phytopathological Society – Northeastern Division (2011-2013)
- Graduate Student Award Committee Member: American Phytopathological Society – Northeastern Division: (2011-2014)
- Local Arrangement Committee: 69th Annual Meeting of the American Phytopathological Society Northeastern Division, October 28-30, 2009, Québec, Canada
- Local Organization Committee: XIV International Congress on Molecular Plant-Microbe Interactions, July 19-23, 2009, Québec, Canada

9.2. SCHOLARLY ASSESSMENTS

9.2.1. Referee for grant proposals

- Natural Sciences and Engineering Research Council (NSERC) of Canada: Discovery Grants. Evaluation Group 1501 - Genes, Cells and Molecules - (External Referee) 2021
- Natural Sciences and Engineering Research Council (NSERC) of Canada: Discovery Grants. Evaluation Group 1501 - Genes, Cells and Molecules - (External Referee) 2020
- Natural Sciences and Engineering Research Council (NSERC) of Canada: John C. Polanyi Award - (External Referee) 2019
- Natural Sciences and Engineering Research Council (NSERC) of Canada: Discovery Grants. Evaluation Group 1501 - Genes, Cells and Molecules (External Referee) 2019
- *Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec (MAPAQ) - Programme Innov'Action agroalimentaire* 2019
- Agriculture and Agri-Food Canada (AAFC) – Science and Technology Branch: Project Proposal (External Referee) 2018
- Natural Sciences and Engineering Research Council (NSERC) of Canada: Discovery Grants. Evaluation Group 1502 - Biological Systems and Functions (External Referee) 2018
- Agriculture and Agri-Food Canada (AAFC) – Science and Technology Branch: Project Proposal (External Referee) 2015
- United States Department of Agriculture (USDA) – National Institute of Food and Agriculture (NIFA): Small Business Innovation Research Program (External Referee) 2014
- Natural Sciences and Engineering Research Council (NSERC) of Canada: Discovery Grants. Evaluation Group 1504 - Chemistry (External Referee) 2013

- Natural Sciences and Engineering Research Council (NSERC) of Canada: Collaborative Research and Development Grant (External Referee) 2013
- *Fonds de recherche sur la nature et les technologies* (FQRNT): Targeted Research Partnership Projects program. (Evaluation Committee Member) 2011
- *Fonds de recherche sur la nature et les technologies* (FQRNT): Group Research Projects program. Plant Biology Committee 707B (Evaluation Committee Member) 2011
- Natural Sciences and Engineering Research Council (NSERC) of Canada: Discovery Grants. Evaluation Group 1502 - Biological Systems and Functions (External Referee) 2010

9.2.2. Referee for scientific journals

- *Annals of Applied Biology* (2 manuscripts refereed)
- *Applied and Environmental Microbiology* (1)
- *Applied Microbiology and Biotechnology* (1)
- *Applied Soil Ecology* (1)
- *Biochimica et Biophysica Acta – Biomembranes* (5)
- *BioControl* (5)
- *Biological Agriculture & Horticulture* (1)
- *Biological Control* (32)
- *Biology and Fertility of Soils* (1)
- *Biophysical Journal* (1)
- *Bioresource Technology* (1)
- *Canadian Journal of Plant Pathology* (5)
- *Canadian Journal of Microbiology* (1)
- *Canadian Journal of Plant Science* (1)
- *Compost Science and Utilization* (1)
- *Crop Protection* (3)
- *Current Medicinal Chemistry* (1)
- *Environmental Science and Pollution Research* (1)
- *FEMS Microbiology Ecology* (1)
- *FEMS Yeast Research* (3)
- *Food Chemistry* (1)
- *Food Microbiology* (1)
- *Fungal Biology* (4)
- *International Journal of Food Microbiology* (2)
- *Journal of Applied Microbiology* (3)
- *Journal of Basic Microbiology* (1)
- *Journal of Chemical Ecology* (1)
- *Journal of Plant Pathology* (1)
- *Land Degradation and Development* (1)
- *Microbiological Research* (1)
- *Microscopy and Microanalysis* (1)
- *Mycologia* (1)

- *Mycological Research* (1)
- *Mycopathologia* (1)
- *Pedobiologia* (1)
- *Physiological and Molecular Plant Pathology* (1)
- *Phytoprotection* (5)
- *Plant Disease* (1)
- *Plant Cell Reports* (1)
- *Plant Physiology and Biochemistry* (1)
- *Postharvest Biology and Technology* (2)
- *Scientia Horticulturae* (1)
- *Soil Biology and Biochemistry* (2)
- *Yeast* (1)

9.3 OTHER SERVICE TO THE PROFESSION

9.3.1. Editorial work

9.3.1.1. Peer-reviewed scientific journals

- Senior Editor: Canadian Journal of Plant Pathology, Biochemistry, 2019-present.
- Editorial Board Member: BioControl, 2019-present.
- Section Editor: Canadian Journal of Plant Pathology, Biochemistry and Cell Biology, 2017-2019.

9.3.1.2. Books

- Member of the editorial team: Bélanger, R.R., W.R. Bushnell, A.J. Dik, and T.L.W. Carver. 2002. *The Powdery Mildews: A Comprehensive Treatise*. APS Press, St. Paul, MN. 292 p.

9.3.1.3. Educational material

- Member of the editorial team: Bélanger, R.R. and T.J. Avis. *Une introduction illustrée multilingue aux maladies et agents pathogènes des plantes*. French translation of Schumann, G.L., F.H. Tainer, and T.A. Evans, *A Multilingual Illustrated Introduction to Plant Pathogens and Diseases*.

10. OTHER INFORMATION

10.1. CARLETON UNIVERSITY STORIES, JOURNALS AND NEWSLETTERS

Carleton University News Story: “Reducing Food Waste: Beneficial microorganisms represent a sustainable path toward food security”

Carleton University Magazine: “What's for dinner... is it safe?”

Carleton University Magazine: “Future of food”

Eureka (Hot Topic): Panacea or poison?

Eureka (Faculty News): The science of postharvest disease control

10.2. REPORTS/DOCUMENTS FOR GOVERNMENT AND INDUSTRY

10.2.1. Government reports and documents

- Industrial Research Assistance Program (IRAP/NRC): Seven (7) scientific reports.
- Industrial R&D Fellowship (IRDF/NSERC): Two (2) scientific and administrative reports (supervision of an industrial post-doctoral fellow).
- Programme d'aide à la recherche (CORPAQ/MAPAQ): One (1) scientific report.
- Collaborative Research and Development (CRD/NSERC) Grant: Three (3) scientific reports.

10.2.2. Industry reports and documents

- Scientific and technical report for the following research project: “Incorporation and analysis of tea tree oil in a novel cosmetic product”. Collaborative project between Carleton University and SHAV shower bar corp. April 2014. Patent WO2014043787 / CA2884733 / US20150216768.
- Scientific and technical report for the following research project: "Reduction of pesticides through the use of composts for sustainable production of strawberries". Collaborative project between Université Laval, Les Fraises de l'Île-d'Orléans Inc., Tourbières Berger Ltée and NSERC. December 2007.
- Scientific and technical report for the following research project: "Fumigation avec des atmosphères chlorées pour la lutte contre les maladies post-récoltes de la fraise". Collaborative project between Université Laval, Les Fraises de l'Île-d'Orléans Inc. and le Conseil des recherches en pêche et en agroalimentaire du Québec (CORPAQ/MAPAQ). December 2005.
- Scientific and technical report for experimental research and scientific development tax credits: Four (4) reports (Purcell Technologies Inc., 2002 and 2003; AZYMax Inc. 2004 and 2005).
- Patents: Principal writer (non-inventor) of the three (3) following patent applications: Antimicrobial molecule: PCT/CA2003/001080, Transformed fungi for production of recombinant proteins: PCT/CA2003/000756, Compositions comprising thylakoids useful in the modulation of the inflammation process: PCT/CA2002/001009.

- Scientific report for the registration of a biofungicide in Canada [Pest Management Regulatory Agency (PMRA), Health Canada] and the United States [Environmental Protection Agency (EPA)]; PMRA-EPA # 2000-0135.

10.3. MEMBERSHIP (PROFESSIONAL AND ACADEMIC ORGANIZATIONS)

Professional:

American Phytopathological Society (APS)
Canadian Phytopathological Society (CPS)
Canadian Society of Agronomy (CSA)
Canadian Society of Microbiologists (CSM)
International Society of Molecular-Plant Microbe Interactions (IS-MPMI)
Société de protection des plantes du Québec (SPPQ) - Québec Plant Protection Society (QSPP)

Academic:

Institute of Biochemistry – Carleton University
Centre SÈVE – Multi-institutional

CURRICULUM VITAE

Antonio (Tony) J. Bailetti

Sprott School of Business
Faculty of Engineering and Design
Carleton University
1125 Colonel By Drive
Ottawa, Ontario, K1S 5B6

310 St Patricks Building
Email: Bailetti@sce.carleton.ca ;
Tony_Bailetti@carleton.ca
Telephone: (613) 520-2600 x 8398
Cell: (613) 614-2885

Summary

PUBLICATIONS	2020-2021	Lifetime
Articles in refereed journals	3	29
Articles in refereed conference proceedings	3	41
Chapters contributed to books	1	6

STUDENT SUPERVISIONS			
Option	2020-2021	In progress	Lifetime completions
MASc. - thesis	0	1	69
MMS, MDesign – thesis	0	0	8
M.A.B.A. - project	5	3	5
M.Ent. - project	1	3	7
M.Eng. - project	17	5	64
MSc in MS, MISS	0	0	3
	23	12	156

Articles in Refereed Journals

Bashuri, E. and Bailetti, T., 2021. Strategies for a Small to Medium-sized Enterprise to Engage in an Existing Ecosystem. *Technology Innovation Management Review*, 11(7/8).

Bailetti, T., Tanev, S., & Keen, C. 2020. What Makes Value Propositions Distinct and Valuable to New Companies Committed to Scale Rapidly? *Technology Innovation Management Review*, 10(6): 14-27. <http://doi.org/10.22215/timreview/1365>

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Bailetti, A. 2003. The role of senior management in the new product introduction process. *Ottawa Carleton Manufacturing Network* (Ottawa, ON).

Bailetti, A. 2003. Lessons learned from persons who train tech entrepreneurs. *Conference Board of Canada* (Montréal, QC).

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Bailetti, A. 2002. The enabling technology for e-business. *Conference on Empowering Small and Medium Size Businesses, APEC* (Mexico D.F., Mexico).

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Bailetti, A. 2000. Distribution supply web. Ebiz-Texpo (Fredericton, NB).

Bailetti, A. 2000. We're connected: now what? Electronic Commerce Canada (Ottawa, ON)

Bailetti, A. 2000. The future of government online. Health Canada (Ottawa, ON).

Bailetti, A. 2000. Ten laws and seven deadly sins. Information Technology Association of Prince Edward Island (Charlottetown, PEI).

Bailetti, A. 2000. Rules for information technology strategy. Nortel Networks (Ottawa, ON).

Bailetti, A. 2000. Producing courses for learning on the Web. Institute of Canadian Bankers. (Montréal, QC).

Bailetti, A. 2000. Implementation of e-Business applications in small businesses". CBSC – Industry Canada (Charlottetown, PEI).

Bailetti, A. 2000. Fundamentals of e-Business. Newbridge (Ottawa, ON).

Bailetti, A. 2000. E-Business for small brick and mortar businesses". Industry Canada (Vancouver, BC).

Bailetti, A. 2000. E-Business for small agriculture and agri-food businesses: suggestions for government strategy. Agriculture and Agri-Food Canada (Ottawa, ON).

Bailetti, A. 2000. E-Business and organizations responsible for the relocation of people. Canadian Employee Relocation Council, Ottawa, ON.

Bailetti, A. and Callahan, J.R. 1995. Object-Based Patterns of Coordination Structure Business Object Design and Implementation Workshop, OOPSLA '95, Austin, Texas, October 16.
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Bailetti, A. and Callahan, J.R. 1993. The Internationalization of Design Capability: The Experiences of Telecommunications Equipment Manufacturers, ORSA/TIMS Joint National Meeting, Chicago, May.

Bailetti, A. and Callahan, J.R. 1992. Application of a Coordination Centric View of Standards Systems Management, MIT, Boston April 8.

Bailetti, A. and Callahan, J.R. 1992. Standards System Management. Bell-Northern Research, Ottawa, February 13.

Bailetti, A. and Callahan, J.R. 1990. The Role of Standards in Technological Infrastructures. *Second International Conference on Management of Technology*, Miami, February 28-March 2.

Bailetti, A. and Callahan, J.R. 1988. High Temperature Superconductivity: Opportunities and Threats to Canadian Industry. Ottawa-Carleton Research Institute, Ottawa, March 30.

EXTERNAL GRANTS AS APPLICANT AND PRINCIPAL INVESTIGATOR

Summary

Recipient	2015-2016	2013-2016	Lifetime
Carleton University	\$4.550 Million	\$9.648 Million	\$15.810 Million
Not-for-profit Carleton spinoffs	\$525k + \$205K US	\$525k + \$205K US	\$9.89 Million + \$205k US

External grants as applicant and principal investigator – Carleton University

Year	Amount	Source	Purpose
2016	\$3 Million	FedDev - Innovation Centre at Bayview Yards	Create ecosystem of cybersecurity ecosystems
2016	\$1.3 Million	Ontario Centres of Excellence	Operate Capital Entrepreneurs
2015	\$250k	NRC-IRAP	Operate Lead To Win entrepreneurial

			ecosystem
2014	\$998.75k	Public Works and Government Services Canada	R&D in cybersecurity
2014	\$30k	EMC	Increase of entrepreneurial capacity in large companies
2014	\$250k	TELUS	Cybersecurity Capability Maturity Model
2014	\$300k	NRC-IRAP	Operate Lead To Win entrepreneurial ecosystem
2014	\$2 Million	Ontario Centres of Excellence	Operate Capital Entrepreneurs
2013	\$220k	NRC-IRAP	Operate Lead To Win entrepreneurial ecosystem
2013	\$1 Million	TELUS, Communications Security Establishment Canada, NRC-IRAP, OCE	Launch VENUS Cybersecurity Corporation
2013	\$300k	City of Ottawa	Develop 255 Centrum
2012	\$200k	NRC-IRAP	Operate Lead To Win entrepreneurial ecosystem
2012	\$55k	City of Ottawa	Born Global knowledge

			infrastructure
2012	\$945k	FedDev-Science and Engineers in Business	Funding of 30 born global businesses launched by graduate students
2012	\$1.43 Million	FedDev-Graduate Enterprise Internships	Place 60 graduate and 40 undergraduate students with companies that are members of LTW ecosystem
2011	\$1 Million	Ontario Centres of Excellence	Ottawa Young Entrepreneurs
2010	\$145k	NRC-IRAP	Lead to Win innovative company support
2010	\$60k	NRC-IRAP	Develop keystone off the shelf
2010	\$150k	NRC-IRAP	Develop keystone off the shelf
2009	\$200k	NRC-IRAP	Lead project and Sandbox development
2009	\$150k	NRC-IRAP	Lead to Win innovative company support
2010	\$300k	Ontario Ministry of Research and Innovation	Support thesis research and company formation

2009	\$96k	City of Ottawa, Ottawa Centre for Research and Innovation, Arrow Electronics, onconference, Développement économique-CLD Gatineau	Lead to Win opportunity development program
2009	\$70k	NRC-IRAP	Lead to Win opportunity development program
2008	\$50k	Nortel Research Grant for Ecosystems	Research and travel
2006-2008	\$1.1 Million	Ontario Ministry of Research and Innovation	Fund thesis research and company formation
2006	\$10k	Eclipse Foundation	Fund thesis research
2006	\$60.350k	Nortel Research Grant for open source project	Research and travel
2006	\$25k	Nortel Networks Grant for value generation and capture project	Research and travel
2005	\$60.350k	Nortel Research Grant for	Research and travel

		open source project	
2005	\$30k	CITO Research Grant for remote upgrade and recovery of IP enabled products project	Fund thesis research
2004	\$25k	Nortel Networks Grant for wireless payments project	Research and travel
Total	\$15.810 Million		

External grants as applicant and principal investigator – not-for-profit Carleton spinoffs

Year	Amount	Source	Purpose
2016	\$125k US	Laboratory of Analytical Sciences/North Carolina State University	Anticipation research
2016	\$125k	TELUS	Securing municipal services
2015	\$400k	Communications Security Establishment	Develop co-creation machine
2015	\$80k US	Laboratory of Analytical Sciences/North Carolina State University	Code reuse and machine learning research
2009	\$9.365 Million	Ministry of Research and Innovation	Coral CEA ecosystem
Total	\$9.890 Million + \$205k US		

THESIS AND PROJECT SUPERVISION – SUMMARY

Degree	Option	Completed	In-Progress
Master of Applied Sciences, Technology Innovation Management and Telecommunications Technology Management	M.A.Sc., with thesis M.Eng., with thesis	69	1
Master of Management Studies	M.M.S, with thesis	6	0
Master of Design	M.Des., with thesis	2	0
Ph.D. in Business (Note 1)	Ph.D., with thesis	1	0
Thesis supervisions		78	0
Master of Entrepreneurship, Technology Innovation Management	M.Ent., with project	4	2
Master of Engineering, Technology Innovation Management	M.Eng., with project	47	1
Master of Science in Management Studies (Note 2)	M.Sc., with project	2	0
Master of Information and Systems Science	M.Sc. with project	1	0
Project supervisions		54	2
Total supervisions		132	2

Note 1: Vienna University of Economics and Business, Vienna, Austria.

Note 2: Sloan School of Management, MIT, Boston, United States.

**Master of Applied Sciences (M.A.Sc.) Technology Innovation Management with thesis and
Master of Engineering, Telecommunications Technology Management with thesis**

Gamage, Renuka	M.A.Sc.	New multi sided platform operator growth – Post funding	Fall 2017
Tadjalli, Seyed Ayat	M.A.Sc.	The legitimacy of transnational startups: The Case of Canadian-Iranian startups	Fall 2017
Badalkhani, Parisa	M.A.Sc.	Using publicly available information to predict cyber failures	Fall 2016
Sunna, Abdallah	M.A.Sc.	Design of a regional venture-creation ecosystem by reusing the components of another ecosystem	Winter 2016
Adegboyega, Olukayode	M.A.Sc.	Representing botnet-enabled cyber-attacks and botnet takedowns using club theory	Summer 2015
Miron, Walter	M.A.Sc.	Adoption of cybersecurity capability maturity models in municipal governments	Summer 2015
Kadivar, Mehdi	M.A.Sc.	Representation of the cyber-attack domain	Winter 2015
Yoos, Simar	M.A.Sc.	Market channels of technology startups that internationalize rapidly from inception	Winter 2013
Shanker, Aparna	M.A.Sc.	Open source solutions: A study on customer value propositions	Fall 2012

Prattico, Ludovico	M.A.Sc.	Examining governance of open source software foundations	Fall 2012
Jensen, Brian	M.A.Sc.	How training affects the new venture development of technology startups	Fall 2012
De Baets, Leonard	M.A.Sc.	A keystone for making money built using open source components	Fall 2012
McPhee, Christopher	M.A.Sc.	Using a results-based organization design methodology to construct the Technology	Summer 2012

Debo-Omidokun, Adefemi	M.A.Sc.	Web conference system scalability: dimensioning and measurement	Summer 2012
Olawale, Femi	M.A.Sc.	Small company transfer of technology to developing nations	Summer 2012
Rezaie Adl, Laleh,	M.A.Sc.	Scrutinizing Business Models using publicly available information: The case of communications enabled applications	Fall 2011
Justus, Chris	M.A.Sc.	Relationships of young information technology companies and growth in revenue	Summer 2011
Rosenblum, Howard	M.A.Sc.	Customer values of communication enabled application mashup types	Fall 2011
Sorlescu, Sorin	M.A.Sc.	Points of difference in affiliations within wireless industry consortia	Fall 2010
Chisty, Jainal	M.A.Sc.	Innovation in co-creation practices: An exploratory study (with Stoyan Tanev)	Fall 2010
Moraes, Eduardo	M.A.Sc.	Assessing trust of suppliers' solutions offered in an electronic marketplace	Summer 2010
Ferreira, Edy	M.A.Sc.	Types of market offers enabled by open source hardware (with Stoyan Tanev)	Fall 2009
Mekki MacAulay Abdelwahab	M.A.Sc.	Assessing the switching barriers between Microsoft Office and OpenOffice.org	Fall 2008

Lombardi, Stephen	M.A.Sc.	Interactions between Eclipse Foundation members and Eclipse projects	Fall 2008
Muttulingam, Jeevithan	M.A.Sc.	Development of open carrier grade-based platforms	Fall 2008
McInnis, Glen	M.A.Sc.	Unique competitive actions of open source firms	Fall 2008
Hassin, Kamal	M.A.Sc.	Model to ensure clean intellectual property in software development projects	Summer 2008
Mora, Monica	M.A.Sc.	Open educational resources: motivations, governance, and content protection	Summer 2008
Dhillon, Samrat	M.A.Sc.	Managing license incompatibilities distributing Eclipse application stacks (thesis, supervision with D. Deugo)	Sumer 2008
Xie, Zhensheng	M.A.Sc.	Open source software foundation: company involvement, governance, and effectiveness	Sumer 2008
Yue, Howard	M.A.Sc.	Classifying venture capital backed open source software startups using publicly available information	Sumer 2008
Liu, Haijun (Peter)	M.A.Sc.	Examining open source telecommunications companies	Fall 2008
Yuan, Jiang (Tammy)	M.A.Sc.	Company Interactions with Open Platforms: Case of Carrier Grade Linux	Summer 2007
Garcia Lozano, Rene	M.A.Sc.	Adoption of embedded open source software: The case of Linux in mobile	Summer 2007

		devices	
Khan, Azmat	M.Eng.	How companies use open source software to capture value in the voice over Internet protocol market	Summer 2006
Li, Feng	M.A.Sc.	Examining open source investment aggressiveness of large computer and telecommunication firms	Summer 2006
Liu, Xiaoling	M.A.Sc.	Assessing the release of proprietary code as open source: large company case	Summer 2006
Giggey, Veronica	M.A.Sc.	Using theoretical perspectives to predict the size of addressable markets for mobile payment systems	Winter 2006
Rehman, Rizwan	M.Eng.	Factors that contribute to open source software project success	Winter 2006
Alam, Richard	M.Eng.	Open source projects, market offers and competitive advantage	Fall 2005
Pinzon, Piedad	M.Eng.	The relationship between structure and performance of open source projects: case of learning content management systems	Fall 2005
Yang, Jihong	M.Eng.	Sales generated using open source projects	Fall 2005
Ghobros, Michael	M.Eng.	The relationship between capability platform and performance for software start-ups	Fall 2005

Ahmed, Owais	M.Eng.	Migration from proprietary to open source learning content management systems	Summer 2005
Ahmad, Irfan	M.Eng.	Commercialization strategy and performance of technology start-ups	Summer 2005
Ashraf, Muhammad	M.Eng.	Using theoretical perspectives to examine the adoption of mobile internet and wireless payments services	Summer 2005
Davidson, Sandy	M.Eng.	Early stage resource allocation in specialized supplier firms	Summer 2005
Zhang, Terence	M.Eng.	How customer attributes affect retention, loyalty intention and satisfaction for continuously provided services	Winter 2005
Ali, Syed	M.Eng.	Adoption of voice over Internet protocol by North American service operators	Winter 2005
Malik, Ishfaq	M.Eng.	Differences in competitive aggressiveness between growth and meltdown periods	Winter 2005
Wang, Peiyao	M.Eng.	Distributed new product development structures and schedule overrun	Winter 2005
Zhang, Yong	M.Eng.	Capturing value from early stage technology in open standard environments: the case of Wi-Fi	Winter 2005
Zhen, Wei	M.Eng.	Using Christensen's models to examine the growth of Chinese suppliers of telecommunications equipment	Fall 2004

Napoles, Rodolfo	M.Eng.	The evolution of model driven development tools	Fall 2004
Hoddinott, Peter	M.Eng.	Commercial alignment of firms and government agencies advancing climate change technologies	Fall 2004
Tanev, Stoyan	M.Eng.	Competitive intelligence information and innovation performance of IRAP funded companies	Fall 2004
Sajjad, Amer	M.Eng.	Relationship between Ottawa start-ups' commercialization strategy and their competitive aggressiveness	Fall 2004
Dumitrescu, Tudor	M.Eng.	Change in product line due to product market repositioning (thesis, supervision with S.A. Ajila)	Summer 2004
Peng, Zheshi	M.Eng.	Firm adoption of Linux	Winter 2004
Qin, Edward	M.Eng.	Determinants of successful acquisitions: the case of Cisco	Winter 2004
Fang, Chris	M.Eng.	The relationship between trust, commitment and schedule overrun	Winter 2004
Li, Zhibin	M.Eng.	Involvement in standards development and product performance	Winter 2004
Liu, Ying	M.Eng.	Launch aggressiveness and product performance: the case of new telecommunications products	Winter 2004

Hao, Yanxia	M.Eng.	Competition during market meltdowns: The performance of telecommunications equipment suppliers during 2001-2003	Winter 2004
Loudiadis, Josee	M.Eng.	Comparing early sales of new technology products closed by start-ups and large suppliers	Summer 2003
Pellerin, Karine	M.Eng.	Multimode verification system using fingerprint and voice information	Summer 2003
Ahmed, Syed	M.Eng.	Ontologies of electronic devices in DAML+OIL for automated product design services in the semantic web (thesis, supervision with M. Weiss)	Fall 2002
Iszak, Trevor	M.Eng.	Product news releases for time to market and competitive intelligence	Winter 2001
Usman, Arshad	M.Eng.	The effect of product price and product category on online payment methods and on the decision to own a secure server	Winter 1999

Master of Management Studies (M.M.S.), with thesis

Iyer, Sanyeeta	MMS	Critical success factors for electronic software distribution	Winter 1999
FitzGibbon, Chris	MMS	Comparing project management practices of ISO 9001 and non ISO 9001 registered software companies	Winter 1997
Smith, Fraser	MMS	An investigation of the dimensions of prototype management that affect the outcomes of software development projects	Summer 1996
Kakkar, Paraj	MMS	Factors for the success of chip design and manufacture	Winter 1996
Gopalan, Mani	MMS	Reasons for schedule overruns in software development projects	Summer 1995
McCluskey, Sean	MMS	Evolution of the coordination structure of organizations producing complex system designs	Summer 1993

Master of Design (M.Des.), with thesis

Payette, Jay	M.Des.	Aligned design: exploring strategic alignment of design in large firms	Fall 2016
Zohbi, Hala	M.Des.	Meeting environmental certification in design: A toolkit facilitating the process of eco-labeling through life cycle assessment	Summer 2012

for electronic products (with Lorenzo Imbesi)

Ph.D., Vienna University of Economics and Business, with thesis

Sommerer, Peter	Ph.D.	Single-market-multi-product companies – Evolution, organization and performance (with Oskar Grün)	Winter 2007
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Master of Applied Business Analytics, Technology Innovation Management, with project

Ndonguissop, Lauria	MABA	Using student feedback to create better online learning experiences	Fall 2021
Parasa, Meghana Devi	MABA	Delivering an AI component to SERS LMS by incorporating prediction models into it	Summer 2021
Gajjar, Rahul	MABA	Scenario-based teaching using the Moodle learning management system	Winter 2021
Marvaniya, Sagar Pradipbhai	MABA	Application of simulation and machine learning models to predict participants' course completion status for the SERS LMS	Winter 2021
Mohanty, Sandeep	MABA	Exploring the capabilities of analytics api embedded with machine learning models to predict students at risk	Winter 2021

Master of Entrepreneurship (M.Ent.), Technology Innovation Management, with project

Ogunsola, Akinkunmi	M.Ent.	An approach to improve performance when entering a foreign market	Winter 2021
Umeh, Charles Chima	M.Ent.	Applying assertions to assist a new company raise funds	Fall 2020
Yadav, Rahul	M.Ent.	Improving topic models: SERS data set	Fall 2020
Ren, Jie	M.Ent.	User incentive mechanisms on short video and live-streaming platforms	Fall 2019
Akinwumi, Adetoyese	M.Ent.	Using cybersecurity to differentiate an online marketplace	Fall 2018
Chimezie, Dean	M.Ent.	Cybersecurity safeguards to enhance the value of digital assets	Fall 2018
Sharma, Arushi	M.Ent.	Plan to enter international markets for ForwardHop	Winter 2018

Master of Engineering (M.Eng.), Technology Innovation Management, with project

Chukwuemeke, Uteh-Obuseh	M.Eng.	A mechanism for a finance application to improve transaction description	Fall 2021
Garry, Ibinabo	M.Eng.	Developing a replicable process to launch new global programs: SERS	Fall 2021
Hejazi, Khalid	M.Eng.	Design and implementation plan for a COIL course for SERS	Fall 2021
Mariappan, Priyanka	M.Eng.	Improve processes for production and consumption of topic models in learning environments	Fall 2021
Shanto Bhuiyan, Md Shakil Mahmud	M.Eng.	Support for horse race punters: prediction analytics	Fall 2021
Subramanian, Surya	M.Eng.	AI Framework and Chatbot for SERS LMS	Fall 2021
Bhargavi Gottapu, Vijaya Sri	M.Eng.	Process to produce assertions on how to scale companies early, rapidly, and securely	Summer 2021
Memon, Shehzore Ali	M.Eng.	Online sex education program: scenario-based learning and customer value propositions	Summer 2021
Amarneh, Ahmad	M.Eng.	Disrupting the facilities management services players in Canada by using the ecosystem based model	Winter 2021
Bashuri, Ermela	M.Eng.	Aids to support small- and mid-size enterprises engage with an ecosystem	Winter 2021
Chaskar, Aditi Arun	M.Eng.	Visualization of topic modelling results	Winter 2021
Donavalli, Lohit Kumar	M.Eng.	Defining the supplier's perspective of the value that artificial intelligence creates for its customers and investors	Winter 2021

Kurian Kochukaleekal, George	M.Eng.	Predicting individual project completion using machine learning	Winter 2021
Manakan, Kavya	M.Eng.	Machine learning model that predicts students' grades and certification completion status	Winter 2021
Nelson, John	M.Eng.	Assessing the performance of a new topic model: Application of the SERS topic model to restaurant enterprises	Winter 2021
Saravanan, Praveenraj	M.Eng.	Improving the support provided to TIM students completing their final year projects	Winter 2021
Thilagar, Abarna	M.Eng.	Tracking and monitoring student performance for final year projects using a dashboard	Winter 2021
Ibekwe, Charles	M.Eng.	A strategy to use online and offline channels to scale customer base	Fall 2019
Ramadan, Hams	M.Eng.	Stage gate process for a workload management system to scale business output: An action research approach	Fall 2019
Singh, Jyot	M.Eng.	Lead user identification for Autowit Solutions and designing automation solution for Autowit's first Canadian client	Fall 2019
Afolabi, Babatunde	M.Eng.	Mechanisms to scale ventures early and rapidly	Fall 2019
Daada, Oluwadabira	M.Eng.	Developing a cybersecurity-to-scale playbook	Summer 2019
Hoo, Andrew	M.Eng.	Improving "Grow Early, Rapidly and Securely" (GERS) Inventory of Principles with an Information and Communication Tool	Winter 2019

Gbadebo, Olusola	M.Eng.	Strategy to build the customer base of a transnational venture	Winter 2019
Oladipupo, Otusanya Oladimeji	M.Eng.	Cyber-risk management process for small businesses	Winter 2019
Obasa, Damilola Micheal	M.Eng.	Cyber resilience process for small businesses	Fall 2018
Danniyi, Harry	M.Eng.	Developing cybersecurity safeguards that protect an online marketplace for car dealers in Nigeria and Canada	Summer 2018
Arthur, Francis	M.Eng.	Transforming a service business into a solution sales business	Summer 2018
Antwi-Boasiako, Patrick	M.Eng.	Value proposition for IIoT use in equipment rental companies in Canada	Summer 2018
Ajayi, Abiodun	M.Eng.	Using glocalization principles and the resonating focus approach to develop Global EPIC's unique value proposition	Summer 2018
Chadha, Drishty	M.Eng.	Factors that lead to the success of cybersecurity startups	Winter 2018
Wang, Shuai	M.Eng.	Applying glocalization to define value propositions for keystone organizations	Winter 2018
Ani, Anthony C.	M.Eng.	A sales channel mix and customer engagement process to scale security operation centre's services	Fall 2017
Ezeigweneme,	M.Eng.	Applying glocalization principles to develop	Fall 2017

Obianuju		value propositions for Global EPIC	
Jafferjee, Abbas	M.Eng.	Developing cybersecurity safeguards that support attainment of ForwardHop's business objectives	Fall 2017
Montaque, Jermaine	M.Eng.	Using narratives of legitimacy and distinctiveness to develop a growth plan for Strikespot	Fall 2017
Obukonise, Akpevwe	M.Eng.	Create and promote awareness for Netify using social media and search engine optimization	Fall 2017
Bellamkonda, Sushmitha	M.Eng.	Mini Transnational	Summer 2017
Hassan, Mahmoud	M.Eng.	Applying theory of legitimacy to acquire resources required by a small technology firm to grow	Summer 2017
Singh, Sanmeet	M.Eng.	Growth plan for Nutrisens – a Canada-India-USA transnational technology startup	Summer 2017
Alvarenga Castillo, Aida	M.Eng.	Using arguments of legitimacy and distinctiveness to develop a growth pathway for the Global Cybersecurity Resource	Winter 2017
Brayden, Giard	M.Eng.	Growing a software solutions startup at the Canada-United States border	Winter 2017
Narayanasamy, Naveen	M.Eng.	Developing a sales channel mix and growth plan for an Indian new venture	Winter 2017
Ojebiyi, Ayodeji	M.Eng.	How to grow customer base and revenue of a new supplier	Winter 2017

Akligo, Justice	M.Eng.	Developing a Business Model for a Smart Card Technology Startup (CardsAfric)	Fall 2015
Sundaresan, Vignesh	M.Eng.	Sustaining growth at BitAccess	Summer 2015
Radhakrishnan, Subakumaran	M.Eng.	Business of drones in agriculture	Summer 2015
Horsfall, Frank	M.Eng.	Secure rapid prototyping environment for entrepreneurs	Fall 2014
Sherazi, Reza	M.Eng.	Botnet takedowns	Fall 2014
Zainaldin, Atta	M.Eng.	Internal Performance Measurement on BigBlueButton Servers	Fall 2011
Sandhu, Navjot	M.Eng.	Sovereign e-learning and management suite	Summer 2010
Ahmadi, Mahoor	M.Eng.	Design rules for keystones of healthy ecosystems	Summer 2009
Mahendran, Vijayendran	M.Eng.	Adoption of open carrier grade base platforms	Summer 2007
Kumarasamy, Thayaparana	M.Eng.	Development of open carrier grade base platforms	Summer 2007
Abaciouglu, Turgut	M.Eng.	B2B business models on the Internet	Fall 2002
Khan, Obaid	M.Eng.	An inventory of location based services	Fall 2002
Wong, Louis	M.Eng.	Knowledge management for global organizations	Winter 2002
Liu, Jingdong	M.Eng.	Team creativity in software development	Winter 2002

Lakhani, Faizal	M.Eng.	The race to 40; but when will it be needed?	Winter 2001
Barnett, Michael	M.Eng.	Knowledge generation: the competitive advantage	Summer 2001
Maheshwari, Arti	M.Eng.	An investigation of business responses to technological discontinuities	Fall 2000
Bassem, Ali	M.Eng.	Comparing telco-owned with non-telco owned Internet Service Providers	Summer 2000
Xie, Chong	M.Eng.	New product development: managing North American based R&D and China based marketing	Fall 1997
Chow, Edmond	M.Eng.	Software quality metrics	Summer 1997

Master of Management Studies, Sloan School of Management, MIT, with project

Curry, Ian	M.Sc.	Feature and architectural software development (with M. Cusumano)	Winter 1994
Litva, Paul	M.Sc.	External integration in the development of telecommunications systems (with M. Cusumano)	Winter 1993

ISS - Masters project

Hermansen, Edgar	ISS	Critical success factors of organizational learning to address the near continuous advancement of IS technology	Summer 1997
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COURSES AND RESULTS OF TEACHING EVALUATIONS – 2002-2019

Year	Term	Course	Course title	Average Q 1-12	Overall	Enrolment
2018- 2019	Fall	TIMG 5200	Technology	4.54	4.58	42
		BUSI 4810	Entrepreneurship			
2018- 2019	Winter	TIMG 5200	Technology	4.39	4.44	35
		BUSI 4810	Entrepreneurship			
			Practicum in Business			
2018- 2019	Winter	TIMG 5201	Technology and Wealth	4.67	4.72	41
2017- 2018	Fall	TIMG 5200	Technology	4.61	4.62	40
		BUSI 4810	Entrepreneurship			
2017- 2018	Winter	TIMG 5200	Technology	4.76	4.82	22
		BUSI 4810	Entrepreneurship			
			Practicum in Business			
2017- 2018	Winter	TIMG 5201	Technology and Wealth	4.24	4.13	34
2017	Fall	TIMG 5200	Technology	4.61	4.62	40
		BUSI 4810	Entrepreneurship			
2017	Winter	TIMG 5200	Technology	4.14	3.97	40
		BUSI 4810	Entrepreneurship			

			Practicum in Business			
2017	Winter	TIMG 5201	Technology and Wealth	4.39	4.18	37
2016	Fall	TIMG 5200	Technology	4.76	4.80	31
		BUSI 4810	Entrepreneurship			
			Practicum in Business			
2016	Summer	TIMG 5201	Technology and Wealth			
2016	Winter	TIMG 5002	Technology	4.72	4.83	44
		BUSI 4810	Entrepreneurship			
			Practicum in Business			
2015	Fall	TIMG 5002	Technology	4.89	4.83	30
		BUSI 4810	Entrepreneurship			
			Practicum in Business			
2015	Summer	TIMG 5103	Advanced Topics in Technology Innovation Management	4.27	3.67	33
2015	Winter	TIMG 5002	Technology Entrepreneurship	4.79	4.67	29
2014	Fall	TIMG 5002	Technology Entrepreneurship	4.61	4.61	45
2014	Fall	TIMG 5103	Advanced Topics in Technology Innovation Management	3.86	3.78	10
2014	Summer	TIMG 5104	Directed Studies in Technology Innovation Management			
2014	Summer	TIMG 5901	M.Eng. Project			
2014	Summer	TIMG 5909	M.A.Sc. Thesis			
2014	Summer	TIMG 5103	Advanced Topics in Technology Innovation	4.70	4.93	24

			Management			
2013	Fall	TIMG 5002	Technology	4.59	4.69	45
			Entrepreneurship			
2013	Summer	TIMG 5901	M.Eng. Project			
2013	Summer	TIMG 5909	M.A.Sc. Thesis			
2012	Fall	TTMG 5002	Telecommunications	4.78	4.92	22
			Technology			
2012	Summer	TTMG 5909	M.Eng. Project			
2012	Summer	TTMG 5103	Advanced Topics			
			Telecom Tech Mgmt			
2012	Summer	TTMG 5005	Management of	4.91	4.82	11
			Telecommunications			
			System Design			
2012	Winter	TTMG 5003	Issues in	4.80	4.82	18
			Telecommunications			
2011	Fall	TTMG 5104	Directed Studies in			
			Telecommunications			
			Technology			
			Management			
2011	Fall	TTMG 5103	Advanced Topics			
			Telecom Tech Mgmt			
2011	Summer	TTMG 5909	M.Eng. Project			
2011	Summer	TTMG 5901	M.A.Sc. Thesis			
2011	Summer	TTMG 5005	Management of			
			Telecommunications			
			System Design			
2011	Summer	TTMG 5001	Principles of			
			Management for			
			Engineers			

2011	Winter	TTMG 5003	Issues in Telecommunications	4.93	4.91	27
2011	Winter	TTMG 5101	Integrated Product Development	4.92	4.80	7
2010	Fall	TTMG 5104	Directed Studies in Technology Innovation Management			
2010	Fall	TTMG 5001	Principles of Management for Engineers	4.92	4.79	21
2010	Summer	TTMG 5101	Integrated Product Development			
2010	Winter	TTMG 5001	Principles of Management for Engineers			
2010	Winter	TTMG 5003	Issues in Telecommunications			
2009	Fall	TTMG 5001	Principles of Management for Engineers			
2009	Fall	TTMG 5003	Issues in Telecommunications			
2009	Summer	TTMG 5005	Management of Telecommunications System Design			
2009	Winter	TTMG 5001	Principles of Management for Engineers	4.34	4.50	6
2009	Winter	TTMG 5003	Issues in			

			Telecommunications			
2008	Fall	TTMG 5001	Principles of Management for Engineers			
2008	Fall	TTMG 5003	Issues in Telecommunications			
2007	Winter	TTMG 5101	Integrated Product Development			
2007	Winter	TTMG 5001	Principles of Management for Engineers			
2006	Fall	TTMG 5001	Principles of Management for Engineers			
2006	Summer					
2006	Winter	TTMG 5101	Integrated Product Development			
2005	Fall	TTMG 5001	Principles of Management for Engineers	4.83	4.91	11
2005	Summer					
2005	Winter	TTMG 5101	Integrated Product Development	4.96	5.0	9
2004	Fall	SYSC 4105	Engineering Management	4.83	4.79	93
2004	Fall	TTMG 5001	Principles of Management for Engineers	4.91	4.85	18
2004	Winter	TTMG 5101	Integrated Product			

			Development			
2003	Fall	SYSC 4105	Engineering	4.64	4.67	80
			Management			
2003	Fall	TTMG 5001	Principles of	4.65	4.62	13
			Management for			
			Engineers			
2003	Winter	TTMG 5101	Integrated Product			
			Development			
2003	Winter	TTMG 5005	Management of			
			Telecommunications			
			System Design			
2002	Fall	TTMG 5001	Principles of			
			Management for			
			Engineers			

DEGREES

Ph.D.	Business	1976	U of Cincinnati, USA
MBA	Finance	1972	U of Cincinnati, USA
M.Sc	Engineering	1969	U de Ingenieria, Peru

PERSONAL INFORMATION

Kyle K. Biggar, PhD
Assistant Professor, Institute of Biochemistry
Director, Carleton Functional Proteomics Facility
Carleton University
1125 Colonel By Dr.,
Ottawa, ON K1S 5B6

Tel: 613-520-2600 (ext. 4487)
Email: kyle_biggar@carleton.ca
Website: www.biggarlab.ca

EDUCATION

2008-2013 Doctorate of Philosophy, Biochemistry, Carleton University
2004-2008 Bachelor of Science, Joint Honours (First class) in Biology and Chemistry, St. Francis Xavier University

RECOGNITIONS

2021 Faculty of Science Research Excellence Award, Carleton University
2020 Faculty Graduate Mentoring Award, Carleton University
2017 Distinguished board member, Journal of Genomics, Proteomics & Bioinformatics
2016 John C. Polanyi Prize (Physiology and Medicine), Council of Ontario Universities
2015 Wall of Fame, School of Graduate and Postdoctoral Studies, Western University
2014 CAGS/Proquest-UMI Distinguished Dissertation Awards Nomination, Carleton University
2013 Governor General's Gold Medal (Academic), Carleton University
2013 University Medal, Carleton University
2008 President's Circle of Young Alumni, St. Francis Xavier University
2008 Innovation award, Gerald Schwartz School of Business, St. Francis Xavier University

EMPLOYMENT HISTORY

Sept. 2016 Assistant Professor, Institute of Biochemistry, Carleton University
2015-2016 Banting Postdoctoral fellow, University of Western Ontario, PI: Dr. Shawn S.C. Li
2013-2015 NSERC Postdoctoral fellow, University of Western Ontario, PI: Dr. Shawn S.C. Li

USER PROFILE

My research is primarily focused on the discovery and characterization of how proteins coordinate and work together to achieve a particular cellular function. This includes how proteins dynamically interact with each other, how enzymes select substrates, as well as working to define the changes in protein signaling, or regulatory networks, that accompany disease progression or resistance to treatment. Specifically, my research focuses on how lysine methylation regulates protein-protein interactions and function.

RESEARCH FUNDING HISTORY

- 2022 **NSERC Ideas2Innovation (I2I) grant.** Principle applicant. A novel strategy towards the computational development of peptide 'disruptors' to be used as molecular probes or therapeutic molecules.
Value: 20,000 CAD
- 2020 **CFI Exceptional Opportunities Fund – COVID19.** Co-applicant (25%; Drs. Alex Wong, Ashkan Golshani, Edana Cassol, Carleton University). Infrastructure for research on the molecular biology of SARS-CoV-2. CFI Project #41010.
Value: 333,286 CAD
- 2020-2022 **NSERC Alliance Grant.** Principle applicant. Systematic development of novel peptide-derived inhibitors for methyl-regulatory enzymes.
Value: 300,000 CAD
- 2020 **NSERC Alliance Grant.** Principle applicant. COVID-19: Annotating and controlling the inter-species protein interactome through the development of peptide inhibitors for SARS-CoV-2 and human protein interactions.
Value: 50,000 CAD
- 2020 **Carleton COVID-19 Rapid Response Research Grant.** Co-applicant (50%; Dr. Jim Green, Carleton University). Development of peptide inhibitors of SARS-CoV-2:Human protein interaction.
Value: 16,000 CAD
- 2019 **Carleton Development Grant.** Principle applicant. Discovery of novel lysine demethylase 3A substrates and development of a Lysine Demethylase Peptide Array Screening System (KDM-PASS).
Value: 10,000 CAD
- 2019-2021 **Mitacs Accelerate Grant.** Principle applicant. Systematic development of peptide-derived inhibitors for methyl-regulatory enzymes for the treatment of cancer.
Value: 180,000 CAD
- 2019 **NSERC Research Tools and Instruments Grant,** Co-applicant (Dr. William Willmore). Hypoxic workstation to conduct studies in low oxygen environments.
Value: 67,518 CAD
- 2018 **Banting Research Foundation.** Principle applicant. Identification of new substrates of the histone methyltransferase enzyme, SMYD3, and their implication in lung cancer development.
Value: 25,000 CAD
- 2018 **J.P. Bickell Foundation,** Linking SMYD3 lysine methylation to steroid metabolism in breast cancer development.
Value: 65,000 CAD
- 2017-2019 **Mitacs Accelerate Grant.** Principle applicant. Systematic development of novel peptide-derived therapeutics for the treatment of breast cancer.
Value: 90,000 CAD
- 2016-2022 **NSERC Discovery Grant.** Principle applicant. Discovery and functional characterization of the hypoxia-responsive methyllysine proteome.
Value: 190,000 CAD

Research Funding Applied

- 2022-2027 **CIHR Project Grant.** Principle applicant. Revealing the mechanism of KDM5C-mediated drug resistance using a novel KDM5C inhibitor that exhibits anticancer activity, overcoming cisplatin-resistance in non-small cell lung cancer.
Value: 1,050,000 CAD

ACADEMIC SCHOLARSHIP FUNDING

- 2015-2016 **Banting Postdoctoral Fellowship.** The discovery of dynamic changes in the methyllysine proteome in response to cellular hypoxia. Value: 140,000 CAD
- 2015-2017 **Postdoctoral Fellowship (CIHR-PDF).** Therapeutic potential of targeting DNAPKs lysine methylation to increase sensitivity to chemotherapeutic-induced DNA damage in breast cancer, Canadian Institutes of Health Research. Value: 56,667 CAD (*Refusal of Award*)
- 2013-2015 **Postdoctoral Fellowship (NSERC-PDF).** Role of SETD8 lysine methyltransferase in DNA double strand break repair, Natural Sciences and Engineering Research Council of Canada. Value: 80,000 CAD
- 2010-2013 **Canadian Graduate Scholarship (NSERC-CGS-D3).** Mechanisms of cell cycle arrest in response to anoxia in the red-eared slider turtle, *Trachemys scripta elegans*, Natural Sciences and Engineering Research Council of Canada. Value: 105,000 CAD
- 2010-2011 **Ontario Graduate Scholarship (OGS).** Cell cycle response to anoxia in a tolerant vertebrate, the red-eared slider turtle (*Trachemys scripta elegans*), Government of Ontario. Value: 15,000 CAD (*Refusal of Award*).
- 2009-2010 **Canadian Graduate Scholarship (NSERC-CGS-M).** Regulation of E2F1 transcription factor activity in response to anoxia in the red eared slider turtle, *Trachemys scripta elegans*, Natural Sciences and Engineering Research Council of Canada. Value: 18,000 CAD
- 2009-2010 **Ontario Graduate Scholarship (OGS).** Regulation of E2F and Retinoblastoma proteins in the regulation of the cell cycle during anoxia in the red-eared slider turtle, *Trachemys scripta elegans*, Government of Ontario. Value: 15,000 CAD (*Refusal of Award*)

ACTIVITIES

Editorial activities

I am actively involved in the growth and development of the journal "**Genomics, Proteomics & Bioinformatics**" (impact factor 7.501), such as contributing submissions, handling review process for submissions as an editor, reviewing submissions, inviting submissions and help to organize special issues. In 2017, I received an editorial board distinction for my editorial efforts on well-received co-edited special issue on "Adaptations to extreme environments". I am also on the editorial board of the journal "**Comparative Biochemistry and Physiology**" (IF 2.219), and where I handle the review process for 6-8 submissions as an editor per year.

Student/postdoctoral supervision

Postdoctoral

- 2020-pres. **Valentina Lukinovic, Ph.D.**, Carleton University
Development of peptide inhibitors for the METTL13 lysine methyltransferase.
- 2017-2021. **Hemanta Adhikary, Ph.D.**, Carleton University
Systematic development of novel peptide-derived therapeutics for the treatment of breast cancer

Graduate (Ph.D. candidate)

- 2022-pres. **Ella De Nicola, M.Sc.**, Carleton University
- 2019-pres. **Nashira Grigg, B.Sc.**, Carleton University

- Identification of genetic signatures predicting EP4 drug-response in the NCI60 cancer panel.
- 2019-pres. **Francois Charih, M.Sc.**, Carleton University (Co-supervised with Dr. Jim Green)
In silico prediction and cellular validation of the methyllysine proteome.
- 2018-pres. **Anand Chopra, B.Sc.**, Carleton University (Co-supervised with Dr. Bill Willmore)
Annotation of the Hypoxia-responsive KDM3A substrate network.
- 2017-pres. **Matt Hoekstra, B.Sc.**, Carleton University (Co-supervised with Dr. Bruce McKay)
Substrate specificity of the lysine demethylates enzyme, KDM5A.

Graduate (M.Sc. candidate)

- 2022-pres. **Feras Balbous (incoming), B.Sc.**, Carleton University
Developing viral-vector based delivery systems for therapeutic peptides.
- 2022-pres. **Mullen Boulter (incoming), B.Sc.**, Carleton University
Using machine learning to discover novel substrates of G9a methyltransferase.
- 2022-pres. **Ruofan Wang (incoming), B.Sc.**, Carleton University
Characterization of a novel SMYD3 inhibitor to study protein biology.
- 2020-pres. **Ali Shukri, B.Sc.**, Carleton University
Systematic development of peptide inhibitors of beta-lactamase enzymes as novel anti-microbial peptides.
- 2018-2019. **Viktoria Xing, B.Sc.**, Carleton University (Co-supervised with Dr. Shawn Hayley)
Exploring the function of the FMRP methyl-binding domain in an animal model of Parkinson's disease.
- 2017-2019 **Ryan Collins, B.Sc.**, Carleton University
The role of MLL4-induced methylation of 53BP1 and its impact in DNA damage repair.
- 2017 **Kristin Frensemeier, B.Sc.**, Visiting researcher (Freie Universitaet Berlin)
Investigation of Set8-induced methylation of iNOS and its role in nitric oxide metabolism.

Undergraduate

- 2022-pres. **Luke McCaskill (BIOC4908)**, Carleton University
Development of a novel array-based KDM activity assay: KDM-pass
- 2022-pres. **Emma Simpson (USRA)**, Carleton University
Influence of SMYD3 methylation on Rabin8 GTPase activity
- 2021-pres. **Feras Balbous (BIOC4908)**, Carleton University
Uncovering Substrates of Lysine Methyltransferase G9a by Shared-Specificity Analysis & Lysine-Oriented Peptide Library
- 2021-pres. **Per Law (BIOC4901)**, Carleton University
An Attractive Avenue of Peptide-Based Therapeutics and Its Counterpart. Traditional Small Molecules.
- 2021-2022 **Yunkun Ma (BIOC4907)**, Carleton University
Identification of related peptides for Lysine Methyltransferase SETD8
- 2021-2022 **Faith Her (BIOC4908)**, Carleton University
Expanding the COMPASS Complex Interaction Network: Reconstituting the COMPASS Core Complex to Investigate Novel Non-Histone Substrates
- 2021-2022 **Diana Svyst (BIOC4908)**, Carleton University
Analysis of SET7/9 specificity towards the predicted substrates using K-OPL and Permutation peptide array approaches.
- 2020-pres. **Ruofan Wang (BIOC4908)**, Carleton University

- 2020-2021 Using KDM-PASS to predict the specificity of the lysine demethylase, LSD1.
Jiashu Wang (BIOL4908), Carleton University
Prediction of binding peptides through the use of the protein interaction predictor, SPRINT.
- 2018-2021 **Emine Topcu Can (Volunteer)**, Carleton University
Development of software tools for the efficient analysis of peptide arrays and sequence motifs.
- 2016-2021 **Justin Connolly (volunteer)**, Carleton University
Network mapping of lysine methylated proteins based on protein interaction.
- 2018-2021 **Abhi Kurusetty (BIOL2400)**, Carleton University
In vitro characterization of a new SETD8 inhibitor peptide.
- 2018-2020 **Lucas DiRienzo (DSRI summer research)**, Carleton University
Role of SMYD3 in regulating SOS1/2 guanine exchange activity *in vitro*.
- 2019 **Haikun Liu (BIOL4908)**, Carleton University
Cellular influence of KDM5 activity and p53 function.
- 2017-2019 **Elyn Rowe (BIOL4908)**, Carleton University
In vitro identification of SMYD3 lysine methylation substrates in models of human cancer
- 2016-2019 **Mitchell Jeffs (BIOC4908)**, Carleton University
Protein expression optimization of the Set8 methyltransferase protein for substrate analysis studies.
- 2016-2019 **Le Tri Dung (BIOC4908)**, Carleton University
Functional characterization of antifreeze proteins, FR10 and DRP10 as potential cyroprotectants.
- 2018-2019 **Zena Mankal (BIOC4908)**, Carleton University
Exploration of L3MBTL1 substrate binding and the methyl-interactome.
- 2017 **Yukari Seko (BIOL4908)**, Carleton University
Evaluation of novel long non-coding RNA in response to low oxygen tension in human breast cancer.
- 2017 **Urvi Bhojoo (CUROP summer research)**, Carleton University
Systematic identification of substrate selection of yeast Set1 using peptide array and genetic deletion arrays
- 2017-2018 **Viktoria Xing (NSERC USRA)**, Carleton University
Development of a new lysine demethylation assay to systematically study KDM substrate preference
- 2017 **Gabriela Bernal Astrain (volunteer)**, Carleton University
Role of Set8-induced iNOS methylation in dimer formation and activity during periods of cellular hypoxia
- 2016 **Leanne Martin (BIOC4908)**, Carleton University
Isolation and characterization of the yeast Set1/COMPASS protein complex for *in vitro* substrate selection analysis.
- 2016 **Chathumi De Siliva (BIOC4908)**, Carleton University
Quantitative analysis of lysine methyltransferase gene expression in response to cellular hypoxia.
- 2016 **Kristina Stanistic (volunteer)**, Carleton University
Quantitative analysis of lysine demethylase gene expression in response to cellular hypoxia.
- 2016-2017 **Tim Wilson (volunteer)**, Carleton University
Analysis of anti-freeze activity of the novel protein, FR10.

- 2016-2017 **Orneala Bakos (BIOC4908)**, Carleton University
Characterization of PDI proteins as a new Set8 methyltransferase substrate.
- 2014-2016 **Zhuoran Wu (Honours)**, Western University
Influence of SETD7-induced DNAPKcs methylation on androgen resistance in prostate cancer.
- 2013-2014 **Zaccary Alperstein (NSERC USRA)**, Western University
Biochemical characterization of a newly developed SETD8 methyltransferase inhibitor in breast cancer.

Outreach activities

- 2020 **Biggar, K.K.*** Therapeutic anti-cancer potential of a novel KDM5C inhibitor. Science Cafe, Ottawa Public Library (virtual) (2020-08-05)
- 2020 **Biggar, K.K. and Green, J.** Interview. CBC radio (2020-05-12)
- 2019 **Science Professor Jeopardy.** Contestant. Carleton Science Student Success Centre.
- 2018 **Biggar, K.K.*** Understanding how proteins communicate and how this information drives the advancement of patient-driven medicine. Science Cafe, Ottawa Public Library (2018-02-28)
- 2018-pres. **Carleton Therapy Dogs.** Handler and volunteer through the Carleton Science Student Success Centre. Office of the Vice-President (Students and Enrolment).

Committee memberships

Administrative

- 2020-pres. **Member of the Student Mental Health Advisory Committee (Student Affairs)**, Carleton University
- 2020-pres. **Member of student recruitment and retention committee (Biochemistry)**, Carleton University
*Committee Chair, 2021-2022
- 2020-pres. **Member of the Faculty Health and Safety committee (Biochemistry)**, Carleton University
- 2019-pres. **Member of the Faculty of Science radiation safety committee (Faculty of Science)**, Carleton University
- 2019-pres. **Member of the planning, priorities, and space committee (Biology)**, Carleton University
- 2016-2019 **Member of student recruitment and retention committee (Biology)**, Carleton University
*Committee Chair, 2017-2019
- 2016-2019 **Member of the tenure and promotion committee (Biochemistry)**, Carleton University
- 2017 **Member of the Nesbitt building renovation committee (Biology)**, Carleton University
- 2011-2013 **Senate advisory committee - Graduate student representative, Honourary degree selection committee**, Carleton University

Graduate student committees

2022-2026

Tighe Bloskie (Ph.D. candidate; Storey lab) - Thesis advisory committee

2021-2023

Abraham Awada (M.Sc. candidate; McKay lab) – Thesis advisory committee

2020-2022

Kyle Van Allen (Ph.D. candidate; Bruin lab) - Thesis advisory committee

2019-2021

Serita Fudlosid (M.Sc. candidate; MacMillan lab) – Thesis advisory committee

Anchal Varma (M.Sc. candidate; Storey lab) – Thesis advisory committee

Tighe Bloskie (M.Sc. candidate; Storey lab) - Thesis advisory committee

2018-2022

Chunyu Lu (Ph.D. candidate; Trudeau lab) – External advisor

2017-2019

Mary Gwen Miltenburg (M.Sc. candidate; Subramaniam lab) – Thesis advisory committee

2017-2022

Rebecca Kalinger (Ph.D. candidate; Rowland lab) – Thesis advisory committee

2016-2018

Jared Browning (M.Sc. candidate; MacKay lab) – Thesis advisory committee

Thesis evaluation committees**2021**

Tighe Bloskie (M.Sc. defence; Storey lab) - Committee member

Anchal Varma (Ph.D. comprehensive exam; Storey lab) – Committee member

2020

Matthew Eason (Ph.D. defense; Chica lab, University of Ottawa) – External examiner

Maryam Hajikarimlou (Ph.D. defense; Golshani lab) – Internal examiner

2019

Chris Dedek (M.Sc. defence; Hildebrand lab) – Internal examiner

Noa Gang (Ph.D. candidate; Bruin lab) – Qualifying exam chair

Mallory Waters (M.Sc. defence; Tsopmo lab) – Internal examiner

Ashley Thompson (Ph.D. defence; Hayley lab) – Internal examiner

Erin Macfarlane (M.Sc. defence; Bruin lab) - Internal examiner

2018

Kyle Farmer (Ph.D. defence; Hayley lab) – Internal examiner

Joanna Orzechowska (M.Sc. defence; Aitken lab) – Internal examiner

Alex Watts (Ph.D. comprehensive exam; Storey lab) – Internal examiner

Chunyu Lu (Ph.D. comprehensive exam; Trudeau lab) – External examiner

2017

Jeffery Landrigan (M.Sc. candidate; Hayley lab) – Internal examiner

Adenike Shittu (M.Sc. candidate; Tsopmo lab) – Internal examiner

Kelly Fulton (M.Sc. candidate; Smith lab) – Internal examiner

James Markell (M.Sc. candidate; Wong lab) – Chair of defence

Christopher Mattice (Ph.D. candidate; DeRosa lab) – Internal examiner

2016

Annamaria Ruscito (Ph.D. candidate, DeRosa lab) – Internal examiner

Sam Williamson (M.Sc. candidate; Storey lab) – Internal examiner

Kim Birnie-Gauvin (M.Sc. candidate; Cooke lab) – Internal examiner

Course Instruction**2021-2022**

BIOC4001 - Methods in Biochemistry. This is a fourth-year course exploring select research methods used to study biological macromolecules, their interactions, and their use as tools.

Student enrollment – 15; **Teaching evaluation** - *unavailable*

BIOC3202 - Methods in Biochemistry. This is a third-year course exploring select research biophysical techniques and their application to the biochemical sciences.

Student enrollment – 47; **Teaching evaluation** - *unavailable (COVID19)*

BIOC4908 – Honours Research Thesis in Biochemistry

Student enrollment – 3

BIOC4907 – Honours Research Thesis in Biochemistry

Student enrollment – 1

BIOC4901 – Selected Topics in Biochemistry

Per Law - An Attractive Avenue of Peptide-Based Therapeutics and Its Counterpart. Traditional Small Molecules.

2020-2021

BIOC3202 - Methods in Biochemistry. This is a third-year course exploring select research biophysical techniques and their application to the biochemical sciences.

Student enrollment – 54; **Teaching evaluation** - *unavailable (COVID19)*

BIOC4908 – Honours Research Thesis in Biochemistry

Student enrollment - 1

2019-2020

BIOC3400 – Independent Research II

Emine Topcu Can – Development of software tools for the efficient analysis of peptide arrays and sequence motifs.

BIOC3202 - Methods in Biochemistry. This is a third-year course exploring select research biophysical techniques and their application to the biochemical sciences.

Student enrollment – 52; **Teaching evaluation** - 4.89/5

BIOC4001 - Methods in Biochemistry. This is a fourth-year course exploring select research methods used to study biological macromolecules, their interactions, and their use as tools.

Student enrollment – 12; **Teaching evaluation** – *unavailable (COVID19)*

BIOL4908 – Honours Research Thesis in Biology

Student enrollment – 2

BIOC4901 – Selected Topics in Biochemistry

Haikun Liu - Role of lysine methylation in DNA damage signaling.

BIOL5004 – Advances in Applied Biochemistry. This is a graduate level course in practical biochemistry. The course provides practical biochemistry experience in modern techniques, such as surface plasmon resonance and mass spectrometry.

Student enrollment – 11; **Teaching evaluation** – 4.76/5

2018-2019

BIOC4001 - Methods in Biochemistry. This is a fourth-year course exploring select research methods used to study biological macromolecules, their interactions, and their use as tools.

Student enrollment – 16; **Teaching evaluation** – 4.45/5

BIOC3202 - Methods in Biochemistry. This is a third-year course exploring select research biophysical techniques and their application to the biochemical sciences.

Student enrollment – 33; **Teaching evaluation** - 4.80/5

BIOC4908 – Honours Research Thesis

Student enrollment – 3

BIOL4908 – Honours Research Thesis

Student enrollment - 1

BIOC4901 – Selected Topics in Biochemistry

Nashira Grigg - Development of a computational cluster for transcriptome sample analysis

BIOC2400 – Independent Research I

Abhi Kurusetty - Characterization of a novel inhibitor, KBL20, on SETD8 enzyme activity

Lucas DiRienzo - Development of a fluorescent demethylation assay using peptide array

2017-2018

BIOC4001 - Methods in Biochemistry. This is a fourth year course exploring select research methods used to study biological macromolecules, their interactions, and their use as tools.

Student enrollment – 16; **Teaching evaluation** - 4.84/5

BIOC3202 - Methods in Biochemistry. This is a third year course exploring select research biophysical techniques and their application to the biochemical sciences.

Student enrollment – 43; **Teaching evaluation** - 4.84/5

BIOC2400 – Independent Research I

Elyn Rowe – Establishment of a stable SMYD3 knockdown cell line in HEK293 cells

Justin Connolly – Identification of FXR protein binding partners through in silico analysis

Viktoria Xing – Role of lysine methylation in neurological disorders: a meta-analysis

BIOL5501 – Directed Studies

Jessica Mattice – The role of SMYD3 in the heat shock response of HEK293 cells

BIOC4908 – Honours Research Thesis

Student enrollment – 2

BIOC4901 – Selected Topics in Biochemistry

Orneala Bakos – Perspectives into the role of lysine methylation in cellular adaptation to hypoxia: a new role for 2-oxoglutarate dependant lysine demethylases enzymes.

Kristina Stanstic - Quantitative analysis of lysine demethylase gene expression in response to cellular hypoxia.

Akram Abolbaghaei - Analysis of the methylation enrichment within nuclear localization motifs and insight into post-translational competition

2016-2017

BIOC4001 – Methods in Biochemistry. This is a fourth-year course exploring select research methods used to study biological macromolecules, their interactions, and their use as tools.

Student enrollment – 12; **Teaching evaluation** - 4.82/5

BIOC4908 – Honours Research Thesis

Student enrollment – 1

BIOC4901 – Selected Topics in Biochemistry

Leanne Martin – An overview of methylation as a protein post-translational modification and introduction to the methyltransferase MLL and its role in Human disease.

BIOC2400 – Independent Research I

Le Tri Dung – Cloning and protein purification of a novel freeze-responsive protein, FR10.

BIOL5501 – Directed Studies

Hanane Hadj-Moussa – Identification of novel amphibian microRNAs from small RNA sequencing data.

Conference Organization

2016 **Epiccypher 2016 – Session Chair.** Coordinating invited research presentations on chromatin biology. The session was well received and attended by over 100 international researchers.

2015 **London Health Research Day (LHRD) – Session Chair.** Facilitating and coordinating a panel discussion focused on looking for careers outside of the

academic environment. The session was well received and attended by 200+ students.

- 2010 Ottawa-Carleton Institute of Biology (OCIB) Symposium – Event Co-Chair.** I co-chaired a team to organize a research symposium that showcases graduate-level research at the University of Ottawa and Carleton University.

CONTRIBUTIONS

Presentations (* indicates presenting author)

Invited conference presentations and seminars

- 2019 **Biggar, K.K.*** Single step purification of intrinsic protein complexes for functional characterization in *Saccharomyces cerevisiae* using regenerable Calmodulin resin: A story of the ySet1C enzymes-substrate network. PepTalk - The protein Science Week, San Diego California (2019-01-15).
- 2018 **Biggar, K.K.*** Harnessing protein communication for the development of targeted disease therapeutics. Life Sciences Day 2.0, Carleton University (2018-05-30)
- 2018 **Biggar, K.K.*** Systematic exploration of the methyllysine enzyme-substrate network using combined array and bioinformatic approaches. Departmental seminar. Ben Gurion University of the Negev (2018-05-03)
- 2016 **Biggar, K.K.*** Biological implications of the methyllysine proteome: discovery to characterization. Departmental seminar. Department of Molecular Genetics, University of Toronto (2016-08-05)
- 2016 **Biggar, K.K.*** Systematic identification and functional characterization of the methyllysine proteome in health and disease. Departmental seminar. Structural Genomics Consortium, University of Toronto (2016-04-14)
- 2016 **Biggar, K.K.*** Careers in Academia. Discussion panelist. London Health Research Day, Western University (2016-03-29)
- 2016 **Biggar, K.K.*** Discovering the methyllysine proteome & its biological implications. Biochemistry Forum. Schulich School of Medicine & Dentistry, Department of Biochemistry, University of Western Ontario (2016-02-26)
- 2015 **Biggar, K.K.*** Biology Seminar Series. Exploring the role of microRNAs in the survival of extreme environmental stress, Department of Biology, University of Western Ontario (2015-10-02)
- 2015 **Biggar, K.K.***, Huang, M. and Li, S.S.C. Proteomic analysis of methyllysine modified proteins using tandem enrichment by modular methyl-binding domains. 98th Canadian Chemistry Conference, Ottawa, ON.
- 2014 **Biggar, K.K.***, Lui, H., Wei, R., and Li, S.S.C. A Set8 peptide-based inhibitor for Numb-targeted cancer therapy. Chemical probes for interrogating protein-protein interactions in disease states, Second Annual Meeting, Mount Sinai Hospital, Toronto, ON.
- 2012 **Biggar, K.K.***, and Storey, K.B. MicroRNA regulation of cyclin D1 during anoxia stress in *Trachemys scripta elegans*. 9th Annual Ottawa-Carleton Institute of Biology Research Conference, University of Ottawa, Ottawa, ON.
- 2012 **Biggar, K.K.*** Protein regulation in natural models of environmental stress tolerance. Biochemistry Forum. Schulich School of Medicine & Dentistry, Department of Biochemistry, University of Western Ontario (2012-11-13)
- 2011 **Biggar, K.K.***, and Storey, K.B. Novel mechanisms of cell cycle regulation during anoxic stress in an anoxic turtle, *Trachemys scripta elegans*. 8th Annual Ottawa-Carleton Institute of Biology Research Conference, Carleton University, Ottawa, ON.

- 2010 **Biggar, K.K.***, and Storey, K.B. MicroRNA regulation of cyclin D1 during anoxic stress in an anoxic turtle, *Trachemys scripta elegans*. 5th Annual Canadian Society for Life Science Research Conference, McGill University, Montreal, Que.

Conference presentations (HQP underlined)

41. Hoekstra, M.* and **Biggar, K.K.** (2022) KDM5 family substrate preference and identification of potential substrates. Ottawa-Carleton Institute of Biology Symposium, Ottawa ON, Canada. Virtual meeting. Poster presentation.
40. Shukri, A.*, Wong, A., and **Biggar, K.K.** (2022) A systematic approach to developing new Antimicrobial Peptides. Ottawa-Carleton Institute of Biology Symposium, Ottawa ON, Canada. Virtual meeting. Oral presentation.
39. Chopra, A.*, Willmore, B., and **Biggar, K.K.** (2022) Insights into a cancer-target demethylase: substrate discovery avenues for lysine demethylase 3A. Ottawa-Carleton Institute of Biology Symposium, Ottawa ON, Canada. Virtual meeting. Oral presentation.
38. Hoekstra, M.* and **Biggar, K.K.** (2021) KDM5 family substrate preference and identification of potential substrates. 7th Annual Canadian Conference on Epigenetics. Virtual meeting. Poster presentation.
37. Adhikary, H.* and **Biggar, K.K.** (2020) Systematic development and characterization of highly specific KDM5C inhibitor: A novel potential therapeutic weapon against cancer. American Association for Cancer Research (AACR). Virtual meeting. Poster presentation.
35. Chopra, A.*, Willmore, W. and **Biggar, K.K.** (2020) Systematic discovery of novel KDM3A substrates: First permutation-based exploration of the substrate specificity of an iron(II)/2-oxoglutarate-dependent dioxygenase. Hypoxia: Molecules, Mechanisms and Disease. Keystone CO, USA. Poster presentation.
36. Adhikary, H., Hoekstra, M., MacKay, B., and **Biggar, K.K.*** (2019) The systematic development and characterization of cell active KDM5C-specific peptide inhibitors. The Canadian Cancer Research Conference, Ottawa ON. Poster presentation.
35. Chopra, A.*, Willmore, W. and **Biggar, K.K.** (2020) Systematic discovery of novel KDM3A substrates: First permutation-based exploration of the substrate specificity of an iron(II)/2-oxoglutarate-dependent dioxygenase. Hypoxia: Molecules, Mechanisms and Disease. Keystone CO, USA. Poster presentation.
34. Chopra, A.*, Willmore, W. and **Biggar, K.K.** (2019) Quantification of proteins in solution *via* ultraviolet-induced reaction of 2,2,2-trichloroethanol with tryptophan and tyrosine residues. Ottawa-Carleton Institute of Biology Symposium, Ottawa ON, Canada. Poster presentation.
33. Collins, R.* and **Biggar, K.K.** (2019) Exploration of the MLL4-regulated methyl lysine proteome. Life Sciences Conference, Carleton University, Ottawa ON, Canada. Poster presentation.
33. Charih, F.*, Green, J. and **Biggar, K.K.** (2018) MethylSight: a computational approach to the elucidation of the methyllysine proteome. 21st annual Chemistry and Biochemistry Graduate Research Conference, Concordia University, Montreal QC, Canada. Oral presentation.
32. Chopra, A.*, Willmore, W. and **Biggar, K.K.** (2018) Quantification of proteins in solution *via* ultraviolet-induced reaction of 2,2,2-trichloroethanol with tryptophan and tyrosine residues. 21st annual Chemistry and Biochemistry Graduate Research Conference, Concordia University, Montreal QC, Canada. Oral presentation.

31. Hoekstra, M.* and **Biggar, K.K.** (2018) Development of an enzyme activity assay to study substrate selection of KDM5/JARID1 family of lysine-specific histone demethylases. 21st annual Chemistry and Biochemistry Graduate Research Conference, Concordia University, Montreal QC, Canada. Oral presentation.
30. Collins, R.* and **Biggar, K.K.** (2018) Non-histone substrates for lysine methyltransferases: Investigating MLL4-dependant methylation of 53BP1 and Cfp1. 21st annual Chemistry and Biochemistry Graduate Research Conference, Concordia University, Montreal QC, Canada. Oral presentation.
29. **Biggar, K.K.*** and Li, S.S.C. (2017) Discovery and characterization of the lysine methyltransferase-substrate network. 16th CIHR New Principle Investigators Meeting, Montreal QC, Canada. Poster presentation.
28. **Biggar, K.K.*** and Li, S.S.C. (2016) Harnessing lysine methylation for novel cancer therapy: Design of a SETD8 inhibitor to sensitize breast cancer to chemotherapy. EpiCypher 2016, San Juan, Puerto Rico. Poster presentation.
27. Malkani, N.*, **Biggar, K.K.**, Li, S.S.C., Jansson, T. and Gupta, M. (2015) IGFBP-hyperphosphorylation in response to leucine deprivation is mediated by the AAR pathway. Society for Reproductive Investigation 62nd Annual Scientific Meeting, San Fransisco, California, USA. Poster presentation.
26. **Biggar, K.K.***, Liu, H. and Li, S.S.C. (2015) Harnessing lysine methylation for novel cancer therapy: Design of a SETD8 inhibitor to sensitize breast cancer to chemotherapy. London Health Research Day, London, ON, Canada. Poster presentation.
25. Huang, M.*, **Biggar, K.K.** and Li, S.S.C. (2015) Proteomic analysis of methyllysine proteome using tandem enrichment by modular methyl-binding domains. London Health Research Day, London, ON, Canada. Poster presentation.
24. **Biggar, K.K.** and Storey, K.B.* (2014) Life in the slow lane: microRNA regulation of cyclin D1 during anoxic stress in *Trachemys scripta elegans*. Society for Experimental Biology, Manchester University, Manchester, UK. Poster presentation
23. **Biggar, K.K.** and Storey, K.B.* (2014) Changes in the Rb-E2F pathway during anoxic stress of an anoxia tolerant turtle. American Aging Association, San Antonio, Texas. Poster presentation
22. **Biggar, K.K.** and Storey, K.B.* (2014) Life in the slow lane: microRNA regulation of cyclin D1 during anoxic stress in *Trachemys scripta elegans*. American Aging Association, San Antonio, Texas. Poster presentation
21. **Biggar, K.K.**, Dawson, N.J. and Storey, K.B.* (2014) Real-time protein unfolding: A method for determining the kinetics of native protein denaturation using a quantitative real-time thermocycler. ACCryo2014, Key Largo, Florida. Poster presentation
20. **Biggar, K.K.** and Storey, K.B.* (2014) Life in the slow lane: microRNA regulation of cyclin D1 during anoxic stress in *Trachemys scripta elegans*. ACCryo2014, Key Largo, Florida. Poster presentation
19. **Biggar, K.K.***, Dawson, N. and Storey, K.B (2013) Novel measurements of the kinetics of native denaturation using an qRT-PCR machine and Sypro Orange fluorescent dye. 10th Annual Ottawa-Carleton Institute of Biology Research Conference, Carleton University, Ottawa, ON. Poster presentation

Patents

1. **Biggar, K.K.**, Adhikary, H., and Hoekstra, M. Peptide-derived therapeutics targeting KDM5C for the treatment of cancer. US. Provisional Patent Application No. 62/818,793 (Filed: 03/15/2019).

2. **Biggar, K.K.**, and Adhikary, H. Peptide-derived therapeutics targeting SETD8 for the treatment of cancer. US. Provisional Patent Application No. 62/818,251 (Filed: 03/14/2019).

Interview and media relations

- 2021 Funding from Canada Foundation for Innovation to provide infrastructure for the study of the molecular biology of the SARS-CoV-2 virus at Carleton - **Carleton University** (2021-01-05)
- 2020 Contributing to curing COVID: two Carleton labs join forces to add to international race to solving COVID-19 pandemic – **Carleton University** (2020-06-11)
- 2017 Snail's DNA secrets unlocked in fight against river disease – **BBC** (2017-05-16)
- 2016 Eye on the prize: Young scientists making their mark – **Ottawa Citizen** (2016-12-24)
- 2016 Fighting Cancer – **Carleton University** (2016-11-15)
- 2015 Always On: Sustaining proliferative signaling in cancer – **Hallmarks of Cancer Series, Londoner** (2015-04-16)
- 2015 Advancing the science of protein modifications – **Western University** (2015-01-12)
- 2014 Inspired by Discovery – **Western University** (2014-11-19)
- 2013 Summerside man pushing scientific boundaries – **Journal Pioneer** (2013-11-22)
- 2013 Governor General's medalist credits Carleton for opportunities – **Carleton Now**(2013-11-08)
- 2013 Turtle can freeze solid and survive, and we have those same genes – **LA Times** (2013-04-10)
- 2013 Getting under the shell of the turtle genome – **Science Daily** (2013-03-28)
- 2010 Frozen frogs thaw out and hop away – **Globe and Mail** (2010-02-05)
- 2010 Using natural models of anoxia tolerance to explore mechanisms of cell cycle regulation for hypoxic tumors – **Ottawa Cancer Society** (2010-02-01)

Publications and citations

h-index = 28; i10-index = 53; Citations = 2753

Accepted manuscripts (HQP underlined)

92. Rosario, F.J., Chopra, A., Powell, T.L., **Biggar, K.K.**, Gupta, M.B., Jansson, T. (2022). Placental remote control of fetal metabolism: Trophoblast mTOR signaling regulates liver IGF1 phosphorylation and IGF-1 bioavailability PKA. **J. Cell Comm. Signal.** *in press.*
91. **Biggar, K.K.**, Li, C., Nathanielsz, P., Gupta, M.B., Jansson, T. (2022). Increased co-localization and interaction between decidual protein kinase A and insulin-like growth factor binding protein-1 in intrauterine growth restriction. **J. Histo. Chem.** *in press.*
90. Admoni-Elisha, L., Feldman, M., Elbaz, T., Chopra, A., Shapira, G., Bedford, M., Fry, C.J., Shomron, N., **Biggar, K.K.**, Levy, D. (2022). TWIST1 methylation by SETD6 selectively antagonizes LINC-PINT expression in Glioma. **Nucl. Acids Res.** *in press.*
89. Chopra A., Willmore, W., **Biggar, K.K.** (2022). Insights into a cancer-target demethylase: substrate prediction through systematic specificity analysis for KDM3A. **Biomolecules** 12(5), 641.
88. Gregory, B., et al. (2022) The cross-disciplinary study of post-transcriptional and post-translational modifications: Defining the commonalities of interests, approaches, and future directions. **Nucl. Acids Res.** *in press.*
87. Hoekstra, M., Chopra, A., **Biggar, K.K.** (2022). Evaluation of jumonji C lysine demethylase substrate preference to guide identification of in vitro substrates. **Star Protocols** 3(2), 101271.

86. Charih, F., **Biggar, K.K.***, Green, J.* (2022). Assessing sequence-based protein-protein interaction predictors for use in therapeutic peptide engineering. ***Sci Rep. in press.***
85. Hoekstra, M., **Biggar, K.K.** (2021). Identification of in vitro JMJD lysine demethylase candidate substrates via systematic determination of substrate preference. ***Anal. Biochem.*** 633, 114429.
84. Chen, A.W., **Biggar, K.K.**, Nygard, K., Singal, S., Zhao, T., Li, C., Nathanielsz, P.W., Jansson, T., Gupta, M.B. (2021). IGF1P-1 hyperphosphorylation in response to nutrient deprivation is mediated by activation of protein kinase C alpha (PKCa). ***Mol. Cell. Endo.*** 536, 111400.
83. Nandi, P., Jang, C.E., **Biggar, K.K.**, Halari, C.D., Jansson, T., Gupta, M.B. (2021) Mechanistic target of rapamycin complex 1 signaling links hypoxia to increased IGF1P-1 phosphorylation in primary human decidualized endometrial stromal cells. ***Biomolecules*** 11(9), 1382.
82. Kakadia, J.H., **Biggar, K.K.**, Jain, B., Chen, A.W., Nygard, K., Li, C., Nathanielsz, P.W., Jansson, T., Gupta, M.B. (2021). Mechanisms linking hypoxia to phosphorylation of insulin-like growth factor restriction and in cell culture. ***FASEB J.*** 35(9), e21788.
81. Kakadia, J.H., Jain, B.B., Biggar, K.K., Sutherland, A., Nygard, K., Li, C., Nathanielsz, P.W., Jansson, T., Gupta, M. (2021). Hyperphosphorylation of fetal liver IGF1P-1 precedes slowing of fetal growth in nutrient-restricted baboons and may be a mechanism underlying IUGR. ***Am. J. Physiol. Endo. Metab.*** 319(3), E614-E628.
80. Lukinovic, V., **Biggar, K.K.** (2021). Deconvoluting complex protein interaction networks through reductionist strategies in peptide biochemistry: modern approaches and research questions. ***Comp. Biochem. Phys. D.*** In press.
79. Dick, K., Chopra, A., **Biggar, K.K.***, Green, J.R*. (2021). Multi-schema computational prediction of the comprehensive SARS-CoV-2 vs. human interactome. ***PeerJ***, e11117.
78. Charih, F., Green, J.R., **Biggar, K.K.** (2020). Machine Learning-Driven Identification of Novel Lysine Methylation Sites with MethylSight. ***STAR Protoc. (Cell press)*** 1(3), 100135.
77. Chopra, A., Cho, W.C., Willmore, W.G., **Biggar, K.K.** G9a and GLP as hypoxia-inducible lysine methyltransferases and implications of non-histone substrate modification in the hypoxic landscape. ***Frontiers Genet.*** 11: 579636. ***Invited Review.***
76. **Biggar, K.K.***, Charih, F.*, Liu, H., Ruiz-Blanco, Y.B., Stalker, L., Chopra, A., Hoekstra, M., Connolly, J., Adhikary, H., Frensemier, K., Galka, M., Fang, Q., Wynder, C., Stanford, W.L., Green, J.R.* , Li, S.S.C. (2020) Proteome-wide Prediction of Lysine Methylation Reveals Novel Histone Marks and Outlines the Methyllysine Proteome. ***Cell Reports (Cell press)*** 32: 107896.
75. Shehab, M.A., **Biggar, K.K.**, Kakadia, J.H., Dhruv, M. Jain, B., Nandi, P., Nygard, K., Jansson, T., Gupta, M. (2020) Inhibition of decidual IGF-1 signaling in response to hypoxia and leucine deprivation is mediated by mTOR and AAR and increased IGF1P-1 phosphorylation. ***Mol. Cell. Endo.*** 512: 110865.
74. Kakadia, J.H., Jain, B., **Biggar, K.K.**, Sutherland, A., Nygard, K., Li, C., Nathanielsz, P.W., Jansson, T., Gupta, M.B. (2020) Hyperphosphorylation of fetal liver IGF1P-1 precedes slowing of fetal growth in nutrient restricted baboons and may be a mechanism underlying IUGR. ***Am. J. Physiol. Endocrinol. Metab.*** 319(3): E614-E628.
73. Balasuriya, N., Davey, N.E., Johnson, J.L., Liu, H., **Biggar, K.K.**, Cantley, L.C., Li, S.S.C., O'Donoghue, P. (2020) Phosphorylation-dependent substrate selectivity of Akt1. ***J. Biol. Chem.*** 295: 8120-8134.
72. Dick, K., Samanfar, B., Barnes, B., Cober, E., Mimeo, B., Tan, L., Wong, A., Molnar, S., **Biggar, K.K.**, Golshani, A., Dehne, F. And Green, J.R. (2020) PIPE4: Ultra-fast PPI predictor for comprehensive inter- and cross-species Interactomes. ***Sci. Rep.*** 10: 1390.

71. **Biggar, K.K.** (2020) Protein lysine methylation in the regulation of anoxia tolerance in the red eared slider turtle, *Trachemys scripta elegans*. **Comp. Biochem. Phys. D** 34: 100660. **Invited Review.**
70. Chopra, A., Adhikary, H., Willmore, W.G., Biggar, K.K. (2020) Insights into the function and regulation of Jumonji C lysine demethylases as hypoxic responsive enzymes. **Curr. protein peptide sci.** 21(7): 642-654. **Invited Review.**
69. Yin, K., Chopra, A., Biggar, K.K. and Meneghini, M. (2020) An essential RNA-binding lysine residue in the Nab3 RRM domain undergoes mono and tri-methylation. **Nuc. Acids Res.** 48(6): 2897-2911.
68. Mezey, N., Cho, W. and Biggar, K.K. (2020) The intriguing origins of protein lysine methylation: influencing cell function through dynamic methylation of non-histone proteins. **Genom. Proteom. Bioinform.** 17(6): 551-557. **Invited Review.**
67. Al-attar, R., Wu, C.W., **Biggar, K.K.** and Storey, K.B. Carb-loading: Freeze-induced activation of the glucose-responsive ChREBP. **Physiol. Biochem. Zool.** 93(1):49-61.
66. Gupta, M.B., Shehab, M.A., Nygard, N., **Biggar, K.K.**, Singal, S.S., Santoro, N., Powell, T.L., Jansson, T. (2019) IUGR is associated with marked hyperphosphorylation of decidual and maternal plasma IGF1. **J. Clinical Endocrin. Metabol.** 104(2): 408-422.
65. **Biggar, K.K.**, Zhang, J., Storey, K.B. (2019) Navigating oxygen deprivation: liver transcriptomic responses of the red eared slider turtle to environmental anoxia. **PeerJ.** 7: e8144.
64. Chopra, A., Willmore, W.G.* , Biggar, K.K.* (2019) Protein quantification and visualization via ultraviolet-dependent labeling with 2,2,2-trichloroethanol. **Sci. Reports.** 9(1):1-8.
63. Topcu, E., Biggar, K.K. (2019) PeSA: a software tool for peptide specificity analysis. **Comput. Biol. Chem.** 83: 107145.
62. Tri, L.D., Childers, C., Adam, M.K., Ben, R.N., Storey, K.B. and Biggar, K.K. Characterization of anti-freeze activity in the novel freeze-responsive protein Fr10 from freeze-tolerant wood frogs, *Rana sylvatica*. **J. Thermal Biol.** 84:426-430.
61. Adhikary, H., Bakos, O. and Biggar, K.K. (2019) The role of protein lysine methylation in the regulation of protein function – looking beyond the histone code. In *The DNA, RNA, and histone methylomes* (eds. Jurga, S. and Barciszewski, J.) Springer. Pp. 453-477.
60. Grigg, N., Schoenrock, A., Dick, K., Green, J.R., Golshani, A., Wong, A., Dehne, F., Tsai, E.C. and Biggar, K.K. (2019) Insights into the suitability of utilizing brown rats as a model for healing spinal cord injury with epidermal growth factor and fibroblast growth factor-II by predicting protein-protein interactions. **Comp. Biol. Med.** 104: 220-226.
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57. Singal, S.S., **Biggar, K.K.***, Nygard, K.*, Shehab, M.A., Li, S.S.C., Jansson, T. and Gupta, M.B. (2019) IUGR is associated with marked hyperphosphorylation of decidual and maternal plasma IGF1. **J. Clin. Endo. Metabol.** 104(2):408-422.
56. **Biggar, K.K.**, Luu, B.E., Wu, C.W., Pifferi F., Perret, M. and Storey, K.B. (2018) Identification of novel and conserved microRNA and their expression in the gray mouse lemur, *Microcebus murinus*, a primate capable of daily torpor. **Gene** 677, 332-339.

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54. Bhojoo, U. and **Biggar, K.K.** (2018) Single-step Purification of intrinsic protein complexes in *Saccharomyces cerevisiae* using regenerable calmodulin resin. **MethodsX** 5, 613-619.
53. **Biggar, K.K.** and Storey, K.B. (2018) The evaluation of the DNA binding affinity and protein composition of active transcription factor complexes. **PeerJ.** e4755.
52. Balasuriya, N., Kunkel, M.T., **Biggar, K.K.**, Liu X., Li S.S.C., Newton, A.C., and O'Donoghue, P. (2018) Genetic code expansion and live cell imaging reveal that Thr-308 phosphorylation in the protein kinase Akt is essential and sufficient for Akt activity. **J. Biol. Chem.** 293(27):10744-10756.
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20. **Biggar, K.K.**, Wu, C.W. and Storey, K.B. (2014) High-throughput amplification of mature microRNA in uncharacterized animal models using polyadenylated RNA and stem-loop RT-PCR. *Anal. Biochem.* 462(1): 32-34.
19. **Biggar, K.K.** and Storey, K.B. (2014) Identification and expression of microRNA in the brain of hibernating bats, *Myotis lucifugus*. *Gene.* 544(1): 67-74.
18. Rouble, A.N., **Biggar, K.K.** and Storey, K.B. (2014) A high-throughput protocol for message RNA quantification using RNA dot-blot. *Anal. Biochem.* 452(1): 31-33.
17. Wu, C.W., **Biggar, K.K.** and Storey, K.B. (2013) MicroRNA regulation during dehydration in the Western clawed frog, *Xenopus tropicalis*. *Gene* 529(2): 269-275.
16. **Biggar, K.K.**, Dawson, N.J. and Storey, K.B. (2013) Proteomic characterization of fructose-1,6-bisphosphate aldolase from anoxia tolerance *Trachemys scripta elegans*: Bioinformatics and mass spectrometric exploration of enzymatic activity. *PLoS ONE* 8(7): e68830.
15. **Biggar, K.K.**, Kotani, E., Furusawa, T. and Storey, K.B. (2013) Expression of freeze responsive proteins, Fr10 and Li16, from freeze tolerant frogs enhances survival of BmN insect cells. *FASEB J.* 27(8): 3376-3383. **Featured article in Global Medical Discovery Series (February, 2014)**
14. Shaffer, B.H., Minx, P., Warren, D.E., Shedlock, A.M., Thomson, R.C., Valenzuela, N., Abramyan, J., Badenhorst, D., **Biggar, K.K.**, et al. (2013) The painted turtle genome: extreme physiological adaptations in a slowly evolving lineage. *Genome Res.* 14: R28.
13. Wu, C.W., **Biggar, K.K.** and Storey, K.B. (2013) Biochemical adaptations of mammalian hibernation: exploring the thirteen-lined ground squirrel as a perspective model for naturally induced reversible insulin resistance. *Braz. J. Med. Biol. Res.* 46(1): 1-13.
12. Zhang, J., **Biggar, K.K.** and Storey, K.B. (2013) Regulation of p53 by reversible post-transcriptional and post translational mechanisms in liver and skeletal muscle of anoxia tolerant turtle, *Trachemys scripta elegans*. *Gene* 513(1): 147-155.
11. **Biggar, K.K.**, Dawson, N. and Storey, K.B. (2012) Real-time protein unfolding: a method for determining the kinetics of native protein denaturation using a qRT thermocycler. *Biotechniques* 53(4): 231-238. **Featured article in BioSpotlight article (October, 2012)**
10. **Biggar, K.K.**, Kornfeld, S.F. and Storey, K.B. (2012) Suppression of muscle disuse atrophy during mammalian hibernation: MicroRNA regulation in the skeletal muscle of *Myotis lucifugus*. *Genom. Proteom. Bioinform.* 10(5): 295-301.
9. **Biggar, K.K.**, Kornfeld, S.F., Maistrovski, Y. and Storey, K.B. (2012) Differential expression of miRNAs in the intertidal snail *Littorina littorea* during freezing and anoxia in foot muscle and hepatopancreas. *Genom. Proteom. Bioinform.* 10(5): 302-309.
8. Maistrovski, Y., **Biggar, K.K.** and Storey, K.B. (2012) The conserved response of HIF-1 α regulation in mammalian hibernators: examining the regulation of HIF-1 α by long non-coding RNAs in the thirteen lined ground squirrel (*Spermophilus tridecemlineatus*) and little brown bat (*Myotis lucifugus*). *J. Comp. Physiol. B* 182(6): 849-859.
7. **Biggar, K.K.**, Groom, A. and Storey, K.B. (2012) Hypometabolism in turtles: Physiological and molecular strategies of anoxia survival. *In* Hypometabolism: Strategies of survival in vertebrates and invertebrates (eds. Nowakowska, A. and Caputa, M.) Research Signpost. ISBN: 978-81-308-0471-2

6. **Biggar, K.K.** and Storey, K.B. (2012) Evidence for cell cycle suppression and microRNA regulation of cyclin D1 during anoxia survival in turtles. ***Cell Cycle*** 11(9): 1705-1713.
5. **Biggar, K.K.**, Kornfeld, S.F. and Storey, K.B. (2011) Amplification and sequencing of mature microRNAs in uncharacterized animal models using stem-loop reverse transcription-polymerase chain reaction. ***Anal. Biochem.*** 416(2):231-233.
4. Roufayel, R., **Biggar, K.K.** and Storey, K.B. (2011) Regulation of cell cycle components during exposure to anoxic and dehydration stress in the wood frog, *Rana sylvatica*. ***J. Exp. Zool.*** 315A(8): 487-494.
3. **Biggar, K.K.** and Storey, K.B. (2011) The emerging roles of microRNAs in the molecular responses of metabolic rate depression. ***J. Mol. Cell Biol.*** 3(3): 167-175. ***Invited Review***
2. **Biggar, K.K.** and Storey, K.B. (2009) Perspectives in cell cycle regulation: Lessons from an anoxic vertebrate. ***Current Genomics*** 10(8): 573-584.
1. **Biggar, K.K.**, Dubuc, A., and Storey, K.B. (2009) MicroRNA regulation below zero: Differential expression of miRNA-21 and miRNA-16 during freezing in wood frogs. ***Cryobiology*** 59: 317–321.

Jennifer E. Bruin, PhD

www.bruinlab.com

244 Nesbitt Biology Building
1125 Colonel By Drive
Ottawa, ON K1S 5B6
jenny.bruin@carleton.ca

FACULTY APPOINTMENTS AND PROFESSIONAL AFFILIATIONS

2021 - present **Associate Professor**, Carleton University; Department of Biology & Institute of Biochemistry
2016 - 2021 **Assistant Professor**, Carleton University; Department of Biology & Institute of Biochemistry
2021 - present Member of the Carleton University Centre for Studies on Stress, Trauma, and Resilience
2020 - present Member of the Canadian Islet Research and Training Network (CIRTN)
2019 - present Member of the Ottawa/Carleton Chemical and Environmental Toxicology Graduate Program
2018 - present Member of the Montreal Diabetes Research Center (MDRC)
2017 - present Member of the Ontario Institute of Regenerative Medicine

EDUCATION

2018 **Certificate in University Teaching**, Education Development Centre, Carleton University
2010 - 2016 **Postdoctoral Fellow**, University of British Columbia
Department of Cellular and Physiological Sciences; Diabetes Research Group
Project Title: *Treating diabetes with stem cell-derived islets*.
Supervisor: Dr. Timothy Kieffer
2005 - 2010 **PhD**, Medical Sciences, McMaster University
Department of Obstetrics and Gynecology; Reproductive Biology Division
Thesis Title: *Fetal and neonatal nicotine exposure: effects on pancreatic beta cells*.
Supervisor: Dr. Alison Holloway
2000 - 2005 **BSc, Honours**, University of Guelph
Major: Biomedical Toxicology, Co-operative Education

FUNDING AND AWARDS

OPERATING & INFRASTRUCTURE FUNDING AWARDS (Successful)

Years	Funding Competition	Amount	Role
2022 - 2028	NSERC-CREATE Title: <i>Canadian Islet Research and Training Network – Réseau de Recherche et Formation sur les Îlots du Canada (CIRTN-R2FIC)</i> Lead Applicant: Patrick MacDonald (UAlberta) Other Co-applicants: Christine Doucette (UManitoba), Mathieu Ferron (UMontréal), David Hill (Western), Corinne Hoesli (McGill), Jamie Joseph (UWaterloo), Erin Mulvihill (UOttawa), Elizabeth Rideout (UBC), Rob Sreaton (UToronto), Mark Ungrin (UCalgary)	\$1,650,000	Co-applicant
2021	Ontario Early Researcher Award Title: <i>Environmental toxins and diabetes</i>	\$150,000	PI
2021	NSERC RTI Title: <i>Updates and infrastructure for the Carleton University Biomolecular Radiation Facility</i> Co-PI: Kyle Biggar (Carleton)	\$124,934	Co-PI
2022 - 2023	Carleton University Research Achievement Award	\$15,000	PI

2022 - 2027	Title: <i>Investigation of the link between exposure to fluorinated pollutants and inflammation during pregnancy in a Canadian human cohort</i> CIHR Team Grant: Diabetes Mechanisms and Translational Solutions Title: <i>A deep phenotyping network for understanding human islet variation in health and diabetes</i> Lead Applicant: Patrick MacDonald (UAlberta) Other Principal Applicants: James Johnson (UBC), Jeff Xia (McGill)	\$2,000,000 (~\$500k to Carleton)	Principal applicant
2020 – 2025	CIHR-JDRF Team Grant: Accelerating Stem Cell-Based Therapies for Type 1 Diabetes Title: <i>Generation of a functionally robust stem cell based therapy for type 1 diabetes</i> Team Lead: Francis Lynn (UBC) Other Principal Applicants: Jim Johnson (UBC), Megan Levings (UBC), Patrick MacDonald (UAlberta), Bruce Verchere (UBC)	\$3,000,000 (~\$600k to Carleton)	Principal Applicant
2019 – 2020	NSERC RTI Title: <i>Whole body composition analysis for live animals</i> Co-PI: Melissa Chee (Carleton)	\$132,833	Co-PI
2018 – 2024	CIHR Project Grant Title: <i>Contribution of environmental chemicals to beta cell dysfunction and death in diabetes</i>	\$750,000	PI
2018 – 2023	CFI John R. Evans Leaders Fund / Ontario Research Fund Title: <i>Contribution of environmental chemicals to beta cell dysfunction and death in diabetes</i>	\$200,000	PI
2017 – 2023	NSERC Discovery Grant Title: <i>Mechanisms underlying the regulation of beta cell function by environmental pollutants</i>	\$165,000	PI
2017 – 2018	Ontario Institute of Regenerative Medicine New Ideas Grant Title: <i>The impact of persistent environmental pollutants on pancreatic endocrine cell development</i>	\$75,000	PI

OPERATING & INFRASTRUCTURE FUNDING APPLICATIONS (Pending)

Year	Funding Competition	Amount	Role
2022	CIHR Project Grant Title: <i>Effects of fluorinated pollutants on maternal metabolic health: a translational toxicology approach.</i> Co-applicants: Jillian Ashley-Martin (Health Canada), Michael Borghese (Health Canada), Mandy Fisher (Health Canada), Jan Mennigen (UOttawa), Amy Rand (Carleton), Carole Yauk (UOttawa), Brandy Wicklow (UManitoba)	\$1,400,000	PI
2022	CIHR Project Grant PI: Kyle Biggar (Carleton) Title: <i>Therapeutic potential of a novel KDM5C inhibitor</i>	\$1,075,000	Co-applicant
2022	CIHR Project Grant PI: Gareth Lim (University of Montreal, CRCHUM) Title: <i>Targeting 14-3-3ζ to increase beta cell proliferation and function to Type 1 Diabetes</i>	\$1,200,000	Co-applicant

GRADUATE & POSTDOCTORAL FUNDING

Years	Funding Competition	Amount	Role	Status
2015 - 2016	Canadian Diabetes Association Postdoctoral Fellowship	\$40,000	PDF	Awarded
2016 - 2018	Canadian Diabetes Association Postdoctoral Fellowship	\$80,000	PDF	Declined award
2012	L'Oréal Canada for Women in Science Research Excellence Fellowship	\$20,000	PDF	Awarded
2011 - 2015	JDRF Postdoctoral Fellowship	\$143,184	PDF	Awarded
2011 (4 mo)	CIHR Postdoctoral Fellowship	\$18,750	PDF	Awarded
2011 - 2014	CIHR Postdoctoral Fellowship	\$116,250	PDF	Declined award
2010 - 2012	CIHR Transplantation Research Training Award	\$19,500	PDF	Awarded
2007 - 2010	CIHR / Ontario Women's Health Doctoral Award	\$66,000	PhD	Awarded
2006 - 2009	CIHR / Strategic Training Program in Tobacco Research	\$9,000	PhD	Awarded
2009 - 2010	Ontario Tobacco Research Unit Ashley Studentship	\$7,500	PhD	Awarded
2008 - 2009	Ontario Tobacco Research Unit Ashley Studentship	\$7,500	PhD	Awarded
2007 - 2008	Ontario Tobacco Research Unit Ashley Studentship	\$7,500	PhD	Awarded
2007 - 2008	Ontario Graduate Scholarship	\$15,000	PhD	Declined award
2006 - 2007	Ontario Graduate Scholarship	\$15,000	PhD	Awarded
2006 - 2007	CIHR Canada Graduate Scholarship	\$17,500	MSc	Declined award

SPECIAL RECOGNITION AWARDS

2021	Faculty of Science Research Excellence Award. Carleton University
2021	Faculty Graduate Mentoring Award (nominated by students). Carleton University
2020	New Faculty Excellence in Teaching Award. Carleton University. Value: \$500
2016	Post-doctoral and Research Scientist of the Year. UBC Department of Cellular and Physiological Sciences. Value: \$500
2013	Post-doctoral and Research Scientist of the Year. UBC Department of Cellular and Physiological Sciences. Value: \$750
2012	L'Oréal Canada for Women in Science Research Excellence Fellowship; awarded every other year to two Canadian female postdoctoral fellows in Life Sciences. Value: \$20,000

PRESENTATION AWARDS

2019	1 st Place 3MT Faculty Presentation. 16 th Annual OCIB Annual Symposium, Ottawa, ON
2015	Best Oral Presentation by a Postdoctoral Fellow. UBC Department of Cellular and Physiological Sciences Annual Research Retreat. Vancouver, BC
2014	Best Poster Presentation. Till & McCulloch Meeting. Ottawa, ON
2014	Best Oral Presentation by a Postdoctoral Fellow. UBC Department of Cellular and Physiological Sciences Annual Research Retreat. Vancouver, BC
2013	Best Oral Presentation by a Postdoctoral Fellow. UBC Department of Cellular and Physiological Sciences Annual Research Retreat. Vancouver, BC
2012	Best Senior Oral Presentation Award. Alberta-BC Islet Workshop. Silver Star Resort, BC
2010	Best Oral Presentation Award. Stem Cell Network Annual Scientific Meeting. Calgary, AB
2010	1 st Place Poster Award. BC Preclinical Research Symposium. Vancouver, BC
2009	Poster Presentation Award. 3 rd Annual Health Research in the City Conference: Gene-Environment Interaction. Hamilton, ON
2009	Oral Presentation Award. McMaster University Health Sciences Research Day. Hamilton, ON
2008	Gold Poster Award Recipient. CIHR National Student Research Poster Competition: Institute of Human Development, Child and Youth Health. Winnipeg, MB
2008	Poster Award Recipient. McMaster University Health Sciences Research Day. Hamilton, ON
2006	Best Oral Presentation Award. McMaster University Department of Obstetrics and Gynecology 32 nd Annual RT Weaver Research Day. Hamilton, ON

PRESENTATIONS**INVITED ACADEMIC PRESENTATIONS**

- 2022 CIRTN-R2FIC Seminar Series. Virtual
- 2021 University of Waterloo, School of Pharmacy Seminar Series. Virtual
- 2021 Ottawa Hospital Adult and Pediatric Endocrinology and Metabolism Research Retreat - **Keynote speaker**. Virtual
- 2021 Alberta Diabetes Institute Research Day - **Keynote speaker**. Virtual
- 2021 Ottawa-Carleton Institute of Biology Annual Symposium - **Keynote Speaker**. Virtual
- 2021 American Diabetes Association 81st Virtual Scientific Sessions, Invited Symposium Speaker. Virtual
- 2021 Endocrinology & Metabolic Disease (EMD) Seminar Series, Department of Physiology and Pathophysiology, University of Manitoba. Virtual
- 2020 Diabetes Canada / Canadian Society of Endocrinology and Metabolism (CSEM) Professional Conference. Virtual
- 2020 Children's Hospital Research Institute of Manitoba Research Rounds. Virtual
- 2020 Keystone Symposia on Molecular and Cellular Biology - Islet Biology: From Gene to Cell to Micro-Organ. Santa Fe, New Mexico, USA
- 2019 Society of Toxicology of Canada 51st Annual Symposium. Ottawa, ON
- 2019 IRCM Cardiovascular and Metabolic Diseases Research Division Seminar. Montreal, QC
- 2019 Health Canada Environmental Health Science & Research Bureau Seminar Series. Ottawa, ON
- 2019 Carleton University Life Sciences Day 3.0. Ottawa, ON
- 2019 8th Annual Alberta-BC Islet Workshop. Vernon, BC
- 2019 Laurentian Chapter of the Society of Environmental Toxicology and Chemistry Pub Night. Ottawa, ON
- 2018 CRCHUM and Montreal Diabetes Research Center Seminar Series. Montreal, QC
- 2018 Ontario Institute of Regenerative Medicine Annual Stem Cells & Regenerative Symposium. Toronto, ON
- 2017 15th Transplantation Science Symposium. Victoria, BC
- 2017 Ottawa Carleton Institute Symposium, 3 Minute Faculty Talk Competition. Ottawa, ON
- 2017 Ottawa Hospital Endocrinology and Metabolism Grand Rounds. Ottawa, ON
- 2016 Canadian Diabetes Association Professional Conference and Annual Meeting. Ottawa, ON
- 2016 University of Alberta, Alberta Diabetes Institute. Edmonton, AB
- 2016 Carleton University, Department of Biology. Ottawa, ON
- 2015 University of Ottawa, Department of Cellular and Molecular Medicine. Ottawa, ON
- 2015 University of Toronto, Leslie Dan Faculty of Pharmacy. Toronto, ON
- 2014 1st Annual Vancouver Diabetes Research Day. Vancouver, BC
- 2014 18th Annual Transplantation Research Day. Vancouver, BC
- 2014 17th Annual Canadian Diabetes Association (CDA) Professional Conference. Winnipeg, MB
- 2014 Diabetes, Infectious Diseases and Immunology Seminar Series; Child & Family Research Institute. Vancouver, BC
- 2014 Keystone Symposia: Emerging Concepts and Targets in Islet Biology. Keystone, Colorado
- 2013 BC Stem Cell and Regenerative Medicine Initiative Retreat. Vancouver, BC
- 2011 Kyoto University Global Center of Excellence "Center for Frontier Medicine" International Symposium. Awaji Island, Japan
- 2011 23rd Annual Diabetes Directors Seminar. Vancouver, BC
- 2009 McEwen Centre for Regenerative Research. Toronto, ON
- 2009 Department of Cellular and Physiological Sciences, UBC. Vancouver, BC
- 2009 Sprott Centre for Stem Cell Research, Ottawa Health Research Institute. Ottawa, ON
- 2009 Roberts Vascular Biology Research Group; University of Western Ontario. London, ON
- 2008 Center for Addiction and Mental Health, Transdisciplinary Tobacco Rounds. Toronto, ON

OUTREACH ACTIVITIES

- 2022 Faculty of Science, CIHR Project Grant Workshop. Carleton University. Ottawa, ON
- 2020 CIRTN Panel Discussion: Beginning a Career in Academia. Virtual
- 2020 Carleton University New Faculty Research Orientation, Plenary Session Panelist. Virtual
- 2019 Faculty of Science, CIHR Project Grant Workshop. Carleton University. Ottawa, ON
- 2019 How to Get a Faculty Job. Panelist for Department of Biology, Carleton University. Ottawa, ON
- 2019 Diabetes Day on the Hill. Met with Members of Parliament on behalf of Diabetes Canada. Ottawa, ON
- 2018 Science Professor Jeopardy. Contestant for the Carleton Science Student Success Centre. Ottawa, ON
- 2018 Hosted Elmwood High School Grade 12 Biology students for a day in the lab at Carleton University.
- 2017 Stem cells for treating and understanding diabetes. OSSTF District 25 Planned Science Professional Development Day. Ottawa, ON
- 2017 Using Human Stem Cells for Treating and Understanding Diabetes. Carleton University Science Café. Ottawa Public Library.

- 2016 Career Path of a Professor. Earl of March Secondary School. Ottawa, ON
- 2016 How to Land a Faculty Position. Panelist for Department of Biology, Carleton University. Ottawa, ON
- 2015 How Close is a Cell Therapy for Diabetes? Pacific TD JDRF Ride Kick-Off Event. Vancouver, BC
- 2015 Stem Cell Advances: Are We Closer to Curing Diabetes? Annual Diabetes Days for Health Professionals and for Families; Hospital for Sick Children. Toronto, ON
- 2014 Stem Cells for Treating Diabetes. Crofton House School, Grade 12 Students. Vancouver, BC
- 2014 How Close is a Cell Therapy for Diabetes? JDRF Diabetes Research Symposium. Victoria, BC
- 2014 How Close is a Cell Therapy for Diabetes? JDRF TELUS Walk to Cure Diabetes, Corporate Leadership Breakfast. Vancouver, BC
- 2014 How Close is a Cell Therapy for Diabetes? JDRF Ride for Diabetes Research, Awards Ceremony. Vancouver, BC
- 2012 Treating Diabetes with Stem Cells. Crofton House School, Grade 9 Careers & Health Education Program. Vancouver, BC

MEDIA COVERAGE

- 2022 Carleton University. [New research suggests link between contaminants and diabetes.](#)
- 2021 Carleton University. [Towards a Cure: Carleton Research Team Working on Stem Cell Therapy to Reverse Type 1 Diabetes](#)
- 2019 Carleton Newsroom. [Pollutants and Diabetes: Carleton Lab Makes New Discoveries.](#)
- 2018 Diabetes Canada Podcast. [Diabetes 360: Season 2, Episode 3.](#)
- 2015 Global BC TV News Interview
- 2012 Global BC TV News Interview

PUBLICATIONS

PUBLICATION SUMMARY

Underline indicates HQP from the Bruin Lab or co-supervised HQP

* Indicates equal contribution by authors

Category	Published	In Press	Submitted
Peer-reviewed Manuscripts	35	0	0
Non peer-reviewed pre-prints (BioRxiv)	0	n/a	n/a
Book Chapters	1	0	0

PUBLISHED PEER-REVIEWED MANUSCRIPTS

1. Hoyeck M*, Matteo G*, MacFarlane EM, Perera I, **Bruin JE**. Persistent organic pollutants and β -cell toxicity: a comprehensive review. *American Journal of Physiology - Endocrinology & Metabolism*. May 1;322(5):E383-E413 (2022). <https://doi.org/10.1152/ajpendo.00358.2021>
2. Gang N, Van Allen K, Villeneuve P, MacDonald H, **Bruin JE**. Sex-specific associations between type 2 diabetes incidence and exposure to dioxin and dioxin-like pollutants: a meta-analysis. *Frontiers in Toxicology*. Vol 3, Article 685840 (2022). <https://doi.org/10.3389/ftox.2021.685840>
3. Erener S, Ellis CE, Ramzy A, Glavas MM, O'Dwyer S, Pereira S, Wang T, Pang J, **Bruin JE**, Riedel MJ, Baker RK, Webber TD, Lesina M, Bluhner M, Algul H, Kopp JL, Herzig S, Kieffer TJ. Deletion of pancreas-specific miR-216a reduces beta-cell mass and inhibits pancreatic cancer progression in mice. *Cell Reports Medicine*. 2, 100434 (2021). <https://doi.org/10.1016/j.xcrm.2021.100434>
4. Matteo G*, Hoyeck M*, Blair H, Rick KRC, Williams A, Buick JK, Gagné R, Yauk CL, **Bruin JE**. Chronic low-dose dioxin exposure accelerates high fat diet-induced hyperglycemia in female mice. *Endocrinology*, 162(6):1-18 (2021). doi.org/10.1101/2020.09.12.294587
5. MacFarlane EM, **Bruin JE**. Human pluripotent stem cells: a unique tool for toxicity testing in pancreatic progenitor and endocrine cells. *Frontiers in Endocrinology* (special edition "Advances in Stem Cell Technology to Model and Treat Diabetes"). Jan 19;11:604998 (2021). <https://doi.org/10.3389/fendo.2020.604998>
6. Hoyeck M, Merhi R, Blair HL, Spencer CD, Payant MA, Alfonso DIM, Zhang M, Matteo G, Chee MJ, **Bruin JE**. Female mice exposed to low doses of dioxin during pregnancy and lactation have increased susceptibility to diet-induced obesity and diabetes. *Molecular Metabolism*. Dec;42:101104 (2020).

<https://doi.org/10.1016/j.molmet.2020.101104>

7. Hoyeck M, Blair H, Ibrahim M, Solanky S, Elsayy M, Prakash A, Rick KRC, Matteo G, O'Dwyer S, Bruin JE. Long-term metabolic consequences of acute dioxin exposure differ between male and female mice. *Scientific Reports*. Jan 29;10(1):1448 (2020). <https://www.nature.com/articles/s41598-020-57973-0>
8. Ibrahim M, MacFarlane EM, Matteo G, Hoyeck MP, Rick KRC, Farokhi S, Copley C, O'Dwyer S, Bruin JE. Functional cytochrome P450 1a enzymes are induced in mouse and human islets following pollutant exposure. *Diabetologia* Jan;63(1):162-178 (2020). <https://link.springer.com/article/10.1007/s00125-019-05035-0>
9. Saber N, Bruin JE, O'Dwyer S, Schuster H, Rezaia A, Kieffer TJ. Sex differences in maturation of human ES cell-derived β cells in mice. *Endocrinology*. 159(4):1827-1841 (2018).
10. Bruin JE*, Saber N*, Fox JK, Mojibian M, Arora P, Rezaia A, Kieffer TJ. Hypothyroidism impairs human stem cell-derived pancreatic progenitor cell maturation in mice. *Diabetes*. 65(5):1297-1309 (2016).
11. Szabat M, Page MM, Panzhinskiy E, Skovsø S, Mojibian M, Fernandez-Tajes J, Bruin JE, Bround MJ, Lee JTC, Xu EE, Taghizadeh F, O'Dwyer S, van de Bunt M, Moon KM, Sinha S, Han J, Fan Y, Lynn FC, Trucco M, Borchers CH, Foster LJ, Nislow C, Kieffer TJ, Johnson JD. Reduced Insulin Production Relieves Endoplasmic Reticulum Stress and Induces β Cell Proliferation. *Cell Metabolism*. 23(1):179-93 (2016).
12. Bruin JE, Rezaia A, Kieffer TJ. Replacing and safeguarding pancreatic beta cells for diabetes. *Science Translational Medicine*. Dec 2; 7(316):316ps23 (2015).
13. Bruin JE, Fox JK, Asadi A, Rezaia A, Kieffer TJ. Accelerated maturation of human stem cell-derived pancreatic progenitor cells into insulin-secreting cells in immunodeficient rats relative to mice. *Stem Cell Reports*, 5: 1081-1096 (2015).
14. Quiskamp N, Bruin JE, Kieffer TJ. Differentiation of human pluripotent stem cells into beta cells: potential and challenges. *Best Practice and Research Clinical Endocrinology and Metabolism*. 29(6):833-47 (2015).
15. Bruin JE, Saber N, Braun N, Fox JK, Mojibian M, Asadi A, Drohan C, O'Dwyer S, Rosman-Balzer DS, Swiss VA, Rezaia A, Kieffer TJ. Treating diet-induced diabetes and obesity with human embryonic stem cell-derived pancreatic progenitor cells and antidiabetic drugs. *Stem Cell Reports*. 4(4):605-620 (2015).
16. Asadi A*, Bruin JE*, Kieffer TJ. Characterization of antibodies to products of proinsulin processing using immunofluorescence staining of pancreas in multiple species. *Journal of Histochemistry & Cytochemistry*. 63(8):646-62 (2015).
17. Rezaia A, Bruin JE, Arora P, Rubin A, Batushansky I, Asadi A, O'Dwyer S, Quiskamp N, Mojibian M, Albrecht T, Yang YH, Johnson JD, Kieffer TJ. Reversal of diabetes with insulin-producing cells derived in vitro from human pluripotent stem cells. *Nature Biotechnology*. 32:1121-1133 (2014).
18. Bruin JE, Erener S, Vela J, Hu X, Kurata HT, Johnson JD, Lynn FC, Piret JM, Rezaia A, Kieffer TJ. Characterization of polyhormonal insulin-producing cells derived in vitro from human embryonic stem cells. *Stem Cell Research*. 12(1):194-208 (2014).
19. Bruin JE*, Rezaia A*, Xu J, Narayan K, Fox JK, O'Neil JJ, Kieffer TJ. Maturation and function of human embryonic stem cell-derived pancreatic progenitors in macroencapsulation devices following transplant into mice. *Diabetologia*. 56(9):1987-98 (2013).
20. Rezaia A*, Bruin JE*, Xu J*, Narayan K, Fox JK, O'Neil JJ, Kieffer TJ. Enrichment of human embryonic stem cell-derived NKX6.1-expressing pancreatic progenitor cells accelerates the maturation of insulin-secreting cells *in vivo*. *Stem Cells*. 31(11):2432-42 (2013).
21. Tuduri E, Bruin JE, Denroche HC, Fox JK, Johnson JD, Kieffer TJ. Impaired Ca²⁺ signaling in beta cells lacking leptin receptors by Cre-loxP recombination. *PLoS One*. 8(8):e71075 (2013).
22. Denroche HC, Quong WL, Bruin JE, Tuduri E, Asadi A, Glavas MM, Fox JK, Kieffer TJ. Leptin administration enhances islet transplant performance in diabetic mice. *Diabetes*. 62(8):2738-46 (2013).
23. Mojibian M, Harder B, Hurlburt A, Bruin JE, Asadi A, Kieffer TJ. Implanted islets in the anterior chamber of the eye are prone to autoimmune attack in a mouse model of diabetes. *Diabetologia*. 56(10):2213-21 (2013).

24. Rezania A*, **Bruin JE***, Riedel MJ, Mojibian M, Asadi A, Xu J, Gauvin R, Narayan K, Karanu F, O'Neil JJ, Ao Z, Warnock GL, Kieffer TJ. Maturation of human embryonic stem cell-derived pancreatic progenitors into functional islets in diabetic mice. *Diabetes*. 61(8):2016-29 (2012).
25. Tuduri E, **Bruin JE**, Kieffer TJ. Restoring insulin production for type 1 diabetes. *Journal of Diabetes*. 4:319-331 (2012).
26. **Bruin JE**, Woynillowicz AK, Tarnopolsky MA, Hettinga BP, Gerstein HC, Holloway AC. Maternal antioxidants prevent beta cell apoptosis and promote formation of dual hormone-expressing endocrine cells in male offspring following fetal and neonatal nicotine exposure. *Journal of Diabetes*. 4(3):297-306 (2012).
27. Lagunov A, Anzar M, Sadeu JC, Khan MIR, **Bruin JE**, Woynillowicz AK, Buhr M, Holloway AC, Foster WG. Effect of *in utero* and lactational nicotine exposure on the male reproductive tract in peripubertal and adult rats. *Reproductive Toxicology*. 31(4):418-423 (2011).
28. **Bruin JE**, Gerstein HC, Holloway AC. Long-term consequences of fetal and neonatal nicotine exposure: a critical review. *Toxicological Sciences*. 116(2):364-74 (2010).
29. Kellenberger L, **Bruin JE**, Greenaway J, Solinger NE, Moorehead R, Holloway AC, Petrik J. The role of dysregulated glucose metabolism in epithelial ovarian cancer. *Journal of Oncology*. 2010:514310 (2010).
30. **Bruin JE**, Petrik JJ, Hyslop J, Tarnopolsky MA, Raha S, Gerstein HC, Holloway AC. Rosiglitazone improves pancreatic mitochondrial function in an animal model of dysglycemia: Role of the insulin-like growth factor axis. *Endocrine*. 37(2) 303-311 (2010).
31. **Bruin JE**, Petre MA, Raha S, Morrison KM, Gerstein HC, Holloway AC. Fetal and neonatal nicotine exposure in Wistar rats causes a progression of pancreatic mitochondrial alterations and leads to beta cell dysfunction. *PLoS ONE*. 3(10):e3371 (2008).
32. **Bruin JE**, Petre MA, Lehman MA, Raha S, Gerstein HC, Morrison KM and Holloway AC. Maternal exposure to nicotine increases oxidative stress in the pancreas of the offspring. *Free Radical Biology and Medicine*. 44(11):1919-25 (2008).
33. Holloway AC, Petrik JJ, **Bruin JE**, Gerstein HC. Rosiglitazone prevents diabetes by increasing beta-cell mass in an animal model of type 2 diabetes characterized by reduced beta-cell mass at birth. *Diabetes Obesity and Metabolism*. 10(9):763-71 (2008).
34. **Bruin JE**, Gerstein HC, Morrison KM and Holloway AC. Increased pancreatic beta cell apoptosis following fetal and neonatal exposure to nicotine is mediated via the mitochondria. *Toxicological Sciences*. 103(2):362-70 (2008).
35. **Bruin JE**, Kellenberger LD, Gerstein HC, Morrison KM, Holloway AC. Fetal and neonatal nicotine exposure and postnatal glucose homeostasis: Identifying critical windows of exposure. *Journal of Endocrinology*. 194(1):171-8 (2007).

PUBLISHED BOOK CHAPTERS

1. **Bruin JE** and Kieffer TJ. Differentiation of human embryonic stem cells into pancreatic endocrine cells. Hayat, MA (ed). *Stem Cells and Cancer Stem Cells: Therapeutic Applications in Disease and Injury*. Springer. Vol 8, Chapter 18, p 192-206 (2012).

PATENTS

ISSUED PATENTS

Title: Pancreatic Endocrine Progenitor Cell Therapies for the Treatment of Obesity and Type 2 Diabetes

Inventors: KIEFFER, Timothy J. and BRUIN, Jennifer E.

- | | |
|--------------------------------------|----------------------------|
| 1. Australian Patent # 2016228894 | Issued: June 17, 2021 |
| 2. European Application #16760957.7 | Issued: May 12 2021 |
| 3. United States Patent # 10,772,917 | Issued: September 15, 2020 |

PENDING PATENT APPLICATIONS

Pancreatic endocrine progenitor cell therapies for the treatment of obesity and type 2 diabetes (T2D).
PCT/CA2016/000072. 2016/03/11.

- | | |
|---|-----------------------------|
| 1. Chinese Application # 201680024439.5 | Submitted: March 9 2018 |
| 2. Canadian Application #2,979,293 | Submitted: March 5 2018 |
| 3. Indian Application #201747036093 | Submitted: December 12 2017 |
| 4. Japanese Application #2017-547514 | Submitted: November 7 2017 |

TRAINEE SUPERVISION

SUMMARY OF HQP

Level of Trainee	Completed	In Progress	Upcoming
Undergraduate Directed Study (BIOC 3901/4901)	9	0	0
Other Undergraduates (summer, work study, volunteer)	18	3	0
Undergraduate Honours Thesis (BIOL/BIOC 4908)	14	1	1
MSc Thesis	2	2	0
PhD Thesis	0	5	0
Technical Staff	3	1	0

UNDERGRADUATE STUDENTS: Directed Studies, Work Study, Volunteer, Co-op, Summer Students

Term	Name	Position and Funding Awards
2022 S	Jason Au	Dean's Summer Research Internship
2022 S	Dana Graves	Dean's Summer Research Internship
2022 S	Cameron Sinclair	NSERC USRA Summer Student
2021 S	Hailey Adams	BIOL 4901 Directed Study (co-supervised with Dr Ella Atlas)
2021 S	Salar Farokhi Boroujeni	NSERC USRA Summer Student
2019/20 F/W	Abbie Smith	Work Study Student
2020 W	Shivani Solanki	uOttawa Community Service-Learning Placement Student
2020 W	Erika Wall	Lab volunteer
2020 W	Salar Farokhi Boroujeni	BIOL 4901 Directed Study
2019 F	Sarita Cuadros Sanchez	BIOL 4901 Directed Study
2019 F	Salar Farokhi Boroujeni	Work Study Student
2019 S	Kyle Van Allen	BIOL 4901 Directed Study
2019 S	Salar Farokhi Boroujeni	NSERC USRA Summer Student
2019 S	Shivani Solanki	Summer Student
2019 S	Rahanna Merhi	Summer Student
2018 W	Kelsea McKay	BIOL 3901 Directed Study
2018/19 F/W	Salar Farokhi Boroujeni	Work Study Student
2018/19 F/W	Hannah Blair	Work Study Student
2018 S	Laura Harkness	BIOL 4901 Directed Study
2018 S	Hannah Blair	NSERC USRA Summer Student
2018 S	Salar Farokhi Boroujeni	Dean's Summer Research Internship
2017/18 F/W	Hannah Blair	Work Study Student
2017 S	Andrea Smith	BIOL 4901 Directed Study
2017 S	Arina Prakash	BIOL 4901 Directed Study
2017 S	Hannah Blair	Walker Summer Research Award Recipient
2017 S	Catherine Copley	Dean's Summer Research Internship
2017 S	Mariam Elsayy	Dean's Summer Research Internship
2015 - 2016	Muna Ibrahim (UBC)	Summer Student; Directed Study; Co-op Student

UNDERGRADUATE STUDENTS: Honour's Thesis, BIOL/BIOC 4908 (or equivalent)

Term	Name	Awards
2022/23 F/W	Shahen Shahen	
2021/22 F/W	Jordyn Burnett	
2021 S	Kaitlyn McCormick	
2020/21 F/W	Sarita Cuadros Sanchez	
2020/21 F/W	Salar Farokhi Boroujeni	
2020/21 F/W	Cameron Tulloch	

2020 S	Abbie Smith	
2019/20 F/W	Julia Zebarth	
2019/20 F/W	Kyle Van Allen	Recipient of Directors Award in Biochemistry
2018/19 F/W	Rayanna Merhi	Research Day poster presentation award winner
2018/19 F/W	Kelsea McKay	
2018/19 F/W	Laura Harkness	Research Day poster presentation award winner
2018 S	Melody Zhang	
2017/18 F/W	Andrea Smith	
2017/18 F/W	Arina Prakash	
2017/18 F/W	Jocelyn Bonti-Ankomah	

GRADUATE STUDENTS

Dates	Name	Degree	Funding Awards
09/2021	Ma Enrica Angela Ching	MSc student	NSERC CGS-M 2022-23
09/2021	Lahari Basu	MSc student	
09/2020 - present	Kyle Van Allen	PhD candidate	
09/2020 - present	Srijanani Palaniyandi	PhD candidate	
09/2020 - present	Ineli Perera, MSc	PhD candidate	
09/2018 - present	Noa Gang, MSc	PhD candidate	OGS 2018-19, NSERC CGS-D 2021-24
09/2017 - present	Myriam Hoyeck	PhD candidate	NSERC CGS-M 2017-18, OGS 2018-19, OGS 2019-20, OGS 2020-21 (declined), CIHR CGS-D 2020-23
05/2017 - 09/2019	Geronimo Matteo	MSc (complete)	
05/2017 - 05/2019	Erin MacFarlane	MSc (complete)	

TECHNICAL STAFF

Dates	Name	Position
02/2022 – present	Antonio Hanson	Lab Technician
09/2021 – 01/2022	Rayanna Merhi	Lab Technician
12/2020 – 05/2021	Erin MacFarlane, MSc	Research Assistant
01/2017 – 09/2021	Kayleigh Rick, MSc	Lab Manager and Technician

SERVICE CONTRIBUTIONS – Carleton University**STUDENT THESIS ADVISORY COMMITTEES**

2021 – present	Tyler Eng, MSc Candidate (UOttawa Biology). Supervisors: Laurie Chan, Dawn Jin
2021 – present	Giancarlo Talarico (UOttawa Biology). Supervisors: Jean-Michel Weber, Jan Mennigen
2020 – present	Eunnara Cho, PhD Candidate (Biology). Supervisors: Iain Lambert, Carole Yauk
2020 – present	Tyler Nguyen, MSc Candidate (Biology). Supervisor: Jason O'Brien
2019 – present	Maddie Ferguson, PhD Candidate (Chemistry). Supervisor: Maria De Rosa
2018 – 2020	Mais Jubouri, MSc Candidate (Uottawa Biology). Supervisors: Jan Mennigen, Jean-Michel Weber
2018 – present	Tristan Smythe, PhD Candidate (Biology). Supervisor: Rob Letcher
2017 – present	Erin Vanzyl, PhD Candidate (Biology). Supervisor: Bruce McKay
2017 – 2018	Laura Corrigan, MSc Candidate (Biology). Supervisor: Shelley Hepworth
2016 – 2019	Braydon Hall, MSc Candidate (Uottawa Biology). Supervisor: Cory Harris

STUDENT THESIS DEFENSE / QUALIFYING EXAM COMMITTEES

2022	Jessica Sheng, MSc Defense (Biology) – Examiner
2021	Caitlyn Proctor, MSc Defense (Biology) – Chair
2021	Esther Munezero, MSc Defense (Biology) – Examiner
2021	Jacob Billingsly, MSc Defense (Biology) – Examiner
2021	Emma Wistaff, MSc Defense (Chemistry) – Examiner
2020	Andrea Smith, PhD Prospectus Exam (Neuroscience) – Examiner
2020	Mikayla Payant, PhD Qualifying Exam (Neuroscience) – Examiner
2020	Alex Blackmore, MSc Defense (Biology) – Chair
2020	Anand Chopra, PhD Qualifying Exam (Biology) – Chair
2020	Aakriti Gupta, PhD Qualifying Exam (Biology) – Chair

2020	Nikolaos Tzakis, PhD Defense (Neuroscience) – Examiner
2019	Melanie Clarke, PhD Defense (Neuroscience) – Examiner
2019	Shazeen Alam, MSc Defense (Neuroscience) – Examiner
2019	Kaylen Brzezinski, MSc Defense (Biology) – Chair
2019	Stephanie Diaz, MSc Defense (Biology) – Examiner
2019	Jill Brooks, PhD Qualifying Exam (Biology) – Chair
2019	Diana Beresford-Kroeger, PhD Defense (Biology) – Examiner
2018	Peng Di, PhD Qualifying Exam (UOttawa Biology) – Examiner
2018	Gamalat Allam, MSc Defense (Biology) – Chair
2018	Ashley Cooper, PhD Qualifying Exam (Biology) – Examiner
2018	Rasha Al-Attar, PhD Qualifying Exam (Biology) – Chair
2017	Kathleen Chandler, MSc Defense (Neuroscience) – Examiner
2017	Katie Hill, MSc Defense (Biology) – Examiner
2017	Adelle Strobel, MSc Defense (Biology) – Examiner
2017	Brittany Sullivan, MSc Defense (Biology) – Chair
2016	Kim Birnie-Gauvin, MSc Defense (Biology) – Chair

HIRING COMMITTEES

2020 - 2021	Department of Physics – Medical Physics Hiring Committee (external member)
2019 - 2020	Department of Biology Chair Search Committee
2017 - 2018	Faculty of Science Decanal Search Committee
2017 - 2017	Department of Chemistry – Organic Toxicology Hiring Committee (external member)

OTHER COMMITTEES

2021 - present	Carleton University Research Computing Committee
2021 - present	Department of Biology Capstone Curriculum Committee
2020 - present	Department of Biology Equity, Diversity and Inclusion Committee
2020 - present	Faculty of Science Equity, Diversity and Inclusion Committee
2020 - 2021	Department of Biology Graduate Cyclical Program Review Committee
2018 - 2020	Animal Care Committee
2017 - 2018	Carleton University Vivarium Planning Committee
2016 - 2018	Tenure and Promotion Committee, Department of Biology, Carleton University

SERVICE CONTRIBUTIONS – External

EXTERNAL GRANT REVIEW

2022 (June)	CIHR Project Grant; Hematology, Digestive Disease & Kidney Committee - External reviewer, (1 grant)
2021 (Nov)	CIHR Project Grant; Diabetes, Obesity and Lipoprotein Metabolism Committee (8 grants)
2021	Michigan Diabetes Research Center Pilot/Feasibility Grant Program review (1 grant)
2021	Diabetes Canada Research Competition LOI review panel (3 applications)
2021	Montreal Diabetes Research Group PDF application review (11 applications)
2021 (June)	CIHR Project Grant; Diabetes, Obesity and Lipoprotein Metabolism Committee (7 grants)
2021 (Jan)	CIHR Project Grant; Diabetes, Obesity and Lipoprotein Metabolism Committee (6 grants)
2020	NSERC Discovery Grant - External Reviewer (1 grant)
2019 (Nov)	CIHR Project Grant; Diabetes, Obesity and Lipoprotein Metabolism Committee (8 grants)
2019 (May)	CIHR Project Grant; Diabetes, Obesity and Lipoprotein Metabolism Committee (7 grants)
2019	Mitacs Accelerate (1 grant)
2018	CIHR Institute Community Support Planning and Dissemination Grants program (1 grant)
2018	Mitacs Accelerate (1 grant)
2018	National Medical Research Council, Ministry of Health, Singapore (1 grant)
2017	Medicine by Design New Ideas Fund – “New Tools & Devices” Competition (6 grants)

EDITORIAL BOARD MEMBER

2020 - present	Associate Editor for <i>Islets</i> (Islets website)
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EXTERNAL COMMITTEES

2021 - present CIRTN Mentorship Committee Member
 2020 - present CIRTN Leadership Team
 2020 - present Canadian Physiological Society Council Member
 2018 - 2019 Ontario Institute of Regenerative Medicine Council Member

JOURNAL PEER REVIEWER

Journal of Immunology & Regenerative Medicine
Experimental and Molecular Pathology
Canadian Journal of Diabetes
Journal of Applied Toxicology
Engineering Reports
Scientific Reports
Diabetologia
Physiology
American Journal of Physiology - Endocrinology and Metabolism
Islets
Stem Cell Reports
Journal of Developmental Origins of Health and Disease
Environment International
Journal of Molecular Endocrinology
Toxicological Sciences
Trends in Endocrinology & Metabolism
iScience

TEACHING**TEACHING AWARDS**

2020 New Faculty Excellence in Teaching Award. Carleton University

COURSES TAUGHT

2022 W BIOL6500, Advanced Science Communication
 2022 W BIOL4201, Advanced Cell Culture and Tissue Engineering
 2021 W BIOL4201, Advanced Cell Culture and Tissue Engineering
 2020 F BIOC4009, Biochemistry of Disease
 2020 W BIOL5502X, Selected Topics: Science Communication
 2020 W BIOL4201, Advanced Cell Culture and Tissue Engineering
 2019 F BIOC4009, Biochemistry of Disease
 2019 W BIOL5502X, Selected Topics: Science Communication
 2019 W BIOL4201, Advanced Cell Culture and Tissue Engineering
 2018 F BIOC4009, Biochemistry of Disease
 2018 W BIOL4201, Advanced Cell Culture and Tissue Engineering
 2017 F BIOC4009, Biochemistry of Disease
 2017 W BIOL4201, Advanced Cell Culture and Tissue Engineering
 2011-2015 PHYL424, Mammalian Endocrinology (University of British Columbia)

GUEST LECTURES

2022 W BIOL4301, Biotechnology
 2021 W BCH2024, Islet Biology I (University of Toronto, CIRTN graduate course)
 2021 F BIOC4009, Biochemistry of Disease
 2021 W BCH2024, Islet Biology II (University of Toronto, CIRTN graduate course)
 2021 W BIOL5002/BIOL6102/CHEM5800/CHEM6800, Seminars in Biochemistry
 2021 W BIOL4301, Biotechnology
 2020 W PMCOL450, Diabetes and Its Pharmacotherapy (University of Alberta - Skype lecture)
 2020 W BIOL5002/BIOL6102/CHEM5800/CHEM6800, Seminars in Biochemistry
 2019 F BIOL2301, Biotechnology I
 2019 W BIOL4301, Current Topics in Biotechnology (Dragon's Den Judge)
 2019 W BIOL5002/BIOL6102/CHEM5800/CHEM6800, Seminars in Biochemistry
 2018 F BIOL2301, Biotechnology I
 2018 F BIOL5402, Advanced Endocrinology

2018 W BIOL5002/BIOL6102/CHEM5800/CHEM6800, Seminars in Biochemistry
2017 W BIOL3202, Principles of Developmental Biology
2016 F BIOL3301, Biotechnology II

PROFESSIONAL DEVELOPMENT AND TRAINING

2020 Course Design Express – Getting Started with Online Design
2019 Talking Teaching in Biology Workshop: High Impact Practises, Low Impact Implementation
2018 Education Development Center Certificate in University Teaching Program
2017 Capture: An Introduction to Creating Course Videos
2017 Midterm Feedback: Collection, Reflection, Action
2017 Introduction to CuLearn
2017 Experiential Learning Practices in the Classroom

Catherine I. Cullingham

BIOLOGY ■ CARLETON UNIVERSITY ■ PHONE: (613) 520-2600 x7066 ■ catherine.cullingham@carleton.ca

RESEARCH EXPERIENCE

Assistant Professor <i>Department of Biology, Carleton University</i> Chair: B McKay	2019-present
Project Manager/Research Associate Systems Biology and Molecular Ecology of Chronic Wasting Disease, <i>Centre for Prions and Protein Folding Disease, University of Alberta</i> Supervisor: D McKenzie	2017-2019
Research Associate Translating MPB Genomics Outputs into Tools for Forest Protection and Resiliency <i>Biological Sciences, University of Alberta</i> Principle Investigators: DW Coltman, JEK Cooke	2012-2016
Postdoctoral Researcher Genomics-Enhanced Forecasting of Lignocellulosic Feedstock Supply for Bioenergy <i>Biological Sciences, University of Alberta</i> Principle Investigators: DW Coltman, JEK Cooke	2010-2012
Postdoctoral Researcher Proactive Surveillance and Management of CWD in Alberta's Wild Cervid Populations <i>Biological Sciences, University of Alberta</i> Principle Investigators: DW Coltman, TK Bollinger	2008-2009
Project Manager Feasibility of using Faecal Material for Swift Fox Population Surveys <i>DNA Profiling and Forensic Centre, Trent University</i> Principle Investigator: M Manseau	2006-2008

TEACHING & MENTORING

CARLETON UNIVERSITY

Teaching

BIOL2104	W2022
BIOL4103 Population Genetics	W2020, F2020, F2021
BIOL5526 NGS Data analysis	F2021

Supervision & Mentoring

Undergraduate	MSc	Committees
Caitlin Hubbard-MacLeod (S2020 USRA, F2020 Hons)	Julia Clark (F2020)	Matt Muzatti (PhD, W2020)
Becca Macphail (F2020 Hons)	Danya Yarenchuk (F2020)	Jenna Hutchins (PhD, F2020)
Jessica Rackal (S2021, DSRI)	Jessica Duffy (F2021)	Hamna Shazadee (PhD, F2021)
Zainab Ahmed (S2021, ICUREUS)	Marc Avramov (F2021)	
Lauren Miner (S2021, ICUREUS)		
Mia Akbar (F2021 Hons)		
Andrea MacDougal (F2021 Hons)		

UNIVERSITY OF ALBERTA

Teaching

Genetics of Populations (with D Coltman), Department chair: M Caldwell Winter 2015
Genetics of Populations (with J Hamilton), Department chair: D Coltman Winter 2014

Supervision & Mentoring

Ty Russel (2017-2019, M.Sc committee)
Rhiannon Peery (2016-2019, Postdoctoral Fellow)
Ian Burns (co-supervised with D. Coltman, 2014-2017, M.Sc.)
Lisa Vuong (co-supervised with J. Cooke, 2014-2015, Hons. Project)
Trevor Petitt (co-supervised with E. Merrill, 2014-2015, Hons. Project)
Elizabeth Mahon (co-supervised with J Cooke, 2013-2014, Hons. Project)
Patrick Lo (co-supervised with J Cooke, 2012-13, Hons. Project)

TRENT UNIVERSITY

Instructor

Advanced Molecular Genetics (with T. Frasier), Department Chair: E. Nol 2006
Forensic Science summer camp, Supervisors: C. Kyle, A. Mohindra 2006-2007

Teaching Assistant

Human Anatomy and Physiology, Professor: I. Brenner 2007-2008

Graduate Teaching Assistant

Human Anatomy & Physiology, Professor: I. Brenner 2004-2007
Cell Biology, Professor: C. Kapron Winter 2002-03
Chemistry, Professor: I. Brenner Winter 2002
Molecular Biology, Professor: J. Yee Fall 2002
Genetics, Professor: M. Hay Fall 2001

Supervision

Medea Curteanu (M.Sc. defense committee, 2008, University of Manitoba)
Kate Pammett (co-supervised with B White, 2005-2006, Technician)
Penny Massey (co-supervised with C Kyle, 2003-2005, Technician)
Lisa MacDonald (co-supervised with C Kyle, 2004-2005, OMNR Summer Experience Program)

PROFESSIONAL AND ADMINISTRATIVE EXPERIENCE

Co-Investigator

Genetic assessment of black-tailed prairie dog populations in Saskatchewan 2018-present
Center for Conservation Research, Calgary Zoo
Collaborator: A. Moehrensclager, T Stephens

Genetic analysis of swift fox populations in Alberta and Saskatchewan to assess 2008-present
success of reintroduction, *Center for Conservation Research, Calgary Zoo*
Collaborator: A. Moehrensclager

Wood Bison genetic review 2018
Parks Canada
Collaborator: T Shury, G Wilson

SERVICE

Boards and Committees

Terrestrial Mammals Specialist Subcommittee, COSEWIC (2020-2024)
Recruitment and Retention Committee, Biology Department, Carleton (2021-current)
Tenure and Promotion Committee, Biology Department, Carleton (2019-2021)
Board Chair, Canadian Parks and Wilderness Society – Northern Alberta
Advisory Group for Provost's Fellow, University of Alberta
The Umbrella Committee (Provost's office), University of Alberta
Biological Sciences Departmental Council, University of Alberta
President's Coalition, University of Alberta
University Finance Committee, Trent University

Associations

Postdoctoral Fellows Association, University of Alberta

President	2010-2012
Vice-President Social	2009-2010
Vice-President Academic	2008-2009

Graduate Students Association, Trent University

Senator	2005-2006
Treasurer	2002-2005

Reviewer

American Journal of Botany, Basic and Applied Ecology, Biological Conservation, Biological Invasions, BMC Ecology, Canadian Journal of Forest Research, Canadian Journal of Zoology, Conservation Genetics, Diversity and Distributions, Ecology and Evolution, European Journal of Wildlife Management, Evolutionary Applications, International Congress for Conservation Biology, International Journal of Molecular Sciences, Journal of Biogeography, Journal of Heredity, Journal of Mammalogy, Journal of Wildlife Diseases, Landscape Ecology, Molecular Ecology, Molecular Ecology Resources, Proceedings of the Royal Society, Series B, Vector Borne and Zoonotic Diseases, Wildlife Research

Associate editor: *Canadian Journal of Forest Research* (2020 – 2023)

Professional Affiliations

Canadian Parks and Wilderness Society
Canadian Society of Ecology and Evolution
Canadian Society of Plant Biologists
Ecological Society of America
Society for Conservation Biology
Society for Molecular Biology and Evolution

Teacher Training

Centre for Teaching and Learning, University of Alberta

Don't enrage, engage: avoiding obstacles when creating learning materials
Concept and course design series: Teaching philosophy
Concept and course design series: Learning objectives

Instructional Development Center, Trent University

Developing and nurturing a statement of teaching philosophy
Reflections on using various means to enhance in-class participation
Strategies for generating in-course evaluation and feedback

RESEARCH CONTRIBUTIONS

Peer-Reviewed (2278 citations, h-index: 23), * denotes HQP

Absences from research to assist in measuring my productivity: maternity leave 2016 = 12 mnths

42. Peery RM, **Cullingham CI**, Coltman DW, Cooke JEK (in review) Traceability of provenance-collected lodgepole pine in a reforestation chain of custody case. *Tree Genet Genomes* (TGGE-D-21-00145)
41. McAlliser CH[†], **Cullingham CI**[†], Peery RM, Mbenoun M, McPeak E, Feau N, Hamelin RC, Ramsfield TD, Myrholm C, Cooke JEK (in review) Evidence of coevolution between *Cronartium harknessii* lineages and their corresponding hosts, lodgepole pine and jack pine. *Phytopathology* (in press)
40. Russell T*, **Cullingham CI**, Ball M, Pybus M, Coltman DW (2021) Extent and direction of introgressive hybridization of mule and white-tailed deer in western Canada. *Evol App* 14:1914-1925
39. Bubac C, **Cullingham CI**, Fox J, Bowen W, de Heyer C, Coltman DW (2021) Genetic association with boldness and maternal performance in a free-ranging population of grey seals (*Halichoerus grypus*). *Heredity* 127:35-51 Prize for Best Student Paper, Editor's Choice
38. Peery RM, McAllister CH, **Cullingham CI**, Mahon EL*, Arango-Velez A, Cooke JEK (2021) Comparative genomics of the chitinase gene family in lodgepole and jack pines: contrasting responses to biotic threats and landscape level investigation of genetic differentiation. *Botany* 99:355-378
37. Miller JM, **Cullingham CI**, Peery RM (2021) The influence of a priori grouping on inference of genetic clusters: simulation study and literature review of the DAPC method. *Heredity* 125:269-280
36. Arafin MI, Staskevicius A, Shim SY, Huang Y-H, Fenton H, McLoughlin PD, Mitchell G, **Cullingham CI**, Gilch S (2020) Large-scale prion protein genotyping in Canadian caribou populations and potential impact on chronic wasting disease susceptibility. *Mol Ecol* 29:3830-3840
35. Kuznetsova A, McKenzie D, **Cullingham CI** Aiken JM (2020) Long-Term Incubation PrP^{CWD} with Soils Affects Prion Recovery but Not Infectivity. *Pathogens* 9:311
34. **Cullingham CI**, Miller JM, Peery RM, Dupuis JR, Malenfant RM, Gorrell JC, Janes JK (2020) Confidently identifying the correct *K* value using the ΔK method: when does *K* = 2? *Mol Ecol* 29:862-869
33. **Cullingham CI**, Peery RM, Dao A, McKenzie DI, Coltman DW (2020) Predicting the spread-risk potential of chronic wasting disease to sympatric ungulate species. *Prion* 14:56-66
32. **Cullingham CI**, Peery RM, Fortier CE, *Mahon EL, Cooke JEK, Coltman DW (2020) Linking genotype to phenotype to identify genetic variation relating to host susceptibility in the mountain pine beetle system. *Evol App* 13:48-61
31. **Cullingham CI**, Moehrensclager A (2019) Genetics of a reintroduced swift fox population highlights the need for integrated conservation between neighbouring countries. *Anim Conserv* 22:611-621
30. Bubac CM, Johnson AC, Fox JA, **Cullingham CI** (2019) Conservation translocations and post-release monitoring: identifying trends in failures, biases, and challenges from around the world. *Biol Cons* 238:108239
29. Dupuis JR, **Cullingham CI**, Nielsen SC, Sperling FAH (2019) Environmental effects on gene flow in a species complex of vagile, hilltopping butterflies. *Biol J Linn Soc* 127:417-428
28. Burns I*, James PMA, Coltman DW, **Cullingham CI** (2019) Spatial and genetic structure of the lodgepole × jack pine hybrid zone. *Can J Forest Res* 49:844-853
27. Russel T*, **Cullingham CI**, Stothard P, Kommadath A, Herbst A, Coltman DW (2019) Development of a novel mule deer genomic assembly and species-diagnostic SNP panel for assessing introgression in mule deer, white-tailed deer, and their interspecific hybrids. *G3-Genes Genom Genet* 9:911-919

26. **Cullingham CI**,† Janes JK†, Hamelin R, James PMA, Murray B, Sperling FAH (2019) The contribution of genetics and genomics to understanding the ecology of the mountain pine beetle system. *Can J Forest Res* 49:721-730 †equal contribution by both authors
25. Kuznetsova A, **Cullingham CI**, McKenzie D, Aiken JM (2018) Soil humic acids degrade CWD prions and reduce infectiity. *PLoS Pathog* 14(11): e1007414
24. Janes JK, Miller JM, Dupuis JR, Malenfant RM, Gorrell JC, **Cullingham CI**, Andrew RL (2017) The K=2 conundrum. *Mol Ecol* 26:3594-3602
23. Mijíja-Salazar MF, Goldizen AW, Menz CS, Dwyer RG, Blomber SP, Waldner CL, **Cullingham CI**, Bollinger TK (2017) Mule deer spatial association patterns and potential implications for transmission of an epizootic disease. *PLoS One* 12:e0175385
22. Fischer ML, Salgado I, Beninde J, Klein R, Frantz AC, Heddergott M, **Cullingham CI**, Kyle CJ, Hochkirch A (2017) Multiple founder effects are followed by range expansion and admixture during the invasion process of the raccoon (*Procyon lotor*) in Europe. *Divers Distrib* 4:409-420
21. Malenfant RM, Davis CS, **Cullingham CI**, Coltman DW (2016) Circumpolar genetic structure and recent gene flow of polar bears: a reanalysis. *PLoS One* 11:e014896
20. **Cullingham CI**, Thiessen CD, Derocher AE, Paquet PC, Miller JM, Hamilton JA, Coltman DW (2016) Population structure and dispersal of wolves in the Canadian Rocky Mountains. *J Mammal* 97:839-851
19. **Cullingham CI**, Cooke JEK, Coltman DW (2014) Cross-species outlier detection reveals different evolutionary pressures between sister species. *New Phyt*, 204:215-229
18. Kyle, CJ, Rico Y, Castillo S, Srithayakumar V, **Cullingham CI**, White BN, Pond BA (2014) Spatial patterns of neutral and functional genetic variation reveal patterns of local adaptation in raccoon (*Procyon lotor*) populations exposed to raccoon rabies. *Mol Ecol* 23:2287-2298
17. **Cullingham CI**, Cooke JEK, Coltman DW (2013) Effects of introgression on the genetic population structure of two ecologically and economically important conifer species: lodgepole pine (*Pinus contorta latifolia*) and jack pine (*P. banksiana*). *Genome* 56:577-585
16. **Cullingham CI**, Moehrenschrager AM (2013) Temporal analysis to assess population dynamics of reintroduced populations: implications of genetic structure in swift foxes. *Conserv Biol* 27:1389-1398
15. **Cullingham CI**, Cooke JEK, Dang, S*, Coltman DW (2013) A species-diagnostic SNP panel for discriminating lodgepole, jack, and hybrid pine. *Tree Genet Genomes* 9:1119-1127
14. **Cullingham CI**, James PMA, Cooke JEK, Coltman DW (2012) Characterizing the physical and genetic structure of the lodgepole pine × jack pine hybrid zone: mosaic structure and differential introgression. *Evol Appl* 5:879-891
13. **Cullingham CI**, Roe AD, Sperling FAH, Coltman DW (2012) Phylogeographic insights into an irruptive pest outbreak. *Ecol Evol* 2:908-919
12. **Cullingham CI**, Cooke JEK, Dang S*, Davis CS, Cooke BJ, Coltman DW (2011) Mountain pine beetle host-range expansion threatens the boreal forest. *Mol Ecol* 20:2157-2171
11. **Cullingham CI**, Nakada SM*, Merrill EH, Bollinger TK, Pybus MJ, Coltman DW (2011) Multi-scale population genetic analysis of mule deer (*Odocoileus hemionus hemionus*) in western Canada sheds new light on chronic wasting disease spread. *Can J Zool* 89:134-147
10. **Cullingham CI**, Merrill EH, Pybus MJ, Bollinger TK, Wilson GA, Coltman DW (2011) Broad and fine-scale genetic analysis of white-tailed deer populations: estimating the relative risk of chronic wasting disease spread. *Evol Appl* 4:116-131
9. Shafer ABA, **Cullingham CI**, Côté SD, Coltman DW (2010) Of glaciers and refugia: A decade of study sheds new light on the phylogeography of northwestern North America. *Mol Ecol* 19:4589-4621

8. **Cullingham CI**, Curtineau M*, Ball MC, Manseau M (2010) Feasibility and recommendations for swift fox (*Vulpes velox*) faecal DNA profiling. *J Wildlife Manage* 74:849-859
7. **Cullingham CI**, Kyle CJ, Rees EE, Pond BA, and White BN (2009) Differential permeability of rivers to raccoon gene flow corresponds to rabies incidence in Ontario, Canada. *Mol Ecol* 18:43-53
6. Rees EE, Pond BA, **Cullingham CI**, Tinline RR, Ball D, Kyle CJ, White BN (2009) Landscape modeling spatial bottlenecks: implications for raccoon rabies disease spread. *Biol Letters* 5:387-390
5. **Cullingham CI**, Rees EE, Kyle CJ, Pond BA, Rosatte RC, and White BN (2008) Combining direct and indirect genetic methods to estimate dispersal for informing wildlife management decisions. *Mol Ecol* 17:4874-4886
4. **Cullingham CI**, Kyle CJ, Pond BA, and White BN (2008) Genetic structure of raccoons in Eastern North America based on mtDNA: implications for subspecies designation and rabies disease dynamics. *Can J Zool* 86:947-958
3. Rees EE, Pond BA, **Cullingham CI**, Rowland RT, Ball D, Kyle CJ, and White BN (2008) Assessing a landscape barrier using genetic simulation modelling: implications for raccoon rabies management. *Preventative Veterinary Medicine*, 86:107-123
2. **Cullingham CI**, Kyle CJ, and White BN (2006) Isolation, characterization and multiplex genotyping of raccoon tetranucleotide microsatellite loci. *Mol Ecol Notes* 6:1030-1032
1. **Cullingham CI**, Smeeton C, and White BN (2006) Isolation and characterization of tetranucleotide microsatellite loci. *Mol Ecol Notes* 7:160-162

Abstracts

- Cullingham CI**, Dao A, McKenzie DI, Coltman DW (2019) Understanding chronic wasting disease spread potential for at-risk species. *Prion* 13:26-27
- Cullingham CI**, Cooke JEK, Coltman DW (2012) Application of genomics to understand forest-pest interactions. *Genome* 55:727
- Cullingham CI**, Dang S*, Davis CS, Cooke BJ, Coltman DW, Cooke JEK (2011) Lodgepole pine, jack pine, and their hybrids: molecular markers reveal mountain pine beetle host-range expansion into jack pine of the boreal forest. *BMC Proceedings* 5(S7):O3

Book Chapters

- Cullingham CI** (2020) Understanding host dynamics: Applications of molecular ecology. In "Taking the Bite out of Rabies: The Evolution of Rabies Management in Canada" (eds Gregory & Tinline). University of Toronto Press.

Invited Talks/Posters

Cullingham CI (2021) Using genomics to predict forest resiliency in the mountain pine beetle system. Canadian Society of Plant Biologists – Eastern (Keynote)

Cullingham CI (2021) From landscapes to molecules and back: characterizing eastern spread risk of mountain pine beetle. Biology Graduate Student Symposium Memorial University (Keynote)

Cullingham CI (2021) Mountain pine beetle: potential for eastern spread. Invasive Species Centre Forum

Cullingham CI, Peery RM (2021) Putting genomics to work. MPB Information Exchange Forum, fRI Research

Cullingham CI (2019) Understanding host susceptibility in the mountain pine beetle system using genomic approaches. Forest Pest Management Forum, Ottawa, ON

Cullingham CI (2019) Species Distribution Modelling using Genetic Data to Improve Large-scale Forest Management. US – International Association of Landscape Ecologists, Fort Collins, CO

Cullingham CI (2018) From landscapes to molecules and back: characterizing spread risk in the mountain pine beetle system. Department of Biology, Carleton University, Ottawa, ON

Cullingham CI, James PMA, McKenzie D, Cooke JEK, Coltman DW (2018) Understanding pathogen spread using host landscape genetics. Ecological Society of America, New Orleans, LA

Cullingham CI (2015) Understanding mountain pine beetle spread risk. Life & Health Sciences Seminar, Trent University, Peterborough, ON

Cullingham CI (2015) From landscapes to genes: understanding mountain pine beetle spread risk. Ecology & Evolutionary seminar, Biological Sciences, University of Calgary, Calgary, AB

Cullingham CI (2014) Spread risk and persistence of disease in nature: a population genetics perspective. Ecology & Evolution seminar, Biological Sciences, University of Alberta, Edmonton, AB

Cullingham CI (2013) The contribution of landscape genetics to understanding the spread of raccoon rabies in North America. The Wildlife Society, Milwaukee, IL

Cullingham CI, Cooke JEK, Coltman DW (2012) Application of genomics to understand forest-pest interactions. Genomics: The Power and the Promise, Ottawa, ON

Cullingham CI (2011) Applicability of genomics to forest management: MPB and pine genetics. 35th Annual Forest Health Review, Orillia, ON

Cullingham CI, Cooke JEK (2011) Mountain pine beetle and the boreal forest. The Canadian Institute of Foresters Electronic Series: the Forest on Your Desktop

Cullingham CI, Nakada S*, Merrill EH, Pybus MJ, Bollinger TK, Coltman DW (2010) Characterizing factors related to the risk of chronic wasting disease spread in mule and white-tailed deer populations in Alberta and Saskatchewan. AWS, Red Deer, AB

GRANTS

TRIA-FoR: Transformative Risk Assessment and Forest Resilience Using Genomic Tools for the Mountain Pine Beetle Outbreak

LSARP Genome Canada 2021

Co-lead project development and writing

Awarded \$6.4M over four years

Lead investigators: JEK Cooke & CI Cullingham + 8 PIs

Modelling eastern spread risk of mountain pine beetle using host genetic ancestry

fRI – Federal-Provincial MPB Research Partnership 2021

Co-lead project development and writing

Awarded \$92K over two years

Lead investigators: JEK Cooke & CI Cullingham + 8 PIs

Developing biomarkers for wildlife management

NSERC - Alliance 2021

Proposal development and writing

Awarded \$91K over four years

Lead investigator: A Shafer, (co-grantee: CI Cullingham)

Genomics of Plants, Pests and Pathogens (GP3)

CFI - JELF 2021

Proposal development and writing

Awarded \$80K

Lead investigator: CI Cullingham

Identifying genetic variation associated with pathogen susceptibility in pines using population genomics

NSERC Discovery Grant 2020

Proposal development and writing

Awarded \$33K/yr + \$12.5K in first year

Lead investigator: CI Cullingham

Assessing Mule/White-tail Deer Hybrid Proportions in Chronic Wasting Disease

Alberta Environment and Parks 2018

Lead in project development and writing

Awarded \$11K for one year

Lead investigator: D Coltman

Systems Biology and Molecular Ecology of Chronic Wasting Disease

Genome Canada Large Scale Applied Research Project 2016

Grant writing, management, and research

Awarded \$11.6M over four years (Cullingham: \$44K)

Lead investigators: D McKenzie, D Wishart, 10 co-principle investigators

Translating Mountain Pine Beetle Genomic Outputs into Tools for Forest Protection and Resiliency

Value Chain Sustainability, Alberta Innovates Bio Solutions 2012

One of the leads in conceptualizing research directions, and grant writing

Awarded \$398 000 over three years

Lead investigator: JEK Cooke, 4 co-principle investigators

Roslyn Dakin, PhD

Short CV

Appointments

July 2019-present	Assistant Professor, Department of Biology, Carleton University
2017-2019	Postdoctoral Fellow, Smithsonian Migratory Bird Center
2016-2017	Maternity and Parental Leave
2014-16	NSERC Postdoctoral Fellowship
2013-2016	Postdoctoral Fellow, Department of Zoology, University of British Columbia
2011-13	Teaching Fellow, Queen's University

Education

2006-13	PhD & MSc Biology, Queen's University
2002-06	BSc Honours Biology, Queen's University

Teaching

Carleton University

Biological Data Science in R BIOL 5502 (Winter 2022, current) <i>2021-22 Favourite Faculty Member</i>	25 students
Social Evolution BIOL 3804 (Winter 2022, current)	38 students
Biological Methods, Analysis and Interpretation BIOL 1105 (Fall 2021) <i>Average Teaching Evaluation Score 4.58</i>	231 students
Biostatistics I BIOL 5407 (Winter 2021) <i>Co-taught with Sherratt, Average Teaching Evaluation Score 4.64</i>	27 students
Bayesian Statistics BIOL 5502 (Fall 2020) <i>Co-taught with Sherratt and Smith, Average Teaching Evaluation Score 4.86</i>	16 students
Biological Methods, Analysis and Interpretation BIOL 1105 (Fall 2020) <i>2020-21 Favourite Faculty Member, Average Teaching Evaluation Score 4.89</i>	206 students
Social Evolution BIOL 3804 (Winter 2020) <i>Average Teaching Evaluation Score 4.91</i>	45 students
Biological Methods, Analysis and Interpretation BIOL 1105 (Fall 2019) <i>Raving Raven, Average Teaching Evaluation Score 4.69</i>	173 students

Queen's University

Ecology and the Environment BIOL 111 (Summer 2012, 2013) <i>Nominated for the Christopher Knapper Teaching Award</i>	100 students
Animal Behaviour BIOL 321 (Fall 2011)	100 students

Guest Lectures

Animal Behaviour BIOL 3802 at Carleton (Winter 2019)
Ornithology BIOL 4500 at Carleton (Fall 2018)
Data Management and Statistics for Biologists BIOL 243 at Queen's (Fall 2013)
Comparative Cognition PSYC 355 at Queen's (Spring 2013)
Nanoscience and Nanotechnology PHYS 483 at Queen's (Winter 2008; Winter 2012)
The Biology of Sex BIOL 210 at Queen's (2008-10)
Population and Evolutionary Ecology BIOL 302 at Queen's (Fall 2006)

Education Courses Completed

Incorporating Activities into Larger Classes at Carleton (Summer 2019)

Teaching and Learning in Higher Education SGS 901 at Queen's University (Spring 2013)

Writing for Magazines and Newspapers

R Dakin. (2012) Grades, the currency on campus. **University Affairs**, December.

R Dakin. (2012) Accreditation of environmental degree programs raises concerns. **University Affairs**, November.

R Dakin. (2012) Getting up close to nature. **Kingston Whig Standard** newspaper, February 4.

Advising and Mentoring

Graduate Students and Post-Docs

Emil Isaksson, PhD uOttawa (2022-2024)

Ruchitha Ratnayake, MSc Carleton (2022-2024)

Caitlin Menzies, MSc Carleton (2021-2023)

Courtney Donkersteeg, MSc Carleton (2021-2023)

Erin Jackson, MSc Carleton (2020-22)

Ilias Berberi, PhD Carleton (2020-24)

Vikram Baliga, Postdoc UBC (2020-21)

Ben Vernasco, PhD Virginia Tech (2017-19)

Levente Orban, Postdoc UBC (2016-19)

Paolo Segre, PhD UBC (2013-15)

Tyson Read, MSc UBC (2013-15)

Tyee Fellows, MSc UBC (2013-15)

** I have served as Emil's PhD supervisor after the illness and death of his original supervisor*

Subsequent Position

PhD in progress*

MSc in progress

MSc in progress

MSc in progress

MSc in progress

PhD in progress

Postdoc at University of British Columbia

Postdoc at Washington State University

Instructor at Kwantlen Polytechnic University

Instructor at Cal State University, Chico

Wildlife Biologist, Pacific Gas and Electric

Medical School at the University of Toronto

Nominated for a 2020-21 Faculty Graduate Mentoring Award

Honours Theses

Jessica Bellefeuille, Carleton (2021-22)

Brenna Gagliardi, Carleton (2021-22)

Justyna Fleming, Carleton (2021-22)

Grace Simonds, Carleton (2020-21)

Zoe Hillier-Weltman, Carleton (2020-21)

Jenna Watson, Carleton (2020-21)

Ashley Irwin, Carleton (2020-21)

Courtney Donkersteeg, Carleton (2020)

Erin Jackson, Carleton (2019-20)

Paisley Clunis, Carleton (2019-20)

Shufan Xia, Haverford (2018-20)

Owen McCrossan, Drexel (2015-16)

Chun Chi Lau, UBC (2014-15)

Alice Domalik, Queen's (2013-14)

Michelle Loranger, Queen's (2012-13)

Alison Porter, Queen's (2011-12)

Subsequent Position

BSc in progress

BSc in progress

BSc in progress

BEd at Queen's University

MSc at York, Biology

MSc at Carleton, Biology

Applying to Medical School

MSc at Carleton, Biology

MSc at Carleton, Biology

Program Officer at NSERC

BSc in progress

Research Assistant at Drexel University

Medical School at Oxford

MSc at Simon Fraser University, Biology

Employed at Canadian Museum of Nature

Employed at the Beaty Biodiversity Centre

BIOL 4901 Directed Studies and iCureus

Eric Maquignaz, Carleton (2021-22)

Subsequent Position

MSc at Carleton, Biology

Brenna Gagliardi, Carleton (2020-21)	BSc in progress
Jessica Bellefeuille, Carleton (2020-21)	BSc in progress
Charlotte Jerome, Carleton (2020-21)	BSc in progress
Kara Scott, Carleton (2019-20)	BSc in progress
Yuchao Wang, Haverford (2018-20)	Research Specialist at the University of Pennsylvania
Dan van Beveren, Haverford (2017-18)	PhD at Cal Tech
Yasmin Banga, UBC (2016)	Medical School
Hannah Visty, UBC (2014-15)	Employed as an Ecological Consultant
Jordan Roth, UBC (2014-15)	BSc at UBC, Computer Science and Statistics

Research Publications (last 6 years only)

† undergraduate co-author * *co-first author*

Manuscripts Submitted and in Revision

1. EK Jackson†, JA Elmore, SR Loss, BM Winger, **R Dakin**. Flight morphology and visual obstruction predict collision risk in birds. Revision requested for **Proceedings B**. <https://doi.org/10.1101/2020.07.20.212985>
2. I Berberi, PS Segre, DL Altshuler, **R Dakin**. Unpredictable hummingbirds: Flight path entropy is constrained by speed and wing loading. Revision requested for **Proceedings B**. <https://doi.org/10.1101/2020.08.11.246926>
3. **R Dakin**, P Clunis†, TB Ryder. Reciprocal social ties drive stable cooperation within a network. In revision following review at **Proceedings B**. <https://doi.org/10.1101/2020.11.06.371567>
4. **R Dakin** and TB Ryder. Gender bias in research teams and the underrepresentation of women in science. In revision following review at **PLoS Biology**. <https://doi.org/10.1101/741694>
5. GS Betini, E Malaj, C Donkersteeg†, AC Smith, S Wilson, GW Mitchell, RG Clark, CA Bishop, LE Burns, **R Dakin**, C Morissey, N Mahony. Spatial-temporal variation in the association between agricultural activities and bird communities in Canada. In review.
6. KM Scott†, A Danko, P Plant, and **R Dakin**. What causes bird-building collision risk? Seasonal dynamics and weather drivers. In review.

Peer-Reviewed Journal Articles

7. DG Roche, I Berberi, F Dhane†, F Lauzon†, S Soeharjono†, **R Dakin**, and SA Binning. (2022) Slow improvement to the archiving quality of open datasets shared by researchers in ecology and evolution. In press at **Proceedings of the Royal Society B**.
8. M Campbell, **R Dakin**, S Stowe, K Burton†, B Raven†, M Mapani, JW Dawson, and A Adler. (2021) Thoracic weighting of restrained subjects during exhaustion recovery causes loss of lung reserve volume in a model of police arrest. **Nature Scientific Reports** 11: 15166. <https://doi.org/10.1038/s41598-021-94157-w>
9. SM Bertram, **R Dakin**, SJ Harrison, DT Tremblay, ML Reifer†, and GR Kolluru. (2021) Acoustic signalling performance: variation in vigour at multiple scales. **Animal Behaviour** 184: 157-171. <https://doi.org/10.1016/j.anbehav.2021.08.001>
10. BJ Vernasco, **R Dakin**, AD Majer†, MF Haussmann, TB Ryder, and IT Moore. (2021) Longitudinal dynamics and behavioral correlates of telomeres in male wire-tailed manakins. **Functional Ecology** 35: 450-462. <https://doi.org/10.1111/1365-2435.13715>
11. **R Dakin**, IT Moore, BM Horton, BJ Vernasco, and TB Ryder. (2021) Testosterone-mediated behavior shapes the emergent properties of social networks. In press, **Journal of Animal Ecology** 90: 131-142. <https://doi.org/10.1111/1365-2656.13305>

12. **R Dakin**, PS Segre, and DL Altshuler. (2020) Individual variation and the biomechanics of maneuvering flight in hummingbirds. Accepted to the **Journal of Experimental Biology**. 223: jeb161828.
<https://doi.org/10.1242/jeb.161828>
 13. **R Dakin** and TB Ryder. (2020) Reciprocity and behavioral heterogeneity govern the stability of social networks. **PNAS** 117: 2993-2999. <https://doi.org/10.1073/pnas.1913284117>
 14. TB Ryder*, **R Dakin***, BJ Vernasco, BS Evans, BM Horton, IT Moore. (2020) Testosterone modulates status-specific patterns of cooperation in a social network. **American Naturalist** 195: 82-94.
<https://doi.org/10.1086/706236>
 15. B Goller, TK Fellows, **R Dakin**, L Tyrell, E Fernández-Juricic, and DL Altshuler. (2019) Spatial and temporal resolution of the visual system of Anna's hummingbirds (*Calypte anna*) relative to other birds. **Physiological and Biochemical Zoology** 92: 482-495. <https://doi.org/10.1086/705124>
 16. SA Kane, Y Wang, R Fang, Y Lu, **R Dakin**. (2019) How conspicuous are peacock eyespots and other colorful feathers in the eyes of mammalian predators? **PLoS One** 14: e0210924.
<https://doi.org/10.1371/journal.pone.0210924>
 17. **R Dakin** and TB Ryder. (2018) Dynamic network partnerships and social contagion drive cooperation. **Proceedings of the Royal Society B** 285: 20181973. <https://doi.org/10.1098/rspb.2018.1973>
 18. SA Kane, D van Beveren† and **R Dakin**. (2018) Biomechanics of the peafowl's crest reveals frequencies tuned to social displays. **PLoS One** 13: e020724. <https://doi.org/10.1371/journal.pone.0207247>
 19. **R Dakin***, PS Segre*, AD Straw and DL Altshuler. (2018) Morphology, muscle capacity, skill, and maneuvering ability in hummingbirds. **Science** 359: 653-657. <https://doi.org/10.1126/science.aao7104>
 - *I took parental leave in 2016-17 following the birth of my daughter, for a total of 9 months full-time absence from research*
 20. PS Segre*, **R Dakin***, TG Read, AD Straw, and DL Altshuler. (2016) Mechanical constraints on flight at high elevation decrease maneuvering performance of hummingbirds. **Current Biology** 26: 3368-3374.
<https://doi.org/10.1016/j.cub.2016.10.028>
 21. EE LeDue, K Mann, E Koch†, B Chu, **R Dakin**, and MD Gordon. (2016) Starvation-induced depotentiation of bitter taste in *Drosophila*. **Current Biology** 26: 2854-2861. <https://doi.org/10.1016/j.cub.2016.08.028>
 22. **R Dakin**, TK Fellows, and DL Altshuler. (2016) Visual guidance of forward flight in hummingbirds reveals control based on image features instead of pattern velocity. **PNAS** 113: 8849-8854.
<https://doi.org/10.1073/pnas.1603221113>
 23. **R Dakin**, JQ Ouyang, ÁZ Lendvai, MF Haussmann, IT Moore, and F Bonier. (2016) Weather matters: begging calls are temperature- and size-dependent signals of offspring state. **Behaviour** 153: 871-896.
<https://doi.org/10.1163/1568539X-00003370>
 24. **R Dakin**, O McCrossan†, JF Hare, R Montgomerie, and SA Kane. (2016) Biomechanics of the peacock's display: how feather structure and resonance influence multimodal signaling. **PLoS One** 11(4): e0152759.
<https://doi.org/10.1371/journal.pone.0152759>
- In the top 1% most downloaded articles for PLoS One.*
25. **R Dakin**, ÁZ Lendvai, JQ Ouyang, IT Moore, and F Bonier. (2016) Plumage colour is associated with partner parental care in mutually ornamented tree swallows. **Animal Behaviour** 111: 111-118.
<https://doi.org/10.1016/j.anbehav.2015.10.006>

Conference Presentations (last 3 years only)

* presenting author † undergraduate co-author

I Berberi*, PS Segre, DL Altshuler, **R Dakin**. (2021) Unpredictable hummingbirds: Flight path entropy is constrained by speed and wing loading. SICB virtual meeting.

EK Jackson†*, JA Elmore, SR Loss, BM Winger, **R Dakin**. (2021) Morphology, vision, and the risk of collision mortality in birds. SICB virtual meeting.

P Clunis†*, TB Ryder, **R Dakin**. (2021) Reciprocity is a pathway to social network stability. SICB virtual meeting.

BJ Vernasco*, **R Dakin**, AD Majer†, MF Haussmann, TB Ryder, IT Moore. (2021) A telomeric perspective on the (anti-)aging phenotype of male wire-tailed manakins (*Pipra flicauda*). SICB virtual meeting.

PE Bolton*, CN Balakrishnan, TB Ryder, **R Dakin**, IT Moore, BM Horton. (2021) Gene expression in neuroendocrine tissues of a cooperatively lekking bird, the wire-tailed manakin. SICB virtual meeting.

VB Baliga*, **R Dakin**, DL Altshuler. (2021) The influence of lateral and frontal optic flow on flight control in Anna's hummingbirds. SICB virtual meeting.

R Dakin*, IT Moore, BM Horton, BJ Vernasco, TB Ryder. (2021) Testosterone-mediated behavior shapes social networks in wire-tailed manakins. SICB virtual meeting.

EK Jackson†*, **R Dakin**. (2020) Morphology, vision, and the risk of collision mortality in birds. Animal Behavior Society virtual meeting.

I Berberi*, PS Segre, DL Altshuler, **R Dakin**. (2020) In the air, but now where? Quantifying flight path predictability in hummingbirds. Animal Behavior Society virtual meeting.

P Clunis†*, TB Ryder, **R Dakin**. (2020) Reciprocity is a pathway to social network stability. Animal Behavior Society virtual meeting.

R Dakin*, TB Ryder. (2020) Reciprocity and behavioural heterogeneity govern the stability of social networks. Animal Behavior Society virtual meeting.

R Dakin*, PS Segre, I Berberi, DL Altshuler. (2020) Multilevel analysis of maneuvering performance and morphology in hummingbirds. SICB, Austin. Oral presentation. *Invited contribution to the symposium on modelling and morphology*.

TB Ryder, **R Dakin***, BJ Vernasco, BM Horton, and IT Moore. (2020) Testosterone modulates status-specific patterns of cooperation and transmission of behavior in a social network. SICB, Austin. Oral presentation.

Vernasco BJ*, **R Dakin**, AD Majer†, MF Haussmann, TB Ryder, IT Moore. (2020) Using telomeres to assess patterns of biological aging in a cooperative lek-breeding passerine, the wire-tailed manakin. SICB, Austin. Oral presentation.

Kane SA, S Xia†*, R Fang†, Y Lu†, Ulzii-Orshikh N, J Wu, **R Dakin**. (2020) Multispectral imaging reveals the design of iridescent visual signals in peacocks and related pheasants. SICB, Austin. Poster presentation.

Kane SA, Y Wang†*, R Fang†, Y Lu†, **R Dakin**. (2020) How conspicuous are peacock eyespots and other colorful feathers in the eyes of mammalian predators? SICB, Austin, Poster presentation.

Academic Presentations – Invited

Kansas State University, Division of Biology

Mar. 2022

George A. Bartholomew Lecture (keynote), Society of Integrative and Comparative Biology

Jan. 2021

University of Toronto, Scarborough

Nov. 2019

Université du Québec à Montréal

Oct. 2019

Cornell University, Department of Neurobiology and Behavior	Mar. 2018
Memorial University of Newfoundland, Department of Psychology	Feb. 2018
San Diego State University, Biology Department	Feb. 2018
Carleton University, Department of Biology	Jan. 2018
University of British Columbia, Department of Zoology	Nov. 2017
Smithsonian Institution, Smithsonian Conservation Biology Institute	Sept. 2017
University of Ottawa, Department of Biology	Feb. 2017
Canadian Wildlife Services and Environment Canada	Dec. 2015
Simon Fraser University, Department of Biological Sciences	Dec. 2015

Awards and Honours

George A. Bartholomew Award (annual international award for top career researcher), Society for Integrative and Comparative Biology (2021)
Broadening Participation Award, Society for Integrative and Comparative Biology (2018)
Dorothy Skinner Award for Research Excellence, Society for Integrative and Comparative Biology (2016)
Dean of Science Excellence in Service Award, UBC Faculty of Science (2015)
UBC Postdoc Conference Travel Award (2015)
American Ornithologists' Union Student Travel Award (2013)
Canadian Foundation for Innovation Emerging Science Journalist Award (2011)
Fred Cooke Research Award, Society for Canadian Ornithologists (2008)
Conference Travel Grant, Iridescence: More than Meets the Eye (2008)
Ontario Sailing Leadership Award (2007)
Medal in Biology, Queen's University (2006)
Helen Arlis Denyes Scholarship in Biology, Queen's University (2005)
James H. Rattray Scholarship in Science, Queen's University (2004)
Wallace Near Prize in Biology, Queen's University (2004)

Service

NSERC National Scholarships and Fellowships Committee 169, Ecology and Evolution (2021-2024)
Hiring Committee, Conservation Science Faculty Position (2021)
Tenure and Promotion Committee, Carleton Biology (2021)
Host for Carleton ACE-EDI Event: The Social Context of STEM Education with Dr. Bryan Dewsbury (2021)
Carleton Faculty of Science Equity, Diversity and Inclusion Committee (2020-21)
Biology Equity, Diversity and Inclusion Committee (2020-21)
CUASA Union Council Representative (2020-21)
NSERC USRA Award Selection Committee (2020, 2021)
Biology Library Representative (2019-2020)
“How to Get a Faculty Position” Invited Presentation, Carleton (2019)
Broadening Participation Mentorship Program, SICB (2019-2021)
Local Organizing Committee, 10th International Congress of Comparative Physiology and Biochemistry (2018-19)
Student Award Judge, ICCPB (2019)
Student Award Judge, SICB (2016-20)
R Study Group (workshops on statistical software), UBC (2014-16)
R Club (workshops on statistical software), Queen's University (2012-13)
Hiring Committee, Integrative Cell Biologist, Queen's University (2012)
Hiring Committee, Instructor for Introductory Biology, Queen's University (2011)
Appointments, Review, Tenure & Promotion Committee (elected representative, Queen's) (2010-12)

Biology Graduate Students' Committee, Queen's University (2010-12)
Organizing Committee, Society of Canadian Ornithologists conference (2007)

Reviewer for Journals and Grants: I review about 8-10 articles and grants per year (not including revisions). The following is a list of venues where I have contributed recent reviews: American Naturalist, Animal Behaviour, Behavioral Ecology, Behavioral Ecology and Sociobiology, Biological Journal of the Linnean Society, Biology Letters, Biotropica, BMC Evolutionary Biology, Ecology and Evolution, eLife, Ethology, Functional Ecology, Integrative and Comparative Biology, Journal of Animal Ecology, Journal of Ornithology, MITACS Accelerate, MITACS Elevate, National Geographic Society Grants, Nature Communications, NKFI Hungary, Ornithology, PeerJ, Peerage of Science, PLoS One, PNAS, Proceedings of the Royal Society B, The Auk, The Dorothy Skinner Award, The George A. Bartholomew Award, and The Werner & Hildegarde Hesse Ornithological Research Awards, US-Israel Binational Science Foundation

Outreach

Invited Speaker for MacNamara Naturalist's Club (2022)
Carleton BioBites Lunch Hour (2020, 2022)
Discovery Canada #scientistfridays, featured video with Yuchao Wang (2020)
National Girls Learning Code Day mentor, "Collaborative Game Production" (2018)
Ladies Learning Code workshop mentor, "HTML and CSS for beginners" (2017)
National Learn to Code Day mentor, "Using Data to Solve Problems: Intro to AI and Machine Learning" (2017)
Sedona Hummingbird Festival, invited speaker (2017)
Peacock Day Los Angeles, keynote at an outreach event with over 4,400 attendees (2017)
Reddit PLoS Science Wednesday, invited host for science Ask Me Anything series (2016)
Science Fair Judge, Greater Vancouver Regional Science Fair (2016)
"Peacocks are Way Cool because..." public event at the Beaty Biodiversity Museum (2015)
Los Angeles Arboretum, invited speaker (2010, 2015)
Canadian Association for Girls in Science, mentor and field trip organizer (2013)
CFRC 101.9, training coordinator for a radio program by and for seniors (2012-13)
Science Fair Judge, Frontenac, Lennox and Addington Regional Science Fair (2011-13)
SEEDS at Queen's University, taught animal behaviour to 7-8th grade students (2012)
"Hen's Quest: A Peacockumentary" shortlisted for US Animal Behavior Society film awards (2011)
YouTube, I have created videos about scientific research with >250,000 views: [youtube.com/user/roslyndakin](https://www.youtube.com/user/roslyndakin)

Media Coverage

Biology of weighted restraint... New York Times
Why Peacocks? An Unlikely Search for Meaning in the World's Most Magnificent Bird... Sean Flynn, Simon & Schuster
Social Networks in Animals... CJBQ Radio, The Ottawa Citizen
BBC's 30 Animals That Made Us Smarter... Research featured in radio program
Hummingbird Flight... CBC's Fresh Air, CKCU Radio, National Geographic Spain
Crest feathers are tuned to social displays... Science, New Scientist, Daily Mail, The Atlantic, The Scientific American 60-Second Science Podcast, Birdnote podcast
Natural Born Rebels... BBC/PBS Series, Episode 3 "The Mating Game"
Peacocks accused of fowl play... Vancouver Weekly
Evolution of maneuverability... Science, Science News, Seeker, Daily Mail, BBC, CBC, Forbes
Visual guidance of flight... Gizmodo, Christian Science Monitor, BBC Radio, City TV, Vancouver Sun, Daily Planet, National Geographic feature story

Biomechanics of the peacock's display... New York Times/Science Take, Quirks and Quarks, Science News, Christian Science Monitor, Gizmodo, Wall Street Journal, Nature Research Highlights, Scientific American, Discover, PBS Newshour

Deceptive courtship strategies... Quirks and Quarks, BBC, Science News, National Geographic, NPR

Sexual selection and peacocks... The Nature of Things, Slate, Nature News, Wired, Science News, Wall Street Journal, Vancouver Weekly

CURRICULUM VITAE

ASHKAN GOLSHANI

BIOGRAPHICAL INFORMATION

Name: Ashkan Golshani
Date of Birth: September 08, 1970
Citizenship: Canadian

University Address:
Department of Biology
Carleton University
1125 Colonel By Drive
Ottawa, ON
K1S 5B6
E-mail: ashkan_golshani@carleton.ca
Phone: (613) 520-2600 ex 1006
Fax: (613) 520-3539

ACADEMIC POSITIONS

Full Professor 2016-present	Department of Biology Carleton University
Associate Professor 2007-2016	Department of Biology Carleton University
Director 2004-present	Systems Biology Group Carleton University
Assistant Professor 2003-2007	Department of Biology Carleton University
Post-Doctoral Fellow Research 2001-2003	Banting and Best Institute of Medical University of Toronto

EDUCATION

Doctor of Philosophy (2001)	University of Toronto Area of specialization: Virology, Molecular Microbiology and Genetics Supervisor: Dr. MG AbouHaidar
Masters of Science (1996)	University of Toronto Area of specialization: Molecular Biology and Genetics Thesis: Virology, Molecular Microbiology and Genetics Supervisor: Dr. MG AbouHaidar
Bachelor of Science (1994)	York University Area of specialization: Molecular Genetics

POST DOCTORAL TRAINING

NSERC-Post Doctoral Fellow Banting and Best Institute of Medical Research
(2001-2003) Area of specialization: Genomics and Proteomics
Supervisor: Dr. JF Greenblatt

AFFILIATIONS AND AWARDS

Editorial Board Member, Journal of Biotechnology and Biotechnological Equipment 2004 - present

Member of American Society for Microbiology 2003 - present

Member of American Society for Virology 2003 - present

Member of the Board of Advisors for HB Biotech Inc 2003 - present

Member of the Refereeing Committee for the Canadian Journal of Plant Pathology, Journal of Archives of Biochemistry and Biophysics, Journal of Cryobiology, BMC Bioinformatic, Journal of Chromatography B, BMC Genomics, and Plant Science 2002 - present

Member of the Refereeing Committee for the Journal of Cryobiology 2004 - present

Designed Biologics Inc. co-founder, 2016 - present

Canadian Foundation for Innovation New-Opportunity Award 2005 and 2020

Natural Sciences and Engineering Research Council (NSERC) Award of Appreciation 2016

Canadian Society of Microbiologists Award of Appreciation 2014

Carleton University Research Award 2012

Persian Circle Award of Contribution 2010

Natural Science and Engineering Research Council of Canada (NSERC) Post-Doctoral Award
2001 - 2003

Duncan Gellatly Memorial Award
1999 - 2000

Ontario Graduate Studies in Sciences and Technology Award
1999 - 2000

University of Toronto Open Fellowship
1994 - 2001

Commonwealth Student Award
1990 - 1991

Summer NSERC Award
1991

Summer Industrial IRAP-H Award
1990

NOTABLE REGIONAL AND NATIONAL CONTRIBUTIONS TO THE SOCIETY

Ottawa Regional Microbiology Event, Founder and Chair (2018-present)

Natural Sciences and Engineering Research Council of Canada (NSERC), Discovery Grant competition panel member 1501 (2016-2017)

Canadian Institute of Health Research (CIHR) natural sciences and engineering advisory board member (2013-2014)

Canadian Society of Microbiologists (CSM) 63rd annual conference Chair (2012-2013)

Natural Sciences and Engineering Research Council of Canada (NSERC), Discovery Grant competition panel Chair (2011-2013)

Natural Sciences and Engineering Research Council of Canada (NSERC), Discovery Grant competition panel member 1501 (2009-2011)

Ontario Graduate Scholarship (OGS) selection member graduate student ranking committee (2008-2009)

Natural Sciences and Engineering Research Council of Canada (NSERC) Graduate Student Ranking Committee (2004 - 2006)

RESEARCH ACTIVITIES

A) Academic Research Grants

Natural Sciences and Engineering Research Council of Canada Discovery Grant 2019-2024	\$210,000.00
International collaboration seed project 2021-2022	\$10,000.00
Multidisciplinary Research Catalyst Fund (MRCF) 2021-2022 (co-PI)	\$30,000.00
Canadian Institute of Health Research CIHR Project Grant (co-PI) 2020-2021	\$934,000.00
Canadian Foundation for Innovation COVID Infrastructure development (co-PI) 2020-2021	\$250,000.00
COVID-Rapid Intervention Response 2020-2021	\$12,000.00
SPRINT collaboration program 2017-2019	\$8,000.00

Genome Canada Food biosafety program (co-PI) 2017-2019	\$1,300,000.00
Natural Sciences and Engineering Research Council of Canada Discovery Grant 2014-2018	\$265,000.00
Natural Sciences and Engineering Research Council of Canada Discovery Grant 2009-2013	\$185,000.00
Labatt Alcohol reduction in processed alcoholic beverages 2009-2011 (co-PI)	\$150,000.00
Cities of Ottawa and Guelph Pathogens in plant feeds 2008-2010 (co-PI)	\$75,000.00
Canadian Foundation for Innovation New-Op A proteomics center to study gene function in yeast 2005-2006	\$178,000.00
Ontario Innovation Trust A proteomics center to study gene function in yeast 2005	\$178,000.00
HB Biotech Filter development for bacterial count reduction in water treatment 2005	\$6,000.00
BioRad A proteomics center to study gene function in yeast 2005	\$89,000.00
Natural Sciences and Engineering Research Council of Canada Equipment Grant (co-PI) 2005-2006	\$52,000.00
Natural Sciences and Engineering Research Council of Canada Discovery Grant 2004-2009	\$190,000.00
Natural Sciences and Engineering Research Council of Canada Equipment Grant 2004	\$17,000.00
Natural Sciences and Engineering Research Council of Canada Post-Doctoral Fellowship 2001-2003	\$80,000.00

B) Refereed Journal Publications (total citation count = 5,150; h-index = 32)

Jessulat M, Amin S, Hooshyar M, Malty R, Moutaoufik MT, Zilocchi M, Istace Z, Phanse S, Aoki H, Omidi K, Burnside D, Samanfar B, Aly KA, Golshani A, Babu M. The conserved Tpk1 regulates non-homologous end joining double-strand break repair by phosphorylation of Nej1, a homolog of the human XLF. **Nucleic Acids Res.** 2021, 49(14):8145-8160.

Ahmed D, Humphrey A, Roy D, Sheridan ME, Versey Z, Jaworski A, Edwards A, Donner J, Abizaid A, Willmore W, Kumar A, Golshani A, Cassol E. HIF-1 α Regulation of Cytokine Production following TLR3 Engagement in Murine Bone Marrow-Derived Macrophages Is Dependent on Viral Nucleic Acid Length and Glucose Availability. **J Immunol.** 2021;207(11):2813-2827.

Hernández RB, de Souza-Pinto NC, Kleinjans J, van Herwijnen M, Piepers J, Moteshareie H, Burnside D, Golshani A. Manganese-Induced Neurotoxicity through Impairment of Cross-Talk Pathways in Human Neuroblastoma Cell Line SH-SY5Y Differentiated with Retinoic Acid. **Toxics.** 2021;9(12):348.

Human-Soybean Allergies: Elucidation of the Seed Proteome and Comprehensive Protein-Protein Interaction Prediction. Dick K, Pattang A, Hooker J, Nissan N, Sadowski M, Barnes B, Tan LH, Burnside D, Phanse S, Aoki H, Babu M, Dehne F, Golshani A, Cober ER, Green JR, Samanfar B. **J Proteome Res.** 2021;20(11):4925-4947.

Micalizzi EW, Golshani A, Smith ML. Propionic acid disrupts endocytosis, cell cycle, and cellular respiration in yeast. **BMC Res Notes.** 2021; 14(1):335.

Nissan N, Cober ER, Sadowski M, Charette M, Golshani A, Samanfar B. Identifying new variation at the J locus, previously identified as e6, in long juvenile 'Paranagoiana' soybean. **Theor Appl Genet.** 2021; 134(4):1007-1014.

Hooshyar M, Jessulat M, Burnside D, Kluew A, Babu M, Golshani A. Deletion of yeast TPK1 reduces the efficiency of non-homologous end joining DNA repair. **Biochem Biophys Res Commun.** 2020; 533: 899-904.

Hajikarimlou M, Hunt K, Kirby G, Takallou S, Jagadeesan SK, Omidi K, Hooshyar M, Burnside D, Moteshareie H, Babu M, Smith M, Holcik M, Samanfar B, Golshani A. Lithium Chloride Sensitivity in Yeast and Regulation of Translation. **International Journal of Molecular Science.** 2020; 21: 5730.

Hernández RB, Carrascal M, Abian J, Michalke B, Farina M, Gonzalez YR, Iyirhiaro GO, Moteshareie H, Burnside D, Golshani A, Suñol C. Manganese-induced neurotoxicity in cerebellar granule neurons due to perturbation of cell network pathways with potential implications for neurodegenerative disorders. **Metallomics.** 2020; 12: 1656-1678.

Haji-Karimlou M, Moteshareie H, Omidi K, Hooshyar M, Shaikho S, Kazmirchuk T, Burnside D, Takallou S, Zare N, Jagadeesan S, Puchacz N, Babu M, Smith M, Holcik M, Samanfar B, Golshani A. Sensitivity of yeast to lithium chloride connects the activity of YTA6 and YPR096C to translation of structured mRNAs. **PLoS One.** 2020; 15: e0235033.

Dick K, Samanfar B, Barnes B, Cober ER, Mimeo B, Tan LH, Molnar SJ, Biggar KK, Golshani A, Dehne F, Green JR. PIPE4: Fast PPI Predictor for Comprehensive Inter- and Cross-Species Interactomes. **Scientific Rep.** 2020;10(1):1390.

Galván Márquez IJ, McKay B, Wong A, Cheetham JJ, Bean C, Golshani A, Smith ML. Mode of action of nisin on Escherichia coli. **Can J Microbiol.** 2020;66(2):161-168.

Ahmed D, Roy D, Jaworski A, Edwards A, Abizaid A, Kumar A, Golshani A, Cassol E. Differential remodeling of the electron transport chain is required to support TLR3 and TLR4 signaling and cytokine production in macrophages. **Scientific Rep.** 2019;9(1):18801.

Burnside D, Schoenrock A, Moteshareie H, Hooshyar M, Basra P, Hajikarimlou M, Dick K, Barnes B, Kazmirchuk T, Jessulat M, Pitre S, Samanfar B, Babu M, Green JR, Wong A, Dehne F, Biggar KK, Golshani A. In Silico Engineering of Synthetic Binding Proteins from Random Amino Acid Sequences. **iScience.** 2019; 11:375-387.

Hernández RB, Moteshareie H, Burnside D, McKay B, Golshani A. Manganese-induced cellular disturbance in the baker's yeast, *Saccharomyces cerevisiae* with putative implications in neuronal dysfunction. **Scientific Rep.** 2019; 25:6563.

Grigg N, Schoenrock A, Dick K, Green JR, Golshani A, Wong A, Dehne F, Tsai EC, Biggar KK. Insights into the suitability of utilizing brown rats (*Rattus norvegicus*) as a model for healing spinal cord injury with epidermal growth factor and fibroblast growth factor-II by predicting protein-protein interactions. **Comput Biol Med.** 2019; 104:220-226.

Babu M, Bundalovic-Torma C, Calmettes C, Phanse S, Zhang Q, Jiang Y, Minic Z, Kim S, Mehla J, Gagarinova A, Rodionova I, Kumar A, Guo H, Kagan O, Pogoutse O, Aoki H, Deineko V, Caufield JH, Holtzapple E, Zhang Z, Vastermark A, Pandya Y, Lai CC, El Bakkouri M, Hooda Y, Shah M, Burnside D, Hooshyar M, Vlasblom J, Rajagopala SV, Golshani A, Wuchty S, F Greenblatt J, Saier M, Uetz P, F Moraes T, Parkinson J, Emili A. Global landscape of cell envelope protein complexes in *Escherichia coli*. **Nature Biotechnol.** 2018; 36(1):103-112.

Galván Márquez I, Ghiyasvand M, Massarsky A, Babu M, Samanfar B, Omid K, Moon TW, Smith ML, Golshani A. Zinc oxide and silver nanoparticles toxicity in the baker's yeast, *Saccharomyces cerevisiae*. **PLoS One.** 2018; 13(3):e0193111.

Ahmed D, Jaworski A, Roy D, Willmore W, Golshani A, Cassol E. Transcriptional Profiling Suggests Extensive Metabolic Rewiring of Human and Mouse Macrophages during Early Interferon Alpha Responses. **Mediators Inflamm.** 2018; 5906819.

Bentley-DeSousa A, Holinier C, Moteshareie H, Tseng YC, Kajjo S, Nwosu C, Amodeo GF, Bondy-Chorney E, Sai Y, Rudner A, Golshani A, Davey NE, Downey M. A Screen for Candidate Targets of Lysine Polyphosphorylation Uncovers a Conserved Network Implicated in Ribosome Biogenesis. **Cell Rep.** 2018; 22(13):3427-3439.

Omid K, Jessulat M, Hooshyar M, Burnside D, Schoenrock A, Kazmirchuk T, Hajikarimlou M, Daniel M, Moteshareie H, Bhojoo U, Sanders M, Ramotar D, Dehne F, Samanfar B, Babu M, Golshani A. Uncharacterized ORF HUR1 influences the efficiency of non-homologous end-joining repair in *Saccharomyces cerevisiae*. **Gene.** 2018; 639:128-136.

Samanfar B, Shostak K, Moteshareie H, Hajikarimlou M, Shaikho S, Omid K, Hooshyar M, Burnside D, Márquez IG, Kazmirchuk T, Naing T, Ludovico P, York-Lyon A, Szereszewski K, Leung C, Jin JY, Megarbane R, Smith ML, Babu M, Holcik M, Golshani A. The sensitivity of the yeast, *Saccharomyces cerevisiae*, to acetic acid is influenced by DOM34 and RPL36A. **PeerJ.** 2017; 5:e4037.

Kazmirchuk T, Dick K, Burnside DJ, Barnes B, Moteshareie H, Hajikarimlou M, Omid K, Ahmed D, Low A, Lettl C, Hooshyar M, Schoenrock A, Pitre S, Babu M, Cassol E, Samanfar B, Wong A, Dehne F, Green JR, Golshani A. Designing anti-Zika virus peptides derived from predicted human-Zika virus protein-protein interactions. **Comput Biol Chem.** 2017; 71:180-187.

Mehranfar A, Ghadiri N, Kouhsar M, Golshani A. A Type-2 fuzzy data fusion approach for building reliable weighted protein interaction networks with application in protein complex detection. **Comput Biol Med.** 2017; 88:18-31.

Samanfar B, Molnar SJ, Charette M, Schoenrock A, Dehne F, Golshani A, Belzile F, Cober ER. Mapping and identification of a potential candidate gene for a novel maturity locus, E10, in soybean. **Theor Appl Genet.** 2017; 130(2):377-390.

Schoenrock A, Burnside D, Moteshareie H, Pitre S, Hooshyar M, Green JR, Golshani A, Dehne F, Wong A. Evolution of protein-protein interaction networks in yeast. **PLoS One.** 2017; 12(3):e0171920

Shaikho S, Dobson CC, Naing T, Samanfar B, Moteshareie H, Hajikarimloo M, Golshani A, Holcik M. Elevated levels of ribosomal proteins eL36 and eL42 control expression of Hsp90 in rhabdomyosarcoma. **Translation (Austin).** 2016 ; 4(2):e1244395.

Gagarinova A, Stewart G, Samanfar B, Phanse S, White CA, Aoki H, Deineko V, Beloglazova N, Yakunin AF, Golshani A, Brown ED, Babu M, Emili A. Systematic Genetic Screens Reveal the Dynamic Global Functional Organization of the Bacterial Translation Machinery. **Cell Reports** 2016 17(3):904-916.

Pelin A, Moteshareie H, Sak B, Selman M, Naor A, Eyahpaise MÈ, Farinelli L, Golshani A, Kvac M, Corradi N. The genome of an Encephalitozoon cuniculi type III strain reveals insights into the genetic diversity and mode of reproduction of a ubiquitous vertebrate pathogen. **Heredity (Edinb).** 2016 116(5):458-65.

Kumar A, Beloglazova N, Bundalovic-Torma C, Phanse S, Deineko V, Gagarinova A, Musso G, Vlasblom J, Lemak S, Hooshyar M, Minic Z, Wagih O, Mosca R, Aloy P, Golshani A, Parkinson J, Emili A, Yakunin AF, Babu M. Conditional Epistatic Interaction Maps Reveal Global Functional Rewiring of Genome Integrity Pathways in Escherichia coli. **Cell Rep.** 2016 14(3):648-61.

Jessulat M, Maly RH, Nguyen-Tran DH, Deineko V, Aoki H, Vlasblom J, Omidi K, Jin K, Minic Z, Hooshyar M, Burnside D, Samanfar B, Phanse S, Freywald T, Prasad B, Zhang Z, Vizeacoumar F, Krogan NJ, Freywald A, Golshani A, Babu M. Spindle Checkpoint Factors Bub1 and Bub2 Promote DNA Double-Strand Break Repair by Nonhomologous End Joining. **Mol Cell Biol.** 2015 35(14):2448-2463.

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Newsted D, Fallahi F, Golshani A, Azizi A. Advances and challenges in mucosal adjuvant technology. **Vaccine.** 2015 33(21):2399-2405.

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Samanfar B, Tan le H, Shostak K, Chalabian F, Wu Z, Alamgir M, Sunba N, Burnside D, Omidi K, Hooshyar M, Galván Márquez I, Jessulat M, Smith ML, Babu M, Azizi A, Golshani A. A global investigation of gene deletion strains that affect premature stop codon bypass in yeast, Saccharomyces cerevisiae. **Mol Biosyst.** 2014 Apr;10(4):916-24

AbouHaidar MG, Venkataraman S, Golshani A, Liu B, Ahmad T. Novel coding, translation, and gene expression of a replicating covalently closed circular RNA of 220 nt. **Proc Natl Acad Sci USA.** 2014 7;111(40):14542-7

Babu M, Arnold R, Bundalovic-Torma C, Gagarinova A, Wong KS, Kumar A, Stewart G, Samanfar B, Aoki H, Wagih O, Vlasblom J, Phanse S, Lad K, Yeou Hsiung Yu A, Graham C, Jin K, Brown E, Golshani A, Kim P, Moreno-Hagelsieb G, Greenblatt J, Houry WA, Parkinson J, Emili A. Quantitative genome-wide genetic interaction screens reveal global epistatic relationships of protein complexes in Escherichia coli. **PLoS Genet.** 2014 10(2):e1004120.

Omidi K, Hooshyar M, Jessulat M, Samanfar B, Sanders M, Burnside D, Pitre S, Schoenrock A, Xu J, Babu M, Golshani A. Phosphatase Complex Pph3/Psy2 Is Involved in Regulation of Efficient Non-Homologous End- Joining Pathway in the Yeast *Saccharomyces cerevisiae*. **PLoS One**. 2014 31;9(1):e87248

Darvishi E, Omidi M, Bushehri AA, Golshani A, Smith ML. The antifungal eugenol perturbs dual aromatic and branched-chain amino acid permeases in the cytoplasmic membrane of yeast. **PLoS One**. 2013 18;8(10):e76028.

Darvishi E, Omidi M, Bushehri AA, Golshani A, Smith ML. Thymol antifungal mode of action involves telomerase inhibition. **Med Mycol**. 2013 51(8):826-34.

Samanfar B, Omidi K, Hooshyar M, Laliberte B, Alamgir M, Seal AJ, Ahmed-Muhsin E, Viteri DF, Said K, Chalabian F, Golshani A, Wainer G, Burnside D, Shostak K, Bugno M, Willmore WG, Smith ML, Golshani A. Large- scale investigation of oxygen response mutants in *Saccharomyces cerevisiae*. **Mol Biosyst**. 2013 7;9(6):1351-9.

Galván Márquez I, Akuaku J, Cruz I, Cheetham J, Golshani A, Smith ML. Disruption of protein synthesis as antifungal mode of action by chitosan. **Int J Food Microbiol**. 2013 3;164(1):108-12.

Pitre S, Hooshyar M, Schoenrock A, Samanfar B, Jessulat M, Green JR, Dehne F, Golshani A. Short Co- occurring Polypeptide Regions Can Predict Global Protein Interaction Maps. **Sci Rep**. 2012;2:239

Babu M, Díaz-Mejía JJ, Vlasblom J, Gagarinova A, Phanse S, Graham C, Yousif F, Ding H, Xiong X, Nazarians-Armavil A, Alamgir M, Ali M, Pogoutse O, Pe'er A, Arnold R, Michaut M, Parkinson J, Golshani A, Whitfield C, Wodak SJ, Moreno-Hagelsieb G, Greenblatt JF, Emili A. Genetic interaction maps in *Escherichia coli* reveal functional crosstalk among cell envelope biogenesis pathways. **PLoS Genet**. 2011; 7(11):e1002377.

Babu M, Aoki H, Chowdhury WQ, Gagarinova A, Graham C, Phanse S, Laliberte B, Sunba N, Jessulat M, Golshani A, Emili A, Greenblatt JF, Ganoza MC. Ribosome-dependent ATPase interacts with conserved membrane protein in *Escherichia coli* to modulate protein synthesis and oxidative phosphorylation. **PLoS One**. 2011; 6(4):e18510.

Amos-Binks A, Patulea C, Pitre S, Schoenrock A, Gui Y, Green JR, Golshani A, Dehne F. Binding site prediction for protein-protein interactions and novel motif discovery using re-occurring polypeptide sequences. **BMC Bioinformatics**. 2011; 12:225.

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Jessulat M, Buist T, Alamgir M, Hooshyar M, Xu J, Aoki H, Ganoza MC, Butland G, Golshani A. In vivo investigation of protein-protein interactions for helicases using tandem affinity purification. **Methods Mol Biol**. 2010; 587:99-111.

Sirskyj D, Weltzin R, Golshani A, Anderson D, Bozic J, Diaz-Mitoma F, Azizi A. Detection of influenza A and B neutralizing antibodies in vaccinated ferrets and macaques using specific biotin-streptavidin conjugated antibodies. **J Virol Methods**. 2010; 163(2):459-464.

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Krogan NJ, Dover J, Wood A, Schneider J, Heidt J, Boateng MA, Dean K, Ryan OW, Golshani A, Johnston M, Greenblatt JF, Shilatifard A. The Paf1 complex is required for histone H3 methylation by COMPASS and Dot1p: linking transcriptional elongation to histone methylation. **Mol Cell**. 2003; 11:721-729.

Wood A, Krogan NJ, Dover J, Schneider J, Heidt J, Boateng MA, Dean K, Golshani A, Zhang Y, Greenblatt JF, Johnston M, Shilatifard A. Bre1, an E3 ubiquitin ligase required for recruitment and substrate selection of Rad6 at a promoter. **Mol Cell**. 2003; 11:267-274.

Golshani A, Xu J, Kolev V, Abouhaidar MG, Ivanov IG. Inability of *Agrobacterium tumefaciens* ribosomes to translate in vivo mRNAs containing non-Shine-Dalgarno translational initiators. **Z Naturforsch**. 2002; 57:307- 312.

Golshani, A., Kolev, V., AbouHaidar, M.G. and Ivanov, I.G. (2000) Epsilon as an initiator of translation of CAT mRNA in *Escherichia coli*. **Biochemical and Biophysical Research Communications** 273: 528-531.

Golshani, A., Kolev, V., Mironova, R., AbouHaidar, M.G. and Ivanov, I.G. (2000) Enhancing activity of Epsilon in *Escherichia coli* and *Agrobacterium tumefaciens* cells. **Biochemical and Biophysical Research Communications** 269: 508-512.

Odjakava, M., Golshani A., Ivanov, G., AbouHaidar M.G. and Ivanov, I. (1998) The low-level expression of chloramphenicol acetyltransferase (CAT) mRNA in *Escherichia coli* does not depend on either Shine/Dalgarno or the down stream boxes in the CAT gene. **Microbiological Research** 153: 173-178.

Golshani, A., Golomehova, V., Mironova, R., Ivanov, I.G. and AbouHaidar, M. (1997) Does the Epsilon sequence of phage T7 function as an initiator for the translation of CAT mRNA in *Escherichia coli*? **Biochemical and Biophysical Research Communications** 236: 253-256.

C) Book Chapters:

Jessulat M, Smith RP, Mir-Rashed N, Golshani A, Arnason J, Smith M. Modern biological approaches to folk medicines and traditional antifungal therapies. *Int J Technol Knowl Soc*. 2006; 2: 171-80.

Johnson, C.Y., Xu, J., Nafar, Z., Dean, R., AbouHaidar, M.G., and Golshani A. (2006) "Subviral Pathogens: Their Biology and Replication" in *Recent Advances in RNA Virus Replication*. Research Signpost Press, Fort PO, pp 213-229.

Golshani, A., Hefferon, K., AbouHaidar, M.G., and Ivanov, I.G. (2002) "Alternative initiation of translation in prokaryotes" in *Advances in Biochemistry and Biophysics*. Research Signpost Press, Fort PO, Vol. 2, pp 223-241.

Hefferon, K., Golshani, A. and AbouHaidar, M. G. (2002) "Translation control of plant RNA viruses" in *Recent Research and Development in Virology*. Transworld Research Network. Fort PO, Vol. 4, pp 1-12.

D) Selected Invited Talks and Presentations:

(2019). Systematic investigation of the mode of activity of bioactive compounds. 3rd Annual Toxicology Event., Sao Paulo, Brazil Main Audience: Researcher; Keynote

(2018). Protein interactions and drugs. Science Cafe, Ottawa, Canada Main Audience: General

(2017). Predicting novel functions from interacting proteins. Ottawa Chemistry Symposium, Canada Main Audience: Researcher; Keynote

(2017). Protein synthesis, a key regulator of gene expression during stress. Health Sciences North, Departmental seminar series, Canada Main Audience: Researcher

(2017). Designing peptides with specific binding patterns. Goldstone Institute Seminar Series, United States Main Audience: Researcher

(2016). Using yeast functional genomics to study biochemical pathways in mammalian cells. University of California Riverside, Departmental Seminar Series, United States Main Audience: Researcher

(2015). Predicting protein-protein interactions from genomic data. 26th Annual High Performance Computing Symposium (2014), Canada Main Audience: Researcher; Keynote

(2015). Lessons from interacting proteins. 98th Canadian Chemistry Conference, Canada Main Audience: Researcher

Ashkan Golshani
Protein-protein interactions in higher Eukaryotes. Ottawa Health Institute, April 2012

Omidi, K. Samanfar, B. and Golshani, A. Bub1 and Bub2 affect NHEJ in yeast.
Toronto 8th Symposium of Biophysics; 2011

Samanfar, B. Chalebi, F. and Golshani, A. Genes that affect translation fidelity in yeast. Toronto 8th Symposium of Biophysics; 2011

Golshani, A. and Dehne, F.
Global investigation of protein-protein interactions in yeast. 3th European Fungus Society Meeting; 2009

Nazemof, N., Erukova, V., and Golshani, A. Identification of novel translation genes in *E.coli*
Canadian Society of Microbiologist Meeting, Montreal, 2009

Jessulat, M., Alamgir, M.D., and Golshani, A.
Rtt109 affects the efficiency of NHEJ pathway in yeast. Canadian Society of Microbiologist Meeting, Montreal, 2009

Hasan, N. and Golshani, A.
Directing mRNA into yeast mitochondria.
Canadian Society of Microbiologist Meeting, Montreal, 2009

Alamgir, M.D., Jessulat, M., and Golshani, A.
Chemical genetics and translation
Yeast Genetics Meeting, Toronto, 2008

Jessulat, M., Filingham, Greenblatt, J. and Golshani, A. Novel yeast
genes involved in NHEJ
Yeast Genetics Meeting, Toronto, 2008

Alamgir, M.D., Jessulat, M., and Golshani A.
Identification of TRP5 as a novel translation factor in *Saccharomyces cerevisiae*. FASEB
Genetics Annual Meeting, Princeton, New Jersey, 2007.

Nafar, Z. and Golshani, A.
Data mining methods for protein-protein interactions
IEEE Canadian Conference on Electrical and Computer Engineering, Ottawa, 2006.

Memarian, N., Alirezaie, J. and Golshani, A.
Automated System for Image Analysis of Yeast Colonies: A Novel Application in Functional Genomics,
Toronto 2006

Proceedings of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), pp
1120-1123, France, 2006.

Jessulat, M., Filingham, J., Krogan, N., Greenblatt, J. and Golshani, A.
Rtt109 is involved in non-homologous double stranded DNA break repair in yeast FASEB
Genetics Annual Meeting, Princeton, New Jersey, 2007.

Green, J.R., Dmochowski, G.M. and Golshani, A.
Prediction of Protein Sumoylation Sites Via Parallel Cascade Identification Canadian
Medical and Biological Engineering Society, Vancouver, June 2006.

Memarian, N., Alirezaie, J. and Golshani, A.
Application of Computerized Image Processing in Functional Genomics,
Proceedings of the IASTED International Conference on Biomedical Engineering, 2006, pp. 7-12, Austria.

Golshani, A. and AbouHaidar M.G.
The activity of LTSV associated Satellite RNA as a plant promoter
23rd Annual Meeting of American Society for Virology, Montreal, Canada, 2004).

Ramishkan, V., Golshani, A. and AbouHaidar M.G.
RYMV associated viroid-like RNA contains a functional open reading frame
23rd Annual Meeting of American Society for Virology, Montreal, Canada, 2004.

Golshani, A., Kolev, V., Ivanov, I.G. and AbouHaidar, M.G.
Non-SD base pairing to 16S rRNA and recognition by ribosomal protein S1 are not sufficient for an alternative
initiation of mRNA translation in *Agrobacterium tumefaciens*.
Translation Control 2000, Cold Spring Harbor Laboratories, New York, USA, 2000.

E) Graduate Student/Post-Doctoral Supervision (14 PhDs; 18 MSc; 5 PDF):

PhD students (total 14):

2021/01 - present
Principal Supervisor
Robati, Reza, Carleton University

Thesis/Project Title: Protein engineering of antibody-like molecules.
Present Position: PhD student

2019/9 - present

Principal Supervisor

Jagadeesan, Sasi, Carleton University

Thesis/Project Title: Regulation of translation for structured mRNAs.

Present Position: PhD student

2018/9 - present

Principal Supervisor

Takallou, Sarah, Carleton University

Thesis/Project Title: Global investigation of mRNA quality control in yeast.

Present Position: PhD student

2016/1 - 2020/6

Principal Supervisor

Maryam Karimloo, Carleton University

Student Degree Start Date: 2014/9

Thesis/Project Title: Novel helicases that influence translation initiation.

Present Position: Post-doctoral fellow

2015/9 - 2020/8

Co-Supervisor

Ahmed, Duale, Carleton University

Thesis/Project Title: Re-wiring of metabolic pathways in response to stress.

Present Position: Post-doctoral fellow

2015/1 - 2019/1

Principal Supervisor

Houman Moteshareie, Carleton University

Student Degree Start Date: 2014/1

Thesis/Project Title: IRES mediated translation control in yeast.

Present Position: Post-doctoral fellow

2014/9 - 2019/5

Principal Supervisor

Daniel Burnside, Carleton University

Thesis/Project Title: Yeast functional genomics.

Present Position: Patent agent

2013/9 - 2018/5

Principal Supervisor

Hooshyar, Mohsen, Carleton University

Thesis/Project Title: Protein-protein interaction network of DNA-stability genes.

Present Position: Scientist

2011/6 - 2012/2

Co-Supervisor

Darvishi, Emad, Tehran University

Thesis/Project Title: Mode of activity of anti-fungals.

Present Position: Research Associate

2011/5 - 2015/9

Principal Supervisor

Omidi, Katayoun, Carleton University

Thesis/Project Title: Investigating regulation of yeast NHEJ using protein-protein

interaction network mapping.
Present Position: Scientist, Growcer Inc

2011/5 - 2014/12
Principal Supervisor
Samanfar, Bahram, Carleton University
Thesis/Project Title: Regulation of translation in model organisms.
Present Position: Scientist at Agriculture Canada; Adjunct professor at Carleton U

2009/9 - 2014/9
Co-Supervisor
Galvan, Imelda, Carleton University
Thesis/Project Title: Chemical genomics of bioactive compounds.
Present Position: Policy Advisor, Health Canada

2007/9 - 2011/9
Principal Supervisor
Jessulat, Matthew
Thesis/Project Title: Characterization of Bub1 and Bub2 in cross-communication of cellular processes in yeast.
Present Position: Post-Doctoral Fellow, U of Regina

2006/9 - 2010/9
Principal Supervisor
Alamgir, Md
Thesis/Project Title: Characterization of translation associated elements 1 and 2 (TAE1 and TAE2).
Present Position: Scientific Officer, Ottawa Heart Institute

Masters students (total 18):

2021/09 – present
Principal Supervisor
Jiashu Wang
Thesis/Project Title: Designing Functional Proteins
Present Position: MSc student

2020/01 - present
Principal Supervisor
Al-Gafari, Mustafa, Carleton University
Thesis/Project Title: Translation control of structured mRNAs.
Present Position: MSc student

2020/01 - present
Principal Supervisor
Allard, Danielle, Carleton University
Thesis/Project Title: Protein interaction-based protein engineering.
Present Position: MSc student

2020/01 – 2022/01
Co-Supervisor
Pattang, Arezo, Carleton University
Thesis/Project Title: Functional genomics of early flowering.
Present Position: MSc student

2017/9 - 2020/01
Principal Supervisor

Zare, Narges, Carleton University
Thesis/Project Title: Regulation of IRES mediated translation in yeast.
Present Position: Research Technician

2018/09 – 2020/09
Co-Supervisor
Sadowski, Mike, Carleton University
Thesis/Project Title: Early maturity gene discovery.
Present Position: Research Scientist

2017/9 - 2019/9
Principal Supervisor
Puchacz, Nathalia, Carleton University
Thesis/Project Title: Alternative translation initiation in E. coli.
Present Position: Research Technician

2016/9 - 2018/9
Principal Supervisor
Potter, Taylor, Carleton University
Thesis/Project Title: Identification of novel genes associated with genomic stability in yeast.
Present Position: Scientist

2015/9 - 2017/9
Principal Supervisor
Tom Kazmirchuk, Carleton University
Thesis/Project Title: mRNA quality control in yeast.
Present Position: PhD student

2012/9 - 2014/9
Principal Supervisor
Tan, Le Hoa, Carleton University
Thesis/Project Title: Regulation of translation in micro-organisms.
Present Position: technician, Agriculture Canada

2012/9 - 2014/9
Principal Supervisor
Burnside, Daniel, Carleton University
Student Degree Received Date: 2014/9
Thesis/Project Title: Functional genomics of gene expression in yeast.
Present Position: PhD student

2012/9 - 2014/9
Principal Supervisor
Shostak, Kristina, Carleton University
Student Degree Received Date: 2014/9
Thesis/Project Title: Identification of novel genes that affect stop codon bypass.
Present Position: PhD student

2011/5 - 2013/6
Principal Supervisor
Ghiyasvand, Mergan, Carleton University
Thesis/Project Title: Effect of nano-metals on gene expression in yeast and E. coli cells.
Present Position: Financial sector

2010/9 - 2013/1
Co-Supervisor
Wu, Zongbin, Carleton University

Thesis/Project Title: Genomics of heat tolerance.
Present Position: Health Inspector, CFIA

2010/9 - 2012/9
Principal Supervisor
Gui, Yuan, Carleton University
Thesis/Project Title: Novel gene function prediction using genome-wide interaction data.
Present Position: Research Scientist, SignalChem

2009/9 - 2011/9
Principal Supervisor
Sunba, Noor
Thesis/Project Title: Mitochondrial translation initiation.
Present Position: Drug Assessment Officer, Health Canada

2009/9 - 2011/9
Principal Supervisor
Hooshyar, Mohsen
Thesis/Project Title: Investigating protein-protein interaction profiles for microbial organisms.
Present Position: PhD student

2007/9 - 2009/9
Principal Supervisor
Nazemof, Nazila
Thesis/Project Title: Characterization of YciL as a novel protein that affects *E. coli* translation.
Present Position: PhD student

Post-Doctoral Fellows (total 5):

2020/6 – 2022/01
Principal Supervisor
Maryam Karimloo, Carleton University
Thesis/Project Title: Anti-COVID peptide therapy
Present Position: Post-doctoral fellow

2020/01 – 2021/01
Supervisor
Mohsen Hooshyar, Carleton University
Thesis/Project Title: Designing peptides for diagnostics
Present Position: Research Associate

2016/06 – 2017/06
Co-supervisor
Andrew Schoenrock, Carleton University
Thesis/Project Title: Protein-protein interaction detection and analysis
Present Position: Carleton research computation manager

2005/6 – 2009/06
Principal Supervisor
Veronika Eroukova, Carleton University
Thesis/Project Title: Functional genomics of translation process.
Present Position: Research Scientist

2006/6 – 2008/06
Principal Supervisor
Kris Kiani, Carleton University

Thesis/Project Title: Functional genomics of translation process.
Present Position: Consultant

TEACHING EXPERIENCE

A) Undergraduate/Graduate Courses

BIOL4303 Advances in Microbiology; Lecturer (2017-present) Carleton University

BIOL2303/ENVE2002 Second year Microbiology; Lecturer (2003-2016) Carleton University

BIOL4901/BIOC4901 Fourth year Directed Studies; Supervisor (2003-present) Carleton University

BIO4908/BIOC4908 Fourth year undergraduate thesis project; Supervisor (2003-present) Carleton University

BIOL4106/BIOL5101 Fourth year/graduate course in Genomics and Proteomics; Lecturer (2003- present) Carleton University

BIO250Y Second year Molecular and Cellular Biology; Teaching Assistant (1994-2001) University of Toronto

BIOL351Y Third year Introductory Virology; Teaching Assistant (1994-2001) University of Toronto

B) Undergraduate Thesis Supervision (total 59)

2020/5 - present

Principal Supervisor

Hewapathirana, Minuka, Carleton University

Thesis/Project Title: SARS-CoV-2 Nsp1 protein affects ribosomes in yeast.

Present Position: Undergraduate Student

2020/5 - present

Principal Supervisor

Arnoczki, Christina, Carleton University

Thesis/Project Title: Translation via IRES elements in yeast.

Present Position: Undergraduate Student

2019/5 - 2019/12

Principal Supervisor

Kirby, Grace, Carleton University

Thesis/Project Title: Non-stop Decay factors controlling gene expression.

Present Position: Undergraduate Student

2019/4 - 2020/4
Principal Supervisor
Shukri, Ali, Carleton University
Thesis/Project Title: Designing functional peptides.
Present Position: MSc student

2019/4 - 2020/4
Principal Supervisor
Hunt, Cathryn, Carleton University
Thesis/Project Title: Novel factors affecting translation of mRNAs in yeast.
Present Position: MSc student

2018/5 - 2019/9
Principal Supervisor
Faraji, Danniell, Carleton University
Thesis/Project Title: Bridging prokaryotic and eukaryotic translation initiation.
Present Position: Undergraduate student

2018/5 - 2019/5
Principal Supervisor
Allard, Danielle, Carleton University
Thesis/Project Title: Evolution of translation regulation.
Present Position: MSc student

2017/9 - 2018/5
Principal Supervisor
Mankal, Mariam, Carleton University
Thesis/Project Title: Regulation of mRNA quality control in yeast.
Present Position: Technician

2016/9 - 2017/5
Principal Supervisor
Puchacz, Nathalia, Carleton University
Thesis/Project Title: Cap-independent translation control in yeast.
Present Position: Researcher

2016/9 - 2017/5
Principal Supervisor
Kluew, Anna, Carleton University
Thesis/Project Title: Investigating the activity of novel DNA repair genes.
Present Position: Research Administrator

2016/9 - 2017/9
Principal Supervisor
Deslaurier, Michael, Carleton University
Thesis/Project Title: A genome-wide investigation of novel gene functions in non-stop mRNA decay pathway in yeast.
Present Position: Medical school

2016/5 - 2017/9
Principal Supervisor
Jamilchelvan, Ruben, Carleton University
Thesis/Project Title: Helicases in yeast translation control.
Present Position: Technician

2016/5 - 2019/5
Principal Supervisor
Silva, Eshan, Carleton University
Thesis/Project Title: Investigating regulation of gene expression for novel NHEJ proteins in yeast.
Present Position: Medical student

2016/1 - 2017/5
Principal Supervisor
Littl, Clara, Technical University of Munich
Thesis/Project Title: Predicting gene function from interaction networks.
Present Position: PhD student

2015/9 - 2016/5
Principal Supervisor
Ellis, Brittany, Carleton University
Thesis/Project Title: Chemical genomics of anti-fungal cymoxanil.
Present Position: School of Pharmacy

2015/9 - 2016/5
Principal Supervisor
Bouti, Leyla, Carleton University
Thesis/Project Title: Involvement of Psk1 in fidelity of DNA repair.
Present Position: Technician

2015/9 - 2016/5
Principal Supervisor
Silva, Michael, Carleton University
Thesis/Project Title: Regulation of gene expression in yeast.
Present Position: Medical student

2015/4 - 2016/4
Principal Supervisor
Kaleigh Timmins, Carleton University
Thesis/Project Title: Translation control in yeast.
Present Position: Financial Advisor

2015/4 - 2015/9
Principal Supervisor
Adamo Young, University of Toronto
Thesis/Project Title: Synthesizing proteins with specific binding properties.
Present Position: PhD student

2015/4 - 2016/4
Principal Supervisor
David Nelson, Carleton University
Thesis/Project Title: Identification of novel NHEJ proteins through PPI network analysis.
Present Position: MSc student

2015/4 - 2016/4
Principal Supervisor
Amanda Rampersaud, Carleton University
Thesis/Project Title: Reduction of global translation rate in response to ethanol.
Present Position: Pharmacy Student

2015/1 - 2018/9

Principal Supervisor

Alex Mulet, Carleton University

Thesis/Project Title: Regulation of IRES mediated translation in yeast.

Present Position: PhD student

2014/9 - 2017/5

Principal Supervisor

Bhojoo, Urvi, Carleton University

Thesis/Project Title: Novel functions for members of a PAS kinase family in NHEJ.

Present Position: PhD student

2014/9 - 2015/9

Principal Supervisor

Cherubin, Pedro, University of Sao Paulo

Thesis/Project Title: Identification of novel genes involved in yeast DNA repair pathway.

Present Position: PhD student

2014/9 - 2015/9

Principal Supervisor

Ide, Jennifer, Carleton University

Thesis/Project Title: Identification of novel genes involved in yeast DNA repair pathway.

Present Position: Nutritionist

2014/5 - 2015/5

Principal Supervisor

Al Jaber, Zain, Carleton University

Thesis/Project Title: Genetic interaction analysis of the DNA repair gene ARP6.

Present Position: Technician

2013/4 - 2014/4

Principal Supervisor

Megharbane, Ramy, Carleton University

Thesis/Project Title: Genetic interactions of BSC2 with other translation genes.

Present Position: CEO of his own biotech company

2012/9 - 2013/5

Principal Supervisor

Leung, Cindy, Carleton University

Thesis/Project Title: Identification of novel genes involved in IRES-mediated translation.

Present Position: Nurse

2012/5 - 2014/4

Principal Supervisor

York-Lyon, Anna, Carleton University

Thesis/Project Title: Tae6 increases fidelity and reduces efficiency of translation.

Present Position: Medical Doctor

2012/5 - 2014/4

Principal Supervisor

Jesso, Alex, Carleton University

Thesis/Project Title: Identification of novel NHEJ genes in yeast.

Present Position: Pharmacy student

2011/9 - 2012/9
Principal Supervisor
Szereszewsk, Kama, Carleton University
Thesis/Project Title: Identification of novel translation genes.
Present Position: Scientist

2011/9 - 2012/9
Principal Supervisor
Honarvar, Pouriya, Carleton University
Thesis/Project Title: Isolation and characterization of Pph3p.
Present Position: Dentist

2011/5 - 2012/4
Principal Supervisor
Burnside, Daniel, Carleton University
Thesis/Project Title: Bub2 is a novel NHEJ gene.
Present Position: Patent agent

2011/5 - 2012/9
Principal Supervisor
Jin, Jennifer, University of Toronto
Thesis/Project Title: Ola1p and Lys5p affect protein fidelity in yeast.
Present Position: Pharmacist

2010/4 - 2010/12
Principal Supervisor
Moazzami, Namdar, Carleton University
Thesis/Project Title: Developing a lift assay for functional genomics.
Present Position: Medical School

2009/5 - 2010/4
Principal Supervisor
Abolbaghaei, Akram, Carleton University
Thesis/Project Title: Identification of novel translation genes.
Present Position: Scientist

2008/8 - 2009/4
Principal Supervisor
Karimi, Golnaz, Carleton University
Thesis/Project Title: Digital imaging for functional genomics.
Present Position: Architect

2008/5 - 2009/4
Principal Supervisor
Buist, Terry, Carleton University
Thesis/Project Title: The functional overlap between Lif1 and Bub2.
Present Position: Unknown

2008/5 - 2009/4
Principal Supervisor
Wu, Zongbin, Carleton University
Thesis/Project Title: Identification of novel genes involved in translation.
Present Position: Health Inspector, CFIA

2008/5 - 2010/5
Principal Supervisor
Sanders, Megan, Carleton University
Thesis/Project Title: Double stranded DNA damage repair in microbial organisms.
Present Position: Scientist

2008/1 - 2009/12
Co-Supervisor
Adsett, Mehnur, Carleton University
Thesis/Project Title: Multidrug resistance in bacteria.
Present Position: Research Technician

2008/1 - 2009/12
Supervisor
Alicia Couse, Carleton University
Thesis/Project Title: Identification of novel genes involved in cell wall synthesis in yeast.
Present Position: Dentist

2008/1 - 2009/12
Supervisor
Shannon Tessier, Carleton University
Thesis/Project Title: Directing mRNAs into yeast mitochondria
Present Position: Research Associate

2007/1 - 2008/04
Supervisor
Maysoon Eshoul, Carleton University
Thesis/Project Title: Identification of novel translation related genes in yeast
Present Position: Epidemiologist

2006/1 - 2007/01
Supervisor
Xiahan Yue, Carleton University
Thesis/Project Title: Identification of novel translation related genes in yeast
Present Position: Unknown

2006/1 - 2007/01
Supervisor
Valerie Kelly-Turner, Carleton University
Thesis/Project Title: Protein-protein interaction prediction in mammals
Present Position: Stats Canada

2005/9 - 2006/12
Supervisor
Noor Hassan, Carleton University
Thesis/Project Title: Directing mRNAs into yeast mitochondria.
Present Position: Health Canada

2005/9 - 2006/09
Supervisor
Laura Driedger, Carleton University
Thesis/Project Title: Protein-protein interaction prediction in mammals.
Present Position: RCMP

2005/9 - 2006/12

Supervisor

Zahra Nafar, Carleton University

Thesis/Project Title: Protein-protein interaction prediction in prokaryotes.

Present Position: Global Affairs

2005/9 - 2006/09

Supervisor

Arlinda Hyseni, Carleton University

Thesis/Project Title: Prediction of novel glycosylation sites for yeast proteins.

Present Position: Unknown

2004/9 - 2005/09

Supervisor

Sofia Ribchinsky, Carleton University

Thesis/Project Title: Identification of novel genes involved in cell wall synthesis in yeast.

Present Position: Medical Doctor

2004/9 - 2005/09

Supervisor

Robert Dean, Carleton University

Thesis/Project Title: Identification of novel DNA repair genes in yeast.

Present Position: Unknown

2004/9 - 2005/09

Supervisor

Duber Frey Viteri, Carleton University

Thesis/Project Title: Identification of oxygen sensing genes in yeast

Present Position: Research technician

2004/9 - 2005/09

Supervisor

Melissa Cheung, Carleton University

Thesis/Project Title: Identification of novel DNA repair genes in yeast.

Present Position: Librarian

2004/9 - 2005/09

Supervisor

Ashraf Hassanein, Carleton University

Thesis/Project Title: Prediction of the internal topology of protein complexes in yeast.

Present Position: Lawyer

2003/9 - 2004/09

Supervisor

Rahin Farzadfar, Carleton University

Thesis/Project Title: Identification of novel DNA repair genes in yeast.

Present Position: Scientist

2003/9 - 2004/09

Supervisor

Latifa Hope Haider, Carleton University

Thesis/Project Title: Protein-protein interaction prediction in yeast.

Present Position: Bioinformatician

2003/9 - 2004/09

Supervisor

Victoria Lee, Carleton University

Thesis/Project Title: Identification of novel translation related genes in *E. coli*.

Present Position: Geologist

2003/9 - 2004/09

Supervisor

Candice Johnson, Carleton University

Thesis/Project Title: Investigating a potential open reading frame in Rice Yellow Mosaic Virus Satellite RNA.

Present Position: Professor

Curriculum Vitae

Name: Shelley Roanne Hepworth
Institute Address: Carleton University
1125 Colonel By Drive
Ottawa, Ontario
Canada, K1S 5B6
Tel: (613) 520-2600 X4214
Fax: (613) 520-3539
E-mail: shelly.hepworth@carleton.ca
Website: shellyhepworth.wixsite.com/thehepworthlab

Birthdate: March 26, 1968
Citizenship: Canadian

Academic Background

Sept 5, 1991- Doctor of Philosophy (Ph.D.)
Nov 1, 1997 Department of Biochemistry, University of Toronto, Canada
Supervisor: Dr. Jacqueline Segall

Sept 5, 1986- Bachelor of Science (B.Sc.)
April 20, 1991 University of Waterloo, Biochemistry (Honours)

Professional Experience

July 1, 2019- Full Professor (Tenured)
present Department of Biology and Institute of Biochemistry
Carleton University, Ottawa

July 1, 2009- Associate Professor (Tenured)
June 30, 2019 Department of Biology and Institute of Biochemistry
Carleton University, Ottawa

July 1, 2005- Assistant Professor (Tenure-track)
June 30, 2009 Department of Biology and Institute of Biochemistry
Carleton University, Ottawa

Feb 1, 2002- Research Associate
June 30, 2005 Supervisor: Dr. George Haughn
Department of Botany
University of British Columbia, Vancouver

Jan 10, 1998-
Dec 31, 2001

Post-doctoral Fellowships, NSERC and EMBO
Supervisor: Dr. George Coupland
Department of Cell and Developmental Biology
John Innes Centre, Norwich, United Kingdom

Honorary Appointment

Dec 2016 –
Present

Guest Professor of Lanzhou University, China

Research Grants Awarded

Role	Title	Source	Amount	Term
Co PI	Plant biology communities	Carleton, Shared On-line Project Initiatives	\$30,000	2021
Sole PI	NSERC COVID supplement	NSERC DG	\$6,560	2020
Co PI	Sustainable communities: Food security, housing, and social Interaction	Carleton, Multidisciplinary Research Catalyst Fund	\$30,000	2019
Sole PI	Polyploidization for improvement of medical cannabis	OCE/NSERC Engage	\$50,000	2017-2018
Lead PI	How boundaries control plant architecture	NSERC DG	\$205,000	2016-2020
Lead PI	Sputter metal/carbon coater for electron microscopy	NSERC RTI-1	\$46,904	2014
Sole PI	Organogenesis for micro propagation of Pixie grape	NSERC Engage	\$25,000	2013
Sole PI	Role of BLADE-ON-PETIOLE and TGA bZIP transcription factors in regulation of plant architecture	NSERC DG	\$200,000	2011-2015
Co PI	Motorized rotary microtome	NSERC RTI-1	\$37,859	2010
Lead PI	Variable pressure scanning electron microscope	NSERC RTI-1	\$145,000	2008
Sole PI	Control of leaf and floral architecture in a model plant species	OMRI (ERA)	\$150,000	2007-2011
Lead PI	Infrastructure operating fund	CFI/ORF	\$48,000	2007
Lead PI	Carleton facility for the study of plant metabolism and development	CFI/ORF (LOF)	\$288,400	2006
Sole PI	Control of plant morphogenesis by the <i>BLADE-ON-PETIOLE</i> genes in Arabidopsis	NSERC DG	\$200,000	2006-2010
Lead PI	Stereofluorescence microscope	NSERC RTI-1	\$52,328	2006
Co PI	Plant growth chamber	NSERC RTI-1	\$49,068	2006
Sole PI	New lab start-up grant	Carleton University	\$60,000	2005

Abbreviations: OCE = Ontario Centers of Excellence, NSERC = Natural Sciences and Engineering Research Council DG = Discovery Grant, RTI-1 = Research Tools and Instruments – Category 1, OMRI = Ontario Ministry of Research and Innovation, ERA = Early Researcher Award, CFI = Canada Foundation for Innovation, LOF = Leaders Opportunity Fund. All money amounts are in Canadian Dollars.

Research Activities

Statement of Research Interests

My lab studies the genetic basis of plant architecture traits important for crop yield. The source of these physical traits is the shoot apical meristem, a dome-like collection of stem cells that drives vertical growth of shoots and produces lateral organs (leaves, branches, flowers) for the above-ground parts of a plant. Our lab studies a subdomain of the meristem called the boundary that forms at the base of organs as they separate from the meristem. Boundaries control the shape of leaves and provide lateral meristems that dictate the branching architecture of a plant. Boundaries are also sites where organs are shed from a plant to prune foliage or for seed dispersal. Our lab studies the genes and molecules that regulate architecture traits related to organ boundaries. Application of this knowledge is used to optimize traits like branching architecture, abscission, and seed dispersal in crop plants.

Most Significant Contributions

My group is internationally recognized for its pioneering work on *BLADE-ON-PETIOLE* (*BOP*) genes as conserved regulators of boundary patterning in land plants (Hepworth et al. 2005, *Plant Cell*, 296 citations). Our collective works: 2 invited reviews and 11 research papers (9 published/two submitted) examine how simple underlying genetic “recipes” established in the embryo regulate plant architectures like inflorescence patterning (Khan et al. 2012ab, Khan et al. 2015; Wang et al. 2019), secondary growth (Khan et al. 2012ab; Woerlen et al. 2017), the patterning of flowers and fruits (Xu et al. 2010; Khan et al. 2012ab) and abscission (McKim et al. 2008; Crick and Corrigan et al. 2021, submitted). Our discoveries laid the groundwork for the identification of boundary genes as regulators of key domestication traits in crop plants including tillering (barley), leaf complexity (tomato), inflorescence architecture (maize) and abscission (many crops). My expertise in this area has led to various international collaborations (e.g. Germany, France, China) and formed the basis for applied work in numerous plants (e.g. barley, rice, tomato, melon, and legumes).

More widely, *BLADE-ON-PETIOLE* genes are related to a group of NPR1-like proteins that defend plants against pathogens. Our newest work shows that *BOP* genes contribute to innate immunity--the first and most ancient layer of plant defense. This activity may depend on TGA bZIP and WRKY transcription factors, which we found to interact with BOP1 and BOP2 for recruitment to DNA. This work (submitted, in revision) shows that BOPs participate in plant defense using functional partners similar to NPR1 meaning that all members of this family contribute to plant immunity.

My lab is also internationally recognized for its work on *Cannabis sativa*. [Parsons et al., 2021, *Frontiers in Plant Science* 10:476]. In partnership with Canopy Growth, we

established methods for the production of tetraploid cannabis via the treatment of cultured bud explants with the microtubule inhibitor oryzalin. Tetraploid plants showed an increase in the size of fan leaves, a higher density of trichomes on the sugar leaves, and changes in the terpenoid profile of dried buds. This research lays important groundwork for the breeding of new Cannabis strains. Canopy has taken this work further to generate sterile triploids and polyploid versions of their popular diploid varieties for further evaluation. A patent application was filed in the United States, no 20190289804. Public interest in this project has led to interviews or speaking events (e.g. Nature magazine, Growth Op, WE Cann West) and other Cannabis-related projects. Further, the Canadian Food Inspection Agency asked me to review a white paper on the biology of *Cannabis sativa* for public release. I have also been interviewed on a pod cast and recruited to other industry-related projects as a result of my work on Cannabis.

As a result of my expertise, I am regularly invited to review grants and papers on topics related to agriculture and plant development. Also, I am an associate editor of two academic journals (Botany, Plants), an executive of the Canadian Botanical Association (Treasurer, Development Section Co-Chair) and Discovery Grant Panellist in 1502 Biological Systems and Functions (Plant and Food Science) for the Natural Sciences and Engineering Research Council (NSERC) of Canada (2021-2023).

Research Contributions

Contributions made by HQP under my supervision or co-supervision are in **bold**. Superscripts designate Postdoctoral Fellow^{PDF}, Research Associate^{RA}, Graduate Student^{GS}, Technician^T, and Undergraduate Student^{UG} contributors. We aim to publish our work in the best peer-reviewed journals in our field. My career published works (28 papers) have been cited 3939 times (average of 140.7 citations per paper). [Source: Google Scholar, accessed Apr 29, 2022].

Publication rating table:

Journal	5-year* Impact Factor
BMC Plant Biology	4.49
Development	6.19
EMBO Journal	10.37
Frontiers in Plant Science	5.21
Functional Plant Biology	2.73
Journal of Experimental Botany	5.36
Lipids	2.02
Molecular and Cellular Biology	3.96
Plant Cell	10.14
Plant Journal	6.63
Plant Physiology	7.52
Plant Science	4.25
Plant Signaling and Behavior	1.67
Planta	3.69

*Source: InCites Journal Citation Reports, accessed Jan 8, 2021

A. Articles published or accepted in peer-reviewed journals:

1. M. Li, C. Liu, S.R. Hepworth; C. Ma, J. Li, S.-M. Wang, and H. Y (2022) SAUR15 interaction with BRI1 activates plasma membrane H⁺-ATPase to promote organs development of Arabidopsis. **Plant Physiology** (accepted)
2. **N. Manes**^{GS}, E. Brauer, S.R. Hepworth, and R. Subramaniam (2021). MAMP and DAMP signalling contributes resistance to *Fusarium graminearum* in Arabidopsis. **Journal of Experimental Botany**. 72:6628-6639. [2 citations]
3. H.-J. Yin, M. Li, M. Lv, S.R. Hepworth, D. Li, C. Ma, J. Li, and S.-M. Wang (2020) SAUR15 promotes lateral and adventitious root development via activating H⁺-ATPases and auxin biosynthesis. **Plant Physiology** 184:837-851. [10 citations] Impact: article chosen for highlight commentary.
4. R.S. Kalinger, I.P. Pulsifer, S.R. Hepworth, and O. Rowland. (2020) Fatty acyl synthetases and thioesterases in plant lipid metabolism: diverse functions and biotechnological applications. **Lipids** 55:435-455. [7 citations] Invited review, published in special tribute edition.
5. W.-W. Chai, W.-Y. Wang, Q. Ma, H.-J. Yin, S.R. Hepworth, and S.-M. Wang. (2019) Comparative transcriptome analysis reveals unique genetic adaptations conferring salt tolerance in a xerohalophyte. **Functional Plant Biology** 46:670-683. [6 citations]
6. **J.L. Parsons**^{RA}, S.L. Martin, T. James, G. Golenia, E.A. Boudko*, and S.R. Hepworth*. (2019) Polyploidization for the genetic improvement of *Cannabis sativa*. **Frontiers in Plant Science** 10:476. *co-corresponding authors [32 citations] Impact: 41,689 views, top 99% based on journal impact metrics.
7. **Y. Wang**^{GS}, **B.C. Salasini**^{GS}, **M. Khan**^{GS/PDF}, **B. Devi**^{GS}, **M. Bush**^{GS}, R. Subramaniam, and S.R. Hepworth. (2019) Clade I TGA bZIP transcription factors mediate BLADE-ON-PETIOLE-dependent regulation of development. **Plant Physiology** 180:937-951. [28 citations] Impact: article chosen for highlight commentary
8. H. Yin, M. Li, D. Li, S.-A. Khan, S.R. Hepworth, and S.-M. Wang (2019) Transcriptome analysis reveals regulatory framework for salt and osmotic tolerance in a succulent xerophyte. **BMC Plant Biology** 19:88. [15 citations]
9. **N. Woerlen**^{UG}, **G. Allam**^{GS}, **A. Popescu**^{GS}, **L. Corrigan**^{GS}, V. Pautot, and S.R. Hepworth. (2017) Repression of *BLADE-ON-PETIOLE* genes by KNOX homeodomain protein BREVIPEDICELLUS is essential for differentiation of secondary xylem in Arabidopsis roots. **Planta** 245:1079-1090. [39 citations]
10. S.R. Hepworth* and V. Pautot*. (2015) Beyond the divide: boundaries for patterning and stem cell regulation in plants. **Frontiers in Plant Science** 6:1052. [76 citations] *co-corresponding authors. Impact: invited review, 11,155 views, top 89% based on journal impact metrics.
11. **M. Khan**^{GS/PDF}, L. Ragni, **P. Tabb**^{GS}, **B.C. Salasini**^{GS}, **S. Chatfield**^{RA}, R. Datla, **J. Lock**^{UG}, X. Kuai, C. Després, M. Proveniers, C. Yongguo, D. Xiang, H. Morin, J.P. Rullière, S. Citerne, S.R. Hepworth*, and V. Pautot*. (2015) Repression of lateral organ boundary genes by PENNYWISE and POUND-FOOLISH is essential for meristem maintenance and flowering in Arabidopsis. **Plant Physiology** 169:2166-2186. [54 citations] *co-corresponding authors

12. **M. Khan**^{GS}, **H. Xu**^{GS} and **S.R. Hepworth**. (2014) *BLADE-ON-PETIOLE* genes: setting boundaries in development and defence. **Plant Science** 215-216:157-171. [58 citations]
13. **M. Khan**^{GS}, **P. Tabb**^{GS}, and **S.R. Hepworth**. (2012) BLADE-ON-PETIOLE1 and 2 regulate Arabidopsis inflorescence architecture in conjunction with homeobox genes *KNAT6* and *ATH1*. **Plant Signaling and Behavior** 7:1-5. [43 citations] Invited Addendum to (13)
14. **M. Khan**^{GS}, **M. Xu**^{GS}, **J. Murmu**^{PDF}, **P. Tabb**^{UG/GS}, Y. Liu, **K. Storey**^{UG}, S.M. McKim, C.J. Douglas, and **S.R. Hepworth**. (2012) Antagonistic interaction of BLADE-ON-PETIOLE1 and 2 with *BREVIPEDICELLUS* and *PENNYWISE* regulates Arabidopsis inflorescence architecture. **Plant Physiology** 158:946-960. [68 citations]
15. **J. Murmu**^{PDF}, **M.J. Bush**^{GS}, C. DeLong, S. Li, **M. Xu**^{GS}, **M. Khan**^{GS}, **C. Malcolmson**^{UG}, P.R. Fobert, S. Zachgo, and **S.R. Hepworth**. (2010) Arabidopsis bZIP transcription factors TGA9 and TGA10 interact with floral glutaredoxins ROXY1 and ROXY2 and are redundantly required for anther development. **Plant Physiology** 154:1492-1504. [160 citations]
16. **M. Xu**^{GS}, **T. Hu**^T, **S. McKim**^{GS}, **J. Murmu**^{PDF}, G.W. Haughn, and **S.R. Hepworth**. (2010) Arabidopsis BLADE-ON-PETIOLE1 and 2 promote floral meristem fate and determinacy in a previously undefined pathway targeting *APETALA1* and *AGAMOUS-LIKE24*. **Plant Journal** 63:974-989. [81 citations] Impact: Faculty of 1000 selection for review.
17. **S.M. McKim**^{GS}, G.-E. Stenvik, M.A. Butenko, W. Kristiansen, S.K. Cho, **S.R. Hepworth**, R.B. Aalen, and G.W. Haughn. (2008) The *BLADE-ON-PETIOLE* genes are essential for abscission zone formation in Arabidopsis. **Development** 135:1537-1546. [175 citations]
18. R. Kumar, K. Kushalappa, D. Godt, M.S. Pidkowich, S. Pastorelli, **S.R. Hepworth**, and G.W. Haughn. (2007) The Arabidopsis BEL1-LIKE HOMEODOMAIN proteins SAW1 and SAW2 act redundantly to regulate *KNOX* expression spatially in leaf margins. **Plant Cell** 19:2719-2735. [132 citations]
19. O. Rowland, H. Zheng, **S.R. Hepworth**, P. Lam, R. Jetter, and L. Kunst. (2006) *CER4* encodes an alcohol-forming fatty acyl-coenzyme A reductase involved in cuticular wax production in Arabidopsis. **Plant Physiology** 142:866-877. [391 citations]
20. **S.R. Hepworth**, J. Klenz, and G.W. Haughn. (2006) UFO in the Arabidopsis inflorescence apex is required for floral meristem identity and bract suppression. **Planta** 223:769-778. [101 citations]
21. **S.R. Hepworth**, Y. Zhang, X. Li, **S. McKim**^{GS}, and G.W. Haughn. (2005) BLADE-ON-PETIOLE-dependent signaling controls leaf and floral patterning in Arabidopsis. **Plant Cell** 17:1-15. [296 citations] Impact: Faculty of 1000 selection for review.
22. H. An, **C. Rousot**^{GS}, P. Suárez-López, L. Corbesier, C. Vincent, M. Piñeiro, **S. Hepworth**, A. Mouradov, S. Justin, C. Turnbull, and G. Coupland. (2004) *CONSTANS* acts in the phloem to regulate a systemic signal that induces photoperiodic flowering of Arabidopsis. **Development** 131:3615-3626. [699 citations]
23. **S.R. Hepworth**, F. Valverde, D. Ravenscroft^{GS}, A. Mouradov, and G. Coupland. (2002) Antagonistic regulation of flowering-time gene *SOC1* by *CONSTANS* and *FLC* via separate promoter motifs. **EMBO Journal** 21:4327-4337. [521 citations]
24. F. Robson, M.M. Costa, **S.R. Hepworth**, I. Vizir, M. Piñeiro, P.H. Reeves, J. Putterill, and G. Coupland. (2001) Functional importance of conserved domains in the flowering-time

gene CONSTANS demonstrated by analysis of mutant alleles and transgenic plants. **Plant Journal** 28:619-631. [501 citations]

25. S.R. Hepworth, H. Friesen, and J. Segall. (1998) NDT80 and the meiotic recombination checkpoint regulate expression of middle sporulation-specific genes in *Saccharomyces cerevisiae*. **Molecular and Cellular Biology** 18: 5750-5761. [201 citations]
26. H. Friesen, S.R. Hepworth, and J. Segall. (1997) An Ssn6-Tup1-dependent negative regulatory element controls sporulation-specific expression of *DIT1* and *DIT2* in *Saccharomyces cerevisiae*. **Molecular and Cellular Biology** 17: 123-134. [70 citations]
27. S.R. Hepworth, L.K. Ebusuzaki, and J. Segall. (1995) A 15-base-pair element activates the *SPS4* gene midway through sporulation in *Saccharomyces cerevisiae*. **Molecular and Cellular Biology** 15: 3934-3944. [76 citations]
28. Z.E. Suntres, S.R. Hepworth, and P.N. Shek. (1993) Pulmonary uptake of liposome-associated α -tocopherol following intratracheal instillation in rats. **Journal of Pharmacy and Pharmacology** 45: 514-520. [37 citations]
29. Z.E. Suntres, S.R. Hepworth, and P.N. Shek. (1992) Protective effect of liposome-associated α -tocopherol against paraquat-induced acute lung toxicity. **Biochemical Pharmacology** 44: 1811-1818. [60 citations]

B. Articles submitted in peer-reviewed journals:

30. W-P. Bai, H-J. Li, S.R. Hepworth, H-S. Liu, L-B. Liu, G-N. Wang, Q. Ma, A-K. Bao, Wang S-M. (2021) Physiological and transcriptomic analyses reveal thermotolerance mechanisms in xerophyte *Zygophyllum xanthoxylum*. **BMC Plant Biology** (submitted)
31. **J. Crick**^{GS}, **L. Corrigan**^{GS}, K. Belcram, **M. Khan**^{GS}, J. Dawson, B. Adroher, S.R. Hepworth^{*}, V. Pautot^{*}. Floral organ abscission requires the combined activities of three TALE homeodomain transcription factors. **Journal of Experimental Botany** (in revision) ^{*}co-corresponding
32. **Y. Wang**^{GS}, **C.J. Bergin**^{GS}, **B. Oyeteran**^{GS}, **S. Chatfield**^{RA}, R. Datla, D. Xiang, Y. Liu, L. Li, Z. Wang, **J. O'Neill**^{UG}, C. Bonner, **N. Manes**^{GS}, M.L. Smith, R. Subramaniam, S.R. Hepworth. (2020) Arabidopsis BLADE-ON-PETIOLE 1 and 2 interact with clade I TGA and WRKY transcription factors to promote plant defense. **Plant Cell** (in revision)
33. **J. Murmu**^{PDF}, J. Allard, D. Chabot, E. Nambara, R. Datla, S.R. Hepworth, R. Subramaniam, and J. Singh (2020) The Arabidopsis *RGO* gene mediates cytokinin responses and increases seed yield. **Plants Direct** (in revision)

C. Other research contributions:

34. G. Briggs, C.J. Meyer, S.R. Hepworth, and S.P. Chatfield. (2019) Undergraduates choose your own adventure: Inquiry-based research in plant biology and developmental biology classes. **Advances in Biology Laboratory Education** (Volume 41).
31. **Chatfield**^{RA}, and S.R. Hepworth (2013) Micropropagation of Pixie Grape. Technical report to Sunrise Greenhouses Limited, Vineland, Ontario. Industry partnership, Funded by NSERC Engage.

32. Landmark Papers in Yeast Biology (2005) eds. P. Linder, D. Shore, M. Hall. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, USA. **Reprinted:** S.R. Hepworth, H. Friesen, and J. Segall. (1998) NDT80 and the meiotic recombination checkpoint regulate expression of middle sporulation-specific genes in *Saccharomyces cerevisiae*. **Molecular and Cellular Biology** 18:5750-5761. [201 citations]

D. Theses published:

33. **Ying Wang** (2021) Investigating the roles of BLADE-ON-PETIOLE 1 and 2 with clade I TGACG-motif binding basic leucine zipper transcription factors in the regulation of development and defense in *Arabidopsis thaliana*. Ph.D. thesis.
34. **Jenny Crick** (2021) Investigating the multiple roles of boundary genes in abscission in *Arabidopsis thaliana*. M.Sc. thesis.
35. **Bodunde Oretoyan** (2021) Investigating the role of *BLADE-ON-PETIOLE* genes and hydrophobic cell-wall polymer suberin in *Arabidopsis thaliana* defense against bacterial and fungal pathogens. Ph.D. thesis.
36. **Mary Gwen Miltenburg** (2019) Identification of candidate effector proteins from *Fusarium graminearum* during infection of *Arabidopsis thaliana* using proximity-dependent biotin identification (BioID). M.Sc. thesis
37. **Nimrat Manes** (2019) Characterization of receptor kinases and downstream signalling components involved in *Fusarium* head blight resistance. M.Sc. thesis.
38. **Kevin Xiong** (2019) A previously undiscovered role for clade III TGA basic leucine zipper transcription factors in BLADE-ON-PETIOLE dependent regulation of plant development. M.Sc. thesis.
39. **Chris Bergin** (2018) Investigating a role for *BLADE-ON-PETIOLE* genes in plant defense. M.Sc. thesis.
40. **Laura Corrigan** (2018) Investigating how boundary genes control abscission in *Arabidopsis thaliana*. M.Sc. thesis.
41. **Adina Popescu** (2018) Contribution of boundary genes in fruit patterning and dehiscence in *Arabidopsis thaliana*. M.Sc. thesis.
42. **Gamat Allam** (2018) Investigating the role of boundary genes in plant vascular cambiums. M.Sc. thesis.
43. **Kevin Vali** (2018) Biological characterization of an *Arabidopsis thaliana* anther-specific caleosin. M.Sc. thesis.
44. **Brenda Salasini** (2015) Functional interactions between TALE and lateral organ boundary transcription factors in regulation of flowering in *Arabidopsis thaliana*. M.Sc. thesis.
45. **Bhaswati Devi** (2014) Investigating a conserved role for BLADE-ON-PETIOLE and class I TGA bZIP transcription factors in regulation of inflorescence architecture and lignin biosynthesis in *Arabidopsis thaliana* and *Populus trichocarpa*. M.Sc. thesis.
46. **Madiha Khan** (2012) Interactions of BLADE-ON-PETIOLE1 and 2 with TALE homeobox genes in regulation of flowering and inflorescence architecture. Ph.D. thesis.
47. **Paul Tabb** (2012) Genetic analysis of co-ordination of flowering and regulation of inflorescence architecture in *Arabidopsis thaliana*. M.Sc. thesis.

48. **Mingli Xu** (2011) Role of BLADE-ON-PETIOLE1 and 2 in patterning the *Arabidopsis thaliana* leaf and inflorescence. Ph.D. thesis.
49. **Lama Musa** (2010) Analysis of BLADE-ON-PETIOLE interactions with auxin in control of organ initiation and leaf patterning in *Arabidopsis thaliana*. M.Sc. thesis.

Other Scholarly Activities:

Selected conference presentations: (2012 to present)

Our work is presented at a number of regional, national, and/or international, conferences each year. Selected presentations are listed below. Conference presentations in 2020 were cancelled due to COVID turmoil.

1. **B. Haas**^{UG}, **T. Montoya**^{UG}, O. Rowland, S.R. Hepworth. Characterization of flower cutin mutants to reveal potential role in *Arabidopsis thaliana* floral organ abscission. Canadian Society of Plant Biologists (CSPB) - Eastern Regional Meeting (ERM). Ottawa, Ontario, November 2021 (Poster).
2. **S. Li**^{GS}, **K. Xiong**^{GS}, S.R. Hepworth. Clade III TGACG-motif binding basic leucine zipper transcription factors mediate BLADE-ON-PETIOLE dependent regulation of plant development. CSPB-ERM. Ottawa, Ontario, November 2021 (Poster).
3. **T. Montoya**^{UG}, S.R. Hepworth, O. Rowland. Abscission in plants: Structural, chemical and transcriptomic analysis of protective surface layers. CSPB Annual Meeting. Saskatoon, Saskatchewan, July 2021 (Talk).
4. **S. Li**^{GS}, **K. Xiong**^{GS}, S.R. Hepworth. Clade III TGACG-motif binding basic leucine zipper transcription factors mediate BLADE-ON-PETIOLE dependent regulation of plant development. Canadian Botanical Association (CBA) Annual Meeting. Quebec City, Quebec, June 2021 (Talk).
5. **T. Montoya**^{UG}, S.R. Hepworth, O. Rowland. Abscission in plants: Structural, chemical and transcriptomic analysis of protective surface layers. CBA Annual Meeting. Quebec City, Quebec, June 2021 (Poster).
6. **J. Crick**^{GS}, **L. Corrigan**^{GS}, V. Pautot, and S.R. Hepworth. Role of boundary three-amino-acid-loop-extension (TALE) transcription factors in programmed separation of plant organs. CSPB-ERM. St. Catharines, Ontario, November 2019 (Talk).
7. **Y. Wang**^{GS}, **C. Bergin**^{GS}, **B. Salasini**^{GS}, **M. Khan**^{GS}, **B. Devi**^{GS}, **M. Bush**^{GS}, **B. Oyetoran**^{GS}, M.L. Smith, R. Subramaniam, and S.R. Hepworth. Arabidopsis clade I TGACG-motif binding basic leucine-zipper transcription factors mediate BLADE-ON-PETIOLE-dependent activities in development and defense. Plant Canada Meeting. Guelph, Ontario, July 2019 (Talk).
8. **K. Xiong**^{GS}, **Y. Wang**^{GS}, **C. Bergin**^{GS}, and S.R. Hepworth. Investigating the role of clade III TGA transcription factors in BLADE-ON-PETIOLE-dependent regulation of development in *Arabidopsis thaliana*. CSPB-ERM. London, Ontario, November 2018 (Poster).
9. **Y. Wang**^{GS}, **B.C. Salasini**^{GS}, **M. Khan**^{GS/PDF}, **B. Devi**^{GS}, **M. Bush**^{GS}, R. Subramaniam and S.R. Hepworth. Clade I TGA bZIP transcription factors mediate BLADE-ON-PETIOLE dependent regulation of development in *Arabidopsis thaliana*. Joint Annual Meeting of

- the American Society of Plant Biologists and CSPB. Montreal, Quebec, July 2018 (Poster, 3rd prize winner).
10. **J.L. Parsons**, S. Martin, T. James, K. Boudko, S. Hepworth. Polyploidization as a strategy for the improvement of medicinal Cannabis. Society for In Vitro Biology Annual Meeting. St. Louis Missouri, June 2018 (Talk).
 11. **C. Bergin**^{GS}, **B.O. Oyetoran**^{GS}, **Y. Wang**^{GS}, **S. Chatfield**^{RA}, L. Brauer, R. Datla, R. Subramaniam, M.L. Smith, and S.R. Hepworth. Investigating the role of *BLADE-ON-PETIOLE* genes in plant defense. CSPB-ERM. Montreal, Quebec, November 2017 (Talk).
 12. **L. Corrigan**^{GS}, V. Pautot, and S.R. Hepworth. Investigating a role for homeodomain transcription factors in differentiating abscission zones in Arabidopsis. CSPB-ERM. Montreal, Quebec, November 2017 (Poster, first prize winner).
 13. **B.O. Oyetoran**^{GS}, **C. Bergin**^{GS}, **Y. Wang**^{GS}, **S. Chatfield**^{RA}, L. Brauer, R. Subramaniam, M.L. Smith, and S.R. Hepworth. *BLADE-ON-PETIOLE* 1 and 2 are required for innate immunity against pathogens in *Arabidopsis thaliana*. CBA Annual Meeting. Waterloo, Ontario, July 2017 (Poster).
 14. **G. Allam**^{GS}, **B. Devi**^{GS}, **E. Li**^{RA}, **M. Khan**^{GS}, and S.R. Hepworth. Investigating a conserved role for *BLADE-ON-PETIOLE* genes during secondary growth in *Arabidopsis thaliana* and *Populus trichocarpa*. CSPB-ERM. Hamilton, Ontario, November 2016 (Poster).
 15. **A. Popescu**^{GS}, V. Pautot, and S.R. Hepworth. Contribution of *BLADE-ON-PETIOLE* and TALE homeodomain transcription factors in fruit patterning and dehiscence in *Arabidopsis thaliana*. CSPB and Canadian Association for Plant Biotechnology (CAPB) Joint Annual Meeting. Kingston, Ontario, June 2016 (Poster).
 16. **N. Woerlen**^{UG}, V. Pautot, and S.R. Hepworth. Repression of *BLADE-ON-PETIOLE* genes by KNOX homeodomain protein *BREVIPEDECELLUS* is essential for differentiation of secondary xylem in Arabidopsis roots. CSPB and CAPB Joint Annual Meeting. Kingston, Ontario, June 2016 (Poster).
 17. **Y. Wang**^{GS}, **B.C. Salasini**^{GS}, **M. Khan**^{GS/PDF}, **B. Devi**^{GS}, **M. Bush**^{GS}, and S.R. Hepworth. Clade I TGA bZIP factors are essential for *BLADE-ON-PETIOLE*-dependent regulation of flowering and inflorescence architecture in *Arabidopsis thaliana*. CSPB-ERM. Toronto, Ontario, November 2015 (Poster).
 18. **M. Khan**^{GS/PDF}, **B.C. Salasini**^{GS}, L. Ragni, **P. Tabb**^{GS}, R. Datla, X. Kuai, C. Després, H. Morin, V. Pautot, and S.R. Hepworth. Repression of lateral organ boundary genes by *PENNYWISE* and *POUND-FOOLISH* is essential for meristem maintenance and flowering in *Arabidopsis thaliana*. CSPB-ERM. Mississauga, Ontario, November 2014 (Poster, second prize winner).
 19. C.-L. Shi, S. Hepworth, I. Kirkeleite, **S. Chatfield**^{RA}, R. Datla, M. Wildhagen, R. Aalen, and M. Butenko. Floral organ abscission zones as a lateral organ boundary 19th International Conference on Arabidopsis Research. Vancouver, British Columbia, July 2014 (Poster).
 20. **M. Khan**^{GS/PDF}, **P. Tabb**^{GS}, **B. Devi**^{GS}, **B. Chisanga**^{GS}, and S.R. Hepworth. Regulation of inflorescence architecture: lessons from a model plant. CBA Annual Meeting. Montreal, Quebec, June 2014 (Plenary Speaker).
 21. **M. Khan**^{GS}, **P. Tabb**^{GS}, **H. Xu**^{GS}, **B. Devi**^{GS}, **M. Bush**^{GS}, and S.R. Hepworth. *BLADE-ON-PETIOLE* genes: setting boundaries in inflorescence development. CSPB-ERM. Mississauga, Ontario, December 2013 (Talk).

22. **B. Devi^{GS}, E. Li^{RA}, S. Gholoobi^{UG}, M. Khan^{GS}, and S.R. Hepworth.** Investigating the role of BLADE-ON-PETIOLE genes in secondary wall formation in Arabidopsis and poplar. CSPB-ERM. Mississauga, Ontario, December 2013 (Poster).
23. **M. Khan^{GS}, P. Tabb^{GS}, S. Chatfield^{RA}, M. Bush^{GS}, J. Cheong^{UG}, R. Datla, and S.R. Hepworth.** BLADE-ON-PETIOLE1/2 promote TALE homeobox genes *ATH1* and *KNAT6* to regulate flowering and inflorescence architecture in *Arabidopsis thaliana*. Joint Proceedings of the Plant Development Workshop (PDW) and Canadian Society of Plant Physiologists (CSPP) - ERM. Guelph, Ontario, December 2012 (Talk).
24. **M. Khan^{GS}, P. Tabb^{GS}, A. Edwards^{UG}, S. Chatfield^{RA}, C. Bonner^{UG}, and S.R. Hepworth.** BLADE-ON-PETIOLE1/2 regulate Arabidopsis inflorescence architecture in conjunction with homeobox genes *KNAT6* and *ATH1*. 77th Symposium: The Biology of Plants. Cold Spring Harbor, New York, USA, May 2012 (Poster).

List of current collaborators:

Bahram Samanfar, Agriculture and Agri-Food Canada (2019-present)
Functional characterization of soybean early flowering time regulators

Suo-Min Wang, Lanzhou University, China (2017-present)
Genetics and molecular biology of stress tolerance in desert plants

Tyler Smith, Agriculture and Agri-Food Canada (2016–2019)
Analysis of pod shatter resistance in oil seed crops

Jeff Dawson, Carleton University (2015–2022)
Quantitative analysis of petal break strength for abscission studies in Arabidopsis

Sara Martin, Agriculture and Agri-Food Canada (2015–2019)
Analysis of pod shatter resistance in oil seed crops

Flow cytometry for measuring Cannabis sativa ploidy

Myron Smith, Carleton University (2014–present)
Role of BLADE-ON-PETIOLE genes in plant defense

Gopal Subramaniam, Agriculture and Agri-Food Canada (2014–present)
Role of BLADE-ON-PETIOLE genes in plant defence

Véronique Pautot, Institut Jean-Pierre Bourgin, France (2011–present)
TALE transcription factors and boundary patterning

Invited speaking presentations: (2012 to present)

Lanzhou University, Lanzhou China (2021)
University of Montreal, Montreal (March 2020)
Discovery Café, Blackburn Hamlet (November 2019)
WeCann West 2019, Science Panellist, Edmonton, Alberta (May 2019)
Life Sciences Day 3.0, Carleton University, Ottawa (May 2019)
Lanzhou University, Lanzhou China (June 2018)
Lanzhou Institute of Technology, Lanzhou, China (June 2017)
McGill University, Montreal (March 2018)
Hexi University, Zhangye, China (June 2017)
Lanzhou Institute of Technology, Lanzhou, China (June 2017)
Lanzhou University, Lanzhou, China (June 2017)
Shaanxi Normal University, Xi'an, China (June 2017)
University of Ottawa, Ottawa (March 2017)
Wilfrid Laurier University, Waterloo (November 2014)
Canadian Botanical Association, Annual Meeting, Montreal (June 2014)
University of Western Ontario, London (March 2014)
Agriculture and Agri-Food Canada, Ottawa (April 2013)

Scientific administrative roles: (2012 to present)

Organizer, Co-Chair, Canadian Society of Plant Biologists, Eastern Regional Meeting (2021)
Section Co-Chair, Canadian Botanical Association (2021 to present)
Co-Organizer, Tree Development Symposium (2021)
Panellist, NSERC Discovery Grant Review Panel, Biological Systems and Functions (2020 to present)
Associate Editor, Plants (2020 to present)
Associate Editor, Botany (2020 to present)
Treasurer, Canadian Botanical Association (2018 to present)
Panellist, NSERC Research Tools and Equipment Grant Review Panel (2016, 2017)
Organizer Committee, Ontario Biology Day (March 2015)
Organizer, Canadian Society of Plant Biologists, Eastern Regional Meeting (2012)

Invited external examiner for Ph.D. defences: (2012 to present)

University of Toronto, St. George Campus (2018)
University of Toronto, Scarborough Campus (2018)
Brock University (2014)
University of Toronto, St. George Campus (2013)
University of Toronto, Scarborough Campus (2012)
Brock University (2012)

Invited reviewer for manuscripts submitted to: (2012 to present)

African Journal of Agriculture (2014)
Biologia Plantarum (2015)
BMC Genomics (2015)
BMC Plant Biology (2019)
Botany (2012, twice in 2014, 2016, 2020, 2021)
Cell Reports (2019)
Development (2012, 2017)
Frontiers in Plant Science (twice in 2015, twice in 2016, 2019)
F1000 (2020)
Horticultural Science (2020)
Journal of International Plant Biology (2014)
Journal of Plant Research (2015)
Journal of Plant Sciences (2012, 2013, 2016)
Journal of Visualized Experiments (2021)
JOVE (2021)
Nature Communications (2018)
New Phytologist (2015, 2017, 2018)
Peer J (2019)
Plants (2020, 2021)
Plant Cell (2012, 2013, 2014, 2015, 2017)
Plant Cell Reports (2012)
Plant Journal (2012, 2014, 2017, 2022)
Plant Physiology (2014)
Plant Science (2016, 2019)
PLOS One (twice in 2016)
Scientific Reports (2019)

Invited reviewer for grants submitted to: (2012 to present)

Agence Nationale de la Recherche (France) (2012)
Agriculture and Agri-Food Canada (2012, 2015)
Austrian Science Fund (2013)
Biotechnology and Biological Sciences Research Council (UK) (2016)
Canada Foundation for Innovation (CFI) (2018)
Dutch Research Council (2020)
Fonds de Recherche Nature et Technologies Quebec (2018)
Israel Science Foundation (2016)
MITACS (2013, 2018, 2019, 2020)
National Research Council Canada (2012, 2015)
National Science Foundation (USA) (2012, 2014, 2015)
Natural Sciences and Engineering Research Council (Canada) (2012, 2013, two in 2014, two in 2015, two in 2016, two in 2017, 2018, 2019, 2020)

Awards and honours:

Outstanding Reviewer (Botany, 2015)

Media interviews:

Talks with Nik, interviewed for podcast on Cannabis and academic-industry partnerships (2022)

The Charlatan, interviewed for blog article on plants and mental health (2020)

The GrowthOp, interview for blog article on WeCann West Cannabis industry conference (2019)

Nature Magazine, reaction to preview article showing divergent genetics for U.S.A. government-supplied cannabis strains for medical research (2019)

Women in Science and Engineering, panellist for “Mary Janes: Women of Weed” film event (2019)

Nature Magazine, interview for article “A Gold Rush for Cannabis” (2018)

The Mighty CKCU 93.1, radio interview for Midweek on topic of Women in STEM (2017)

Metro Daily Newspaper, commentary on use and properties of osmium tetroxide (2015)

Biocatalyst, comment on DNA fingerprinting implications for the chocolate industry (2014)

Memberships: (2012 to present)

Member, Women in Science and Engineering

Treasurer and Section Chair, Canadian Botanical Association

Member, American Society of Plant Biologists

Member, Society for Experimental Biology

Member, Canadian Society of Plant Biologists

Public service: (2012 to present)

Webinar, A Virtual Fireside Chat with Dr. Henry Lickers on Indigenous and Western Science, Panel discussion, Anoka Indigenous Research Institute of Carleton University (2022)

Session Chair, Canadian Society of Plant Biologists, Eastern Regional Meeting (2021)

External Reviewer, Canada Food Inspection Agency document “The Biology of *Cannabis Sativa*”

Consultant, Art of scanning electron microscopy for artist, writer and film-maker Michael Benson pertaining to exhibit “Nano cosmos” commissioned by the Canadian Museum of Nature (2019)

Session Chair, Canadian Society of Plant Biologists, Annual Meeting (2016)

Education Panellist, Canadian Society of Plant Biologists, Annual Meeting (2016)

Student Awards Judge, Canadian Society of Plant Biologists, Eastern Regional Meetings (2010 to present)

Student Awards Judge, Canadian Botanical Association, Annual Meeting (2020)

Newsletter Editor, Be the Choice (2016-2019)
Judge, Carleton University 3-minute thesis competition (2013)

Teaching Activities

1. Supervision and Graduate Student Training: (2012 to present)

Over the past six years, 9 M.Sc. students, 2 Ph.D. students, and 1 post-doctoral or research associate have completed training. **I currently supervise 1 graduate student and 1 part-time research associate.** *Three graduate students are joining the lab in Fall 2022.

Supervision of graduate students and post-graduates:

Name	Type of HQP training	Dates	Title of Project	Current Status
Haley Turcotte	M.Sc. (co-supervised)	Sept 2021-present	Reproductive biology of <i>Camelina sativa</i>	In progress
Sibei Li	Ph.D.	Sept 2019-present	bZIP TGA transcription factors in development and defence	In progress
Jhadeswar Murmu	Research associate, part time	Feb 2021-present	Expression analysis of <i>BLADE-ON-PETIOLE</i> genes in poplar tree	In progress
Jenny Crick	M.Sc.	Sept 2018- Jan 2021	Investigating a role for boundary genes in abscission	Technician, Platform Genetics
Kevin Xiong	M.Sc.	Sept 2017-Sept 2019	bZIP TGA transcription factors in development and defence	Technician, Ontario Public Health
Nimrat Manes	M.Sc. (co-supervised)	Sept 2017-Aug 2019	Mechanisms of <i>fusarium graminearum</i> pathogenesis	Technician, Agriculture and Agri-Food Canada
Mary-Gwen Miltenburg	M.Sc. (co-supervised)	Sept 2017-Aug 2019	Mechanisms of <i>fusarium graminearum</i> pathogenesis	Plant Health Risk Assessor, Canada Food Inspection Agency
Jessica Parsons	Research Associate	Mar 2017-June 2018	Polyploidization of medical cannabis	Scientist, Cadence Agricultural Systems
Chris Bergin	M.Sc.	Sept 2016-Sept 2018	<i>BLADE-ON-PETIOLE</i> genes in development and defence	Ph.D. student, University of Ottawa
Laura Corrigan	M.Sc.	Sept 2016 – Sept 2018	Role of boundary genes in floral organ abscission	Ph.D. student, Trent University
Bodunde Oyetoran	Ph.D. (co-supervised)	Sept 2015 – April 2021	Role of <i>BLADE-ON-PETIOLE</i> genes in innate plant immunity	Job seeking
Gigi Allam	M.Sc.	Sept 2015-May 2018	Role of boundary genes in secondary growth	Ph.D. student, Western University
Adina Popescu	M.Sc.	Sept 2015-May 2018	Role of boundary genes in fruit development	R&D, Canopy Growth until May 2020
Ying Wang	Ph.D.	May 2015-March 2021	Clade I TGA bZIP transcription factors in plant development	Algonquin College, student in computer programming
Kevin Vali	M.Sc.	Jan 2015-May 2018	Pollen-stigma interactions in canola and wheat	Program Officer, Health Canada
Madiha Khan	Research Associate, part-time	Jan 2014-May 2015	Regulation of flowering and inflorescence architecture	Patent Examiner, Government of Canada
Brenda Salasini	M.Sc.	Sept 2013-Aug 2015	Class I TGA bZIP factors: co-factors in regulation of plant architecture	Instructor, University of Zambia Ph.D. student, South Africa
Huasong Xu	Ph.D.	Sept 2012–Aug 2014	Structure-function analysis of <i>BLADE-ON-PETIOLE</i> genes	Research Technician, University of Guelph
Bhaswati Devi	M.Sc.	Sept 2012–Oct 2014	<i>BLADE-ON-PETIOLE</i> function in the vascular cambium	Technologist, Dow Chemical, Texas (2016-2017)
Steven Chatfield	Research Associate	Mar 2012-July	Transcriptome analysis of plants	Teaching-Stream

		2014	overexpressing <i>BLADE-ON-PETIOLE1</i> Micropropagation of Pixie Grape	Professor, University of Toronto, Mississauga
Eryang Li	Research Associate, part -time	Sept-Dec 2011	BLADE-ON-PETIOLE function in the vascular cambium	Research Associate, McGill until 2017
Paul Tabb	M.Sc.	May 2010-April 2012	Co-ordination of internode elongation and flowering in a model plant species	Officer, Royal Canadian Air Force, Cornwall
Lama Musa	M.Sc.	Sept 2008-Jan 2011	Interactions with auxin in leaf and floral patterning	Instructor and Department Head at Zayed University, United Arab Emirates
Madiha Khan	Ph.D.	Sept 2007-Aug 2013	Mechanisms regulating inflorescence architecture	Patent Examiner, Government of Canada
Mingli Xu	Ph.D.	Sept 2006-Aug 2011	Mechanisms regulating flowering	Assistant Professor, University of South Carolina

Membership on graduate committees or examinations: (2012 to present)

Graduate thesis advisory committees, Masters: 30+
 Graduate thesis advisory committees, Doctoral: 6-10
 Ph.D. defenses: 15+
 Ph.D. qualifying exams: 15+
 M.Sc. defenses: 50+

Graduate courses taught: (2012 to present)

Course Title	Course Code	Enrolment	Years
Advances in Plant Biology	BIOL 6300	4-12 per year	2018 to present
Advances in Plant Molecular Biology	BIOL 6002	4-8 per year	2005 to 2018
Directed Studies Course, one-to- one supervision	BIOL 5501	0-1 per year	2005 to present
Techniques in Molecular Genetics	BIOL 5106	0-2 per year	2005, 2006, 2016

*on sabbatical July 1, 2011 - June 30, 2012, **on medical leave, January - April 2015, on sabbatical
 July 1, 2020 to June 30, 2021

2. Undergraduate Student Supervision and Teaching: (2012 to present)

Over the past six years I have supervised 20+ undergraduates. Undergraduate students range from volunteers to work-study students, part-time technicians, summer research assistants, or students carrying out lab-based coursework including honour's thesis research projects. **I currently supervise three undergraduate students in my lab.**

Names	Dates	Thesis or Study Project	Current Status
Armaan Bhullar	2022	Molecular and genetic characterization of BLADE-ON-PETIOLE genes in poplar	In progress
Brittany Haas	2021-22	Characterization of flower cutin mutants to reveal potential roles in abscission	M.Sc. student, University of Ottawa beginning Sept 2022
Rhiannon Pinkerton	2020-21	Genetic analysis of boundary genes contribution to fruit elongation	M.Sc. student, Ryerson University
Trent Johnson	2020-21	Building a Gene Coexpression Network to examine a defense role for BOP1 and BOP2 genes	Graduated
Tamara Montoya	2020-present	Chemical analysis of abscission zones (DSRI, USRA X 3, iCureus)	In progress
Jenna O'Neill	2020-present	Bioinformatics analysis of BOP1 and BOP2 genes in abscission and defense (USRA X 3)	In progress
Katie Van Looyen	2020	Measuring distribution of reactive oxygen species in plant meristems	Nursing student, McMaster University
Daniel Gladish	2020	Genetic controls in Arabidopsis fruit development	Bioinformatics Scientist at Canada Food Inspection Agency
Liam Golding	2018-20	Investigation of cannabinoids as novel non-steroid anti-inflammatory drugs *co-supervised with Cory Harris, Ottawa U	M.Sc. in Immunology, University of British Columbia
Inam Siraj	2018-19	Why are Camelina fruits resistant to pod shatter?	Materials Analyst, Assent Compliance
Molly Neave	2017-18	Characterization of salt bladder development on leaves of a salt tolerant halophyte	Horticulture Specialist, Growcer
Selena Rorabeck	2016-17	Petal break strength analysis of floral organ abscission in wild-type and mutants	Unknown
Omar Al-Juboori	2016-17	Roles of bZIP TGA9 in plant development	Nursing student, Ottawa U
Laura Corrigan	2016	Quantitative analysis of pod shatter resistance in <i>Brassica</i> oilseeds	Ph.D. student, Trent University
Ya Ding	2015-16	Role of KNAT2 and KNAT6 in floral organ abscission	Bioinformatician, Essex Lake Group, Shanghai China
Madhi Najem	2014-15	Metabolic activity of microbes in canola rhizosphere	M.Sc. graduate, Carleton Now: Sales, Nissan
Ryan Johnson	2014-15	Development of protocol for poplar transformation	Landscaper Construction
Natalie Woerlen	2012-15	Role of BOP1/2 in root development DSRI, USRA, BIOL 3901, BIOL 4908	Senior Lab Analyst, Greenfield Global
John Lock	2014-15	Analysis of ATH1:GUS induction by BOP1	Employee, Iridian Spectral Technologies
Ryan Boddis	2014-15	Role of KNAT2 and KNAT6 in floral organ abscission	Environmental Management and Assessment certificate, Algonquin College (2017)
Jamieson Brock Billing	2013-14	Analysis of <i>TGA1</i> and <i>TGA4</i> gene expression pattern in wild-type Arabidopsis plants	Unknown
Hazem Bashiti	2013-14	Yeast two-hybrid assay to test for BOP interactions with NPR1	Medical School, United Kingdom
Judah Leung	2013-14	Yeast two-hybrid assay to test for BOP interactions with class I TGA bZIP factors	Unknown
Thearany Lay	2013-14	Analysis of cell wall peroxidase PRXR9 expression in wild-type <i>Arabidopsis thaliana</i>	Occupational Health and Safety Program Advisor for Government of Canada
Patrick De Francesco	2012-13	Making PRXR9 and AS2 GUS reporters	Conseil des écoles catholiques du Centre-Est
Gary Bourque	2012-13	Testing for induction of <i>BOP1/2</i> expression in response to plant defense hormones	Employee, Children's Hospital of Eastern Ontario
Alex Edwards	2011-12	Creation of steroid-inducible BOP1 (USRA, BIOL 4908)	Lab coordinator at Carleton University, Health Sciences Department
Rawan Saliba	2011-12	Segregation analysis of <i>pnj</i> crosses to <i>bop1 bop2, knat2, knat6, knat2 knat6, and ath1</i>	Financial administrator at Canadian Armed Forces

Other undergraduate supervisions:

Volunteers in the lab: ~15

iCureus research intern: 1

DSRI scholarship students: 2

USRA scholarship students: 4

Work-study students: 2

Part-time research assistants: 3

High school internships: 2

Undergraduate lecture courses instructed:

Course Title	Course Code	Number of Students	Years
Cell Biology	BIOL 3201	40-72	2012-2021
Developmental Biology	BIOL 3202	45-72	2012-2022
Honour's Essay and Research Proposal	BIOL BIOC 4907	0-1	2012-2021
Honour's Research Projects	BIOL BIOC 4908	1-4	2012-2021
Direct Studies Projects	BIOL BIOC 4901	0-3	2012-2021
Essay and Research Projects	BIOL 3901 BIOC 3400	0-1	2012-2021

*on sabbatical July 1, 2011 - June 30, 2012, **on medical leave, January - April 2015, on sabbatical July 1, 2020 to June 30, 2021

Service to Carleton University (2012-present)

University Level Administrative Activities

Member, Carleton Council of Reviewers (2013-2018)

NSERC RTI grant internal selection committee (2014, 2015)

Faculty of Science Level Administrative Activities

Panelist, Discovery Grant Workshops (2021, 2022)

Director, Carleton University Nano Imaging Facility (2006-present)

Benchmarking Committee, First-year learning cohorts in Science (2011-2012)

Faculty Mentor, Biology (2013-2015)

Graduate, Carleton Leader 2 training program (2014)

Developer, part of team involved in creating collaborative Indigenous Learning Bundles for teaching plant biology in undergraduate sciences, partnership with Teaching and Learning Services and Carleton's Anoka Institute (2021-present).

Department of Biology Administrative Activities

Hiring Committee, Departmental Administrator (2022)

Hiring Committee, Laboratory Coordinator term position (2021)

Task Force, Biology Graduate Programs Cyclic Review (2020)

Hiring Committee, Departmental Administrator (2019)

Recruitment and Retention Committee (2009-2012, 2020)

Search Committee, next Departmental Chair (2019-2020)

FutureFunder Campaign Lead, McCully Plant Biology Lecture (2018-2019)

Chair, Search Committee, Faculty position in Plant Population Genetics (2017 and 2018)

Search Committee, Instructor Position in Biotechnology (2016)

Departmental Website Advisor (2016-2018)

Task Force, Biology Undergraduate Programs Cyclic Review (2017-2018)

Organizer, Annual McCully Lecture in Plant Biology (2015-present)

Chair, Search Committee, next Departmental Chair (2014-2015)

Search Committee, Faculty position in Bioinformatics (2014)

Planning and Priorities Committee (2013-2014)

Undergraduate Awards Committee (2014, 2015)

Hiring Committee, Faculty position in Health Sciences (2012)

Institute of Biochemistry Administrative Activities

Recruitment and Retention Committee (2012-2015, 2021, 2022)

Hiring Committee, Faculty position in Protein Biochemistry (2015)



Mechanisms of adaptive
variation in thermal tolerance
macmillanlab.com

Carleton University
209 Nesbitt Building
1125 Colonel By Drive
Ottawa, ON
K1S 5B6

Citizenship: Canadian
Email: heath.macmillan@carleton.ca
Phone: +1 (613) 520-2600 ext. 1935

CURRENT POSITION

2017- Assistant Professor, Department of Biology
Carleton University, Ottawa, Ontario, Canada

POSTDOCTORAL EXPERIENCE

2015-17 Banting Postdoctoral Fellow, Department of Biology
York University, Toronto, Canada.
Advisor: Dr. Andrew Donini.

2013-15 Postdoctoral Fellow, Zoophysiology, Department of Bioscience
Aarhus University, Denmark.
Advisor: Johannes Overgaard.

ACADEMIC TRAINING

2008-13 **PhD, Biology**
University of Western Ontario, Department of Biology, London, Canada.
Supervisor: Dr. Brent Sinclair, Co-supervisor: Dr. James Staples
Dissertation Title: "Ionic and osmotic mechanisms of insect chill-coma and chilling injury". Comprehensive examination passed with distinction. Winner of John D. Detwiler Award. Finalist for Governor General's Academic Gold Medal. Ranked the top thesis at Western in Natural Sciences, Engineering or Medical Science for CAGS national Distinguished Dissertation Awards.

2003-08 **BScH, Biology**
Honors Specialization in Animal Physiology
University of Western Ontario, Department of Biology, London, Canada.
Honours Supervisor: Dr. Brent Sinclair

PROFESSIONAL LEAVES

January-August 2021 Parental leave

AWARDS AND SCHOLARSHIPS

- 2022 Carleton Research Achievement Award (15,000 CAD)
- 2021 Carleton Faculty of Science Teaching Excellence Award (1,000 CAD)
- 2021 Carleton Faculty Graduate Mentoring Award
- 2017 Company of Biologists Travel Grant (300 GBP)
- 2016 York University Research Leader Award
- 2015 Banting Postdoctoral Fellowship (140,000 CAD)
- 2015 NSERC Postdoctoral Fellowship (declined; 90,000 CAD)
- 2015 York University Research Support Grant (30,000 CAD)
- 2015 Society for Experimental Biology Irene Manton Poster Prize (100 GBP)
- 2014 American Physiological Society (APS) Scholander award (2nd place; 800 USD)
- 2014 APS Intersociety Meeting Travel Award (300 USD)
- 2014 Company of Biologists Travel Grant (450 GBP)
- 2013 John D. Detwiler Award (1,500 CAD)
- 2012 Society for Experimental Biology Graduate Travel Award (400 GBP)
- 2011 Michael Locke Graduate Travel Scholarship (500 CAD)
- 2010 NSERC Alexander Graham Bell CGS (105,000 CAD)
- 2009 Ontario Graduate Scholarship (15,000 CAD)
- 2007 NSERC Undergraduate Student Research Award (6,800 CAD)

RESEARCH FUNDING

Support awarded

- 2022-2026 Co-PI, NSERC Alliance and MITACS-Accelerate Joint Funding Program. Manipulating diet content and context to improve edible insect farming yield (\$562,240). Co-PI: Sue Bertram.
- 2021-2025 PI, fRI Federal-Provincial Mountain Pine Beetle Research Program 2021, The physiological costs and consequences of overwintering in Mountain Pine Beetle (\$96,720).
- 2021-2025 Co-applicant and lead on Aim 4, Genome Canada Large Scale Research Project. TRIA-FoR: Transformative Risk Assessment and Risk Resilience Using Genomic Tools for the Mountain Pine Beetle Outbreak. Co-PIs: Catherine Cullingham and Janice Cooke (\$6.43M total including co-funding from partner organizations; \$1.56M total funding for Aim 4).
- 2021-2026 PI, Ontario Early Researcher Award. Identifying and disrupting molecular signals governing insect chill tolerance (\$150,000).
- 2020-2022 PI, Environment and Climate Change Canada Increasing Knowledge on Plastic Pollution Initiative. Fates and Physiological Consequences of Ingested Plastics on Terrestrial Insects (\$158,345). Co-applicant: Jennifer Provencher.
- 2020 PI, NSERC Research Tools and Instruments grant. Microwave Plasma Atomic Emission Spectrometer (MP-AES) for Elemental Analysis (\$88,303). Co-applicants: Sue Bertram, Steve Cooke, Jeff Smith.
- 2020-2025 PI, Research Agreement, International Atomic Energy Association Programme of Coordinated Research Activities on Mosquito Irradiation, Sterilization and Quality Control. Improving mosquito field performance through assisted thermal

- acclimation (travel support to attend international annual meetings with the IAEA working group).
- 2020-2021 PI, Carleton University NSE Development Grant (\$10,000) – Overwintering Behaviour and Physiology of Northern Map Turtles. Co-investigator: Steve Cooke.
- 2019 Co-applicant, Carleton University Multidisciplinary Research Catalyst Fund (\$30,000 CAD) - Sustainable Communities: Food Security, Housing and Social Interaction. PI: Myron Smith.
- 2018 PI, NSERC Engage Grant (\$24,828 CAD) – Optimizing the thermal environment of crickets, a promising protein source.
- 2018 PI, CFI John R. Evans Leaders Fund and ORF Small Infrastructure Fund (\$322,226 CAD requested; CFI and ORF both awarded) – Laboratory for Epithelial Ecophysiology and Molecular Biology.
- 2018 PI, NSERC Discovery Launch Supplement (\$12,000 CAD)
- 2018-2023 PI, NSERC Discovery Grant (170,000 CAD) – The Ionoregulatory Mechanisms of Insect Chill Tolerance.
- 2017 PI, Carleton University Start-up fund (140,000 CAD).
- 2013 PI, Carlsbergfondet Research Equipment Grant (50,000 DKK). Co-investigator: J. Overgaard.

INVITED SEMINARS

- 2022 **How the gut and renal epithelia set limits to insect cold tolerance.** Host: Edan Foley, Department of Biology, University of Alberta.
- 2021 **The causes and consequences ionoregulatory collapse in the cold.** Host: Tamzin Blewett, Department of Biology, University of Alberta, Edmonton, AB.
- 2020 **Untitled seminar.** Host: Caroline Williams, Department of Integrative Biology, UC Berkley, CA, USA. *Delayed to May 2022 due to covid-19.*
- 2019 **The integrative and comparative physiology of chill insects.** Host: Sandra Binning, Department of Biology, University of Montreal, QC.
- 2018 **A gradual decline into disorder: The integrative physiology of insect chill tolerance.** Host: Katie Marshall, Department of Zoology, UBC.
- 2018 **Struggling against entropy: How ion balance determines insect cold tolerance** Host: Gil Yerushalmi, Department of Biology, York University.
- 2017 **Struggling against entropy: How ion balance determines insect cold tolerance** Host: Jessica Forrest, Department of Biology, University of Ottawa.
- 2016 **Renal control of cold tolerance in insects** Host: Meldrum Robertson, Department of Biology, Queens University.
- 2016 **Osmoregulation and the susceptibility of insects to low temperatures**
 a) Host: Bruce McKay, Department of Biology, Carleton University.
 b) Host: Graham Scott, Department of Biology, McMaster University.
- 2015 **Keeping balance: Ionoregulation and insects at low temperatures** Host: Tobias Wang, Department of Bioscience, Aarhus University.
- 2012 **Insect Chilling Injury** Host: Johannes Overgaard, Department of Bioscience, Aarhus University.

PEER-REVIEWED PUBLICATIONS

58 publications to date; H-index = 28, >2750 citations since 2010 (Source: Google Scholar)
 Formal mentees appear underlined. Informal mentees appear in italics.

Submitted

- 58) Allison, J., Ritchie, M.W., Correa, P., MacMillan, H.A., Provencher, J.F. Transformation of commercial plastic microlitter in the digestive system of a terrestrial insect. Submitted to Archives of Environmental Contamination and Toxicology on Apr. 19, 2022.
- 57) Bulté G., Robichaud, J., MacMillan, H.A., Cooke, S.J. Cold, slow, and steady: Locomotor activity of northern Map Turtles under lake ice. Submitted to *Ecology* on Mar. 24, 2022.
- 55) Wettlaufer, J.D., Ye, A., MacMillan, H.A., Martin, J.D. A test of the competitive ability – cold tolerance trade-off hypothesis in seasonally breeding beetles. Submitted to *Ecological Entomology* on Feb. 25, 2022.

In press

- 55) Fudlosid, S., Ritchie, M.W., Muzzatti, M.J., Allison, J.E., Provencher, J. MacMillan, H.A. Ingestion of microplastic fibres, but not microplastic beads, impacts growth rates in the tropical house cricket *Grylodes sigillatus*. In press at *Frontiers in Physiology* (invited).
- 54) Cooke, S., MacMillan, H.A., Hultine, K., Rummer, J., Fangué, N., Seebacher, F., Eliason, E., Fuller, A., Franklin, C. Elevating the impact of conservation physiology by building a community devoted to excellence, transparency, ethics, integrity and mutual respect. In press at *Conservation Physiology*.

Published

- 53) O'Neill, E., Davis, H.E., MacMillan, H.A. A lack of repeatability creates the illusion of a trade-off between basal and plastic cold tolerance. *Proceedings of the Royal Society B* 288: 20212121.
- 52) Tremblay, P., MacMillan, H.A., Kharouba, H.M. (2021) Autumn larval cold tolerance does not predict the northern range limit of a widespread butterfly species. *Ecology and Evolution* 11: 8332–8346.
- 51) Davis H.E., Cheslock A., MacMillan H.A. (2021) Chill coma onset and recovery fail to reveal true variation in thermal performance among populations of *Drosophila melanogaster*. *Scientific Reports* 11: 10876.
- 50) Cheslock, A., Andersen, M.K., MacMillan, H.A. (2021) Thermal acclimation alters the roles of Na⁺/K⁺-ATPase activity in a tissue-specific manner in *Drosophila melanogaster*. *Comparative Biochemistry and Physiology A* 256: 1101934. **Invited.**
- 49) Cooke, S.J., J.N. Bergman, C.L. Madliger, R.L. Cramp, J. Beardall, G.P. Burness, T.D. Clark, B. Dantzer, E. de la Barrera, N.A. Fangué, C.E. Franklin, A. Fuller, L.A. Hawkes, K.R. Hultine, K.E. Hunt, O.P. Love, H.A. MacMillan, J.W. Mandelman, F.C. Mark, L.B. Martin, A.E.M. Newman, A.B. Nicotra, G.D. Raby, S.A. Robinson, Y. Ropert-Coudert, J.L. Rummer, F. Seebacher, A.E. Todgham, S. Tomlinson, and S.L. Chown (2021) One hundred research questions in conservation physiology for generating actionable evidence to inform conservation policy and practice. *Conservation Physiology* 9: coab009.
- 48) Ritchie, M.W., Dawson, J.W., MacMillan, H.A. (2021) A simple and dynamic thermal gradient device for measuring thermal performance in small ectotherms. *Current Research in Insect Science* 1: 10005.

- 47) Carrington J, Andersen MK, Brzezinski K, MacMillan HA. (2020) Hyperkalemia, not apoptosis, accurately predicts insect chilling injury. *Proceedings of the Royal Society B* 287: 20201663.
- 46) Brzezinski, K., MacMillan, H.A. (2020) Chilling induces unidirectional solute leak through the locust gut epithelia. *The Journal of Experimental Biology* 223: jeb215475.
- 45) El-Saadi, M.I., Ritchie, M.W., Davis, H.E., MacMillan, H.A. (2020) Warm periods in repeated cold stresses protect *Drosophila* against ionoregulatory collapse, chilling injury, and reproductive deficits. *Journal of Insect Physiology* 123: 104055.
- 44) Cooke, S.J., Madliger, C.L., Cramp, R.L., Beardall, J., Burness, G.P., Chown, S.L., Clark, T.D., Dantzer, B., de la Barrera, E., Fangué, N.A., Franklin, C.E., Fuller, A., Hawkes, L.A., Hultine, K.R., Hunt, K.E., Love, O.P., MacMillan, H.A., Mandelman, J.W., Mark, F.C., Martin, L.B., Newman, A.E.M., Nicotra, A.B., Robinson, S.A., Ropert-Coudert, Y., Rummer, J.L., Seebacher F., and Todgham, A.E. (2020). Reframing conservation physiology to be more inclusive, integrative, relevant and forward-looking: reflections and a horizon scan. *Conservation Physiology* 8: coaa016.
- 43) Livingston, D.L., Patel, H., Donini, A., MacMillan, H.A. (2020) Active transport of brilliant blue FCF across the *Drosophila* midgut and Malpighian tubule epithelia. *Comparative Biochemistry and Physiology B: Biochemistry and Molecular Biology* 239:110588.
- 42) Jass, A., Yerushalmi, G.Y., Davis, H.E., Donini, A., MacMillan, H.A. (2019) An impressive capacity for cold tolerance plasticity protects against ionoregulatory collapse in the disease vector, *Aedes aegypti*. *The Journal of Experimental Biology* 222: jeb214056.
- 41) MacMillan, H.A. (2019) Dissecting cause from consequence: A systematic approach to thermal limits. *The Journal of Experimental Biology* 222: jeb191593. **Invited.**
- 40) Kolosov, D., Donly, C., MacMillan, H.A., O'Donnell M.J. (2019) Transcriptomic analysis of the Malpighian tubule of *Trichoplusia ni*: clues to mechanisms for switching from ion secretion to ion reabsorption in the distal ileac plexus. *Journal of Insect Physiology* 112: 73-89.
- 39) MacMillan, H.A., Nazal, B., Wali, S., Yerushalmi, G.Y., Misyura, L., Donini, A., Paluzzi, J.-P. (2018) Anti-diuretic activity of a CAPA neuropeptide can compromise *Drosophila* chill tolerance. *The Journal of Experimental Biology* 221: jeb185884.
- 38) Yerushalmi, G.Y., Misyura, L., MacMillan, H.A., Donini, A. (2018) Functional plasticity of the gut and Malpighian tubules underlies cold acclimation and mitigates cold-induced hyperkalemia in *Drosophila melanogaster*. *The Journal of Experimental Biology* 221: jeb174904.
- 37) Andersen, M.K., MacMillan, H.A., Donini, A., Overgaard, J. (2017) Cold tolerance of *Drosophila* species is tightly linked to epithelial K⁺ transport capacity of the Malpighian tubules and rectal pads. *The Journal of Experimental Biology* 220: 4261-4269.
- 36) MacMillan, H.A., Yerushalmi, G.Y., Jonusaite, S., Kelly, S.P., Donini, A. (2017) Thermal acclimation mitigates cold-induced paracellular leak from the *Drosophila* gut. *Scientific Reports* 7: 8807.
- 35) MacMillan, H.A., Nørgård, M., MacLean, H.J., Overgaard, J., Williams, C.J.A. (2017) A critical test of *Drosophila* anaesthetics: Isoflurane and sevoflurane are benign alternatives to cold and CO₂. *Journal of Insect Physiology* 101: 97-106.
- 34) Jørgensen, L.B., MacMillan, H.A., Overgaard, J. (2017) Cold mortality is not caused by oxygen limitation or loss of ion homeostasis in the tropical freshwater shrimp *Macrobrachium rosenbergii*. *Cryobiology* 76: 146-149.

- 33) *Jørgensen, L.B., Overgaard, J., MacMillan, H.A. (2017) Paralysis and heart failure precede ion balance disruption in heat-stressed European green crabs. Journal of Thermal Biology 68: 186-194.*
- 32) *O'Sullivan, J., MacMillan, H.A., Overgaard, J. (2017) Heat stress is associated with disruption of ion balance in the migratory locust. Journal of Thermal Biology 68: 177-185.*
- 31) *Overgaard, J., MacMillan, H.A. (2017) The integrative physiology of insect chill tolerance. Annual Review of Physiology 79: 187-208.*
- 30) *Andersen, M.K., Folkersen, R., MacMillan, H.A., Overgaard, J. (2017) Cold-acclimation improves chill tolerance in the migratory locust through preservation of ion balance and membrane potential. The Journal of Experimental Biology 220: 487-496.*
- 29) *Scharf, I., Daniel, A., MacMillan, H.A., Katz, N. The effect of fasting and body reserves on cold tolerance in two pit-building insect predators. (2016) Current Zoology zow049.*
- 28) *Yerushalmi, G. Y., Misyura, L., Donini, A., MacMillan, H.A. (2016) Chronic dietary salt stress mitigates hyperkalemia and facilitates chill coma recovery in Drosophila melanogaster. Journal of Insect Physiology 95: 89-97.*
- 27) *MacMillan, H.A., Knee, J.M., Dennis, A.B., Udaka, H., Marshall, K.E., Merritt, T.J.S., Sinclair, B.J. (2016) Cold acclimation wholly reorganizes the Drosophila melanogaster transcriptome and metabolome. Scientific Reports 6, 28999.*
- 26) *Ollson, T., Malmendal, A., MacMillan, H.A., Nyberg, N., Stærk, D., Overgaard, J. (2016) Hemolymph metabolites and osmolality are tightly linked to cold tolerance of Drosophila species: a comparative study. The Journal of Experimental Biology 219, 2504-2513.*
- 25) *MacMillan, H.A., Schou, M.F., Kristensen, T.N., Overgaard, J. (2016) Preservation of potassium balance is strongly associated with insect cold tolerance in the field: A seasonal study of Drosophila subobscura. Biology Letters 12: 20160123.*
- 24) *Scharf, I., Wexler, Y., MacMillan, H.A., Presman, S., Simpson, E., Rosenstein, S. (2016) The negative effect of starvation and the positive effect of mild thermal stress on thermal tolerance of the red flour beetle. The Science of Nature 103:20.*
- 23) *MacMillan, H.A., Andersen, J.L., Davies, S.A., Overgaard, J. (2015) The capacity to maintain ion and water homeostasis underlies interspecific variation in Drosophila cold tolerance. Scientific Reports 5, 18607.*
- 22) *MacMillan, H.A., Baatrup, E., Overgaard, J. (2015) Concurrent effects of cold and hyperkalemia cause insect chilling injury. Proceedings of the Royal Society B: Biological Sciences 282, 20151483.*
- 21) *Andersen, J.L., MacMillan, H.A., Overgaard, J. (2015) Muscle membrane potential and insect chill coma. The Journal of Experimental Biology 218, 2492-2495.*
- 20) *Coello Alvarado, L.E., MacMillan, H.A., Sinclair, B.J. (2015) Chill-tolerant Gryllus crickets maintain ion balance at low temperatures. Journal of Insect Physiology 77, 15-25.*
- 19) *Andersen, J.L., MacMillan, H.A., Overgaard, J. (2015) Temperate Drosophila preserve cardiac function at low temperature. Journal of Insect Physiology 77, 26-32.*
- 18) *MacMillan, H.A., Andersen, J.L., Loeschcke, V., Overgaard, J. (2015) Sodium distribution predicts the chill tolerance of Drosophila melanogaster raised in different thermal conditions. American Journal of Physiology, Regulatory Integrative and Comparative Physiology 303, R823-R831.*

- 17) MacMillan, H.A., Ferguson, L.V., Nicolai A., Donini, A., Staples, J.F., Sinclair, B.J. (2015). Parallel ionoregulatory adjustments underlie phenotypic plasticity and evolution of *Drosophila* cold tolerance. *The Journal of Experimental Biology* 218, 423-432.
- 16) Andersen, J.L., Manenti, T., Sørensen, J.G., MacMillan, H.A., Loeschcke, V., Overgaard, J. (2015) How to assess *Drosophila* cold tolerance: Chill coma temperature and lower lethal temperature are the best predictors of cold distribution limits. *Functional Ecology* 29, 55-65.
- 15) MacMillan, H.A., Findsen, A., Pedersen, T.H., Overgaard, J. (2014) Cold-induced depolarization of insect muscle: Differing roles of extracellular K⁺ during acute and chronic chilling. *The Journal of Experimental Biology*. 217, 2930-2938.
- 14) MacMillan, H.A., Hughson, B.N. (2014) A high-throughput method of hemolymph extraction from adult *Drosophila* without anesthesia. *Journal of Insect Physiology* 63: 27-31.
- 13) Sinclair, B.J, Ferguson, L., Salehipourshirazi, G., MacMillan, H.A. (2013) Cross-tolerance and cross-talk in the cold: relating low temperatures to desiccation and immune stress in insects. *Integrative and Comparative Biology*. 53, 545-556.
- 12) Lake, S.A., MacMillan, H.A., Williams, C.M., Sinclair, B.J. (2013) Static and dynamic approaches yield similar estimates of thermal sensitivity of insect metabolism. *Journal of Insect Physiology* 59, 761-766.
- 11) Sinclair, B.J., Stinziano, J.R., Williams, C.M., MacMillan, H.A., Marshall, K.E., Storey, K.B. (2013) Real-time measurement of metabolic rate during freezing and thawing of the wood frog, *Rana sylvatica*: Implications for overwinter energy use. *The Journal of Experimental Biology* 216, 292-302.
- 10) MacMillan, H.A., Williams, C.M., Staples, J.F., Sinclair, B.J. (2012) Reestablishment of ion homeostasis during chill-coma recovery in the cricket *Gryllus pennsylvanicus*. *Proceedings of the National Academy of Sciences* 109, 20750-20755.
- 9) MacMillan, H.A., Williams, C.M., Staples, J.F., Sinclair, B.J. (2012) Metabolism and energy supply below the critical thermal minimum of a chill-susceptible insect. *The Journal of Experimental Biology* 215, 1366-1372.
- 8) Williams, C.M., Marshall, K.E. MacMillan, H.A., Dzurisin, J.D.K., Hellmann, J.J., Sinclair, B.J. (2011) Thermal variability increases the impact of autumnal warming and drives metabolic depression in an overwintering butterfly. *PLoS ONE* 7, e34470.
- 7) MacMillan, H.A., Sinclair, B.J. (2011) The role of the gut in insect chilling-injury: cold-induced disruption of osmoregulation in the fall field cricket, *Gryllus pennsylvanicus*. *The Journal of Experimental Biology* 214, 726-734.
- 6) MacMillan, H.A., Sinclair, B.J. (2011) Mechanisms underlying insect chill-coma. *Journal of Insect Physiology* 57, 12-20.
- 5) Ransberry, V.E., MacMillan, H.A., Sinclair, B.J. (2011) The relationship between chill-coma onset and recovery at the extremes of the thermal window of *Drosophila melanogaster*. *Physiological and Biochemical Zoology* 84, 553-559.
- 4) Williams, C.M., Thomas, R.H., MacMillan, H.A., Marshall, K.E., Sinclair, B.J. (2011) Triglyceride measurement in small quantities of insect tissue: comparisons and caveats. *Journal of Insect Physiology* 57, 1602-1613.
- 3) Bazinet, A.L., Marshall, K.E., MacMillan, H.A., Williams, C.M., Sinclair, B.J. (2010) Rapid changes in desiccation resistance in *Drosophila melanogaster* are facilitated by changes in cuticular permeability. *Journal of Insect Physiology* 56, 2006-2012.

- 2) MacMillan, H.A., Guglielmo, C.G., Sinclair, B.J. (2009) Membrane remodeling and glucose in *Drosophila melanogaster*: a test of rapid cold-hardening and chilling tolerance hypotheses. *Journal of Insect Physiology* 55, 243-249.
- 1) MacMillan, H.A., Walsh, J.P., Sinclair B.J. (2009) The effects of selection for cold tolerance on cross-tolerance to other environmental stressors in *Drosophila melanogaster* Meigen. *Insect Science* 16, 263-276.

NON-REFEREED CONTRIBUTIONS

- 1) Shamchuk, A.L., MacMillan, H.A. (2015) Crossing boundaries and building bridges: integrative zoology. *Canadian Journal of Zoology* 93, 677–678. Introduction to special issue.

CONFERENCE PRESENTATIONS

Poster presentations indicated with an asterisk.

Formal mentees appear underlined. Informal mentees (prior to appointment) appear in italics.

- 51) Fudlosid, S., Muzzatti, M., Provencher, J.F., MacMillan, H.A. No consequences of microplastic ingestion on development in the decorated cricket (*Grylloides sigillatus*). *Insect Biotechnology Conference*, virtual, 2021.
- 50) *El-Saadi, M.I., Phillips, L.A., Wong, A., MacMillan, H.A. A gut feeling: Investigating the link between cold stress and bacterial septicemia in migratory locusts – *Locusta migratoria*. *Canadian Society of Zoologists Annual Meeting*, virtual. 2021.
- 49) *O'Neill E.A., Davis, H.E., MacMillan H.A. Does basal cold tolerance constrain plasticity in individual *Drosophila*? *The Society for Integrative and Comparative Biology Annual Meeting*, virtual. 2021.
- 48) Ritchie, M.W., Dawson, J.W., MacMillan, H. A. A simple and dynamic thermal gradient device for measuring thermal performance in small ectotherms. *The Society for Integrative and Comparative Biology Annual Meeting*, virtual. 2021.
- 47) Muzzatti, M. J., MacMillan, H. A., Bertram, S. M. (2021) Farming fecund crickets: fruitful female fertility from feeding crickets royal jelly, *The Society for Integrative and Comparative Biology Annual Conference*, virtual. Oral Presentation. Attendance supported by the Charlotte Mangum Student Support Program.
- 47) MacMillan, H.A. Toward physiological failure networks: The causes and consequences ionoregulatory collapse in the cold. *Society for Experimental Biology Annual Meeting*, virtual. 2020. **Invited.**
- 46) Muzzatti, M. J., MacMillan, H. A., Bertram, S. M. Farming fecund crickets: fruitful female fertility after feeding crickets royal jelly, *Toronto Entomologists Association Student Symposium*, virtual. 2020.
- 45) Muzzatti, M. J., MacMillan, H. A., Bertram, S. M. (2020) Farming fecund crickets: fruitful female fertility after feeding crickets royal jelly, *Insects to Feed the World Virtual Conference*. Oral Presentation.
- 44) El-Saadi, M. I., Ritchie, M.W., Davis, H.E., MacMillan, H.A. Warm periods in repeated cold stresses protect *Drosophila* against ionoregulatory collapse, chilling injury, and

- reproductive deficits, *Entomological Society of America, Annual Meeting*. Oral competition. Virtual. **Second place: Graduate 10 min papers**. 2020.
- 43) Livingston, D.L., Patel, H., Donini, A., MacMillan, H.A. Why are Smurfs blue? Active transport of a food dye through the renal epithelia of *Drosophila*. *29th Comparative Physiology and Biochemistry Workshop*. Rice Lake, ON, Canada. 2020.
- 42) *Cheslock, A., MacMillan, H.A. The role of Na⁺/K⁺-ATPase in maintaining nervous function of insects in the cold. *International Congress of Comparative Physiology and Biochemistry*, Ottawa, Canada. 2019.
- 41) *El-Saadi, M., Davis, H.E., MacMillan, H.A. Let me catch my breath for a minute: the effects of repeated cold exposures on survival, recovery time, and fecundity in female *Drosophila melanogaster*. *International Congress of Comparative Physiology and Biochemistry*, Ottawa, Canada. 2019.
- 40) Brzezinski, K., MacMillan, H.A. The effect of cold on gut epithelial integrity in *Locusta migratoria*. *International Congress of Comparative Physiology and Biochemistry*, Ottawa, Canada. 2019.
- 39) MacMillan, H.A. How can we dissect cause from consequence in the physiology of thermal limits? *International Congress of Comparative Physiology and Biochemistry*, Ottawa, Canada. 2019.
- 38) Davis H.E., Cheslock, A., MacMillan, H.A. Maybe she's born with it, maybe it's plasticity: Basal cold tolerance cannot explain *Drosophila* biogeography. *International Congress of Comparative Physiology and Biochemistry*, Ottawa, Canada. 2019.
- 37) *Davis H.E., Cheslock, A., MacMillan, H.A. Maybe she's born with it, maybe it's plasticity: Basal cold tolerance cannot explain *Drosophila* biogeography. *Canadian Society of Zoologists Annual Meeting*, Windsor, Canada. 2019.
- 36) Brzezinski, K., MacMillan, H.A. Locust gut epithelia leak unidirectionally in the cold. *Canadian Society of Zoologists Annual Meeting*, Windsor, Canada. 2019.
- 35) Jass, A.M., Yerushalmi, G.Y., Davis, H.E., Donini, A., MacMillan, H.A. Tropical/Subtropical *Aedes aegypti* mosquito larvae have an impressive capacity for cold acclimation. *Canadian Society of Zoologists Annual Meeting*, Windsor, Canada. 2019.
- 34) El-Saadi, M., Davis, H.E., MacMillan, H.A. Sometimes, you need to chill out: Recovery time, survival, and offspring viability after repeated cold exposures in *Drosophila melanogaster*. *Canadian Society of Zoologists Annual Meeting*, Windsor, Canada. 2019.
- 33) *Fudlosid, S.A., Macmillan, H.A. Diuretic neuropeptide leucokinin inhibits *Drosophila* chill tolerance. *Canadian Society of Zoologists Annual Meeting*, Windsor, Canada. 2019.
- 32) MacMillan, H.A. How can we dissect cause from consequence in the physiology of thermal limits? *Canadian Society of Zoologists Annual Meeting*, Windsor, Canada. 2019.
- 31) *El Saadi, M., MacMillan, H.A. Recovery time, survival, and hyperkalemia during fluctuating thermal regimes in *Drosophila melanogaster*. *Society for Integrative and Comparative Biology Annual Meeting*, Tampa, USA. 2019.
- 30) Brzezinski, K., MacMillan, H.A. An investigation of cold-induced barrier disruption in the gut epithelia of *Locusta migratoria*. *Society for Integrative and Comparative Biology Annual Meeting*, Tampa, USA. 2019.
- 29) MacMillan, H.A. A role for paracellular barriers in setting the limits of insect cold tolerance. *ESA, ESC, and ESBC joint Meeting*, Vancouver, Canada. 2018.

- 28) Yerushalmi G., MacMillan, H.A., Donini A. The cold tolerance of the arboviral disease vector, *Aedes aegypti*, is thermally plastic and sex-dependent. *Insect Biotechnology Conference*, St. Catherines, Canada. 2018.
- 27) MacMillan, H.A., *Nazal, B.*, *Wali, S.*, Yerushalmi, G., Misyura, L., Donini, A., Paluzzi, J.-P. Anti-diuretic activity of a CAPA neuropeptide can compromise *Drosophila* chill tolerance. *Insect Biotechnology Conference*, St. Catherines, Canada. 2018.
- 26) *Brzezinski, K., MacMillan, H.A. An investigation of cold-induced barrier disruption in the gut epithelia of *Locusta migratoria*. *Canadian Society of Zoologists Annual Meeting*, St. Johns, Canada. 2018. **Winner of CSZ Holeyton Prize for best student poster.**
- 25) MacMillan, H.A., *Nazal, B.*, *Wali, S.*, Yerushalmi, G., Misyura, L., Donini, A., Paluzzi, J.-P. Anti-diuretic activity of a CAPA neuropeptide can compromise *Drosophila* chill tolerance. *Canadian Society of Zoologists Annual Meeting*, St. Johns, Canada. 2018.
- 24) MacMillan, H.A. Struggling against entropy: how ion and water homeostasis determine insect chilling tolerance. *Society for Experimental Biology Annual Meeting*, Gothenburg, Sweden. 2017. **Invited.**
- 23) MacMillan H.A., Kelly S.P., Belozarov V., Jonusaite S., Donini A. (2017). How to minimize accidental leakage: Cold-acclimated *Drosophila* have reduced intestinal paracellular permeability. *Society for Integrative and Comparative Biology Annual Meeting*, New Orleans, USA. 2017.
- 22) MacMillan, H.A., Yerushalmi, G., Jonusaite, S., Kelly S.P., Donini A. How to minimize accidental leakage: Cold- acclimated *Drosophila* have reduced intestinal paracellular permeability. *Canadian Society of Zoologists Annual Meeting*, Winnipeg, Canada, 2017. **Winner of CSZ Presidents' Medal.**
- 21) *Yerushalmi G., MacMillan, H.A., Donini A. Do ion-motive pumps contribute to cold-acclimation in *Drosophila*? *Experimental Biology Annual Meeting*, Chicago, USA, 2017. **Finalist for Scholander Award.**
- 20) *Yerushalmi G., MacMillan H.A., Donini A. Do ion-motive pumps contribute to cold-acclimation in *Drosophila*? *Canadian Society of Zoologists Annual Meeting*, Winnipeg, Canada, 2017. **Finalist for CSZ Battle Award.**
- 19) **Jørgensen, L.*, Overgaard, J., MacMillan, H.A. Paralysis and heart failure precede ion balance disruption in heat-stressed European green crabs. *Canadian Society of Zoologists Annual Meeting*, London, ON, Canada, 2016.
- 18) Overgaard, J., MacMillan, H.A. Struggling against entropy: why the ability to maintain ion and water homeostasis strongly impacts chilling tolerance. *International Congress of Entomology*, Orlando, FL, USA, 2016.
- 17) Yerushalmi, G., MacMillan, H.A., Donini, A. Salt stress confers cold tolerance in *Drosophila*. 1) *Insect Biotechnology Conference*, St. Catherines, ON, Canada, 2016
2)**Canadian Society of Zoologists Annual Meeting*, London, ON, Canada, 2016. **Finalist for CSZ Battle Award and Holeyton Prize.**
- 16) *Olsson, T.*, Malmendal, A., MacMillan, H.A., Nyberg, N., Stærk, D., Overgaard, J. “Cryoprotectants” in hemolymph of chill-tolerant *Drosophila* protect against chilling injury through osmoprotection. *Insect Biotechnology Conference*, St. Catherines, ON, Canada. 2016.
- 15) *Olsson, T.*, Malmendal, A., MacMillan, H.A., Nyberg, N., Stærk, D., Overgaard, J. Hemolymph metabolites are tightly linked to the cold tolerance of *Drosophila* species. *Canadian Society of Zoologists Annual Meeting*, London, ON, Canada, 2016.

- 14) MacMillan, H.A., Baatrup, E., Overgaard, J. Concurrent cold and hyperkalemia cause insect chilling injury. *6th International Symposium on the Environmental Physiology of Ectotherms and Plants*, Aarhus, Denmark, 2015.
- 13) *MacMillan, H.A., Andersen, J.L., Davies, S.A., Overgaard, J. Pump those ions or you'll wake up dead: Key difference in how chilling affects tropical and temperate *Drosophila* species. 1) *Society for Experimental Biology Annual Main Meeting*. Prague, Czech Republic, 2015. **Winner of SEB Irene Manton Poster Prize**. 2) *6th International Symposium on the Environmental Physiology of Ectotherms and Plants*, Aarhus, Denmark, 2015.
- 12) MacMillan, H.A., Findsen, A., Pedersen, T.H., Overgaard, J. What has K⁺ got to do with it? The differing roles of extracellular K⁺ in onset and recovery of insect chill coma. *American Physiological Society Intersociety Meeting*, San Diego, CA, USA 2014. **2nd place in Scholander competition for best oral presentation**.
- 11) MacMillan, H.A., Findsen, A., Pedersen, T.H., Overgaard, J. Does high extracellular K⁺ cause muscle depolarization and chill-coma? An in vivo test with the migratory locust. *Genomes to Biomes*, Montreal, QC, Canada. 2014.
- 10) MacMillan, H.A., Staples, J.F., Donini, A., Ferguson, L.F., Nicolai, A., Sinclair, B.J. Phenotypic plasticity and Evolution of *Drosophila* cold tolerance are associated with modulation of Na⁺ and K⁺ homeostasis. *5th International Symposium on the Environmental Physiology of Ectotherms and Plants*, London, ON, Canada. 2013.
- 9) *MacMillan, H.A., Hughson, B.A. A high-throughput method of hemolymph extraction from adult *Drosophila* without anesthesia. *5th International Symposium on the Environmental Physiology of Ectotherms and Plants*, London, ON, Canada. 2013.
- 8) MacMillan, H.A., Staples, J.F., Sinclair, B.J. Does Na⁺/K⁺-ATPase set the critical thermal minimum of *Drosophila*? 1) *Society for Experimental Biology Annual Meeting*, Salzburg, Austria. Oral. 2) *Canadian Society of Zoologists Annual Meeting*, Guelph, ON, Canada. 2013. **Finalist for William S. Hoar Award for best oral presentation**.
- 7) MacMillan, H.A., Williams, C.M., Staples, J.F., Sinclair, B.J. After the cold: the reestablishment of osmotic balance and neuromuscular function during chill-coma recovery in a cricket (*Gryllus pennsylvanicus*). 1) *Society for Integrative and Comparative Biology Annual Meeting*, Charleston, South Carolina, USA 2) *Canadian Society of Zoologists Annual Meeting*, Sackville, NB, Canada. 2012.
- 6) MacMillan, H.A., Williams, C.M., Staples, J.F., Sinclair, B.J. Maintaining ion balance is crucial in the cold: physiological mechanisms setting the lower thermal limit of an insect. *Canadian Society of Zoologists Annual Meeting*, Ottawa, Ontario, Canada. 2011.
- 5) *MacMillan, H.A., Sinclair, B.J. The role of ion and water homeostasis in chill-coma and chilling-injury of the fall field cricket. *American Physiological Society – Intersociety Meeting*, Westminster, Colorado, USA. 2010.
- 4) MacMillan, H.A., Sinclair, B.J. The curious case of the missing haemolymph: A chill-induced disruption of ion and water homeostasis in the fall field cricket (*Gryllus pennsylvanicus*). *Canadian Society of Zoologists Annual Meeting*, Vancouver, BC, Canada and *Insect Biotechnology Conference*, St. Catherines, Ontario, Canada. 2010.
- 3) MacMillan, H.A., Sinclair, B.J. On the physiological nature of chill-coma in insects: Energy availability in the cold. *Canadian Society of Zoologists Annual Meeting*. Toronto, Ontario, Canada. 2009.

- 2) MacMillan, H.A., Sinclair, B.J. Chill-coma and insect respiration: Implications for the mechanisms of chilling injury. *Rice Lake Comparative Physiology Meeting*, Rice Lake, Ontario, Canada. 2009.
- 1) *MacMillan, H.A., Sinclair, B.J. Membranes, glucose and *Drosophila melanogaster* cold tolerance: A test of chilling injury protection hypotheses. *Society for Integrative and Comparative Biology Annual Meeting*, Boston, Massachusetts, USA. 2009.

TEACHING

Undergraduate Teaching Experience

- 2018- **Instructor**
Adaptations to Extreme Environments, Carleton University (BIOL4318, ~20 students annually)
- 2018- **Instructor**
Animals: Form and Function, Carleton University (BIOL2001, ~220 students annually, not taught in Winter 2021 because of parental leave).
- 2012 **Teaching and Administrative Assistant**
3rd Year Environmental Animal Physiology, University of Western Ontario
*Nominated for teaching award.
- 2008-11 **Teaching Assistant**
2nd Year Organismal Physiology, University of Western Ontario
*Nominated for a teaching award twice.
- 2009 **Teaching Assistant and Course Developer**
2nd Year Vertebrate Biology, University of Western Ontario

Graduate Teaching Experience

- 2019- **Co-instructor:** Research Communication (BIOL 6500, formerly BIOL 5502X). *Ottawa Carleton Institute for Biology*. Co-instructor: Jenny Bruin. ~8-12 students annually.
- 2017- **Instructor (Team teaching):** *Advanced Animal Physiology (BIO 8361/BIOL 6304)*. *Ottawa Carleton Institute for Biology*. Lead instructor: Rotating. 8-10 students biannually.
- 2018 **Guest Instructor:** *Advanced Plant Biology (BIO 8320/BIOL 6300P)*. *Ottawa Carleton Institute for Biology*. Instructors: Cory Harris and Shelly Hepworth.
- 2014-15 **Guest Instructor:** *Animals in Extreme Environments, Aarhus University*
- 2013-14 **Guest Instructor:** *Research theory and practice, Aarhus University*.

Guest Lectures

- 2016 Undergraduate (4th year): *Environmental Animal Physiology (50 students)*. York University. Topic: Overwintering.
- 2013 Undergraduate (3rd year): *Animal Physiology (80 students)*. University of Western Ontario. Topic: Bioluminescence.
- 2012-13 Undergraduate (2nd year): *Organismal Physiology (500 students)*. University of Western Ontario. Topic: Insect cold tolerance.

2011 Undergraduate (4th year): Honors Physiology (40 students). University of Western Ontario. Topic: Life as a graduate student.

MENTORSHIP

Current mentorship

Postdoctoral

- 2022- **Fouzia Haider** – The bioenergetics of overwintering in mountain pine beetle.
- Funded by Genome Canada LSARP.
- 2020- **Li Qing (currently on indefinite leave due to covid-19)**– The role of Mesh in temperature effects on *Drosophila* epithelial barriers.
- Funded by China Scholarship Council Postdoctoral Fellowship (highly competitive; fellowship interrupted temporarily due to covid-19)
- 2019- **Mads K. Andersen** – Impacts of chilling on insect neuronal function.
- Funded by Carlsberg Fund Postdoctoral Fellowship (highly competitive).

PhD

- 2022- **Ella De Nicola** – The role of microRNAs in mitigating ionoregulatory collapse in the cold.
- 2022- **Mahmoud El Saadi** – Tissue damage and immune activation in cold-stressed insects.
- 2021- **Serita Fudlosid** – The energetic consequences of insect overwintering.
- 2020- **Matthew Muzzatti** – Simultaneously maximizing the growth and welfare of edible insects. Co-supervised by Sue Bertram.

MSc

- 2021- **Alexandra Cheslock** - Tissue-specific transcriptomics of crickets fed microplastics.
- 2020- **Jessica Robichaud** – Map turtle overwintering behaviour (co-supervised by Steve Cooke)
- 2020- **Marshall Ritchie** – Transformation of polyethylene plastics in the gut of insects.

Honours thesis / independent research

- 2022 **Anjali Samuel** (BIOL 4901W) – Impacts of microplastic ingestion on ovary development in crickets.
- 2021-2022 **Sophie Kasdorf** (BIOL4908F/W) – Effects of dietary yeast supplementation on insect growth.
- 2021-2022 **Emily McColville** (BIOL4908F/W) – Identification and characterization of microplastics in field-collected insects
- 2021-2022 **Kyra Kavanaugh** (BIOL4908F/W) – Temperature effects on performance in mosquitos.
- 2021-2022 **Hannah Anderson** (BIOL4908F/W) – Metabolism of FITC-dextran by the insect gut microbiome
- 2021-2022 **Martha Ortega-Santos** (BIOL4908F/W) – Effects of cold injury on nervous function in the locust (co-supervised by Jeff Dawson).
- 2021-2022 **Falisha Para** (BIOL4908F/W) – Effects of thermal acclimation on expression of ion transport proteins in *Drosophila* renal tubules.

Volunteer / Work Study

I encourage students to get involved in research early in their academic career through volunteer and work-study positions. At any given time, there are typically 3 to 5 volunteers/work study students gaining experience in animal husbandry and research in the MacMillan lab. These students typically move on to do independent research in the lab in the form of BIOL 4901 or 4908 projects or internally/externally funded student research support programs (e.g. NSERC USRA or I-CUREUS).

Past mentorship

Postdoctoral

2018 **Genevieve Ferguson** – Optimal thermal rearing environments of crickets raised for human consumption (6-month contract, 25% appointment for project management).

Technical

2018 **Mahmoud El Saadi** - Optimal thermal rearing environments of crickets raised for human consumption (6-month contract, full time).

PhD

2018-2021 **Hannah Davis** – Thermal plasticity and adaptation of insect renal ion and water transport.

- NSERC Alexander Graham Bell Canada Graduate Scholarship-Doctoral (2019-2023).
- Passed comprehensive exam with distinction.
- Left in good standing from PhD program due to family obligations in December 2021.

MSc

2019-2021 **Mahmoud El Saadi** – Cold-induced sepsis in *Locusta migratoria*.

2019-2021 **Serita Fudlosid** – Effects of plastic ingestion on growth and survival of a cricket.

2017-2019 **Kaylen Brzezinski** – Effects of cold stress on barrier function in locust gut epithelia.

- Carleton Student Research Bursary (2017)
- CSZ Holeton Award for best student poster (2018)

2016-2018 **Gil Yerushalmi** – Acclimation effects on ionoregulatory epithelia of *Drosophila*

- Co-supervised with Andrew Donini (York University)
- NSERC Postgraduate Scholarship (2017-2018)
- Vernon Oliver Stong Graduate Scholarship (2017)
- Ontario Graduate Scholarship (2017-2018, declined)
- Queen Elizabeth II Graduate Scholarship (2017-2018, declined)

Undergraduate honours thesis / independent laboratory-based research

2021 **Hunter Brzezinski** (DSRI) – Dietary protein:carbohydrate ratios and growth in crickets.

- 2020-2021 **Erica O'Neill** (BIOL4908F/W) - Trade-offs between basal and inducible cold tolerance in *D. melanogaster* within individuals and among populations.
- 2020-2021 **Rosemary Hill** (BIOL4908 F/W) - Diapause in *Diadromus pulchellus*. Co-supervised by Peter Mason (Agriculture and Agri-Food Canada).
- 2020 **Erica O'Neill** (NSERC USRA) – Meta analysis of trade-offs in thermal tolerance.
- 2020 **Erica O'Neill** (BIOL4901W) – Trade-off between basal and inducible cold tolerance in *D. melanogaster*.
- 2019-2020 **Sarah Chalmer** (BIOL4908F/W) – Thermal adaptation and plasticity of elemental stoichiometry.
- 2019-2020 **Alexandra Cheslock** (BIOL4908F/W) – Temperature effects on Na⁺/K⁺-ATPase in the insect renal system.
- 2019-2020 **Marshall Ritchie** (BIOL4908F/W) – Effects of cholesterol on insect thermal tolerance.
- 2019-2020 **Dawson Livingston** (BIOL4908F/W) – Role of neural septate junction proteins in setting *Drosophila* critical thermal minima.
- 2019-2020 **Karina Pocrnic** (BIOL4908F/W) – Effects of thermal stress on insect vision. Co-supervised with Jeff Dawson (Biology).
- 2019 **Mahmoud El Saadi** (BIOL4908S) Effects of repeated cold stress on fecundity
- 2019 **Irfan Dhanidina** (BIOL4908S) Transcellular transport of polyethylene glycol
- 2019 **Marshall Ritchie** (BIOL4901S) Design of a novel insect cooling apparatus
- 2019 **Dawson Livingston** (BIOL4901S) The effects of ion channel knockouts on chill tolerance.
- 2019 **Alexandra Cheslock** (NSERC USRA) Thermal plasticity of ion pump activity in the *Drosophila* brain.
- 2018-2019 **Jessica Carrington** (BIOL4908F/W) – Cold-induced nervous damage in locusts.
- 2018-2019 **Ravneet Hansi** (BIOL4908F/W) – Threshold temperatures of barrier failure.
- 2018-2019 **Serita Fudlosid** (BIOL4908F/W) – Neuropeptide effects on cold tolerance.
- 2018-2019 **Mat Roloson** (BIOL4908F/W) – Axolotl skull development (primary supervisor: HillaryD Maddin, Earth Sciences, Carleton University).
- 2018-2019 **Eseosa Otote** (BIOL4907F/W) – Transcription of TRP channels during thermal acclimation.
- 2019 **Marshall Ritchie** (BIOL4901W) – Rapid cold-hardening of renal function.
- 2019 **Dawson Livingston** (BIOL4901W) – Insect renal transport of dyes.
- 2019 **Irfan Dhanidina** (BIOL4901W) – Insect renal transport of dyes.
- 2018 **Alex Cheslock** (BIOL4901F) – Parallel adaptation of the insect CT_{min}.
- 2018 **Mahmoud El Saadi** (BIOL4901F) – Repeated cold stress and K⁺ balance.
- 2018 **Mat Roloson** (4901S) – Ion balance during hibernation in bats.
- 2018 **Mirvat Noubani** (BIOL4901S) – Function and regulation of Malpighian tubules.
- 2018 **Bassam Helou** (DSRI) – Salt stress in *D. melanogaster*.
- 2017-18 **Hirva Patel** (BIOL4908 F/W, BIOL4901) – Effects of chilling on paracellular barriers.
- 2017-18 **Mirvat Noubani** (BIOL4908F/W) – Function and regulation of Malpighian tubules during rapid cold hardening.
- 2016-17 **Basma Nazal** – Effects of CAPA2 on *D. melanogaster* cold tolerance
- Co-supervised by Jean-Paul Paluzzi (York University)
- 2015-16 **Gil Yerushalmi** – Diet effects on cold tolerance in *D. melanogaster*

- Co-supervised by Andrew Donini (York University)

UNIVERSITY SERVICE

Departmental and Faculty Roles

2022-	Member, Junior Faculty Mentoring Program Steering Committee, Faculty of Science.
2021	Member and EDI Champion, Department of Biology Faculty Hiring Committee; Conservation Science.
2021	Member, Faculty of Graduate and Postdoctoral Affairs Mentorship Award Committee.
2019-	Chair, Recruitment and Retention Committee, Department of Biology.
2021-	Member, Capstone Course Committee, Department of Biology.
2019-	Postdoctoral fellow and research associate faculty liaison (informal role).
2017-	Member, Recruitment and Retention Committee, Department of Biology.
2020-2021	Member, Tenure and Promotion Committee, Institute of Biochemistry.
2020-2021	Member, Tenure and Promotion Committee, Department of Biology.
2017-2018	Alternate, Behavioural Ecology Hiring Committee, Department of Biology.

Supervisory Committees

2021-	Michelle Hong (MSc candidate). Supervisor: Kathleen Gilmour, UOttawa.
2021-	Pomono Osmers (MSc candidate). Supervisor: Marina Cvetkovska, UOttawa.
2020-	Connor Reeve (PhD candidate). Supervisor: Steven Cooke, Carleton.
2020-	Jeffrey Hainer (MSc candidate). Supervisor: Emily Standen, U. Ottawa.
2020-	Hannah Keefe (MSc candidate). Supervisor: Heather Kharouba, U. Ottawa.
2020-	Jessica Desforges (MSc candidate). Supervisor: Steve Cooke, Carleton.
2020-	Nick Westcott (MSc Candidate). Supervisors: Iain McKinnell and Jeff Dawson, Carleton.
2019-	Benjamin Hilna (MSc Candidate). Supervisor: Steve Cooke, Carleton.
2019-	Caroline Maloney (MSc candidate). Supervisor: Vincent Careau, U. Ottawa.
2018-2020	Ariane Rondot (MSc candidate). Supervisor: Charles Darveau, U. Ottawa.
2017-2019	Phillipe Tremblay (MSc candidate). Supervisor: Heather Kharouba, U. Ottawa.
2017-2018	Clay Steell (MSc candidate). Supervisor: Steve Cooke, Carleton University.

Thesis and Comprehensive Examinations

2020	Chair, Alexa McCarthy (MSc candidate, Carleton U.), thesis exam.
2020	Examiner, Madelaine Bourdage (MSc candidate, Department of Geography and Environmental Sciences, Carleton U.), thesis exam.
2020	Examiner, Nour Nissan (PhD candidate, Carleton U.), comprehensive exam.
2020	Examiner, Jacqueline Chapman (PhD candidate, Carleton U.), thesis exam.
2020	Examiner, Jordana Bergman (PhD candidate, Carleton U.), comprehensive exam.
2020	Examiner, Ariane Rondot (MSc candidate, U. Ottawa), thesis exam.
2019	Examiner, Kyle Wong (MSc candidate, U. Ottawa), thesis exam.
2019	Chair, Stephanie Diaz (MSc candidate, Carleton U.), thesis exam.

- 2019 Chair, **Erik Tuononen**, (MSc candidate, Carleton U.), thesis exam.
 2019 Chair, **Matthew Hoekstra** (PhD candidate, Carleton U.), comprehensive exam.
 2019 Chair, **Geronimo Parodi-Matteo** (MSc candidate, Carleton U.), thesis exam.
 2019 Examiner, **Alice Abrams** (PhD candidate, Carleton U.), comprehensive exam.
 2019 Chair, **Christine Cock** (MSc candidate, Carleton U.), thesis exam.
 2019 Chair, **Myriam Hoyeck** (PhD candidate, Carleton U.), comprehensive exam.
 2019 Examiner, **Becky Kalinger** (PhD candidate, Carleton U.), comprehensive exam.
 2018 Chair, **Aaron Zolderdo** (PhD candidate, Carleton U.), comprehensive exam.
 2018 Chair, **Beckie Manouchehri** (MSc candidate, Carleton U.), thesis exam.
 2018 Examiner, **Jessica Mattice** (MSc candidate, Carleton U.), thesis exam.
 2018 Examiner, **Carrie Sun** (MSc candidate, Carleton U.), thesis exam.
 2018 Examiner, **Clay Steell** (MSc candidate, Carleton U.), thesis exam.
 2018 Examiner, **Tina Dancau** (MSc candidate, Carleton U.), thesis exam.
 2018 External Examiner, **Ibragim El -Sakhli** (MSc candidate, U. Ottawa), thesis exam.
 2018 Invited External Examiner, **Austin Browne** (PhD candidate, **McMaster U.**), thesis exam.
 2018 Examiner, **Conrado Denadai** (MSc candidate, Carleton U.), thesis exam.
 2018 Chair, **Alex Watts** (PhD candidate, Carleton U.), comprehensive exam.
 2018 Chair, **Ashley Cooper** (PhD candidate, Carleton U.), comprehensive exam.
 2017 Examiner, **Andras Dobai** (MSc candidate, Carleton U.), thesis exam.
 2017 Chair, **Mykell Reifer** (MSc candidate, Carleton U.), thesis exam.
 2017 Chair, **Chris Bonner** (MSc candidate, Carleton U.), thesis exam.

NATIONAL AND INTERNATIONAL SERVICE

- 2018- **Member of Local Organizing Committee.** International Congress of Comparative Physiology and Biochemistry (ICCPB) 2019.
 2017-20 **Regular Councilor, Canadian Society of Zoologists (CSZ)**
 2014 **Guest editor and symposium co-organizer.** *Canadian Journal of Zoology* special themed issue with contributions from a symposium of the same title: “Crossing boundaries and building bridges: Integrative zoology”. *Genomes to Biomes joint conference (Montreal, 2014)*.
 2013/15 **Conference Organizer.** Assisted in organization of both the 5th and 6th International Symposia on the Environmental Physiology of Ectotherms and Plants. *ISEPEP5: London, Canada (2013); ISEPEP6: Aarhus, Denmark (2015)*
 2012-14 **Canadian Society of Zoologists (CSZ) Student Councilor.** Position awarded by popular vote.
 2012-13 **University of Western Ontario Disciplinary Appeal Committee Member**

EDITORIAL SERVICES

- Service on Editorial Boards** (> 50 manuscripts handled to date)
 2020- **Proceedings of the Royal Society B: Biological Sciences** (Associate Editor)
 2017- **Conservation Physiology** (Editorial Board Member)
 2017-2020 **Functional Ecology** (Associate Editor)

Peer Review

Formal peer review provided for >50 manuscripts across 23 international journals.

<i>Animal Ecology</i>	<i>Insect Science</i>
<i>Biology Open</i>	<i>Journal of Evolutionary Biology</i>
<i>Bulletin of Entomological Research</i>	<i>The Journal of Experimental Biology</i>
<i>Climatic Change</i>	<i>Journal of Insect Physiology</i>
<i>Comparative Biochemistry and Physiology</i>	<i>The Journal of Thermal Biology</i>
<i>Entomologia Experimentalis et Applicata</i>	<i>Molecular Ecology</i>
<i>European Journal of Entomology</i>	<i>Physiological and Biochemical Zoology</i>
<i>Evolution</i>	<i>Physiological Entomology</i>
<i>Evolutionary Biology</i>	<i>PLOS ONE</i>
<i>Frontiers in Zoology</i>	<i>Proceedings of the Royal Society B</i>
<i>Functional Ecology</i>	<i>Scientific Reports</i>
<i>Insect Molecular Biology</i>	

GRANT REVIEW

2018- NSERC Discovery Grant review (*ad hoc*; 3 reviews completed to date).
 2018 LE STUDIUM, Institute for Advanced Studies, Loire Valley, France.

OUTREACH ACTIVITIES

2022 **Let's Talk Science – Climate Change** – Spoke to >200 high school students about studying animal responses to climate change.

2020 **Coffee and Conversation**. Speaker at a weekly series of talks for the Carleton University Faculty of Science.

2019 **How to get a faculty job**. Presenter/panelist. Run by the Department of Biology for graduate students and postdoctoral fellows.

2019 **Ottawa Entomology Club**. Spoke to a local group of entomology professionals and enthusiasts at the Agriculture and Agri-Food Canada Experimental Farm.

2018 **Science Professor Jeopardy**. Contestant. Run by the Carleton Science Student Success Centre.

2018- **PreLights – Company of Biologists**. Contributor of preprint highlights as a service to the comparative biology community. Example:
<https://prelights.biologists.com/highlights/galleria-mellonella-insect-model-p-destructans-cause-white-nose-syndrome-bats/>

2018- **Fermentation Workshop**. Co-developed with Myron Smith as an outreach activity to facilitate retention of students in the Biotechnology programs at Carleton (run annually).

2017 **Science Café – Ottawa Public Library**. Spoke to the public about where insects go in the winter.

2015- **Shut Up and Write Program – York University**. Writing help for graduate students.

2014-15 **R Help Group**. A biweekly help group for undergraduate and graduate students learning R.

2012-15 **Undergraduate Journal Club**. A weekly journal club to discuss a publication from *The Journal of Experimental Biology* in the realm of animal physiology.

2012 **University of Western Ontario Science Volunteer Information Session**.

- 2011 **Bug Day at The Pinery Provincial Park.** Spoke to families camping in the park about insects and invasive species.
- 2008-13 **Visiting Science Instructor at St. Antony Elementary School.**
- 2009 **Biology Undergraduate Society Laboratory Tour Guide.**
- 2009 **Indigenous Services Health Sciences Mini-University Program.**

MEDIA COVERAGE

- 2021 **CBC News** (Online). *Coverage of research on cricket farming.* Interview with Matthew Muzzatti (PhD student). Link: <https://www.cbc.ca/news/canada/ottawa/fatter-cricket-will-save-insect-protein-industry-carleton-phd-researcher-ottawa-1.6007504>
- 2021 **Coverage on CTV Ottawa News** (live television). *Cricket farming research.* Interview with Matthew Muzzatti (PhD student). Associated article: <https://ottawa.ctvnews.ca/a-beefier-cricket-carleton-phd-student-looking-to-pack-more-protein-into-edible-insects-1.5437107>
- 2021 **Guest on CTV Your Morning** (national morning program; live television). *Climate change and tick populations.* Link: <https://www.ctvnews.ca/video?clipId=2206944>. Associated article: <https://www.ctvnews.ca/climate-and-environment/ticks-spreading-into-canada-s-urban-areas-as-a-result-of-climate-change-scientists-say-1.5438399>
- 2020 **Guest on CTV Ottawa News** (live television) *Murder hornets.*
- 2020 **Guest on CTV Your Morning** (national morning program; live television) *Murder hornets.* Associated article: <https://www.ctvnews.ca/sci-tech/murder-hornets-may-spread-east-from-b-c-if-not-eradicated-entomologist-says-1.4923941>
- 2019 **Guest on CTV Your Morning** (national morning program; live television) *Insecticide resistance.* Link: <https://www.theloop.ca/watch/news/strange/bad-news-cockroaches-are-becoming-invincible/6058372957001/6058262509001/your-morning>
- 2019 **Interview:** *Early-career researchers: an interview with Heath MacMillan.* The Journal of Experimental Biology. Link: <http://jeb.biologists.org/content/222/9/jeb205476>.
- 2018 **Interview:** *Meet the preLighters: an interview with Heath MacMillan.* Link: <https://prelights.biologists.com/news/meet-prelighters-interview-heath-macmillan/>
- 2018 *Why your summer might be full of mosquitoes, according to a scientist.* Link: <https://theconversation.com/why-your-summer-might-be-full-of-mosquitoes-according-to-a-scientist-98369> Published: June 22, 2018 in The Conversation. Hosted by >20 outlets, including Scientific American, Smithsonian Magazine, The Weather Network, with >80K total reads to date. Related live radio interview on 1030 News Ottawa.
- 2017 **Guest on CBC Ottawa Morning** (radio) with accompanying article hosted on cbc.ca. Discussed how temperature affects fruit flies and how to get them out of your home. Associated article: <https://www.cbc.ca/news/canada/ottawa/fruit-fly-research-climate-change-carleton-1.4254406>
- 2016 **Interview by Canadian Press** on a *Drosophila* cold acclimation study. Covered by >50 national and international television, newspaper and online news outlets including The Toronto Star, CTV News, and PhysOrg.

2015 **Online coverage:** PhysOrg, Science Daily, EurekAlert!, Medical News Today.
2012 **Newspaper:** London Free Press (front page), The Western Gazette, Western News. **Online coverage:** PhysOrg, Science Daily.

ACTIVE COLLABORATIONS

- Dr. Sue Bertram** (Carleton University, Canada)
Optimal rearing of edible insects.
- Dr. Kyle Biggar** (Carleton University, Canada)
MicroRNA control of cold tolerance.
- Dr. Hervé Colinet** (University of Rennes, France) and **Dr. Youn Henry** (Eawag, Switzerland)
Thermal tolerance and the insect gut microbiome.
- Dr. Catherine Cullingham** (Carleton University)
Mountain pine beetle physiology and transcriptomics
- Dr. Jeff Dawson** (Carleton University, Canada)
A laboratory system for the rapid measurement of organismal thermal performance.
- Dr. Maya Evenden** (University of Alberta, Canada)
Mountain pine beetle energetics
- Dr. Paul Garrity** (Brandeis University, USA)
Thermosensation and thermal tolerance in *Drosophila* mutants.
- Dr. Woo Jae Kim** (Harbin Institute of Technology, China)
RNAi disruption of cold tolerance in the insect nervous system.
- Dr. Heather Kharouba** (U. Ottawa, Canada)
Northern range limits of giant swallowtail butterflies.
- Dr. Katie Marshall** (University of British Columbia, Canada)
Temperature effects on the insect neuromuscular junction.
- Dr. Paul Martin** (Queens University, Canada)
Seasonal variation in thermal tolerance of burying beetles.
- Dr. Thomas Merritt** (Laurentian University, Canada)
The transcriptomic and metabolomic response of *Drosophila* to being deep underground.
- Dr. Jennifer Provencher** (*Canadian Wildlife Service, Environment and Climate Change Canada, Carleton University*)
Physiological consequences of microplastic ingestion in insects.
- Dr. Seth Rudman** and **Dr. Paul Schmidt** (University of Pennsylvania)
Elemental stoichiometry of insect seasonality.
- Dr. Aylin Rodan** (University of Utah)
Septate junctions and cold tolerance plasticity in *Drosophila*.
- Dr. Caroline Williams** (UC Berkeley, USA)
Mountain Pine Beetle lipid storage and use.
- Dr. Alex Wong** (Carleton University, Canada)
Bacterial leak from the insect gut during chilling.

PRIOR COLLABORATIONS

- Dr. Shireen Davies** (University of Glasgow, UK)
Drosophila Malpighian tubule function at low temperatures.
- Dr. Thomas Merritt** (Laurentian University, Canada)

The transcriptomic and metabolomic response of *Drosophila* to cold acclimation.

Dr. Mike O'Donnell (McMaster University)

Functional transcriptomics of renal organs in Lepidoptera.

Dr. Jean-Paul Paluzzi (York University, Canada)

Neuroendocrine control of cold tolerance in *Drosophila*.

Dr. Inon Scharf (Tel Aviv University, Israel)

Cross tolerance to starvation and thermal stress in flour beetles.

PROFESSIONAL AFFILIATIONS

- American Physiological Society (APS)
- Canadian Society of Zoologists (CSZ)
- Entomological Society of Ontario (ESO)
- Ontario Consortium of Undergraduate Biology Educators (oCUBE)
- The Society for Experimental Biology (SEB)
- Society for Integrative and Comparative Biology (SICB)

PROFESSIONAL DEVELOPMENT ACTIVITIES

- 2020 Workshop – Combatting anti-Black racism in the academy: A primer for faculty (OCUFA)
- 2020 Workshop – Course Design Express - Getting Started with Online Design (EDC)
- 2018 Workshop – Tenure and Promotion to Associate Professor (CUASA).
- 2017 New Faculty Orientation to Teaching and Learning, Carleton University.
- 2017 Workshop – Introduction to Poll Everywhere (student polling system; EDC).
- 2017 Workshop – Introduction to CULearn, Carleton University (EDC).
- 2017 Certificate in University Teaching, Carleton University (EDC).

Bruce Campbell McKay
 Professor and Chair
 Department of Biology
 Carleton University
 1125 Colonel By Drive
 Ottawa, ON K1S 5B6
 613-520-2600 x3265

Education:

DATE	DESIGNATION	DISCIPLINE	INSTITUTION
1998	Ph.D.	Biology	McMaster University
1993	M.Sc.	Biological Sciences	Brock University
1990	B.Sc.	Biology	University of Toronto

Employment History:

2020- Chair, Department of Biology
 2020- Full Professor, Department of Biology and Institute of Biochemistry,
 Carleton University
 2019-2020 Director, Institute of Biochemistry, Carleton University
 2016-2020 Associate Professor, Department of Biology and Institute of Biochemistry,
 Carleton University
 2013- Member, Institute of Biochemistry, Carleton University
 2013-2016 Assistant Professor, Department of Biology and Institute of Biochemistry,
 Carleton University
 2012- Affiliate investigator, Ottawa Hospital Research Institute
 2005-2012 Scientist, Ottawa Hospital Research Institute
 2004-2005 Scientist, Cancer Care Ontario, Ottawa Regional Cancer Centre
 2000-2004 Junior Scientist, Cancer Care Ontario, Ottawa Regional Cancer Centre
 1997-2000 Post-doctoral fellow, Department of Radiation Oncology, University of
 Michigan

Honours and Awards:

2002-2008 Biomedical Research Scientist Award, Canadian Cancer Society
 1999 Young Investigator Award, Annual Meeting of the American Association of
 Cancer Research-Genetics Institute, Philadelphia
 1999 Young Investigator Award, Instituto Juan March, Madrid, Spain
 1997 Young Investigator Award, American Association for Cancer Research,
 Special Conference on Tumor Suppressor Genes Victoria, BC.
 1997 Book Prize, Department of Biology, McMaster University
 1994-1996 Graduate Scholarship, McMaster University
 1993 Centennial Scholarship, McMaster University

Publications:*Summary*

Category	Number
Chapters in books	2
Papers in peer-reviewed journals	44
Papers submitted	2
Abstracts or papers presented	>100

Chapters in books

The senior author is in bold, graduate students are italicized and undergraduate students are underlined.

2. **McKay, B.C.**, Becerril, C. and Spronck, J.C., 2005, Transcription of p53-regulated genes under transcriptional stress: implications for nucleotide excision repair, In: Regen Drouin, Evelene Sage and Mahmoud Roubhia (Volume Eds.). From DNA photolesions to mutations, skin cancer and cell death. Donat-P. Hader, Giulio Jori (Series Eds.). Comprehensive Series in Photosciences. Amsterdam: Elsevier Science.

1. **Rainbow, A.J.**, *Pitsikas, P.*, Caney, C., *Boszko, I.*, McKay, B.C. and *Francis, M.A.*, 2005, Reactivation of UV-damaged viruses and reporter genes in mammalian cells. In: Regen Drouin, Evelene Sage and Mahmoud Roubhia (Volume Eds.). From DNA photolesions to mutations, skin cancer and cell death. Donat-P. Hader, Giulio Jori (Series Eds.). Comprehensive Series in Photosciences. Amsterdam: Elsevier Science.

Papers in peer-reviewed journals (reverse chronological order)

The senior author is in **bold**, graduate students are *italicized* and undergraduate students are underlined.

46. *Browning, J. W.L.*, *van Zyl, E.*, Crepeault, H., *Chmara, J.*, Rambo, T.M.E., *Sharpe, G.*, Hearns, E. and **McKay, B.C.** 2022. Isoform-specific differences in miRNA-mediated regulation of MDM2 mRNA expression, Submitted to *RNA*.

45. *Browning, J.W.L.*, *Chmara, J.*, Atkins, H., Sabloff, M. and **McKay, B.C.**, 2022, Heterogeneity in the p53 response and early myeloid marker expression among acute myeloid leukemia patients receiving total body irradiation prior to allogeneic stem cell transplantation, Submitted to *Radiat. Res.*

44. *van Zyl E.J.*, Tolls, V. and **McKay, B.C.**, 2021, Microarray dataset for isoginkgetin-treated colon cancer cells, *Data Brief, in press*, doi.org/10.1016/j.dib.2022.108126

43. *van Zyl E.J.*, *Tolls, V.*, *Blackmore, A.* and **McKay, B.C.**, 2021, The splicing inhibitor isoginkgetin leads to decrease protein synthesis and activates ATF4-dependent gene expression, *Biochim Biophys Acta Mol Cell Res*, 1868 (12), 119123

42. *Vanzyl E.J., Sayed H, Blackmore A.B., Rick K.R.C., Fernando P., McKay B.C.*, 2020 The spliceosome inhibitors isoginkgetin and pladienolide B induce ATF3-dependent cell death, *PLoS ONE*, 15(12):e0224953. doi: 10.1371/journal.pone.0224953
41. *Browning, J.W.L., Rambo, T.M.E. and McKay, B.C.*, 2020, Comparative genomic analysis identifies multiple transposable elements, a RLP24 pseudogene and a novel repeated sequence in the 3'UTR of MDM2 from humans and other closely related primates, *Gene*, 741, 144557
40. *Galván, I.J., McKay, B., Wong, A, Cheetham, J.J., Bean, C., Golshani, A., Smith, M.L.*, 2020, Mode of action of nisin on *Escherichia coli*. *Can. J. Microbiol*, 66(2): 161-168, doi: 10.1139/cjm-2019-0315
39. *Hernández, R.B., Moteshareie, H., Burnside, D. McKay, B. and Golshani, A.*, 2019, Manganese-induced cellular disturbance in the baker's yeast, *Saccharomyces cerevisiae* with putative implications in neuronal dysfunction, *Sci. Rep.*, 9(1):6563. doi: 0.1038/s41598-019-42907-2
38. *Moteshareie, H., Hajikarimlou, M., Mulet Indrayanti, A, Burnside D, Dias, AP, Lettl, C., Ahmed, D., Omid, K., Kazmirchuk, T., Puchacz, N., Zare, N.; Takallou, S.; Naing, T.; Hernández, R.B., Willmore, W.G.; Babu, M.; McKay, B.C., Samanfar, B. Holcik, M. and Golshani, A.*, 2018, Heavy metal sensitivities of gene deletion strains for ITT1 and RPS1A connect their activities to the expression of URE2, a key gene involved in metal detoxification in yeast, submitted to *PLoS ONE*, 13(9):e0198704.
37. *Browning, J.W.L., Chmara, J., Atkins, H. Sabloff, M. and McKay, B.C.*, 2018, Rapid decrease in KRT14 and TP53 mRNA expression in the buccal mucosa of patients receiving total body radiation for allogeneic stem cell transplantation, *Radiat. Res.*, 189, 213-218.
36. *Vanzyl, E.J., Rick, K.R.C., Blackmore, A.B., MacFarlane, E.M. and McKay, B.C.*, 2018, Flow cytometric analysis of isoginkgetin treated cells identifies changes in S and M phases as novel cellular responses to spliceosome inhibition, *PLoS ONE*, 13(1):e0191178
35. *Cabrita M.A., Bose, R., Vanzyl, E.J., Pastic, A., Hamill, J.D. Pan, E., Marcellus, K.A., and McKay, B.C.*, 2017, The p53 protein induces stable miRNAs that have the potential to modify subsequent p53 responses, *Gene* 608, 86-94
34. *Hassan, E.M., Willmore, W.G., McKay, B.C. and DeRosa, M.C.*, 2017, *In vitro* selections of mammaglobin A and mammaglobin B aptamers for the recognition of circulating breast tumor cells, *Scientific Reports*, 7, 14487, doi:10.1038/s41598-017-13751-z
33. *Cabrita M.A., Vanzyl, E.J., Hamill, J.D. Pan, E., Marcellus, K.A., Tolls, V.J., Alonzi, R.C., Pastic, A., Rambo, T.M.E., Sayed, H. and McKay, B.C.*, 2016, A Temperature

Sensitive Variant of p53 Drives p53-Dependent MicroRNA Expression without Evidence of Widespread Post-Transcriptional Gene Silencing, *PLoS One* 11(2):e0148529

32. *Sriram, R., Lo, V., Pryce, B., Antonova, L., Mears, A.J., Daneshmand, M., McKay, B., Conway, S.J., Muller, W.J. and Sabourin, L.A.* 2015, Loss of Periostin/OSF-2 in ErbB2/Neu-driven tumors results in androgen receptor-positive molecular apocrine-like tumors with reduced Notch1 activity, *Breast Cancer Research*, 17(1):7

31. **McKay, B.C.**, 2014, Post-transcriptional control of DNA damage responsive gene expression, *Antioxid Redox Signal*. 20(4):640-54.

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28. **McKay, B.C.** and Cabrita, M.A., 2013, Arresting transcription and sentencing the cell: the consequences of blocked transcription, *Mech. Ageing Devel*, 134 (2013) 243–252.

27. *Melanson, B.D., Cabrita, M.A., Bose, R., Hamill, J.D., Pan, E., Brochu, C., Marcellus, K.A., Zhao, T.T., Holcik, M. and McKay, B.C.*, 2013, A novel *cis*-acting element from the 3'UTR of DNA damage-binding protein 2 mRNA links transcriptional and post-transcriptional regulation of gene expression, *Nuc Acids Res*, 41(11): 5692-703.

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25. Huh, M., O'Dea, T.P., McKay, B.C., Parks, R.J., Rudnicki, M.A. and **Picketts, D.J.**, 2012, Compromised genomic integrity impedes muscle growth after Atrx inactivation., *J. Clin. Invest*, 122(12):4412-23.

24. *MacKinnon-Roy, C. Stubbert, L.J. and McKay, B.C.*, 2011, RNA interference against transcription factor SII fails to support its role in transcription-coupled nucleotide excision repair, *Mutat Res* 706 (1-2) 53-58.

23. *Melanson, B.D., Bose, R., Hamill, J.D., Marcellus, K., Pan E.F. and McKay, B.C.*, 2011, The role of mRNA decay in p53-induced gene expression, *RNA*, 17, 2222-2234.

22. Cabrita, M.A., Jones, L.M., Quizi, J.L., Sabourin, L.A., McKay, B.C. and **Addison, C.A.**, 2011, Focal Adhesion Kinase Inhibitors are Potent Anti-angiogenic Agents, *Mol. Oncol*, 5 (6) 517-526.
21. *Stubbert, L.J., Smith, J.M.* and **McKay, B.C.**, 2010, Decreased transcription-coupled nucleotide excision repair capacity is associated with increased p53- and MLH1-independent apoptosis in response to cisplatin, *BMC Cancer*, 10, 207
20. *Stubbert, L.J., Smith, J.M.* Hamill, J., Arcand, T.L. and **McKay, B.C.**, 2009, The anti-apoptotic role for p53 following exposure to ultraviolet light does not require DDB2, *Mutat Res*, 663, 69-76.
19. *Stubbert, L.J.*, Hamill, J., *Smith, J.M.*, Becerril, C., Spronck J.C. and **McKay, B.C.**, 2009, Ultraviolet light induces the unscheduled expression of cyclin E, *Cell Cycle*, 8, 2995-3002.
18. *Stubbert, L.J.*, Hamill, J. Spronck, J.C., *Smith, J.M.*, Becerril, C. and **McKay, B.C.**, 2007, DDB2-independent role for p53 in the recovery from ultraviolet light-induced replication arrest, *Cell Cycle*, 6 (4), 1730-1740.
17. *Smith J.M., Stubbert, L.J.* and **McKay, B.C.**, 2007, The contribution of transactivation subdomains 1 and 2 to p53-induced gene expression is heterogeneous but not subdomain specific, *Neoplasia*, 9 (12) 1057-1065.
16. **McKay, B.C.**, *Stubbert, L.J. Fowler, C.C. Smith, J.M., Cardamore, R.A.* and Spronck, J.C., Regulation of ultraviolet light-induced gene expression by gene size, *Proc Natl Acad Sci USA*, 101, 17, 6582-6586. *This article was featured in the Research Roundup section of the Journal of Cell Biology, May 2004 and received considerable press coverage.*
15. *Billecke, C.A., Ljungman, M., McKay, B.C., Rehemtulla, A. Taneja, N.* and **Ethier, S.P.** 2002, Lack of Functional pRb results in attenuated recovery of mRNA synthesis and increased apoptosis following UV-irradiation in human breast cancer cells, *Oncogene*, 21, 4481-4489.
14. *Rochette, P.J., Bastien, N., McKay, B.C., Therrien, J.P. Drobetsky, E.A. and Drouin, R.*, 2002, DNA Mismatch Repair-Deficient Human Adenocarcinoma Cells are Fully Proficient in Transcription-Coupled Nucleotide Excision Repair, *Oncogene*, 21, 5743-5752.
13. **McKay, B.C.**, C. Becerril and M. Ljungman, 2002, Ultraviolet light-induced apoptosis is associated with S phase in primary human fibroblasts, *DNA Repair*, 1, 811-820.
12. McKay, B.C., F. Chen, S.T. Clarke, H.E. Wiggin, L.M. Harvey and **M. Ljungman**, 2001, UV light-induced degradation of RNA polymerase II is dependent on the Cockayne's syndrome A and B proteins but not p53 or MLH1, *Mutat. Res. DNA Repair* 485, 93-105.

11. **McKay, B.C.**, C. Becerril and M. Ljungman, 2001, p53 plays a protective role against UV- and cisplatin-induced apoptosis in transcription-coupled repair proficient fibroblasts, *Oncogene*, 20, 6805-6808.
10. McKay, B.C., F. Chen, C. Perumalswami, F.F. Zhang and **M. Ljungman**, 2000, P53 can both stimulate and inhibit UV light-induced apoptosis, *Mol. Biol. Cell*, 11, 2543-2551.
9. **Rainbow, A.J.**, McKay, B.C. and M.A. Francis, 2000, Recombinant adenoviruses as expression vectors and as probes for DNA repair in human cells, *Gene Therapy and Molecular Biology*, 5, 87-100.
8. **Ljungman, M.**, F.F. Zhang, F. Chen, A.J. Rainbow and McKay, B.C., 1999, Inhibition of RNA polymerase II as a trigger for p53 and apoptosis, *Oncogene*, 18, 583-592.
7. Chang, D., Chen, F., Zhang, F.F., McKay, B.C. and **Ljungman, M.** 1999, Dose-dependent effects of DNA-damaging agents on p53-mediated cell cycle arrest, *Cell Growth Differ.*, 10, 155-162.
6. **McKay, B.C.**, M. Ljungman and A.J. Rainbow, 1999, Potential roles for p53 in nucleotide excision repair, *Carcinogenesis*, 20, 1389-1396.
5. **McKay, B.C.** and M. Ljungman, 1999, Role for p53 in the recovery of transcription and protection against apoptosis induced by ultraviolet light, *Neoplasia*, 1, 276-284.
4. *McKay, B.C.*, Ljungman, M and A.J. **Rainbow**, 1998, Persistent DNA damage induced by ultraviolet light inhibits expression of p21waf1 and bax: implications for DNA repair, UV sensitivity and the induction of apoptosis, *Oncogene*, 17, 545-555.
3. *McKay, B.C.*, C. Winrow and **A.J. Rainbow**, 1997, Capacity of UV-irradiated cells to support Adenovirus DNA synthesis is dependent on both transcription coupled repair and p53, and is disrupted in SV40 transformed fibroblasts and human tumour cells lines, *Photochem. Photobiol.*, 66, 659-664.
2. *McKay, B.C.*, *MA Francis* and **A.J. Rainbow**, 1997, Wildtype p53 is required for heat shock and ultraviolet light enhanced repair of a UV-damaged reporter gene, *Carcinogenesis* 18, 245-249.
1. *McKay, B.C.* and **A.J. Rainbow**, 1996, Heat shock enhanced repair of a UV damaged reporter gene involves the transcription coupled repair pathway. *Mutat. Res.*, 363, 125-135.

Oral Scientific Presentations

- 2019 Northern Ontario School of Medicine, Sudbury, ON
- 2018 Ottawa Carleton District School Board, Professional Development Day
- 2017 Ottawa Carleton Institute of Biology Symposium

- 2016 Annual Meeting of the Environmental Mutagenesis and Genomics Society
- 2015 Ottawa Carleton Institute of Biology Symposium
- 2014 Science Café, Carleton University
- 2013 Annual Meeting of the Environmental Mutagen Society
- 2012 Biology Department, Carleton University, Ottawa, ON
- 2012 Department of Hematology, Ottawa Hospital
- 2011 Toxicogenomics Group, Health Canada, Ottawa, ON
- 2011 Department of Cellular and Molecular Biology,
University of Ottawa
- 2010 Biology Department, Carleton University, Ottawa, ON
- 2009 Gliwice Scientific Meetings, Center for Oncology,
Skiodowska-Curie Memorial Institute, Gliwice, Poland,
- 2008 Hopital Maisonneuve-Rosemont, Montreal, QC
- 2007 Radiation Oncology and Physics Rounds,
Ottawa Hospital, Ottawa, ON
- 2006 Radiation Oncology and Physics Rounds,
Ottawa Hospital, Ottawa, ON
- 2005 Radiation Oncology and Physics Rounds,
Ottawa Hospital, Ottawa, ON
- 2004 Toxicogenomics Group, Health Canada, Ottawa, ON
- 2004 Ottawa Hospital Research Institute annual retreat,
Lac Carling, QC.
- 2004 Radiation Oncology and Physics Rounds,
Ottawa Regional Cancer Centre, Ottawa, ON
- 2004 Cancer Biology Group, Southern Alberta Cancer Research
Institute, University of Calgary, Calgary, AB
- 2003 Gordon Research Conference on Mammalian DNA Repair,
Ventura, CA
- 2003 EU-US Workshop on Molecular signatures of DNA damage-
induced stress responses, Cortona, Italy
- 2003 Radiation Oncology Rounds, Ottawa Regional Cancer Centre,
Ottawa, ON
- 2003 Radiation Oncology and Physics Rounds,
Ottawa Regional Cancer Centre, Ottawa, ON
- 2002 Head and Neck Research Group Retreat,
Ottawa Hospital, Ottawa, ON
- 2002 Centre de Recherche Guy Bernier,
University of Montreal, Montreal, QC
- 2002 Annual Meeting of the American Society for Photobiology,
Quebec City, QC
- 2002 Radiation Oncology and Physics Rounds,
Ottawa Regional Cancer Centre
- 2002 North Eastern Ontario Regional Cancer Centre, Sudbury, ON
- 2002 National Cancer Institute of Canada, Toronto, ON
- 2001 Radiation Oncology and Physics Rounds,
Ottawa Regional Cancer Centre, Ottawa, ON

- 2000 13th International Congress on Photobiology, San Francisco, CA.
 2000 Radiation Oncology and Physics Rounds, Ottawa Regional Cancer Centre, Ottawa, ON
 1999 Ottawa Regional Cancer Centre, Ottawa, ON
 1999 National Institutes of Health Videocast
This videocast was archived online at NIH and the talk was placed on the list of 'hot talks' on the Cold Spring Harbor Laboratories website in 1999.
 1999 Midwest DNA Repair Conference, Ann Arbor, MI, USA
 1999 AACR Annual Meeting, Philadelphia, PA
 1997 National Cancer Institute, Bethesda, MD, USA
 1997 National Institute on Aging, Baltimore, MD, USA
 1997 University of Michigan, Ann Arbor, MI
 1997 Dartmouth College, Hanover, NH
 1997 McMaster University, Hamilton, ON
 1993 Brock University, St. Catharines, ON
 1993 McMaster University, Hamilton, ON

Teaching

Carleton University (2013-present)

- 2021- Laboratory Techniques in Molecular Genetics (BIOL 4109/5106)
 2019-2020 Practical Biochemistry I (BIOC3103)
 2018 Selected Topics in Biology: Advanced Topics in Cancer Research (BIOL5502)
 2016-2019 Molecular Genetics (BIOL 3104)
 2015 Selected Topics in Biology: Genomic Analysis (BIOL5502)
 2014-2020 Human Genetics (BIOL 4206)
 2014-2016 Fundamentals of Genetics (BIOL 2107)
 2013- Independent Research II (BIOC 3400)
 2013- Directed Special Studies (BIOL 3901)
 2013- Directed Special Studies (BIOL 4901)
 2013- Honours Essay and Research Proposal (BIOL 4907)
 2013- Honours Research Thesis (BIOC 4908)
 2013- Honours Research Thesis (BIOL 4908)

Ottawa Hospital (2003-2012)

- 2004-12 Medical Oncology Resident course
 2001-12 Radiation Oncology Resident course

University of Ottawa (2001-2012)

- 2007-12 Introductory Concepts in Cancer Biology (CMM5105)
 2003-12 Advanced Topics in Cancer Biology (CMM8105) (course coordinator)
 2001-03 Molecular Biology of Diseases (BCH 8103)
 2001-04 Human Genome (BPS4101)

University of Michigan, School of Public Health
1998-99 Guest Lecturer, *Radiation Biology* (4th year)

McMaster University (teaching assistant)
1993-97 *Developmental Biology* (3rd year)
1993-97 *Cell Biology* (3rd year)

Brock University (teaching assistant)
1992-93 *Genetics* (2nd year)
1991-93 *Developmental Biology* (3rd year)

Guest Lectures

2021 Molecular Genetics (BIOL 3104)
2021 Biochemistry of Disease (BIOC 4009)
2020 Biochemistry of Disease (BIOC 4009)
2019 Biochemistry of Disease (BIOC 4009)
2019 Seminar in Biochemistry (BIOL5002W/6102W and CHEM5800W/6800W)
2018 Biochemistry of Disease (BIOC 4009)
2017 Biochemistry of Disease (BIOC 4009)

Service Contributions

2020- Member, Partnership Group for Science and Engineering
2020- Member, Canadian Council of University Biology Chairs
2020- Chair, Department of Biology
2019-2020 Director, Institute of Biochemistry
2018-2019 Graduate Studies Committee, Department of Biology, Carleton University
2017 Nesbitt Building Renovation Committee
2016-2017 Member, Faculty Search Committee, Department of Health Sciences
2015-2019 Member of Carleton University Research Ethics Board- B
2015-2016 Chair, Faculty Search Committee, Department of Biology, Carleton University
2013-2017 Graduate Studies Committee, Department of Biology, Carleton University
2008-2011 Faculty Search Committee, Centre for Stroke Recovery, University of Ottawa Medical School.
2006-2011 Protocol Review Group, Animal Care Committee, University of Ottawa
2006-2007 Radiation Safety Committee, Ottawa Hospital
2006-2011 Faculty Search Committee, Department of Cellular and Molecular Medicine, University of Ottawa
2003-2005 Human Molecular Genetics Program Committee, University of Ottawa
2002-2004 Trainee Committee, Ottawa Hospital Research Institute
1992-1993 Committee for *the Status of Women in Science*, Brock University

Trainee supervision

Category	COMPLETED	IN PROGRESS
Honour's thesis	57	2
Master's total	5	3
Master's thesis	5	3
Doctoral	3	2
Post-doctoral	3	0

*Supervisory experience**Post-doctoral*

- 2011-2012 Dr. Miguel Cabrera
Current position: Biologics and Genetic Therapies Directorate, Health Canada, Ottawa, ON
- 2006-2009 Dr. Christian Brochu
Current position: Senior Advisor, Knowledge Translation Strategy, Canadian Institutes of Health Research, Ottawa, ON
- 2002-2004 Dr. Jennifer Spronck
Current position: Teacher at Upper Canada District School Board
Former: MBM Intellectual Property Law, Ottawa, ON

Graduate Students-PhD

- 2018- Matthew Hoekstra. Characterization of KDM5A: Substrate specificity and identification of potential p53 K370me3 substrate (co-supervised with Kyle Biggar)
- 2017- Erin Vanzyl. *The mechanism of isoginkgetin-induced cell signaling.*
- 2004-2010 Brian Melanson. *Post-transcriptional regulation of DNA Damage Binding protein 2 and the identification of a novel mRNA stability determinant*
Current position: Regulatory Project Manager, Health Canada, Ottawa ON
- 2003-2009 Jennifer Smith. *Amino-terminal transactivation subdomains of p53 contribute equally to p53-induced gene expression*
Current position: Senior Policy Advisor, Risk Management Bureau at Safe Environments Directorate, Health Canada, Ottawa, ON
- 2004-2009 Lawton Stubbert. *Determining the response of tumour cells to UV light and Cisplatin*
Current position: Clinical Evaluator, Health Canada, Ottawa, ON

Graduate Students-MSc

- 2021- Abraham Awada. Using CRISPR-Cas9 to analyze *cis*-acting sequences in the 3'untranslated regions of MDM2
- 2020- Gavin Sharpe. The role of miRNAs in cellular response to actinomycin D
- 2019- Tyler Nguyen. Molecular approaches to environmental risk assessment (co-supervised with Jason O'Brien).
- 2017-2020 Alex Blackmore. *Transcriptome analysis of spliceosome inhibition in human cells.*
- 2016-2018 Jared Browning. *The role of miRNAs and alternative polyadenylation in the p53 response.* Biology Thesis Award winner.

- 2014-2016 Current Position: Technician, Canadian Wildlife Service
 Kayleigh Rick. *The splicing inhibitor isoginkgetin leads to defects in multiple phases of the cell cycle*
- 2014-2016 Current Position: Technician, Carleton University
 John Chmara. *Characterization of repeated p53 responses in human cells and samples from acute myeloid leukemia patients undergoing allogeneic stem cell transplantation.*
- 2007-10 Current Position: Bioinformatician, Canada Food Inspection Agency
 Christine MacKinnon-Roy. *The role of transcription elongation factor IIS in transcription-coupled nucleotide excision repair*
- Current position: Laboratory Coordinator, Canadian Health Measures Survey at Statistics Canada

Student committees

Category	COMPLETED	IN PROGRESS
Master's advisory	21	1
Master's examination	24	n/a
Doctoral advisory	21	5
Doctoral qualifying	22	n/a
Doctoral examination	24	n/a
External examination	4	n/a

Research Funding*Summary table*

Year	Source	Role	Award	App/Held	Purpose
2020	NSERC-RTI	CO	\$150 000	Held	Equipment
2019-2025	NSERC-Discovery	PI	\$160 000	Held	Operating
2019-2020	Development Grant-Carleton	PI	\$10 000	Held	Operating
2019-2020	Multidisciplinary Research Catalyst Fund	CO	\$20 000	Held	Catalyst
2015	CFI- infrastructure support	PI	\$32 000	Held	Operating
2014-2019	NSERC-Discovery	PI	\$175 000	Held	Operating
2014	CFI/ORF	PI	\$394 000	Held	Equipment
2007-2012	CIHR	PI	\$562 610	Held	Operating
2010-2012	Prostate Cancer Fight Found.	PI	\$68 000	Held	Operating
2005-2008	NCIC	PI	\$450 000	Held	Operating
2005-2008	CIHR-declined to accept NCIC	PI	\$301 000	Held	Operating
2004-2007	CIHR	PI	\$325 566	Held	Operating
2004-2005	CPCRI-IDEA	PI	\$50 000	Held	Operating
2002-2003	CRS	PI	\$120 000	Held	Operating
2002-2008	NCIC	PI	\$383 000	Held	Salary
2002-2006	PREA	PI	\$150 000	Held	Trainee support
2002	CFI/OIT	PI	\$498 000	Held	Equipment
2001-2004	NCIC	PI	\$294 700	Held	Operating

2001	NCIC	PI	\$67 702	Held	Equipment
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External Funding Details

2020	Natural Sciences and Engineering Research Council of Canada, Acquisition of an automated live cell imaging platform, \$150 000 (PI: Martin Holcik)				
2019-2024	Natural Sciences and Engineering Research Council of Canada, Post-transcriptional control of Stress responses, \$160 000				
2014-2019	Natural Sciences and Engineering Research Council of Canada, Post-transcriptional control of DNA damage responses, \$175 000				
2014	Canada Foundation for Innovation/Ontario Research Fund, Infrastructure for Functional Genomics, \$394 000				
2010-2012	Prostate Cancer Fight Foundation, Transcription-coupled repair as a target in prostate cancer, \$68 000				
2005-2008	National Cancer Institute of Canada, Role of transcription-coupled nucleotide excision repair in the cisplatin response. \$450 000				
2005-2008	Canadian Institutes of Health Research, Role of transcription-coupled nucleotide excision repair in the cisplatin response. \$301 000 (declined due to overlap with NCIC)				
2007-2012	Canadian Institutes of Health Research, Messenger RNA stability and the ultraviolet response, \$562 610				
2004-2007	Canadian Institutes of Health Research, Protective role for p53 against DNA damage \$325 566				
2003-2004	Canadian Prostate Cancer Research Initiative Idea Grant, Targeting the Cockayne syndrome Group B gene in hormone refractory prostate cancer \$50 000				
2002-2008	National Cancer Institute of Canada, Canadian Cancer Society Research Scientist Award, \$383 000				
2002-2006	Premier's Research Excellence Award, Development of novel strategies for gene therapy of cancer, \$150 000				
2002-2004	Cancer Research Society Inc., Transactivation-independent apoptosis induced by the p53 tumour suppressor, \$120 000				
2002	Canada Foundation for Innovation, Ontario Innovation Trust and Ottawa Regional Cancer Foundation, Changes in gene expression associated with tumorigenesis and cancer therapy, \$498 000				
2001-2004	National Cancer Institute of Canada, Role of basal p53 in DNA damage responses, \$294 700				
2001	National Cancer Institute of Canada, New Investigator Equipment Grant \$67 702				

Internal Research Funding

2019	Carleton University, Development grant (PI)	\$10 000
2019	Multidisciplinary Research Catalyst Fund Awarded (Co-app)	\$20 000
2015	Carleton University, Development grant (PI)	\$10 000
2013	Carleton University, start-up (PI)	\$80 000
2000	Cancer Care Ontario, start-up (PI)	\$80 000

Scholarly activities*External examiner*

2010 Queen's University
 2006 University of Calgary
 2004 McGill University
 2002 University of Montreal

Grant Reviewer

2021-22 External Reviewer, NSERC Discovery Program
 2019 Reviewer, Mitacs Accelerate Program
 2018 External Reviewer, The Netherlands Organisation for Health Research and Development, VENI Program
 2017 External Reviewer, Breast Cancer Now, UK
 2017-20 Canadian Institutes of Health Research, Cancer Biology and Therapeutics
 2017- Canadian Institutes of Health Research, College of Reviewers
 2016 External Reviewer, Wellcome Trust, UK
 2015 Prostate Cancer Canada, Panel A
 2015 External Reviewer for the City University of New York (CUNY)
 2015 External Reviewer, Netherlands Organization for Scientific Research (NWO), Earth and Life Sciences Division
 2015-16 Cancer Research Society, Panel C1
 2014 Worldwide Cancer Research
 2013 Early Researcher Award, Government of Ontario, Life Sciences Non-Clinical Review Panel
 2011 Technology Foundation STW, External Reviewer, The Netherlands
 2011 Medical Research Council of South Africa, External Reviewer
 2009-10 Cancer Research Society, Molecular Biology Panel D
 2009 Canadian Institutes of Health Research, 'Catalyst Grant: Biomedical and Clinical Approaches to Improving Quality of Life' Committee
 2008 Alberta Heritage Foundation for Medical Research, external
 2008 Children's Hospital of Eastern Ontario Foundation, External Reviewer
 2008 Alberta Cancer Board, External Reviewer
 2007 Canadian Breast Cancer Foundation, External reviewer
 2007 Canadian Institutes of Health Research, Cancer Biology and Therapeutics Panel
 2006 Heart and Stroke Foundation of Canada, External reviewer
 2005-07 National Cancer Institute of Canada, Panel G2, Carcinogenesis, DNA Damage and DNA Repair
 2005-07 Cancer Research Society, Molecular Biology Panel C
 2003 Canadian Institutes of Health Research, Cancer Progression and Therapeutics panel
 2002-03 National Cancer Institute of Canada, Scientific Officer, Panel E, Radiation Biology and Medical Imaging
 2002 Canadian Institutes of Health Research, External Reviewer
 2001 Cancer Research Society, Molecular Biology Panel C

Journal Editorial Board

2019-pres PLOS One

Journal Reviewer

Aging and Mechanisms of Disease

Antioxidant and Redox Signaling

BMC Cancer

BMC Cell Biology

BMC Genomics

Cancer Biology & Therapy

Carcinogenesis

Cell Cycle

Cell Death and Differentiation

Cellular & Molecular Immunology

DNA Repair

Environmental and Molecular Mutagenesis

Environmental Biotechnology

International Journal of Molecular Sciences

Journal of Biological Chemistry

Journal of Cell Physiology

Journal of Cell Science

Journal of Investigative Dermatology

miRNA

Molecular and Cellular Biology

Mutagenesis

Mutation Research- DNA Repair

Mutation Research- Fundamental and Molecular Mechanisms of Mutagenesis

Mutation Research- Genetic Toxicology and Environmental Mutagenesis

Neoplasia

Oncogene

Photochemistry and Photobiology

PLoS One

Radiation Research

Outreach activities

2021 Science Student Success Centre Science Lab Tours-Virtual

2020 Science Student Success Centre Science Lab Tours

2020 Speaker, Biology, Lisgar Collegiate Institute

2020 Speaker, BioBites, Carleton University Biology Society

2019 Ontario Universities Fair

2019 Science Student Success Centre Science Lab Tours

2019 Participated in the Science Student Success Center Poster Practice Event

2019 Carleton University Convocation

2018 Science Professor Jeopardy

2018 Speaker, Ottawa Carleton District School Board, Professional Activity Day

2018 Canvasser for Heart and Stroke Foundation

- 2018 Science Student Success Centre Science Lab Tours
- 2018 Carleton University Convocation
- 2018 Speaker, *Recent technological advances in genetic research and treatment*, Ottawa Carleton District School Board, Professional Development Day
- 2017 Carleton University Convocation
- 2017 Science Student Success Centre Science Lab Tours
- 2017 Carleton University Convocation
- 2016 Science Student Success Centre Science Lab Tours
- 2016 Participated in the Carleton Science Student Society Science Research Night
- 2016 Carleton University Convocation
- 2016 Judge, Sanofi bioGENEius Challenge Science Fair Competition
- 2016 Speaker, Carleton University Biology Society's Munch, Lunch and Learn Seminar Series
- 2016 Dean's Guidance Dinner, Science and Engineering
- 2015 Judge, Sanofi bioGENEius Challenge Science Fair Competition
- 2014 Judge, Sanofi bioGENEius Challenge Science Fair Competition
- 2014 Speaker: Cancer and genetic instability, Science Café, Ottawa Public Library
- 2014 Speaker: Cancer and genetic instability, Carleton Science Student Society Science Research Night
- 2013 Participated in the Annual Carleton University Science Networking Forum organized by the Science Student Success Centre
- 2013 Interviewed for an online video report entitled 'Banning Tanning', Centretown News Online, Nov 6.
- 2011 Speaker at Motorcycle Ride for Dad fundraiser
- 2010 Interviewed for an article in the *Fulcrum*, entitled 'Sun-dissed'
- 2008 Canvasser for Heart and Stroke Foundation
- 2006 Invited speaker, Terry Fox Run, Forest Valley Elementary School
- 2005 Invited speaker, Terry Fox Run, Forest Valley Elementary School
- 2005 Speaker at the Ottawa Corporate Kickoff to the Terry Fox Run
- 2004 Contributed an article to *Challenge* magazine, the publication of the Ottawa Regional Cancer Centre Foundation, *Skin Cancer, the Dark Side of Sunlight* (Fall/winter issue).
- 2004 Interviewed for newspaper articles in the *Ottawa Citizen* and *Ottawa Sun*, April 14, 2004.
- 2004 Interviewed on CJOH television evening news, April 14, 2004.
- 2003 Keynote speaker at the Ottawa Corporate Kickoff to the Terry Fox Run. A transcript of my speech was published in the Terry Fox Foundation Annual Report.
- 2003 Mentor Sanofi Aventis BioTalent Challenge.
- 2001-2010 Terry Fox Run Participant
- 2001 Guest speaker, Cancer and genetic instability, Elmwood Private School, Ottawa
- 1992-1993 Graduate Student Representative in the Department of Biological Sciences at Brock University
- 1992-1993 Member of the Committee for the Status of Women in Science at Brock University.

CURRICULUM VITAE

McKay 4/2022

- 1992-1993 Visited high schools in the Niagara Region to provide information on biotechnology programs at Brock University
- 1989-1990 Member of Pugwash Society at the University of Toronto

CURRICULUM VITAE

Dr. Steven M. Muegge

Sprott School of Business
Carleton University
1125 Colonel By Drive
Ottawa Canada K1S 5B6

website: <http://steven.muegge.net>
email: steven.muegge@carleton.ca
telephone: (613) 520-2600 X6804
twitter: @StevenMuegge

RESEARCH INTERESTS

- Technology entrepreneurship
- Non-traditional settings for innovation and entrepreneurship: business ecosystems, communities, platforms, and interconnected systems that combine these elements
- Business models of technology entrepreneurs, especially in non-traditional settings

INDUSTRIAL EXPERIENCE

- Eight years of industry experience developing hardware and software systems as a designer, architect, and R&D manager in the information and communication technology sector (ICT)
- End-to-end hands-on experience with the processes of new product development, including early concept definition, detailed requirements capture, hardware and software development, product verification, and customer deployment
- A leadership track record of delivering on R&D projects with budgets from \$200k to \$20M, and durations from 4 months to two years

EDUCATION AND PROFESSIONAL CERTIFICATIONS

- 2012 Ph.D. (Management)
Sprott School of Business, Carleton University, Ottawa, Ontario, Canada
Thesis: *Institutions of participation: A nested case study of company participation in the Eclipse Foundation, community, and business ecosystem.*
Supervised by Dr. Gerry Grant.
- 2004 M.Eng. (Telecommunications Technology Management)
Department of Systems and Computer Engineering, Carleton University
Thesis: *Corporate ventured technology spin-offs: A grounded theory of decision and resource environments.*
Supervised by Dr. John Callahan.
- 2001 PMP (Project Management Professional)
Project Management Institute (PMI), Newtown Square, Pennsylvania, USA
- 1995 B.Eng. (Engineering Physics)
McMaster University, Hamilton, Ontario, Canada
Concentration in optical communications and semiconductor devices

EMPLOYMENT

Academic Appointments

2019-present Director, Technology Innovation Management (TIM) program, Carleton University
 2016-present Associate Professor, Sprott School of Business, Carleton University
 2011-2016 Assistant Professor, Sprott School of Business, Carleton University
 2006-2010 Lecturer, Department of Systems and Computer Engineering, Carleton University
 2005-2006 Sessional Lecturer, Sprott School of Business, Carleton University
 2004-2006 Research Associate, Telfer School of Management, University of Ottawa
 2004-2005 Teaching Assistant, Sprott School of Business, Carleton University

Other Employment

1997-2002 R&D Manager/Engineering Manager/Project Manager, Nortel Networks, Ottawa
 1995-1997 Industrial Researcher/ Design Engineer/Architect, Nortel Networks, Ottawa
 1993-1994 Research Assistant, Bell-Northern Research, Ottawa

PUBLICATIONS

Summary of Publications

	Published or forthcoming	
	After July 2011	Lifetime total
Articles in refereed journals (double-blind peer review)	12	13
Edited books	1	1
Chapters in edited books	3*	4
Articles in refereed conference proceedings	13	28
Articles in practitioner journals (refereed by an editorial review board)	0	4
Editorials in refereed journals (invited)	3	4
Conference presentations, posters, workshops, etc. (no proceedings and/or non-refereed)	7	12
Invited talks, public lectures, and panel sessions	13	20

* Two book chapters reprint previously-published journal articles.

Summary of Funds Raised for Research and Commercialization

	Funds awarded	Number of grants with funds awarded	Number of grants on alternative list (successful, but no funds awarded)	Number of grant proposals under review (decision pending)
External grants as principal investigator (PI) or applicant	\$289k	7	2	0
External grants as collaborator or co-applicant	\$18.2M	16	0	0
Internal grants and awards (from Carleton)	\$54.4k	7	0	1

Articles in Refereed Journals

Shaw, J.A. & Muegge, S.M. 2021. Ecosystems, design, and glocalization: A multi-level study of Technovation. *Technology Innovation Management Review*, 11(5): 32-43.
<https://doi.org/10.22215/timreview/14>

- Open access (CC-By 3.0); 2019 ABDC: C

Muegge, S. M., & Reid, E. 2019. Elon Musk and SpaceX: A Case Study of Entrepreneurship as Emancipation. *Technology Innovation Management Review*, 9(8): 18-29.
<https://doi.org/10.22215/timreview/1258>

- Open access (CC-By 3.0); 2019 ABDC: C

Weiss, M., & Muegge, S. 2019. Conceptualizing a New Domain Using Topic Modeling and Concept Mapping: A Case Study of Managed Security Services for Small Businesses. *Technology Innovation Management Review*, 9(8): 55-64.
<https://doi.org/10.22215/timreview/1261>

- Open access (CC-By 3.0); 2019 ABDC: C

Muegge, S. M., & Mezen, M. 2017. Business ecosystems and new venture business models: An exploratory study of participation in the Lead to Win job-creation engine. *International Journal of Technology Management*, 75(1/2/3/4): 157-192.
<https://doi.org/10.1504/IJTM.2017.10006162>

- Special issue on *Leveraging Technological Change: the Role of Business Models and Ecosystems*.
- Open access (CC-By 4.0); 2019 ABDC: B

Muegge, S. M. 2017. A game theory perspective on product development project charters: the project manager – project sponsor relationship as an iterated Prisoner's Dilemma. *International Journal of Project Organization and Management*, 9(1): 57-82.
<https://doi.org/10.1504/IJPOM.2017.083115>

- Open access (CC-By 4.0); 2013 ABDC: C

Muegge, S. M., & Craigen, D. 2015. A design science approach to construct critical infrastructure and communicate cybersecurity risks. *Technology Innovation Management Review*, 5(6): 6-16. <https://doi.org/10.22215/timreview/902>

- Open access (CC-By 3.0); 2019 ABDC: C

Payette, J., Anegbe, E., Caceres, E., & Muegge, S. M. 2015. Security by design: Cybersecurity extensions to project management maturity models for critical infrastructure projects. *Technology Innovation Management Review*, 5(6): 26-34.
<https://doi.org/10.22215/timreview/904>

- Open access (CC-By 3.0); 2019 ABDC: C

Low, A. & Muegge, S. M. 2013. Keystone business models for network security processors. *Technology Innovation Management Review*, 3(7): 25-35.
<https://doi.org/10.22215/timreview/703>

- Open access (CC-By 3.0); 2019 ABDC: C

Muegge, S. M. 2013. Platforms, communities, and business ecosystems: Lessons learned about technology entrepreneurship in an interconnected world. *Technology Innovation Management Review*, 3(2): 5-15.

<https://doi.org/10.22215/timreview/655>

- Open access (CC-By 3.0); 2019 ABDC: C

Bailetti, T., Bot, S., Duxbury, T., Hudson, D., McPhee, C., Muegge, S. M., Weiss, M., Wells, J., & Westerlund, M. 2012. An overview of four issues on technology entrepreneurship in the TIM Review. *Technology Innovation Management Review*, 2(6): 28-34.

<https://doi.org/10.22215/timreview/557>

- Open access (CC-By 3.0); 2019 ABDC: C

Muegge, S. M. 2012. Business model discovery by technology entrepreneurs. *Technology Innovation Management Review*, 2(4): 5-16.

<https://doi.org/10.22215/timreview/545>

- Open access (CC-By 3.0); 2019 ABDC: C
- Reprinted as chapter 1 of S. M. Muegge & C. Haw (Eds.), *Business Models: Best of TIM Review*, Talent First Network
- Reprinted as chapter 10 of T. Bailetti & B. Hurley (Eds.), *Best of TIM Review for Technology Entrepreneurs*, Talent First Network

Muegge, S. M. 2011. Business ecosystems as institutions of participation: A systems perspective on community-developed platforms. *Technology Innovation Management Review*, 1(2): 4-13. <https://doi.org/10.22215/timreview/495>

- Open access (CC-By 3.0); 2019 ABDC: C

Large, D., & Muegge, S. M. 2008. Venture capitalists' non-financial value-added: An evaluation of the evidence and implications for research. *Venture Capital: An International Journal of Entrepreneurial Finance*, 10(1): 1-35.

<https://doi.org/10.1080/13691060701605488>

- 2019 ABDC: B

Edited Book

Muegge, S. M., & Haw, C. (editors). 2013. *Business models for entrepreneurs and startups: Best of TIM Review*. Ottawa, Canada: Talent First Network.

ISBN: 978-0-7709-0559-0. 205 pages.

- Foreword by Sir. Terrence H. Matthews, Founder and Chairman of the Board, Mitel Networks Corporation

Chapters in Edited Books

Bailetti, T., Weiss, M., Muegge, S., & Westerlund, M. 2014. Lead To Win: An ecosystem approach to making universities more entrepreneurial. In A. Meerman & T. Kliewe (Eds.), *UIIN Good Practice Series 2014: Fostering University-Industry Relationships, Entrepreneurial Universities and Collaborative Innovation*, University Industry Innovation Network, chapter 29, pp. 397-408. Available online:

<http://www.uiin.org/index/gps>

- Muegge, S. M. 2013. Business model discovery by technology entrepreneurs. In S. M. Muegge & C. Haw (Eds.), *Business models: Best of TIM Review*, Talent First Network: chapter 1.
- Reprint of an article published in the April 2012 issue of the *TIM Review*
- Muegge, S. M. 2013. Business model discovery by technology entrepreneurs. In T. Bailetti & B. Hurley (Eds.), *Best of TIM Review for Technology Entrepreneurs*, Talent First Network: chapter 10.
- Reprint of an article published in the April 2012 issue of the *TIM Review*
- Callahan, J., & Muegge, S. M. 2003. Venture capital's role in innovation: Issues, research, and stakeholder interests. In L.V. Shavinina (Ed.), *The International Handbook on Innovation*, Elsevier Press: 641-666.

Articles in Refereed Conference Proceedings

- Shaw, J, & Muegge, S. M. 2020. Ecosystem design and glocalization: A multi-level study of Technovation. *Proceedings of ISPIM Connects Global* (December 6-8, online).
- Shaw, J, & Muegge, S. M. 2020 Localization of a global technology entrepreneurship challenge for girls. *Proceedings of the IAMB Virtual Management Conference* (December 3-5, online).
- Zakurdaeva, A., Weiss, M., & Muegge, S. M. 2020. Detecting architectural integrity violation patterns using machine learning. *Proceedings of the 35th ACM/SIGAPP Symposium on Applied Computing* (SAC '20, March 30-April 3, Brno, Czech Republic).
<https://doi.org/10.1145/3341105.3374008>
- Weiss, M. & Muegge, S. M. 2019. Managed security services for small businesses: A literature review using topic modeling. *Proceedings of ISPIM Connects Ottawa* (April 7-10, Ottawa, Canada).
- Reid, E., & Muegge, S. M. 2019. Elon Musk and SpaceX: A study of entrepreneuring as emancipation. *Proceedings of ISPIM Connects Ottawa* (April 7-10, Ottawa, Canada).
- Muegge, S. M., & Murshed, M. 2018. Time to discover and fix software vulnerabilities in open source software projects: Notes on measurement and data availability. *Proceedings of the 2018 Portland International Conference on Management of Engineering and Technology* (PICMET '18, August 19-23, Honolulu, Hawaii, USA).
- Muegge, S. M., & Reid, E. 2018. Richard Branson and Virgin Galactic: A case study of entrepreneuring as emancipation. *Proceedings of the 2018 Portland International Conference on Management of Engineering and Technology* (PICMET '18, August 19-23, Honolulu, Hawaii, USA).
- Muegge, S. M., Bailetti, T., & Sunna, A. 2018. A design perspective on business ecosystems: Intentional reuse of components. *Proceedings of the ISPIM Innovation Forum 2018* (March 25-28, Boston, USA).
- Shortlisted for the *ISPIM Impact Award* (one of three finalists for best paper)

- Westerlund, M., Muegge, S., Bailetti, T., & Weiss, M. 2017. Motivation for continued contribution to an open access innovation journal. *Proceedings of the ISPIM Innovation Forum 2017* (March 19-22, Toronto, Canada).
- Westerlund, M., Bailetti, T., Muegge, S., & Weiss, M. 2017. Towards smart cities: Residential interest in community platforms. *Proceedings of the ISPIM Innovation Forum 2017* (March 19-22, Toronto, Canada).
- Abualhaol, I., & Muegge, S. M. 2016. Securing D2D wireless links by continuous authenticity with legitimacy patterns. *Proceedings at the 49th Hawaii International Conference on System Sciences* (HICSS-49, January 5-8, Kauai, Hawaii, USA).
- Muegge, S. M., & Grant, G. G. 2013. An institutional perspective on participation in business ecosystems, communities, and platforms. Presented at the Academy of Management 2013 Annual Meeting (AoM 2013, August 9-13, Lake Buena Vista, Florida, USA).
- Muegge, S. M. 2011. Business ecosystems as metaphor, label, and analogy. Presented at the Academy of Management 2011 Annual Meeting (AoM 2011, August 12-16, San Antonio, Texas, USA).
- Muegge, S. M. & Weiss, M. 2010. Open source software projects as opportunities for student learning and value creation. *Proceedings of the International Conference on Education and New Learning Technologies* (EDULEARN10, July 5-7, Barcelona, Spain).
- Muegge, S. M., Bailetti, A. J., King, D., Tanev, S., & Weiss, M. 2010. Distance education with BigBlueButton. *Proceedings of the International Conference on Education and New Learning Technologies* (EDULEARN10, July 5-7, Barcelona, Spain).
- Miley, R., Muegge, S. M., & Weiss, M. 2009. Design evolution of an open source software project using an improved modularity metric. *Proceedings of the 5th International Conference on Open Source Systems* (OSS 2009, June 3-6, Skövde, Sweden).
- Enayat, H., Muegge, S. M., & Tanev, S. 2009. Impact of diversity on open source software. *Proceedings of the 4th International MCETECH Conference on e-Technologies* (MCETECH 2009, May 4-6, Ottawa, Canada).
- Mora, M., Hassin, K., Pullin, A., & Muegge, S. M. 2008. Open educational resources and the evolving value chain of education in developing countries. *IEEE International Symposium on Technology and Society* (ISTAS-08, June 26-28, Fredericton, Canada).
- Raman, A., & Muegge, S. M. 2008. An integrated approach to security in software development methodologies. *Proceedings of the IEEE 21st Canadian Conference on Electrical and Computer Engineering* (CCECE'08, May 4-7, Niagara Falls, Canada).
- Hassin, K., Mora, M., Pullin, A., & Muegge, S. M. 2007. Open educational resources in developing countries: Assessing the motivation and ability for innovation. *Proceedings of the Fourth Annual Open Education Conference* (OpenEd2007, September 26-28, Logan, USA).

- Afigbo, C., Ali, N., & Muegge, S. M. 2007. The Nigerian telecommunications industry: An industry forecast. *Proceedings of the IEEE 19th International Engineering Management Conference (IEMC 2007, July 29 - August 1, Austin, USA)*.
- Wylie, J., Muegge, S. M., & Thomas, R. 2006. Bayesian methods in management research: An application to logistic regression. *Administrative Sciences Association of Canada (ASAC 2006, Banff, Canada)*.
- Muegge, S. M., Sharma, M., & Kumar, U. 2005. An exploratory study of new product development at small university spin-offs. *Proceedings of the IEEE 17th International Engineering Management Conference (IEMC 2005, St. John's, Canada)*.
- Muegge, S. M. 2005. A game theory perspective on project charters, plans, and internal contracts. *PMI OVOG Third Student Forum of Project Management (Ottawa, Canada)*.
- Muegge, S. M. 2004. The decision and resource environments of new technology ventures. *Administrative Sciences Association of Canada (ASAC 2004, Quebec City, Canada)*.
- Muegge, S. M. 2004. Value networks and new venture legitimacy. *13th International Conference on the Management of Technology (IAMOT04, April 3-7, Washington, USA)*.
- Muegge, S. M. 2004. The corporate incubator as a risk management strategy. *13th International Conference on the Management of Technology (IAMOT04, April 3-7, Washington, USA)*.
- Song, S., Muegge, S. M., & Au, V. 1997. Performance characterization of thermal vias. *Proceedings of the Pacific Rim/ASME International Intersociety Electronic & Photonic Packaging Conference (InterPACK97, June 15-19, Hawaii, USA)*.

Articles in Practitioner Journals (refereed by an editorial review board)

- Muegge, S. M., & Milev, R. 2009. Measuring modularity in open source code bases. *Open Source Business Resource (OSBR)*, April: 21-26. <https://timreview.ca/article/245>
- Muegge, S. M., & Afigbo, C. 2008. Social innovation in education in sub-Saharan Africa. *Open Source Business Resource (OSBR)*, December: 21-25. <https://timreview.ca/article/213>
- Muegge, S. M. 2008. TIM lectures: Theory, evidence, and the pragmatic manager. *Open Source Business Resource (OSBR)*, August: 35-37. <https://timreview.ca/article/179>
- Muegge, S. M., Mora, M., Hassin, K., & Pullin, A. 2008. A flat network for the unflat world: Open educational resources in developing countries. *Open Source Business Resource (OSBR)*, August: 8-14. <https://timreview.ca/article/174>

Editorials as Guest Editor of Refereed Journal Special Issues

- Technology Innovation Management Review*. June 2021.
 Theme: Distributed ledger technologies for smart digital economies.
 Content: Five peer-reviewed articles and an editorial.

Muegge, S. M., & Sandstrom, G. 2021. Editorial: Distributed ledger technologies for smart digital economies (June 2021). *Technology Innovation Management Review*, 11(6): 3-5.
<https://timreview.ca/article/1444>

Technology Innovation Management Review. June 2015. (Co-edited with Dan Craigen).
Theme: Critical infrastructures and cybersecurity.
Content: Four peer-reviewed articles, an editorial, and a report on a public lecture.

McPhee, C., Craigen, D., & Muegge, S. M. 2015. Editorial: Critical infrastructures and cybersecurity (June 2015). *Technology Innovation Management Review*, 5(6): 3-5.
<https://timreview.ca/article/901>

Technology Innovation Management Review. February 2013.
Theme: Platforms, communities and business ecosystems.
Content: Four peer-reviewed articles, an editorial, and a report on a public lecture.
One of the ten most popular issues of the TIM Review (ranking compiled for the 100th issue, November 2015, based on number of page views at the journal website).

McPhee, C., & Muegge, S. M. 2013. Editorial: Platforms, communities and business ecosystems (February 2013). *Technology Innovation Management Review*, 3(2): 3-4.
<https://timreview.ca/article/654>

Open Source Business Resource. December 2008.
Theme: Enabling innovation.
Content: Seven articles (refereed by an editorial board) and an editorial.

Lavigne, D., & Muegge, S. M. 2008. Editorial: Enabling innovation (December 2008).
Open Source Business Resource (OSBR), December: 3-4.
<https://osbr.ca/article/209>

Conference Presentations, Posters, Workshops, Etc. (non-refereed; no papers)

Muegge, S. M., & Dixon, F. 2021. Delivering effective hybrid classes. Industry showcase presentation at OLC Innovate 2021: Education Reimagined (March 18, Online).

Shaw, S., Muegge, S. M., & Weiss, M. 2019. Detecting port scan activity in network traffic flows with machine learning. Poster presentation at the Machine Learning & Artificial Intelligence Ottawa Poster Session, Social and Networking Event (June 26, Ottawa, Canada).

Muegge, S. M. (moderator). 2018. Design claims for platforms and ecosystems: Which design choices lead to which design goals? Industry Jam@ISPIM hot topics discussion at the 2018 ISPIM Innovation Forum (March 26, Boston, USA).

Muegge, S. M., & Weiss, M. (moderators). 2017. Innovation ecosystems research: What's hot? What's not? Hot topics discussion at the 2017 ISPIM Innovation Forum (March 25, Toronto, Canada).

- Muegge, S. M., Amin, A., Budiman, C., Gad, M., Horsfall, F., & Shah, A. 2015. Venus cybersecurity. Poster presentation at the 2015 Symposium of the Laboratory for Analytic Sciences (LAS, December 4, North Carolina State University, Raleigh, North Carolina, USA).
- Muegge, S. M., Amin, A., Budiman, C., Gad, M., Horsfall, F., & Shah, A. 2015. Emergent techniques for developing and detecting cyber attacks. Poster presentation at the 2015 Symposium of the Laboratory for Analytic Sciences (LAS, December 4, North Carolina State University, Raleigh, North Carolina, USA).
- Tanev, S., Muegge, S. M., & Westerlund, M. 2014. Managing innovation in the cyber security technology sector: Bringing together technology entrepreneurship and research opportunities. Workshop at the 2014 ISPIM Americas Innovation Forum (October 5-8, Montreal, Canada).
- Reid, E., & Muegge, S. M. 2014. Lean product development in the commercial space era. Poster presentation at the 65th International Astronautical Congress (IAC, September 29-October 3, Toronto, Canada).
- Bailetti, T., Weiss, M., Muegge, S. M., & Westerlund, M. 2014. An ecosystem approach to making universities more entrepreneurial. University-Industry Interaction Conference (April 23-25, Barcelona, Spain).
- Muegge, S. M. 2009. Web conferencing with BigBlueButton. Classroom Strategies: One Cool Thing I'm Doing... Carleton University December Teaching Conference (December 8, Carleton University, Ottawa, Canada).
- Muegge, S. M., Weiss, M., Dixon, F., & Alam, R. 2008. Multimedia webconferencing for distance education. Eastern Ontario Symposium on Educational Technology (EOSET2008, May 29, University of Ottawa, Ottawa, Canada).
- Muegge, S. M. 2007. Game theory models of organizational behaviour: A survey of the OB journals and a call to action. Fourth Annual Sprott Doctoral Symposium (April 19-20, Carleton University, Ottawa, Canada).
- Wylie, J., & Muegge, S. M. 2006. Bayesian statistical methods for management research. Third Annual Sprott Doctoral Symposium (April 6-7, Carleton University, Ottawa, Canada).

Invited Talks, Keynote Presentations, Public Lectures, and Panel Sessions

- Muegge, S. M. 2021. Keynote presentation: Overview of the BigBlueButton Foundation. BigBlueButton World (June 24; online).
- Muegge, S. M. 2020. Convocation: AI for Local Value. Presentation to the inaugural graduating class of the AI for Local Value program (December 4, online).
- Muegge, S. M., & Dixon, F. 2018. Open source secret sauce for entrepreneurs. Presentation to the TiE Institute (September 25, Nepean, Canada).

- Weiss, M., & Muegge, S. M. 2018. Architectural integrity monitoring and the WikiSuite stack. Presentation to the WikiSuite Unconference (September 18, Concordia University, Montreal, Canada).
- Muegge, S. M. [panelist]. 2018. Panel on entrepreneurship in the accessibility space. Enable Ottawa (April 27, Carleton University, Ottawa, Canada). Organized by the Carleton University READ Initiative (research, education, accessibility, and design).
- Muegge, S. M. [panelist]. 2015. Panel on humanitarian and open source entrepreneurship experiences and initiatives. IEEE International Humanitarian Technology Conference (IHTC) (June 1, Ottawa, Canada). Organized by the IEEE Young Professionals.
- Muegge, S. M. 2015. Develop strong business models. Lead To Win Bootcamp (March 24).
- Muegge, S. M. 2015. Validate assertions to make money. Lead To Win Cybersecurity Bootcamp (March 9).
- Muegge, S. M. 2015. Validate assertions to make money. Lead To Win Bootcamp (February 17).
- Muegge, S. M. 2014. Validate assertions to make money. Lead To Win Bootcamp (February 19).
- Muegge, S. M. 2013. Validate assertions to make money. Lead To Win Bootcamp (September 25).
- Muegge, S. M. 2013. Validate assertions to make money. Lead To Win Bootcamp (February 19).
- Bailetti, T., Muegge, S. M., Weiss, M., McPhee, C., Duxbury, T., & Hudson, D. 2012. Leadership position in technology entrepreneurship and commercialization. Technology Innovation Management (TIM) Lecture Series (May 31, Carleton University, Ottawa, Canada).
- Muegge, S. M. 2012. Profit formulas and capabilities. Lead To Win Bootcamp (March 21).
- Muegge, S. M. 2011. Profit formulas and capabilities. Lead To Win for Women Bootcamp (November 23).
- Muegge, S. M. 2010. Develop strong business models. Lead To Win Bootcamp (June 21).
- Muegge, S. M. 2010. Develop strong business models. Lead To Win Bootcamp (May 18).
- Muegge, S. M. 2010. Develop strong business models. Lead To Win Bootcamp (February 2).
- Muegge, S. M., & Carbone, P. 2009. Develop strong business models and lever business ecosystems. Lead To Win Bootcamp (November 3).
- Muegge, S. M., & Carbone, P. 2009. New competitive game: How to develop strong business models and lever business ecosystems to gain advantage. Lead To Win Bootcamp (July 24).

Muegge, S. M. 2008. Business ecosystems: basics and design elements. Advanced Technology and Applications Forum, NATO Advanced Studies Institute (November 29, Ottawa, Canada).

Muegge, S. M. 2008. Theory, evidence, and the pragmatic manager. Technology Innovation Management (TIM) Lecture Series (Event #10, July 2, Carleton University, Ottawa, Canada).

Theses

Muegge, S. M. 2011. *Institutions of participation: A nested case study of company participation in the Eclipse Foundation, community, and business ecosystem*. Doctoral thesis, Spratt School of Business, Carleton University. <https://curve.carleton.ca/theses/31185>

Muegge, S. M. 2004. *Corporate ventured technology spin-offs: A grounded theory of decision and resource environments*. Master of engineering thesis, Department of Systems and Computer Engineering, Carleton University. <https://curve.carleton.ca/theses/26980>

Patents

Zapach, T., Jeakins, W., & Muegge, S. M. 1998. Electronic Unit.
Filed in Canada as 5,842,114 with the Canadian Intellectual Property Office.
Filed in the United States as 5,842,514 with the USPTO.
Filed in Europe as EP0863696 with the European Patent Office.
Filed in Japan as 1998-326987 with the Japanese Patent Office.

Scholarly Work Under Review and In Development (unpublished)

Muegge, S. M., & Reid, E. Peter Diamandis and XPRIZE: A case study of entrepreneuring as emancipation. Under development. Target journal: *Technology Innovation Management Review* (2019 ABDC: C).

- Third in a series of three case study publications adapted from a Master of Applied Science thesis supervised in 2018

Alkheir, A. A., Muegge, S. M., & Weiss, M. Discovery of user profiles from network traffic flows with machine learning. Target conference: to be determined.

- Adapted from a Master of Entrepreneurship project supervised in 2018

Muegge, S. M., & Low, A. Evolution of platform strategies in the electronic design automation industry. Under development. Target journal: *Research Policy* (2016 ABDC: A*).

- Adapted from a Master of Applied Science thesis supervised in 2013

Muegge, S. M., & Reid, E. Emancipated entrepreneuring in the space industry: Authoring and organizational forms by Branson, Diamandis, and Musk. Under development. Target journal: *Entrepreneurship: Theory and Practice* (2016 ABDC: A*).

- Adapted from a Master of Applied Science thesis supervised in 2018

RESEARCH AND COMMERCIALIZATION GRANTS

External grants as principal investigator (PI) or applicant

Summary: \$289k funds awarded; 7 grants with funds awarded; 2 grants on alternative list

- 2021 \$30k Digital data engine for efficient storage and management of data (awarded; ongoing)
- Mitacs Accelerate Graduate Research Internship Program, IT20610
 - Supports the work of a Carleton graduate student to undertake applied research at a partner organization (Global Advantage Consulting Group Inc.)
- 2021 \$15k Development and implementation of an Edge AI IoT device with domain specific architecture to autonomously monitor children around pools (awarded; completed)
- Mitacs Accelerate Graduate Research Internship Program, IT20610
 - Supports the work of a Carleton graduate student to undertake applied research at a partner organization (Spectergy)
- 2015 \$30k Xahive Expansion Project (awarded; completed)
- Mitacs Accelerate Graduate Research Internship Program, IT05335
 - Supports the work of two Carleton graduate students to undertake applied research at a partner organization (Xahive)
- 2014 \$37.3k Analyzing Cybersecurity Attack Scenarios (awarded; completed)
- Public Works and Government Services Canada (PWGSC), task 4 of contract 2L165-14-0059
 - Supports the work of four graduate students to develop a process for analyzing cyber attack scenarios using unclassified sources
- 2014 \$66.7k Development of a Cyber Security Maturity Model (awarded; completed)
- Public Works and Government Services Canada (PWGSC), task 7 of contract 2L165-14-0059
 - Awarded to develop a capability maturity model that approaches cybersecurity as a process improvement opportunity
- 2013 \$50k Neuroscience Entrepreneurship Fellowship (awarded; completed): Commercialization of technology to benefit children with autism
- Ontario Brain Institute (OBI) and Ontario Centres for Excellence (OCE)
 - Awarded to support entrepreneurship and commercialization by Natasha D'Souza (TIM M.Eng., 2012), founder and CEO of Virtual EyeSee
- 2013 \$75k SSHRC Insight Development Grant (placed on alternate list): The architecture of participation in business ecosystems
- Social Sciences and Humanities Research Council of Canada (SSHRC)
 - Category A4: recommended for funding, but did not rank high enough to receive an award from the available budget; placed on alternative list for funding if additional SSHRC funds become available; no funds awarded
- 2012 \$285k SSHRC Insight Grant (placed on alternate list): Technology entrepreneurship in business ecosystems
- Social Sciences and Humanities Research Council of Canada (SSHRC)

- Category A4: recommended for funding, but did not rank high enough to receive an award from the available budget; placed on alternative list for funding if additional SSHRC funds become available; no funds awarded

2009 \$60k Coral CEA Sandbox and Application (awarded; completed)

- Talent First Network Proof-of-Principle project, supported by the Ontario Ministry of Research and Innovation

2008 \$30k TFN-12: Commercialization of a Blindside Consumer Electronic (awarded; completed)

- Talent First Network Proof-of-Principle project, supported by the Ontario Ministry of Research and Innovation

External grants as collaborator or co-applicant

Summary: \$18.2M funds awarded; 16 grants with funds awarded

2018 \$560k Open Source Cyber Fusion Center (awarded; completed)

- Awarded under the *Cybersecurity R&D Challenge*, a joint program for industry-academic partnerships in Ontario and Quebec by the Natural Sciences and Engineering Research Council of Canada (NSERC), Ontario Centres of Excellence (OCE), and Prompt.
- Four partner organizations:
 - Ontario research partner (Carleton University; PI: Dr. Michael Weiss)
 - Quebec research partner (Concordia University; PI: Dr. Mourad Debbabi)
 - Ontario industry partner (eGloo; President Ben Chambers)
 - Quebec industry partner (AvanTech; CEO Marc Laporte).
- Expression of Interest (EOI) approved October 2016.
- Full application (NSERC Collaborative Research and Development; CRD) approved November 2017.
- Four-party research agreement approved by NSERC February 1 2018.

2014 \$998.75k Leadership in cybersecurity (awarded; completed)

- Public Works and Government Services Canada (PWGSC), contract 2L165-14-0059
- Umbrella contract comprised of seven tasks; I was principal investigator (PI) for tasks 4 and 7 reported in the previous section

2014 \$250k Venus Cybersecurity Corporation 2014 (awarded; completed)

- Telus Communications

2014 \$300k Delivery of Lead to Win sessions for opportunities rated GREEN (awarded; completed)

- National Research Council Industrial Research Assistance Program (NRC-IRAP), contract 837007

- 2014 \$2M Campus-linked Accelerator (awarded; completed)
 - Ontario Ministry of Research and Innovation (MRI) and Ontario Centres of Excellence (OCE)
 - Includes the launch and ongoing operations of the Carleton-led Accelerator on the first floor of the St. Patrick's Building (SP102)

- 2013 \$250k Venus Cybersecurity Corporation 2013 (awarded; completed)
 - Telus Communications

- 2013 \$250k Venus Task Force (awarded; completed)
 - National Research Council Industrial Research Assistance Program (NRC-IRAP), contract 815051

- 2013 \$250k Venus Task Force – Cybersecurity in Canada (awarded; completed)
 - Ontario Centres of Excellence (OCE)

- 2013 \$220k Lead to Win 2013 boot camps for companies rated GREEN (awarded; ongoing)
 - National Research Council Industrial Research Assistance Program (NRC-IRAP), contract 811499

- 2012 \$50k Lead To Win 2012 - “Born Global” / 80 Aberdeen support (awarded; completed)
 - City of Ottawa

- 2012 \$1.43M Graduate Enterprise Internship (GEI) initiative – STEM support (awarded; completed)
 - FedDev Ontario, contract 802820

- 2012 \$945k Scientists & Engineers in Business (SEB) Initial Commercialization Fellowship (awarded; completed)
 - FedDev Ontario, contract 510427

- 2012 \$320k Delivery of Lead To Win sessions and support for qualified Lead To Win graduates (awarded; completed)
 - National Research Council Industrial Research Assistance Program (NRC-IRAP), contract 796120

- 2011 \$1M Ottawa Young Entrepreneurs (awarded; completed)
 - Ontario Centre of Excellence (OCE)

- 2009 \$9.4M Coral CEA ecosystem (awarded; completed)
 - Ontario Ministry of Research and Innovation (MRI)

Internal grants as Academic Supervisor (Sprott Mitacs Business Strategy Internships)

- 2021 \$10k Prashanthi Beeram, Marketing Intern at Toos Technical Solutions (awarded; completed)
- 2021 \$10k Rishi Bhalla, Podcast Producer at the Society of Obstetricians and Gynaecologists of Canada (awarded; completed)

- 2020 \$10k Gurpreet Singh Sachdeva, Project Manager at Core Civil Constructions
Application Reference. IT23484 (awarded; completed)
- 2020 \$10k Madiha Rehman, Intern at Gnowit Inc.
Application Reference. IT22638 (awarded; completed)

Internal grants (Sprott School of Business, Carleton University)

- 2018 \$3.5k For peer-reviewed journal papers published in 2017
- 2014 \$2.3k For peer-reviewed journal papers published in 2013
- 2014 \$1.2k Tri-council incentive grant
- 2013 \$2.4k For peer-reviewed journal papers published in 2012
- 2011 \$10k Start-up research grant

Internal grants (Faculty of Engineering and Design, Carleton University)

- 2006 \$15k Start-up research grant

TEACHING

Finalist, 2010 Capital Educators' Award, Ottawa Canada

The Capital Educators' Awards have two criteria: (1) a demonstrated excellence in teaching, and (2) acting as a positive role model and making a difference in someone's life. Nominations are accepted from current and former students, parents and professional colleagues. The awards are open to all educators employed by the four publicly-funded school boards, two colleges and four universities located within the City of Ottawa. A panel of judges representing business, education and community-based organizations selected 67 finalists from the more than 450 nominated educators. There were 16 award recipients.

Received letters commending teaching excellence from
Dr. Roseann Runte, Carleton University President and Vice-Chancellor, and
Dr. Peter Ricketts, Carleton University Provost and Vice-President (Academic).

Inventory of courses taught

In the course lists below, (R) indicates a *remote course* delivered online via the Internet, and (C/R) indicates a *hybrid course* with some students physically present in the classroom and some participating remotely via the Internet.

Graduate courses, Technology Innovation Management

- 2022 Winter TIMG 5001 Principles of Technology Innovation Management (R)
- 2021 Fall TIMG 5001 Principles of Technology Innovation Management (R)
- 2021 Summer TIMG 5004 Research Methods in Technology Innovation Management (R)
- 2021 Winter TIMG 5001 Principles of Technology Innovation Management (R)
- 2021 Winter TIMG 5201 Technology and Wealth (R)
- 2020 Fall TIMG 5001 Principles of Technology Innovation Management (R)
- 2020 Summer TIMG 5103 Advanced Topics in Technology Innovation Management (R):
Blockchain and distributed ledger technology (DLT) for
technology entrepreneurs (50% new; 50% adapted from 2019S)
- 2020 Winter TIMG 5001 Principles of Technology Innovation Management (C/R)
- 2020 Winter TIMG 5004 Research Methods in Technology Innovation Management (C/R)
- 2019 Fall TIMG 5001 Principles of Technology Innovation Management (C/R)

2019 Summer	TIMG 5103	Advanced Topics in Technology Innovation Management (C/R): Asset tokenization on blockchain and technology entrepreneurship (<u>new course</u>)
2019 Winter	TIMG 5004	Research Methods in Technology Innovation Management (C/R)
2019 Winter	TIMG 5001	Principles of Technology Innovation Management (C/R)
2018 Fall	TIMG 5001	Principles of Technology Innovation Management (C/R)
2018 Winter	TIMG 5001	Principles of Technology Innovation Management (C/R)
2017 Fall	TIMG 5004	Research Methods in Technology Innovation Management (C/R)
2017 Fall	TIMG 5001	Principles of Technology Innovation Management (C/R)
2017 Summer	TIMG 5103	Advanced Topics in Technology Innovation Management (C/R): Game changers in cybersecurity
2017 Winter	TIMG 5001	Principles of Technology Innovation Management (C/R)
2016 Fall	TIMG 5004	Research Methods in Technology Innovation Management (C/R)
2016 Fall	TIMG 5001	Principles of Technology Innovation Management (C/R)
2016 Winter	TIMG 5103	Advanced Topics in Technology Innovation Management (C/R): Critical infrastructures and cybersecurity
2016 Winter	TIMG 5001	Principles of Technology Innovation Management (C/R)
2015 Fall	TIMG 5103	Advanced Topics in Technology Innovation Management (C/R): Open source tools and process for cybersecurity
2015 Fall	TIMG 5001	Principles of Technology Innovation Management (C/R)
2015 Summer	TIMG 5004	Research Methods in Technology Innovation Management (C/R)
2015 Winter	TIMG 5103	Advanced Topics in Technology Innovation Management (C/R): Critical infrastructures and cybersecurity (<u>new course</u>)
2014 Fall	TIMG 5001	Principles of Technology Innovation Management (C/R)
2014 Summer	TIMG 5004	Research Methods in Technology Innovation Management (C/R)
2014 Winter	TIMG 5001	Principles of Technology Innovation Management (C/R)
2013 Fall	TIMG 5001	Principles of Technology Innovation Management (C/R)
2013 Fall	TIMG 5103	Advanced Topics in Technology Innovation Management (C/R): Design and architecture of platforms, communities, and business ecosystems (<u>new course</u>)
2013 Summer	TTMG 5004	Management of Design Systems (C/R)
2013 Summer	TTMG 5001	Management Principles for Engineers (C/R)
2013 Winter	TTMG 5001	Management Principles for Engineers (C/R)
2012 Fall	TTMG 5001	Management Principles for Engineers (C/R)
2012 Summer	TTMG 5004	Management of Design Systems (C/R)
2012 Summer	TTMG 5001	Management Principles for Engineers (C/R)
2012 Winter	TTMG 5001	Management Principles for Engineers (C/R)
2012 Winter	TTMG 5101	Integrated Product Development (C/R)
2011 Summer	TTMG 5004	Management of Design Systems (C/R)
2010 Summer	TTMG 5004	Management of Design Systems (C/R)
2009 Winter	TTMG 5003T	Issues in Telecommunications
2009 Winter	TTMG 5003P	Issues in Telecommunications (R)
2007 Fall	TTMG 5006	Management of Software Engineering Projects (C/R)
2007 Winter	TTMG 5003T	Issues in Telecommunications
2007 Winter	TTMG 5003P	Issues in Telecommunications (R)

Undergraduate courses, Department of Systems and Computer Engineering

2009 Fall	SYSC 4105	Engineering Management
2008 Fall	SYSC 4105	Engineering Management

2007 Fall SYSC 4105 Engineering Management
 2006 Fall SYSC 4105 Engineering Management
 2005 Fall SYSC 4105 Engineering Management

Undergraduate courses, Sprott School of Business

2006 Winter BUSI 3103F Introduction to Organization Theory
 2005 Fall BUSI 3103C Introduction to Organization Theory

Graduate courses, Directed Studies

2019 Summer TIMG 5104 Nudge theory, employee behaviour, and cybersecurity research (Mona Fallahdoust)
 2016 Winter TIMG 5104 Mixed methods action research (Elizabeth Lance)
 2016 Winter TIMG 5104 Intelligent systems and machine learning in cybersecurity (Mackenzie Adams)
 2015 Fall TIMG 5104 Developing safe and secure open source software (Selman Selman)
 2008 Summer TTMG 5104 Technology diversity, innovation, and product success (Hiba Enayat)

THESIS AND PROJECT SUPERVISION

Summary

	Completed		In progress	Lifetime conversation rate (proportion of completed grad student research resulting in publications)
	After July 2011	Lifetime total		
Master's thesis (M.A.Sc.)	9	9	2	6 / 9 = 66%
Master's project (M.Eng.) [Master of Engineering]	54	64	2	17 / 64 = 27%
Master's project (M.Ent.) [Master of Entrepreneurship]	11	11	6	0 / 11 = 0%
Master's project (MABA) [Master of Applied business analytics]	3	3	0	n/a
Undergraduate project (B.Eng.)	0	17 students 6 group projects	0	n/a

Asterisks (*) denote students that have authored or co-authored at least one publication or submission under review based on their research: a journal article, a conference paper or poster, a journal manuscript currently under review, or a conference paper or abstract under review.

Masters Thesis, Master of Applied Science (M.A.Sc.), Technology Innovation Management

In progress Matthew Bromwich Physician-led pediatric healthcare technology incubation during KidsX Acceleration

In progress Amina Rehman Impact of digital data management strategies on growth and scale of firms

2022 Jan.	Jeff Cole	Faster, cheaper, and higher-value engineering prototypes for technology entrepreneurs: A constructive thesis on prototyping solar thermal technologies
2022 Jan.	Mona Fallahdoust	Nudges and cybersecurity: Harnessing choice architecture for safer work-from-home cybersecurity behaviour
2020 Sept.	Jasmine Shaw (*)	The design of local ecosystems within a global technology entrepreneurship challenge [Senate Medal Nominee]
2018 Jan.	Ewan Reid (*)	Emancipated entrepreneurship in the nascent commercial spaceflight industry: Authoring ecosystems by Branson, Musk, and Diamandis
2017 Jan.	Monzur Murshed (*)	An investigation of software vulnerabilities in open source software projects using data from publicly-available online sources
2016 Jan.	Abdallah Sunna (*)	Redesign of a regional business ecosystem for a new region: Canada's Lead To Win job-creation engine in Jordan [co-supervised with Professor Tony Bailetti, Carleton University]
2014 Apr.	Mel Mezen (*)	Business ecosystems and new venture business models: An exploratory study of participation in the Lead to Win job-creation engine
2013 Sept.	Jeff Fan	Network analysis of the evolution of an open source development community [co-supervised with Professor Michael Weiss, Carleton University]
2013 Sept.	Arthur Low (*)	Platform strategies in the Electronic Design Automation industry

Masters Project, Master of Engineering (M.Eng.), Technology Innovation Management

2021 Dec.	Purwa Patil	Build a digital transformation strategy for Progressive Engineering Group
2021 Aug.	Nicholaus Goulet	Cyber-resilience in the Department of National Defence's Land Materiel Assurance program
2021 Apr.	Ayman Ali	Reshaping the business model of Honeywell Global Tracking by applying the Dual Transformation framework
2021 Apr.	Oluwasola Adare	Designing a new business model for an apparel company

2021 Apr.	Maima Ahmed	Repositioning the business model Rup Bricks Manufacturing Ltd.
2021 Apr.	Rishi Bhalla	Improving adoption of digital hospital management solutions of BLIP Services Pvt Ltd. Through business model transformation
2020 Dec.	Rayner Wong	Leadership skills developed within the Canadian Military translate to successful entrepreneurial leadership
2020 Dec.	Tolga Nizam	Building a location recommender system using machine learning as a service (MLaaS)
2020 Apr.	Anthony Edohen	The quantum threat to distributed ledger technology
2020 Apr.	Akshaykumar Surti	Apply the Running Lean approach to discover the problem-solution fit for MeeMindful
2019 Dec.	Karthikeyan Sankara Vadivelu	Fusion of Cybersecurity event logs using open source software components
2019 Dec.	Rashmi Jain	Business model for a legitimate and distinct primary education school in India
2019 Apr.	Abdirahaman Osman	Improving the business model of a UAV-enabled surveillance service to detect theft of urban land in Somalia
2019 Apr.	Praveen Viswanathan	Localizing a business model by replication and adaptation for e-scooter services
2018 Dec.	Vanessa Zulaga	Enhancing visibility of a business ecosystem for STEM education by a space startup
2018 Dec.	Stephen Shaw (*)	Detecting port scan activity in network traffic flows with machine learning
2018 Dec.	Peter Eseraigbo	Security triage processes in open source software projects
2018 Aug.	Haithm Alshaebi	Implementation of a host-based intrusion detection system (HIDS) with machine learning
2017 Dec.	Tony Wong	Architecting an open source security operations center (SOC) using design claims for legitimate distinctiveness.
2017 Aug.	Sami Mohamed	Design approaches to encourage knowledge sharing at a fabless system on chip (SoC) development firm

2016 Apr.	Jerome Peters	Cybersecurity as a differentiator for a residential microgrid product
2016 Apr.	Lou Rodrigez	Sustainable government: Paper consumption and environmental impact
2016 Dec.	Selman Selman (*)	Signature-based source code audit of the BigBlueButton open source software project
2016 Dec.	Vanessa Jimenez	Mapping the innovation ecosystem for electronic payments in Peru
2016 Apr.	Afolabi Adare	Stakeholder value propositions for Tribal Play
2016 Apr.	Tamunoiyowuna Apiafi (*)	Building sales force capability for a high-end consumer products business
2015 Dec.	Akinlolu Oluwoye	Reconfiguring the innovation ecosystem of Tribal Play
2015 Dec.	Ibrahim Abualhaol (*)	Detecting cybersecurity attacks on device-to-device (D2D) communication systems
2015 Aug.	Paniz Pakshir	Prototyping technology for usability testing to improve a business model for providing consumer products
2015 Apr.	Zaid Tariq	Agile product development at Cisco Systems
2014 Dec.	Alhassan Alhassan (*)	Reputation and legitimacy of technology entrepreneurs
2014 Aug.	Farzaneh Hosseinedjad	GnowIt, a media-monitoring startup: Improving a business model
2014 Aug.	Anish Kak	Business model discovery for an E-sports business team
2014 Aug.	Brent Maheux	Design of an online community anchored around a credit card selection tool
2013 Dec.	Xiaolin Wang	SME growth through merger and acquisition: Post hoc analysis of an existing data set
2013 Aug.	Guillaume Corriveau	Improving the business model of a rental screening platform for landlords and tenants
2013 Apr.	Samer Saifan	New methods in education for children with autism
2013 Apr.	Glenn He	Patents for global entrepreneurs
2013 Apr.	Sean Rajaram	Managing technology offshore outsourcing projects

2013 Apr.	Loai Marashdeh	Applying business analysis in large IT enterprises
2013 Apr.	Ashish Tomar	Collaboration by “Born Global” technology entrepreneurs
2012 Dec.	Jose Gomez	Improving the business model of a mobile ordering and communication platform for restaurants
2012 Dec.	David Peacock	Cross platform development for mobile applications
2012 Dec.	George Pchelarov	Business models for specialized search engine technology
2012 Dec.	Nasir Siddiqui	Software licensing
2012 Dec.	Shumaila Siddiqui	Customer relationship management for new immigrants to Canada
2012 Aug.	Mauricio Abreu (*)	Agile business intelligence development
2012 Aug.	Susana Macedo (*)	Agile development for business process management (Agile BPM)
2012 Apr.	Natasha D'Souza (*)	Virtual therapy business model for children with special needs
2012 Apr.	Elias Majic (*)	Applying design science to improve a business model for language learning software
2012 Apr.	James Makienko (*)	Improving a business model for micro-task closed captioning Service
2012 Apr.	Senthil Kumar	International entrepreneurship
2012 Apr.	Danial Zhou	Entrepreneurship in China
2012 Apr.	Robert Poole (*)	The creation of a keystone company
2011 Dec.	John Schreuders (*)	Feasibility analysis project for the incident command structure (ICS) management application
2010 Apr.	Andrew Ceponkus (*)	Opportunities for communication-enabled applications (CEA) in the healthcare sector
2010 Apr.	Patrick O'Halloran (*)	How should assets be managed within a vendor neutral ecosystem?
2010 Apr.	Alexander Kutman	Corporate venturing at Alcatel-Lucent
2009 Dec.	Daniel Cardenas (*)	A practical communication-enabled application (CEA) implementation: the ActivityBox event registration system

2009 Dec.	Todd Keuleman	Introducing assets to a vendor neutral business ecosystem
2009 Dec.	Ihab Khalil	Managing security within a vendor-neutral business ecosystem
2009 Dec.	Nicholas Sauriol	Building the right team
2008 Aug.	Roberto Milev (*)	Application of design structure matrices for measuring modularity of large-scale software systems
2008 Aug.	Chukwuemeka Afigbo (*)	Support of open standards by open source e-learning platforms

Masters Project, Master of Entrepreneurship (M.Ent.), Technology Innovation Management

2021 Dec.	Taaso Iliya	Develop new capabilities for online identity verification for Cart Lite, a B2B2C e-commerce startup
2021 Aug.	Haithm Alwaeli	Discovering the problem-solution fit for an early-stage startup using Lean Customer Development
2021 Apr.	Charles Chen	Applying the Dual Transformation approach to Vaero's business model
2021 Apr.	Pranaven Premakumaran	Repositioning the business model of Starlight Shipping, a vessel-related service provider, for resilience and future growth
2021 Apr.	Regina Sosing	Links Bridges expansion and diversification: Application of the dual transformation approach to an Ottawa-based supplier of custom fiberglass bridges in North America
2020 Dec.	Seyed Reza Mesbah	Finding applications of Giatec's products in other industries
2020 Apr.	Ozge Tuzumet Yucel	Lean customer development approach to an early-stage parking company: PnP
2019 Dec.	Siamak Aminnejad	Value proposition and value blueprint for peer-to-peer energy trading based on blockchain in Ontario
2018 Dec.	Ala Abu Alkeir	Discovery of user profiles from network traffic flows with machine learning
2017 Dec.	Zef Sadikot	Lean start-up approach to the design of a multi-sided platform business connecting hunters and landowners
2017 Aug.	Elza Karapetyan	Jobs-to-be-done for 3D scanning and printing services

Masters Project, Master of Applied Business Analytics (MABA), Technology Innovation Management

2021 Apr.	Prashanthi Beeram	Exploratory data analytics approach to analyze online learning data
2021 Apr.	Mediha Rehman	Using text analytics on customer data to extract sales leads
2021 Apr.	Gurpreet Singh Sachdeva	Post-pandemic safety guidelines for the construction industry

Senior Engineering Projects (B.Eng.), Dept. of Systems and Computer Engineering

2010	Tanimul Amin Osama Ayyad Zhaocheng Fan Sean Smithwick	Client-side software extensions to an open source webconferencing platform.
2009	Bryan Langille Mykhaylo Ryeckin	Calendar and scheduling mashups for an open source webconferencing platform
2009	Nicolas Encina Riley Onabigon Joe Oommen	Voice-over-IP software extensions to an open source webconferencing platform
2009	Jerome Anthonipillai Kajanthan Nithiyanthan Aravinth Subramaniyam	Hardware controllers for remote collaboration
2009	Anika Choudhury Hiruni Kodippily	Smartphone applications for the visually impaired
2008	Brooke Kingyens, Nitin Sinha, Jeff Verge	Instant messaging and webphone extensions to a multimedia collaboration project

GRADUATE EXAMINATION BOARDS

Summary

	Completed	
	After July 2011	Lifetime total
Masters thesis (M.A.Sc.) examination boards	30	35
Masters thesis (M.Des.) examination boards	2	2
Doctor of Philosophy (Ph.D.) examination boards	1	1

Master of Applied Science (M.A.Sc.), Technology Innovation Management

2021	Alla Zakurdaeva	Using machine learning to detect architectural integrity violations associated with bugs
2021	Tina Khamenehmohammadi	Cross case analysis of shipping and logistic industry supply chains: Blockchain qualities in stakeholder value propositions
2021	Samantha Brand	Libra Association as a case study of ecosystem emergence
2018	Andre Cavalcanti	A goal-oriented model to match accelerator and startup strategies
2018	Renuka Gamage	New multisided platform operator growth–Post funding
2018	Seyed Ayat Tadjalli	The legitimacy of transnational startups: The case of Canadian-Iranian startups
2017	Raheleh Bahrami Khodababandeh	Role of green marketing in the adoption of intelligent food containers
2017	Raed Iskandar	Cybersecurity in consumer adoption of smart home technology
2017	Parisa Badalkhani	Using publicly available information to predict cyber failure
2016	Mohamad Amin	Customer value propositions in the API ecosystem – a topic modeling approach
2016	Faisal Faza	Corporate greening of Canadian manufacturers: A partial least squares analysis
2015	Hamidreza Kavandi	Use of entrepreneurial marketing in fostering resellers' adoption of smart micro-grid technology
2015	Olukayode Adegboyega	Representing botnet-enabled cyber-attacks and botnet-takedowns using club theory

2015	Walter Miron	Adoption of cybersecurity capability maturity models in municipal governments
2015	Christ Habib	The key constructs of the living labs innovation platform
2015	Mehdi Kadivar	Representation of the cyber-attack domain
2014	David Ker	Developing an innovation engine for a web startup
2014	Afaf Alzahrani	How high-technology female entrepreneurs perceive and overcome start-up challenges
2014	Derek Smith	A new methodology for citation dependent patent evaluations (Recipient of the Carleton University Senate Medal at the June 2014 convocation ceremony)
2013	Behrooz Talle	Tracing social capital within a firm: A relational value perspective
2013	Simar Yoos	Market channels of technology startups that internationalize rapidly from inception
2012	Aparna Shanker	Open source solutions: a study on customer value propositions
2012	Ludovico Pratico	Examining governance of open source software foundations
2012	Brian Jensen	How training affects the new venture development of technology startups
2012	Leonard de Baets	A keystone for making money built using source components
2012	Christopher McPhee	Using a results-based organization design methodology to construct the Technology Innovation Management Review
2012	Shruti Satsangi	Using landscape theory to analyze mobile OS platform adoption by mobile device manufacturers
2012	Adefemi Debo-Omidokun	Web conference system scalability: dimensioning and measurement
2012	Nerva Joachim	Early feedback in a flexible new product development
2012	Femi Olawale	Small company transfer of technology to developing nations
2008	Iveta Markova	Web 2.0 technology adoption by government projects
2008	Monica Mora	Open educational resources: motivations, governance, and content protection

- 2008 Xie Zhenshneq Open source software foundation: company involvement, governance, and effectiveness
- 2006 Azmat Khan How companies use open source software in the voice over Internet Protocol market
- 2006 Xiaoling Liu Assessing the release of proprietary code as open source: large company case

Master of Design (M.Des.), Interdisciplinary Design

- 2016 Jay Payette Aligned design: A model for pursuing the strategic alignment of design thinking in large firms
- 2012 Hala Zohbi Meeting environmental certification in design: A toolkit facilitating the process of eco-labeling through life cycle assessment for electronic products

Doctor of Philosophy (Ph.D.)

- 2021 Hasanuzzaman Zaman Bureaucratic entrepreneurship: Administrative behavioral changes and e-governance implementation in Bangladesh (Political Science; supervised by Dr. Gopika Solanki)

AWARDS AND SCHOLARSHIPS

- 2021 Nominee, Faculty Graduate Mentoring Award, Carleton University
- 2010 Finalist, Capital Educators' Awards, Ottawa, Canada
- 2006 SSHRC Doctoral Fellowship,
Social Sciences and Humanities Research Council of Canada
- 2006 Kathy and Steve Loo Scholarship, Carleton University
- 2005 Ontario Graduate Scholarship (OGS)
- 2004-2006 Departmental Scholarship, Sprott School of Business
- 1997 Merit Award for Innovation, Nortel Networks
- 1995 Dean's Honour List, Faculty of Engineering, McMaster University
- 1991 Dr. Harry Lyman Hooker Scholarship, McMaster University
- 1990 John Hodgins Memorial Scholarship, McMaster University

PROFESSIONAL DEVELOPMENT

Teaching

- 2021 BigBlueButton World (June 21-24) – seminars on online learning for educators, administrators, developers, and commercial partners
- 2018 CUOL event: “Blended and Online Learning Open House” (Sept. 4)
- 2015 5th Canada Moodle Moot (Oct. 21-23, Montreal, Canada) – seminars on educational technology, learning management systems, and distance learning
- 2014 EDC Teaching and Learning Symposium: “High Impact Practices: Learner Centered Teaching and Engaged Pedagogy” (Oct. 29)
- 2014 EDC event: “The future of online learning” with Sir John Daniel (Jan. 22)
- 2012 EDC event: “Writing to attract interest” with Brian Palmer (Dec. 7)
- 2010 EDC event: "Classroom Strategies: One Cool Thing I'm Doing..." (Dec. 8)

- 2009 EDC event: "Exam Development Days" (March 17)
- 2008 EDC event: "End of Term Teaching and Learning Event" (Dec. 3)
- 2008 EDC event: "Making Connections: From Teaching Philosophy to Classroom Practice" (Aug. 21)
- 2008 Eastern Ontario Symposium on Educational Technology (EOSET, April 30)
- 2008 EDC seminars on teaching and technology
 - Second Life basics for educators (March 20)
- 2007 EDC seminars on teaching and technology
 - Podcasting in education (Nov. 20)
 - Educational (we) Blogging (Nov. 14)
 - Using a Wiki to foster communication and collaboration (Oct. 24)
- 2007 EDC event: "Fall into Teaching" (Aug. 22) – seminars on Navigating Difficult Situations with Students, and Developing Your Teaching Portfolio
- 2007 Meeting of the Academy of Management (Aug. 3-8) – seminars and workshops on Distance Learning, and An Action Agenda for Refocusing Management Education
- 2006 President's Round Table on Teaching and Learning: Engaging Students (Dec. 6)
- 2006 IP and Copyright Seminar (Nov. 10)
- 2006 Teaching Colloquium: Richard Light (Sept. 22)
- 2006 Teaching and Learning Forum (May 10-12)
- 2005 First-time Instructors' Orientation (May 11)

CUOL is Carleton University OnLine.

EDC is the Carleton University Educational Development Centre.

Other skills development

- 2015 Global Insights (November 2-3, Toronto, Canada) – seminars and workshops on best practices in academic business incubators, organized by UBI Global and Ontario Centres of Excellence (OCE)
- 2015 Media Training, Department of University Communications, Carleton University (May 26)
- 2012 Practical certificate in International Social Protocol: Network, Cocktail and Dining Etiquette, awarded by the Norman Paterson School of International Affairs, Carleton University (September 8)

SERVICE

Editorial Responsibilities: Journals and edited books

- 2021 Guest editor of the June 2021 issue of the *Technology Innovation Management Review* (TIM Review) on the theme of “Distributed ledger technologies for smart digital economies”. <https://timreview.ca/issue/2021/june>
- 2015 Guest editor of the June 2015 issue of the *Technology Innovation Management Review* (TIM Review) on the theme of “Critical Infrastructures and Cybersecurity” (with co-editor Dan Craigan). <https://timreview.ca/issue/2015/june>
- 2013 Guest editor of the February 2013 issue of the *Technology Innovation Management Review* (TIM Review) on the theme of “Platforms, Communities, and Business Ecosystems”. <https://timreview.ca/issue/2013/february>
- 2011-present Member of the Review Board, *Technology Innovation Management Review* (TIM Review). <https://timreview.ca>
- 2007-2011 Member of the Advisory board, *Open Source Business Resource* (OSBR), an on-line open access publication of the Talent First Network. <https://osbr.ca> [The OSBR became the TIM Review in October 2011]

- 2008 Guest editor of the December 2008 issue of the *Open Source Business Resource* (OSBR) on the theme of “Enabling Innovation”.
<https://osbr.ca/issue/2008/december>
- 2008 Technical reviewer for *The Handbook of Technology Management*, published January 2010 by John Wiley & Sons (Hossein Bidgoli, editor-in-chief).

Occasional Reviewer: Refereed Journals

African Journal of Management
 European Journal of Information Systems
 International Journal of the Commons
 Management and Organization Review
 Service Science

Occasional Reviewer: Grant Applications

MITACS Accelerate Program (mitacs.ca)

Academic Conferences

- 2008-2022 (13 events) Reviewer, Annual Meeting of the Academy of Management (AoM)
 - Technology & Innovation Management division (TIM): 13 years
 - Entrepreneurship division (ENT): 10 years (since 2010)
 - Organization & Management Theory division (OMT): 5 years (until 2012)
- 2019 Organizing committee, iHack Ottawa 2019, June 15-16, Ottawa, Canada (cybersecurity conference and capture-the-flag event)
- 2018 Reviewer, ISPIM Innovation Conference, June 17-20, Stockholm, Sweden.
- 2016 Reviewer, ISPIM Innovation Conference, June 19-22, Porto, Portugal.
- 2016 Reviewer, ISPIM Innovation Forum, March 13-16, Boston, USA.
- 2014 Reviewer, ISPIM Americas Innovation Forum 2014, October 5-8, Montreal, Canada.
- 2012 Ad hoc reviewer, 18th Americas Conference on Information Systems, August 9-11, Seattle, Washington, USA.
- 2010 Ad hoc reviewer, Administrative Science Association of Canada Conference (ASAC), May 22-25, Regina, Saskatchewan, Canada.
 - Technology & Innovation Management Division
- 2010 Program committee, 6th International Conference on Open Source Systems (OSS2010), May 30 - June 2, Notre Dame, Indiana, USA.
- 2010 Program Committee, 5th IEEE International Conference on Management of Innovation & Technology (ICMIT2010), June 2-5, Singapore.
- 2009 Program committee, 5th International Conference on Open Source Systems (OSS2009), June 3-6, Skövde, Sweden.
- 2008 Program Committee, 4th IEEE International Conference on Management of Innovation & Technology (ICMIT2008), September 21-24, Bangkok, Thailand.
- 2008 Program committee, Workshop on Open Source Best Practices (WOSBP 2008), Montreal Conference on e-Technologies (MceTech), January 23, Montreal, Canada.
- 2007 Program committee, Workshop on the Integration of Open Source Components into Large Software Systems, ACM Conference on Object-Oriented Programming Systems, Languages, and Applications (OOPSLA), October 22, Montreal, Canada.

Accreditation and Quality Assessment Panels

2017 Quality assessment panel subject matter expert, Post secondary education quality assessment board (PEQAB), *Review of an application from St. Clair College of Applied Arts and Technology for consent to offer an Honours Bachelor of Business Administration (Information Communication Technology) program.*

Industry Working Groups

2016-present ISPIM Platforms and Ecosystems SIG, founding member of the leadership group (<http://ispim.org/groups-communities/platforms-and-ecosystems-sig>),
2014-2015 Open Source Initiative (OSI; <http://opensource.org>)
Working Group on Free/Libre Open Source Software Entities (FLOSS Entities).
2009-present International Federation for Information Processing (IFIP; <http://www.ifip.org>)
Working Group on Open Source Software: IFIP 2.13 (<http://ifipwg213.org>).

Administrative Service and Committee Assignments (Carleton University)

2021-2022 Member of the hiring committee for a Canada Research Chair in Business Analytics, Sprott School of Business.
2016 Member of the hiring committee for an instructor position in Entrepreneurship, Sprott School of Business.
2014-present Member of the Admission Committee for the Technology Innovation Management (TIM) program; rotating chair for the Winter 2014, Summer 2015, Fall 2016, and Winter 2018 academic terms.
2013-2014 Member of the hiring committee for a tenure-track position in Global Entrepreneurship, Sprott School of Business.
2013-2017 Founding member of the Venus Cybersecurity Corporation Council, the committee providing governance for Carleton's lead projects in cybersecurity; led the Venus delegation to North Carolina State University (NCSU) for the 2015 Symposium of the Laboratory for Analytic Sciences (LAS).
2012-2014 Founding faculty liaison for the Technology Innovation Management (TIM) Alumni Association, a chapter of the Carleton University Alumni Association for graduates of the TIM program.
2012-2013 Coauthor of the Quality Assurance (QA) brief for the Technology Innovation Management (TIM) program cyclical program review; led two rounds of documents revisions with the Carleton University Committee on Quality Assurance (CUCQA); served as delegate and discussant to the CUCQA.
2011-present Chair of the Technology Innovation Management (TIM) gate review process: the process to manage thesis and project research, track progress towards completion, and provide timely and constructive feedback from faculty and peers within the Technology Innovation Management (TIM) program.

Community Service

2018 Review panellist, Canada India Accelerator Program (CIAP; <https://carleton.ca/india/startup-network>), a transnational soft-landing program operated by the Carleton University Canada-India Centre.
2018-2020 Member of the judging panel, Space Apps Ottawa 2018, the Ottawa region hackathon for the NASA International Space Apps Challenge (<https://www.spaceappsottawa.com/>; <https://spaceappschallenge.org>)
2017 Member of the judging panel, Technovation Ottawa, the Ottawa regional competition for the Technovation Challenge (<http://technovationottawa.org>);

- <http://technovationchallenge.org>). Girls ages 10 to 18 learn to identify a problem in their community, create a mobile application to address that problem, communicate their ideas, and translate their ideas into a fully launched business.
- 2017-2019 Member of the School Council, Vimy Ridge Public School. Advising on technology, innovation, and STEM education.
- 2013-present Executive Director of the BigBlueButton Foundation, a membership-based vendor-neutral non-profit company whose mission is to enhance the value of remote students' academic experiences and reduce the costs of delivering these experiences. The BigBlueButton Foundation is the steward of the BigBlueButton open source software project (<http://bigbluebutton.org>), a community-developed webconferencing system for online learning and distance education. BigBlueButton was developed by graduate students of Carleton University and the Technology Innovation Management program.
- 2013-present Founding member of the Lead to Win Council, the advisory body of the Lead to Win business ecosystem (<https://leadtowin.ca>); primary responsibility for ecosystem health and growth. Lead To Win is one of the top 10 university business incubators in North America according to the 2015 UBI Global rankings.
- 2013 Member of the judging panel, Apps4Ottawa: Open Data Applications Contest (<https://apps4ottawa.ca>), sponsored by the City of Ottawa.
- 2011-present Entrepreneurship mentor for multiple programs assisting new venture founders, including Ottawa Young Entrepreneurs (OYE), and Carleton Entrepreneurs (CE).
- 2010-2012 Review panellist, Carleton Entrepreneurs.
- 2009-present Member of the Lead to Win “Bootcamp” teaching faculty (<https://leadtowin.ca>), review panellist, and mentor to aspiring entrepreneurs.
- 2009-2011 Member of the Board of Directors, and member of the organizing committee, Technology Venture Challenge business plan competition (<http://techvc.org>).
- 2008 Member of the Judging Panel, Wesley Nicol Business Plan Competition (Carleton University Finals, March 17).

PROFESSIONAL AFFILIATIONS

Academy of Management (AOM)

- Technology and Innovation Management division (TIM)
- Entrepreneurship division (ENT)

Association for Computing Machinery (ACM)

- ACM Software Engineering Special Interest Group (SIGSOFT)

Free Software Foundation (FSF)

IEEE (Institute of Electrical and Electronics Engineers)

- IEEE Engineering Management Society (IEEE EMS)
- IEEE Society on Social Implications of Technology (IEEE SSIT)

Open Source Initiative (OSI)

Project Management Institute (PMI)

Royal Astronomical Society of Canada (RASC) – Ottawa Centre Chapter

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INDUSTRY EXPERIENCE (selected projects)

My research, teaching, and service is grounded in prior industry experience as an industrial researcher, product designer, architect, R&D manager, project manager, and program manager.

Bell-Northern Research and Nortel Networks, Ottawa, Ontario, Canada, 1993-2002

Program Manager **Program Manager** of the *OPTera Connect LX Connection Manager*, a network product for the optical metropolitan area network (MAN). Managed the interdependencies of a 60-person product development group including design engineering, verification, operations, brand management, and customer care.

Project Manager of the *OPTera Metro Network Modeling Tool*, a specialized software application for designing the fiber links of optical metropolitan area networks. Delivered on an aggressive schedule to deploy product to lead customers within sixteen weeks of project launch. Exceeded expectations by deploying to over 200 engineers and network architects within fourteen weeks.

Hardware Manager **Founded** a *Technology Applications* team to prototype new hardware concepts. Recruited seven digital and mechanical designers. Managed external contractors for firmware development, circuit board layout, and mechanical design. Managed the end-to-end supply chain and knowledge transfer to manufacturing.

Senior Engineer **Project Manager** of *Geneva*, a prototype Terabit IP router. Led a global collaborative team including development partners in the USA and Europe and a portfolio of more than thirty component suppliers. Demonstrated a ten-fold improvement in bandwidth density over existing product. Technology and know-how adopted into Nortel product lines, including *XA-Core and Passport*.

Technical Project Manager of *Passport 8250*, a network access product for ATM networks. Managed development activities of hardware, software, and verification groups. Product adopted into Nortel *Passport* portfolio.

Team Leader of the *OC-768 Feasibility Assessment*. Led a team of seven senior designers and architects to analyze the technology and business challenges of next-generation optical transport for the Nortel *OPTera HDX* product line.

Engineering Analyst Developed and analyzed business solutions for ATM edge access, including PBX voice services, Ethernet data services, T1 trunking, and DSL. Managed a cross-functional project to develop tools and processes and for faster business cases.

Materials Researcher and Design Engineer Conducted **applied industrial research** of high-speed electronic materials, hardware miniaturization technologies, and microelectronic packaging.

Team Leader of *Voyageur*, a concept prototype of a robust wireless cell site. Developed technology that saved \$25M in installation and maintenance costs for Nortel customers and produced five patent applications for Nortel. Received the **1997 Merit Award for Innovation** from the Assistant Vice President of the Bell-Northern Research Physical Design and Technology organization.

Physical Architect of *On Ramp*, a network product for ATM data networks. Pioneered the first Nortel application of four novel hardware miniaturization technologies to achieve the world's smallest 16-port ATM switch.

Hardware Designer of electrical and mechanical prototypes. Performed schematic capture, circuit board layout, mechanical design, assembly, and test.

Research Assistant Design and execution of experiments. Statistical data analysis. Numerical modelling of heat transfer and mechanical stress. Scanning electron microscopy.

Vivian M. Nguyen

4 Hackett Street • Ottawa, ON, K1V-0P8 • Canada • vivian.nguyen@carleton.ca • 1-613-853-6553

EDUCATION AND TRAINING

- 2019-present** **Assistant Professor**, Institute of Environmental and Interdisciplinary Science, Carleton University, Ottawa,
Research Member, Canadian Centre for Evidence-Based Conservation, Carleton University, Ottawa, ON
- 2017-18** **Mitacs Canadian Science Policy Fellowship**, Department of Natural Resources Canada, Ottawa, ON
- 2017** **Ph.D., Biology** (Knowledge mobilization theory, and science transfer in fisheries)
Carleton University, with co-supervision at the **University of Ottawa** Sociology Department, Ottawa, ON
Supervisors: Dr. Steven Cooke & Dr. Nathan Young
- 2012** **M.Sc., Biology** (Fisheries Science, Fish Biology and Human Dimensions of Fisheries)
Carleton University, Ottawa, ON with co-supervision at the **University of York**, UK, Environment Department
Supervisors: Dr. Steven Cooke & Dr. Murray Rudd
- 2011** **NSERC Michael Smith Foreign Study**, Conservation Social Science
University of York, United Kingdom, Environment Department
Supervisor: Dr. Murray Rudd
- 2010** **Visiting student** with the Pacific salmon ecology laboratory
University of British Columbia, Vancouver, BC
Supervisor: Dr. Scott Hinch
- 2008** **B.Sc. Hons**, Environmental Science, with highest honours
Carleton University, Ottawa, ON
Minors: Biology and Business
Supervisor: Dr. Steven Cooke

RESEARCH CONTRIBUTIONS

Citations: 2229

h-index: 27

[Google Scholar Profile](#)

Peer-reviewed publications (*indicate mentee/HQP)

1. Beaudoin, C., Joncoux, S., Jasmin, J-F., Berberi, A.*, McPhee, C., Schillo, S.R., **Nguyen, V.M.** (2022). A research agenda for evaluating living labs as an open innovation model for environmental and agricultural sustainability. *Environmental Challenges* <https://doi.org/10.1016/j.envc.2022.100505>
2. Reid, J.L., Bergman, J.N., Kadykalo, A.N., Taylor, J.J., Twardek, W.M, Rytwinski, T., Chhor, A.D., Frempong-Manso, A., Martel, A.L., Lapointe, N.W.R., Bennett, J.R., **Nguyen, V.M.**, Reid, A.J., Marty, J., Robinson, S.A., Drake, D.A.R., Winegardner, A.K., Gregory-Eaves, I., Taylor, M.K., Smol. J.P., Creed, I.F.,

- O'Connor, C.M., Cooke, S.J. (IN PRESS) Developing a National Level Evidence-Based Toolbox for Addressing Freshwater Biodiversity Threats. *Biological Conservation*. 00:000-000.
3. Jacaban, E.*, Rytwinski, T., Taylor, J.J., Young, N., **Nguyen, V.M.**, Cooke, S.J. (2022) Do environmental systematic reviews impact policy and practice? Author perspectives on the application of their work. *Environmental Science and Policy*, 129, 159-167 <https://doi.org/10.1016/j.envsci.2021.12.019>
 4. **Nguyen, V.M.**, Bell, C., Berseth, V., Cvitanovic, C., Darwent, R., Falconer, M., Hutchen, J., Kapoor, T., Klenk, N., Young, N. (2021) Promises and pitfalls of digital knowledge exchange resulting from the COVID-19 pandemic. *Social-Ecological Practice Research*, 1-13.
 5. Andrachuk, M.A., Kadykalo, A.N., Cooke, S.J., Young, N. **Nguyen, V.M.** (2021) Fisheries knowledge exchange and mobilization through a network of policy and practice actors. *Environmental Science and Policy* 125, 157-166.
 6. Guay*, J.D., Brooks, J.L., Chapman, J.M., Medd, H., Cooke, S.J., **Nguyen, V.M.** (2021). Survey-derived angler characteristics and perspectives in the shore-based shark fishery in Florida. *Marine and Coastal Fisheries* 13, 709-727
 7. Roche, D.G., O'Dea, R.E., Kerr, K.A., Rytwinski, T., Schuster, R., **Nguyen, V.M.**, Young, N., Bennett, J.R., Cooke, S.J. (2021). Closing the knowledge-action gap in conservation with open science. *Conservation Biology* doi: 10.1111/cobi.13835
 8. Reyes, S.R., **Nguyen, V.M.**, Schott, S. Berseth, V., Hutchen, J., Taylor, J., Klenk, N. (2021) A research agenda for affective dimensions in climate change risk perception and risk communication. *Frontiers in Climate*, 135.
 9. Nyboer, E., **Nguyen, V.M.**, Young, N., Rytwinski, T., Taylor, J.J., Lane, J.F., Bennett, J.R., Harron, N., Aitken, S.M., Auld, G., Browne, D., Jacob, A., Prior, K., Smith, P.A., Smokorowski, K.E., Alexander, S., Cooke, S.J. (2021). Supporting actionable science for environmental policy: Advice for funding agencies from decision-makers. *Frontiers in Conservation Science* 2, 693129. <https://doi.org/10.3389/fcosc.2021.693129>
 10. Westwood, A.R., Hutchen, J., Kapoor, T., Klenk, K., Saturno, J., Wang, J., Falconer, M, **Nguyen, V.M.** 2021. A systematic mapping protocol for understanding knowledge exchange in forest science. *Ecological Solutions and Evidence*. DOI: 10.1002/2688-8319.12096
 11. Twardek, W.M., Nyboer, E.A., Tickner, D., O'Connor, C.M., Lapointe, N.W.R., Taylor, M.K., **Nguyen, V.M.**, Winegardner, A.K., Bergman, J.N., Taylor, J.J., Rytwinski, T., Martel, A.L., Drake, A.R., Robinson, S.A., Marty, J., Bennett, J.R., Cooke, S.J. 2021. Mobilizing practitioners to support the Emergency Recovery Plan for freshwater biodiversity. *Conservation Science and Practice*. DOI: 10.1111/csp2.467
 12. Madliger, C.L., Love, O.P., **Nguyen, V.M.**, Haddaway, N.R., Cooke, S.J.. 2021. Researcher perspectives on challenges and opportunities in conservation physiology revealed from an online survey. *Conservation Physiology* 9(1): coab030.
 13. Howarth*, A., Jeanson, A.L., Abrams, A.E.I., Beaudoin, C., Mistry, I., Berberi, A., Young, N., **Nguyen, V.M.**, Landsman, S.J., Kadykalo, A.N., Danylchuk, A.J., Cooke, S.J. 2021. COVID-19 restrictions and recreational fisheries in Ontario, Canada: preliminary insights from an online angler survey. *Fisheries Research* 240: 105961.
 14. Thomas-Walters, L., Nyboer, E.A., Taylor, J.J., Rytwinski, T., Lane, J.F., Young, N., Bennett, J.R., **Nguyen, V.M.**, Harron, N., Aitken, S.M., Auld, G., Browne, D., Jacob, A.L., Prior, K., Smith, P.A., Smokorowski, K.E., Alexander, S.M., Cooke, S.J. 2021. An optimistic outlook on the use of evidence syntheses to inform environmental decision-making. *Conservation Science and Practice* DOI: 10.1111/csp2.426
 15. Bronson, K., Devkota, R., **Nguyen, V.M.** 2021. Moving toward Generalizability? A scoping review on measuring the impact of Living Labs. *Sustainability* 13-502.

16. Gaden, M., Brant, C., Stedman, R.C., Cooke, S.J., Lauber, T.B., **Nguyen, V.M.**, Connelly, N.A., Knuth, B. (2021). Shifting baselines and social license to operate: Challenges in communicating sea lamprey control. *Journal of Great Lakes Research*. <https://doi.org/10.1016/j.jglr.2021.01.016>
17. **Nguyen, V.M.**, Delle Palme, C., Pentz, B., Vandergoot, C.S., Krueger, C.C. Young N Cooke, S.J. (2021) Overcoming barriers to transfer of scientific knowledge: integrating biotelemetry into fisheries management in the Laurentian Great Lakes. *Socio-Ecological Practice Research* <https://doi.org/10.1007/s42532-020-00069-w>
18. Cooke, S.J., Rytwinski, T., Taylor, J.J., Nyober, E., **Nguyen, V.M.**, Bennet, J.R., Young, N., Aitken, S., Auld, G., Lane, J-F., Prior, K., Smokorowski, K.E., Smith, P.A., Jacob, A., Browne, D., Blais, J.M., Kerr, J.T., Ormechi, B., Alexander, S.M., Burn, C.R., Buxton, R.T., Oriheli,, D.M., Vermaire, J., Murray, D.L., Simon, P., Edwards, K., Clarke, J., Xenopoulos, M.A., Gregory-Eaves, I., Bennett, E.M., Smol, J. 2020. On “success” in applied environmental research – What is it, how can it be achieved, and how does one know it has been achieved it? *Environmental Reviews*. 28(4), 357-72.
19. Cooke, S.J., **Nguyen, V.M.**, Chapman, J.M., Reid, A.J., Landsman, S.J., Young, N., Hinch S.G., Schott, S., Mandrak, N., Semeniuk, C.A.D. 2020. Knowledge co-production: A pathway to effective fisheries management, conservation, and governance. *Fisheries*. <https://doi.org/10.1002/fsh.10512>
20. Larocque, S.M., Lake, C., Midwood, J.D., **Nguyen, V.M.**, Blouin-Demers, G., Cooke, S.J. (2020) Freshwater turtle bycatch research supports science-based fisheries management. *Aquatic Conservation* 30, 1783-1790.
21. Lennox, R.J., Bennett, J.R., Davies, A., Ford, A.T., Frey, R.M., Harcourt, R., Hayward, M.W., Hussey, N.E., Iverson, S.J., Kays, R., Kessel, S.T., **Nguyen, V.M.**, Muelbert, M., Murray, T.S., Roche, D.G., Whoriskey, F.G., Young, N., Cooke, S.J. (2020). A novel framework to protect animal data in a world of eco-surveillance. *BioScience* 70(6), 468-476.
22. Cooke, S.J., **V.M. Nguyen**, D. Anastakis, S.D. Scott, M.R. Turetsky, A. Amirfazli, A. Hearn, C.E. Milton, L. Loewen, E.E. Smith, D.R. Norris, K.L. Lavoie, A. Aiken, D. Ansari, A.N. Antle, M. Babel, J. Bailey, D.M. Bernstein, R. Birnbaum, C. Bourassa, A. Calcagno, A. Campana, B. Chen, K. Collins, C.E. Connelly, M. Denov, B. Dupont, E. George, I. Gregory-Eaves, S. High, J.M. Hill, P.L. Jackson, N. Jette, M. Jurdjevic, A. Kothari, P. Khairy, S.A. Lamoureux, K. Ladner, C.R. Landry, F. Légaré, N. Lehoux, C. Leuprecht, A.R. Lieverse, A. Luczak, M.L. Mallory, E. Manning, A. Mazalek, S.J. Murray, L.L. Newman, V. Oosterveld, P. Potvin, S. Reimer-Kirkham, J. Rowsell, D. Stacey, S.L. Tighe, D.J. Voadlo, A.E. Wilson and A. Woolford. 2020. Diverse perspectives on interdisciplinarity from the Members of the College of The Royal Society of Canada. *FACETS* 5, 138-165.
23. Young, N., Cooke, S.J., Hinch, S.G., DiGiovanni, C., Corriveau, M., Fortin, S., **Nguyen, V.M.**, Ann-Magnhild, S. 2020. “Consulted to death”: Personal stress as a major barrier to environmental co-management. *Journal of Environmental Management* 254, 109820.
24. Brownscombe, J., Ledee, E., Raby, G., Struthers, D., Gutowsky, L., **Nguyen, V.M.**, Young, N., Stokesbury, M., Holbrook, C., Brenden, T., Vandergroot, C., Murchie, K., Whoriskey, K., Mills-Flemming, J., Kessel, S.T., Krueger, C., Cooke, S.J. (2019) Best practices for fish telemetry: Considerations for researchers and managers. *Reviews in Fish Biology and Fisheries* 29, 369-400.
25. **Nguyen, V.M.**, Young, N., Brownscombe, J.W., Cooke, S.J. Science-based action starts with collaboration and engagement: factors influencing knowledge uptake in fish telemetry (2019) *Ecological Applications* 29, e01943
26. Brooks, J.L., Chapman, J.M., Barkley, A.N., Kessel, S.T., Hussey, N.E., Hinch, S.G., Patterson, D.A., Hedges, K.J., Cooke, S.J., Fisk, A.T., Gruber, S.H., **Nguyen, V.M.** (2019) Biotelemetry informing management: case studies exploring successful integration of biotelemetry data into fisheries and habitat management. *Canadian Journal of Fisheries and Aquatic Sciences* (Special issue). <https://doi.org/10.1139/cjfas-2017-0530>

27. **Nguyen, V.M.**, Young, N., Corriveau, M., Hinch, S.G., Cooke, S.J. (2019) What is 'usable' knowledge? Perceived barriers for integrating new knowledge into fisheries management of an iconic Canadian fishery. *Canadian Journal of Fisheries and Aquatic Sciences*. <https://doi.org/10.1139/cjfas-2017-0305>
28. **Nguyen, V.M.**, Young, N., Cooke, S.J. (2018) Applying a knowledge-action framework for navigating barriers to incorporating telemetry science into fisheries management and conservation: a qualitative study. *Canadian Journal of Fisheries and Aquatic Sciences* 75:1733-1743.
29. Young, N., Corriveau, M., **Nguyen, V.M.**, Cooke, S.J., Hinch, S.G. (2018) Embracing disruptive new science? Biotelemetry meets co-management in Canada's Fraser River. *Fisheries* 43, 51-60.
30. Lennox R.J., Aarestrup K., Cooke S.J., Cowley P.D., Deng Z.D., Fisk A.T., Harcourt R.G., Heupel M., Hinch S.G., Holland K.N., Hussey N.E., Iverson S.J., Kessel S.T., Kocik J.F., Lucas M.C., Mills Flemming J., **Nguyen V.M.**, Stokesbury M.J.W., Vagle S., VanderZwaag D.L., Whoriskey F.G., Young N. (2017) Envisioning the future of aquatic animal tracking: Technology, science, and application. *BioScience* 67(10), 884-896.
31. Crossin, G.T., Heupel, M., Holbrook, C.M., Hussey, N., Lowerre-Barbieri, S., **Nguyen, V.M.**, Raby, G.D., Cooke, S.J. (2017) Acoustic telemetry and fisheries management. *Ecological Applications*. 00, 1-19.
32. Cooke, S.J., **Nguyen, V.M.**, Kessel, S.T., Hussey, N.E., Ford, A.T. (2017) Troubling issues at the frontier of animal tracking for conservation and management. *Conservation Biology* 31, 1205-1207.
33. Cooke, S.J., Gallagher, A.J., Sopinka, N.M., **Nguyen, V.M.**, Skubel, R.A., Hammerschlag, N., Boon, S., Young, N., Danylchuk, A.J. (2017). Considerations for effective science communications. *FACETS Journal* 2, 233-248.
34. **Nguyen, V.M.**, Young, N., Cooke, S.J. (2017) A roadmap for knowledge exchange and mobilization research in conservation and natural resource management. *Conservation Biology* 31, 789-798.
35. **Nguyen V.M.**, Brooks, J., Young, N., Lennox, R., Haddaway, N., Whoriskey, F., Harcourt, R., Cooke, S.J. (2017). To share or not to share in the emerging era of big data: Perspectives from fish telemetry researchers on data sharing. *Canadian Journal of Fisheries and Aquatic Sciences* 74, 1260-1274.
36. Delle Palme, C.A., **Nguyen, V.M.**, Gutowsky, L.F.G., Cooke, S.J. (2016) Do fishing education programs effectively transfer 'catch-and-release' best practices to youth anglers yielding measurable improvements in fish condition and survival? *Knowledge and Management of Aquatic Ecosystems* 417, 42.
37. Young, N., **Nguyen, V.M.**, Corriveau, M.A., Cooke, S.J., Hinch, S.G. (2016) How do knowledge users perceive and evaluate new claims about a contested resource? The problem of different expectations in knowledge exchange and mobilization. *Journal of Environmental Management* 184, 380-388.
38. Cooke, S.J., Allison, E.H., Beard, T.D., Arlinghaus, R., Arthington, A.H., Bartley, D.M., Cowx, I.G., Fuentesvilla, C., Leonard, N.J., Lorenzen, K., Lynch, A.J., **Nguyen, V.M.**, Youn, S.-J., Taylor, W.W., Welcomme, R.L. (2016) On the sustainability of inland fisheries: Finding a future for the forgotten. *Ambio* 45, 753-764. **(Journal Cover Photo)**
39. Young, N., **Nguyen, V.M.**, Corriveau, M.A., Cooke, S.J., Hinch, S.G. (2016) Knowledge users' perspectives and advice on how to improve knowledge exchange and mobilization in the case of a contested fishery. *Environmental Science & Policy* 66, 170-178.
40. **Nguyen, V.M.**, Lynch, A.J., Young, N., Cowx, I.G., Beard, T.D., William, T.W., Cooke, S.J., (2016). To manage inland fisheries is to manage at the social-ecological watershed scale. *Journal of Environmental Management* 18, 312-325.
41. Dick, M., Rous, A.M., **Nguyen, V.M.**, Cooke, S.J. (2016) Necessary but challenging; multiple disciplinary approaches to solving conservation problems. *FACETS Journal* 1, 67-82.
42. **Nguyen, V.M.**, Young, N., Hinch, S.G., Cooke, S.J. (2016) Getting past the blame game: convergence and divergence in perceived threats to salmon resources among anglers and indigenous fishers in Canada's lower Fraser River. *AMBIO* 10.1007/s13280-016-0769-6

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45. **Nguyen, V.M.**, Haddaway, N.R., Gutowsky, L.F.G., Wilson, A.D.M., Gallagher, A.J., Donaldson, M.R., Hammerschlag, N., Cooke, S.J. (2015) How long is too long in contemporary peer review? Perspectives from authors publishing in conservation biology journals. *PLOS ONE* 10(8): e0132557.
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53. Cooke, S.J., **Nguyen, V.M.**, Murchie, K.J., Thiem, J.D., Donaldson, M.R., Hinch, S.G., Brown, R.S., Fisk, A. (2013) To tag or not to tag: animal welfare, conservation and stakeholder considerations in fish tracking studies that use electronic tags. *Journal of International Wildlife Law & Policy* 16, 352-374
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57. **Nguyen, V.M.**, Rudd, M.A., Hinch, S.G., Cooke, S.J. (2012) Differences in information use and preferences among recreational salmon anglers: implications for management initiatives to promote responsible fishing. *Human Dimensions of Wildlife* 17, 248-256.
58. Landsman, S.J., **Nguyen, V.M.**, Gutowsky, L.F.G., Gobin, J., Cook, K.V., Binder, T.R., Lower, N., R.L. McLaughlin, R.L., Cooke, S.J. (2011) Fish movement and migration studies in the Laurentian Great Lakes: research trends and knowledge gaps. *Journal of Great Lakes Research* 37, 365-379.
59. Rudd, M.A., Beazley, K.F., Cooke, S.J.... **Nguyen, V.M.** et al. (2011) Generation of priority research questions to inform conservation policy and management at a national level. *Conservation Biology* 25, 476-484.
60. **Nguyen, V.M.**, Gravel, M.A., Mapleston, A., Hanson, K.C., Cooke, S.J. (2009) Evaluating fizzing as a means of alleviating barotrauma in smallmouth bass. *Fisheries Research* 96, 313-318.

Book Chapters

61. **Nguyen, V.M.**, Ferreira, C.C, Klutsch, C.F.C. (2021). The Knowledge-Implementation Gap in Conservation Science. Pages 3-21 in Ferreira, C.C., Klutsch, C.F.C., Eds. *Closing the Knowledge-Implementation Gap in Conservation Science: Interdisciplinary Evidence Transfer Across Sectors and Spatiotemporal Scales*. Springer, Switzerland.
62. **Nguyen, V.M.** (2020) Leadership Wears Many Hats but Always Involves People. Pages XX to XX in Taylor, W.W., Carlson, A.K., Bennett, A., and Paola Ferreri, C., Editors. *Lessons in Leadership: Integrating Courage, Vision, and Innovation for Future of Sustainable Fisheries*. American Fisheries Society doi: <https://doi.org/10.47886/9781934874608.ch58>
63. Cooke, S.J., G.D. Raby, G.D., Bett, N.M., Teffer, A.K., Burnett, N.J., Jeffries, K.M., Eliason, E.J., Martins, E.G., Miller, K.M., Patterson, D.A., **Nguyen, V.M.**, Young, N., Farrell, A.P., Hinch, S.G. (2020). On conducting management-relevant mechanistic science for upriver migrating adult Pacific salmon. Pages 35 to 56 in Madliger, C., O. Love, S.J. Cooke and C. Franklin, Editors. *Conservation Physiology: applications for wildlife conservation and management*. Oxford University Press, UK.
64. Cooke, S.J., **Nguyen, V.M.**, Dettmers, J.M., Arlinghaus, R., Quist, M.C., Tweddle, D., Weyl, O.L.F., Raghavan, R., Portocarrero-Aya, M., Agudeo Cordoba, E, Cowx, I.G. (2016) Sustainable inland fisheries – Perspectives from the recreational, commercial and subsistence sectors from around the globe. Pages 467-505 in G.P. Closs, M. Krkosek and J.D. Olden, Eds. *Conservation of Freshwater Fishes*. Cambridge University Press, Cambridge.

Articles in Review

65. Drake, A.K., Perkovic, A., Reeve, C., Alexander, S.M., **Nguyen V.M.**, Dunmall, K.M. Community participation in coastal and marine research and monitoring in Inuit Nunangat, Canada: A scoping literature review. facets-2021-0067
66. Christie, L., Drake, A., Perkovic, A., Hunters and Trappers Association, Aiviq, Manning, O., Peter, S., Qiatsuq, P., Alexander, S., **Nguyen, V.M.**, Dunmall, K. Remote co-development of an Indigenous knowledge questionnaire about aquatic species and their habitats in Kinngait, Nunavut. *Ecological Solutions and Evidence: ESO-22-04-029*

Technical Reports

67. Bower, S.D., **Nguyen, V.M.**, Danylchuk, A.J., Beard Jr., T.D., Cooke, S.J. (2014) Inter-sectoral conflict and recreational fisheries of the developing world: Opportunities and challenges for co-operation. In: McConney, P., R. Medeiros and M. Pena. Eds. 2014. *Enhancing Stewardship in Small-Scale*

Fisheries: Practices and Perspectives. Too Big To Ignore (TBTI) and Centre for Resource Management and Environmental Studies, The University of the West Indies, Cave Hill Campus, Barbados. CERMES Technical Report No. 73.

68. Cooke, S.J., Walker, R., O'Toole, A., Whynot, Z., Gingerich, A., Hanson, K., **Nguyen, V.M.**, Black T. (2007) Fisheries and Fish Habitat Assessment for the Rideau Canal, Dow's Lake Location of Work with respect to the Open Cut Tunnel for the North-South Light Rail Project: Final Report with Rehabilitation Appendix. Fish Ecology and Conservation Physiology Laboratory Research Report Series 07-01. Carleton University, Canada

LECTURES AND CONFERENCE CONTRIBUTIONS

*Indicates presenter

Invited Presentations, Seminars, and Panels

- **Nguyen, V.M.*** (2022). Bridging the science and action gap: a decade of research, experience, and reflection. Great Lakes Institute for Environmental Research Seminar Series, Feb 18, 2022 (online)
- **Nguyen, V.M.*** and Bronson, K* (2020). What are the knowledge gaps for evaluating the social impacts and effectiveness of Living Las focused on environmental and agricultural sustainability? AAFC Living Labs/ USDA LTAR Joint Workshop on Socio-Economic Aspects/ Human Dimensions, Virtual, Sept 15-16, 2020.
- Severinson, P.*, Lee, N.*, **Nguyen V.M.***, Seet, B.* (2019). Symposium – Future Skills and Talent Development. *Canadian Science Policy Conference*, Ottawa, ON, Canada. Nov 13-15, 2019.
- **Nguyen, V.M.***, Delle-Palme, C., Young, N. Corriveau, M., Vandergroot, C., Krueger, C., Cooke, S.J. (2019). Social sciences and biotelemetry: understanding and improving science transfer related to telemetry in fisheries. Great Lakes Fisheries Commission 64th Annual General Meeting, Detroit, MI, USA.
- Cooke, S.J.*, Ghose, S.*, **Nguyen, V.M.***, Reid, A.* (2018) Enabling Interdisciplinarity for the Next Generation of Problem Solvers, *Canadian Science Policy Conference*, Ottawa, ON, Canada. Nov 7-9, 2018. **Panelist.**
- **Nguyen, V.M.***, Young, N., Hinch, S.G., Cooke, S.J. (2014) From science to governance: Ocean Tracking Network Pacific salmon case study, *Coastal Zone Canada Conference*, Halifax, NS, Canada. Jun 15-18, 2014. **Invited Speaker**
- **Nguyen, V.M.***, Lapointe, N.*, Rice, J.*, Guy, M.* (2015). Working at the science-policy interface. *Canadian Conference for Fisheries Research 2014*. Ottawa, Canada. Jan 8-11, 2014. **Panelist.**
- Hinch, S.G.*, **Nguyen, V.M.***, Patterson, D.* (2012) Integrating biological and social sciences into management actions: success and future challenges with adult Pacific salmon. *Ocean Tracking Network annual meeting*, Halifax, NS, Canada. Jun 3-5, 2012. **Plenary talk.**
- **Nguyen, V.M.*** (2011) Social aspect of the salmon recreational fishery in the Lower Fraser River. *Canadian Wildlife Federation Board Advisory Meeting*, Ottawa, Canada. Oct 28, 2011. **Invited Speaker.**
- **Nguyen, V.M.*** (2011) Recreational Fisheries: 2010 Social Research in the Lower Fraser River. *LFFA DFO Meeting*, Annacis Island, Canada. Oct 2011. **Invited Speaker.**
- **Nguyen, V.M.*** (2011) Improving post-release survival of Pacific salmon: an integration of biological and social sciences. *Totem Flyfishers' Club Annual Meeting*, Vancouver, Canada. Oct. 2011. **Invited Speaker.**
- **Nguyen, V.M.***, Gravel, M.-A., Cooke, S.J. (2008) Field evaluations of barotraumas incidences and treatment at a smallmouth bass tournament in northwestern Ontario. Oral presentation. *American Fisheries Society 138th Annual Meeting*, Ottawa, Canada. Aug 17-21, 2008. **Invited Speaker.**

Refereed Conferences and Annual Meetings

- **Nguyen, V.M*** (2022). “Provisioning Recreational Fisheries”: an unrecognized but important sub-fishery. *Canadian Conference for Fisheries Research*. Vancouver, BC, Feb 24-27, 2022.
- **Nguyen, V.M.*** (2022). Bridging the Science and Action Gap: a decade of research, experience, and reflection. *Canadian Conference for Fisheries Research*. Vancouver, BC, Feb 24-27, 2022.
- Falconer, M., Westwood, A.*, **Nguyen, V.M**, Hutchen, J., Kapoor, T., Klenk, K. 2021. Knowledge exchange frameworks in natural resource management. Digital poster at *International Network for Government Science Advice*, Aug 30-Sept 2, 2021, Montreal, Quebec & online (international).
- **Nguyen, V.M.*** (2020). Bridging the gap between science and management: A 10-year synthesis. The North American Congress for Conservation Biology, Colorado, USA, Jul 27-21, 2020.
- **Nguyen, V.M***, Delle-Palme, Young, N., Pentz, B., Krueger, C., Vandergoot, C., Corriveau, M., Hinch, S.G., Cooke, S.J. (2020). Maximizing value of telemetry research: synthesis of case studies. GLATOS Meeting, Ann Arbor, MI, USA, Feb 26-28, 2020 (Oral presentation)
- **Nguyen, V.M.***, Young, N, and Cooke, S.J. (2017). From animal movement to knowledge movement: integrating fish telemetry research findings into fisheries management. *International Conference on Fish Telemetry*, Cairns, Australia. June 18-23, 2017.
- Born, J.*, Richer, I., Frank, C., and **Nguyen, V. M** (2017) Access to Care Among Military Health Service Providers – Development of the Caring for Carers (C4C) project. *Society for Epidemiologic Research (SER)*, Seattle, WA, USA. Jun 20-23, 2017. (Poster presentation)
- **Nguyen, V.M.***, Brooks, J.L., Lennox, R.J., Haddaway, N., Whoriskey, F.G., Young, N., Cooke, S.J. (2016) To share or not to share: perspectives from fish telemetry researchers on data sharing. *Ocean Tracking Network Symposium*, Halifax, NS, Canada. June 1-2, 2016.
- Hussey, N.E.*, Beguer-Pon, M., Lennox, R., **Nguyen V.M.**, Eliason, E., Kessel, S., Lidgard, D., Martins, E., and M. Auger-Méthé. (2016). The Ocean Tracking Network: Management and Conservation of Aquatic Ecosystems. *Ocean Tracking Network Symposium*, Halifax, NS, Canada. June 1-2, 2016.
- **Nguyen, V.M.***, Young, N., Hinch, S.G., Cooke, S.J. (2015) Lessons learned in science communication: interactions with Fraser River stakeholders. *American Fisheries Society 145th Annual Meeting*, Portland, Oregon, USA. Aug 16-21, 2015.
- **Nguyen, V.M.***, Lynch, A.J., Young, N., Beard, D.T., Taylor, W.D., Cowx, I.G., Cooke, S.J. (2015) When water is more than water: using a social-ecological watershed framework for inland fisheries management. *FAO Global Inland Fisheries Conference*, Rome, Italy. Jan 26-28, 2015.
- **Nguyen, V.M.***, Corriveau, M., Cooke, S.J., Hinch, S.G., Young, N. (2014) Knowledge Mobilization: Moving Scientific Knowledge into Pacific Salmon Fisheries Management. *Pathways 2014: Common Futures. Integrating Human Dimensions into Fisheries and Wildlife Management*. Estes, Colorado, USA. Oct 5-9, 2014.
- **Nguyen, V.M.***, Corriveau, M., Cooke, S.J., Hinch, S.G., Young, N. (2014) Knowledge Mobilization: Moving Scientific Knowledge into Pacific Salmon Fisheries Management. *American Fisheries Society 144th Annual Meeting*, Quebec City, Canada. Aug 17-21, 2014.
- **Nguyen, V.M***, Young, N., Cooke, S.J. (2014) Transcending the Disciplines. *Ocean Tracking Network Symposium*, Ottawa, ON, Canada. Jun 3-5, 2014.
- **Nguyen, V.M.*** World Fish Migration Day Science Pub Talk, Public Engagement, Ottawa, Canada. May 24, 2014.
- **Nguyen, V.M.***, Martins, E.G., Raby, G.D., Donaldson, M.R., Lotto, A.G., Patterson, D., Robichaud, D., Farrell, A.P., Willmore, W.G., Hinch, S.G., Cooke, S.J. (2012) Roles of stress, injury, and recovery on the post-release survival of migratory sockeye salmon in British Columbia. *The 6th World Fisheries Congress*, Edinburgh, Scotland, UK. May 11, 2012.

- **Nguyen, V.M.***, Rudd M.A., Hinch S.G., Cooke, S.J. (2012) Responsible fishing in a British Columbia recreational salmon fishery: A look at angler perceptions, preferences and support. *The 6th World Fisheries Congress*, Edinburgh, Scotland, UK. May 9, 2012.
- **Nguyen, V.M.*** (2012) Biological and Social Science Aspects of Pacific Salmon Fisheries Interactions in the Lower Fraser River. *Carleton University Biology Departmental Seminar*, Ottawa, Canada, Feb 17, 2012.
- **Nguyen, V.M.***, Rudd M.A., Hinch S.G., Cooke, S.J. (2012) Information from social science: research relevant to salmon conservation and management. *Workshop on Salmon Migrations, Climate Change, and Capture/Release Fisheries*, University of British Columbia, Vancouver, BC, Canada. Feb 10, 2012.
- **Nguyen, V.M.***, Martins, E.G., Raby, G.D., Donaldson, M.R., Lotto, A.G., Patterson, D., Robichaud, D., Farrell, A.P., Willmore, W.G., Hinch, S.G., Cooke, S.J. (2011) Improving the post-release survival of incidentally caught salmon: integrating biology and social science. *Canadian Fly Fishing Championships*, Fairmont Kenauk, QC, Canada. Oct 19, 2011.
- **Nguyen, V.M.***, Rudd M.A., Hinch S.G., Cooke, S.J. (2011) Latent-Class Cluster Analysis: Categorizing Recreational Salmon Anglers' Attitudes and Behaviours Relevant for Pacific Salmon Conservation and Management in British Columbia. *American Fisheries Society 141st Annual Meeting*, Seattle, WA. Sept 4-8, 2011.
- **Nguyen, V.M.*** (2011) Social aspect of lower Fraser salmon recreational fishery. *NSERC-DFO research update meeting*. University of British Columbia, Canada.
- **Nguyen, V.M.*** (2011) Gear interactions: role of stress, injury and recovery on captured and release sockeye salmon. *NSERC research update meeting with stakeholders and DFO*. University of British Columbia, Canada.
- **Nguyen, V.M.***, Martins, E.G., Raby, G.D., Donaldson, M.R., Lotto, A.G., Patterson, D., Robichaud, D., Farrell, A.P., Willmore, W.G., Hinch, S.G., Cooke, S.J. (2010) The relative roles of stress, injury, and recovery on the migratory behavior and success of sockeye captured and released in the lower Fraser River. *Canadian Conference for Fisheries Research 64th Annual Meeting*, Toronto, Canada. Jan 6-8, 2011.
- **Nguyen, V.M.***, Gravel, M.-A., Cooke, S.J. (2008) "To fizz or not to fizz": the post-release behaviour and fate of tournament-caught smallmouth bass after "fizzing" to alleviate distended swim bladders. *American Fisheries Society Ontario Chapter Crossman Symposium*, Burlington, Canada.

EMPLOYMENT HISTORY

1. **Science Policy Analyst (2018-2019)**
Natural Resources Canada, Office of the Chief Scientist, Ottawa, ON
2. **Social Scientist and Human Dimensions Biologist (2013-2017)**
Carleton University, Fish Ecology and Conservation Physiology Laboratory, Biology Department, Ottawa, ON
3. **Research Assistant in Military Personnel Research (2016- 2017):**
Defence Research and Development Canada, Director General Military Personnel Research and Analysis, Ottawa, ON
4. **Survey Analyst (2015)**
Canadian Union of Public Employees (CUPE) 4600, Carleton University, Ottawa, ON
5. **Research Assistant in Knowledge Mobilization (2014)**
University of Ottawa, Department of Sociology and Anthropology, Ottawa, ON
6. **Student Environmental Advisor in Contaminated Sites Management (2012-2013)**
Department of National Defence, Directorate of Land Environment, Ottawa, ON

7. **Human Dimensions Biologist in Turtle Bycatch (2011-2012)**
Carleton University, Ottawa, ON
8. **Research Assistant in Conservation Social Science (2010)**
University of York, Environment Department, York, United Kingdom
9. **Student Environmental Officer, Contaminated Sites Management and Range and Training Areas Environmental Characterization (2006-2009)**
Department of National Defence, Directorate of Land Environment, Ottawa, ON

TEACHING AND MENTORING EXPERIENCE

*Received a University Teaching Certificate in 2015

Courses

- 2022** Applications of Interdisciplinary Research (ISAP3002), Institute of Environmental and Interdisciplinary Science, Carleton University, Ottawa, ON
- 2021** Advanced Conservation Biology (Biol Grad Course), Biology Department, Carleton University, Ottawa, ON (co-instructor)
- 2020** Principles and Applications in Data Analysis (ISAP3001), IEIS, Carleton University, Ottawa, ON (Lead co-instructor and developed course)
Science Communication (ISAP3003), IEIS, Carleton University, Ottawa, ON (Co-instructor)
- 2017** Biology Methods, Analyses and Interpretation, Biology Department, Carleton University, Ottawa, ON (Developed teaching materials for 150+ students)
- 2016** Animal Behaviour, Biology Department Carleton University, Ottawa, ON (Developed teaching materials for 80 students)
Natural History, Carleton University, Ottawa, ON (Teaching assistant for online class of 200+ students)
Analysis of Ecological Relationship, Carleton University, Ottawa, ON (Teaching assistant for class of 35 students)
- 2015** Animal Behaviour, Carleton University, Ottawa, ON (Developed teaching materials for 70 students)
Environmental Science and Evidence-based Policy, Carleton University, Ottawa, ON (Developed and delivered course material for 8 students)
Natural History, Carleton University, Ottawa, ON (Teaching assistant for 200+ students)
- 2014** Animal Behaviour, Carleton University, Ottawa, ON (Co-developed and delivered course and laboratory sessions for 70 students)
Fish Ecology, Conservation and Management, Carleton University, Ottawa, ON (Teaching assistant for 30 students)
- 2013** Animal Behaviour, Carleton University, Ottawa, ON (Co-designed course with instructor)
Evolutionary Ecology, Carleton University, Ottawa, ON (Teaching assistant for 30 students)

- 2011 Aquatic Sciences and Restoration, Carleton University, Ottawa, ON (**Teaching assistant** for 20 students)
- 2010 Pacific Salmon Ecology Field Course, Carleton University, Ottawa, ON (**Teaching assistant** for 25 students in the field)
Practical Biochemistry, Carleton University, Ottawa, ON (**Lab teaching assistant** for 30 students)
- 2008 Human Impacts on the Environment, Integrated Science, Carleton University, Ottawa, ON (**Teaching assistant and tutor**)
The Laws of Nature, Integrated Science, Carleton University, Ottawa, ON (**Teaching assistant**)

Student Supervision and Mentorship

In Progress

1. Emma Russet, BA Honours Essay Co-supervised with Tyler Smith (Winter 2022)
2. Jan Rosete, MA School of Indigenous and Canadian Studies co-supervision (Winter 2022-present)
3. Ethan Fairchild, UG ENSC4901 Directed Studies (Winter 2022)
4. Christopher Orr, research associate co-supervised with Dr. S Schott, School of Public Policy (Summer 2021- present)
5. Valerie Berseth, post-doctoral fellow (Winter 2021-present)
6. Hannah Postma, M.Sc. candidate co-supervised with Dr. S Cooke (Fall 2021- present)
7. Tracy Chamoun, UG BIOL Honour's Thesis co-supervised with Dr. S Cooke (Fall 2021-present)
8. Lisa Nguyen, UG I-CUREUS intern (Summer 2021- present)
9. Jenna Hutchen, Ph.D. student co-supervised with Dr. N Klenk (Fall 2020-present)
10. Albana Berberi, Ph.D. student co-supervised with Dr. S Cooke (Fall 2020-present)
11. Tyreen Kapoor, M.Sc. candidate (Fall 2020-present)
12. Samuel Richard, M.Sc. candidate co-supervised with Dr. G Gilchrist, Environment and Climate Change Canada (Fall 2020-present)
13. Adam Perkovic, M.Sc. candidate co-supervised with Dr. Karen Dunmall, Department of Fisheries and Oceans (Fall 2020-present)
14. Allison Drake, M.Sc. candidate co-supervised with Dr. Karen Dunmall, Department of Fisheries and Oceans (Fall 2020-present)
15. Jessika Guay, M.Sc. candidate, Biology Department, Carleton University (Fall 2020-present)
16. Acacia Frempong-Manso, M.Sc. candidate co-supervised with Dr. Steven Cooke (Summer 2019- present)
17. Andrew Howarth, Ph.D. candidate co-supervised with Dr. Steven Cooke (Winter 2019-present)

Completed

18. Shawn Innocent, UG ENSC Honour's Thesis co-supervised with Dr. J Chetalat, NWRC, entitled "Investigating aspects of lead contamination of wildlife tissues from the use of lead ammunition" (Fall 2021-Winter 2022)
19. Ellen Marciniak, UG ENSC4901 Directed Studies (Fall 2021)
20. Emma Kent, UG Honour's Thesis co-supervised with Dr. Jacqueline Chapman, entitled "Angler differences within the shore-based shark fishery: are Great Hammerhead Anglers a distinct community?" (Summer 2021)

21. Julie Sell, UG Honour's Thesis co-supervised with Dr. Susan Aitken, entitled "The social factors that affect the adoption of BMPs in agriculture" (Spring 2021)
22. Brian Pentz, Research Assistant, PhD Candidate, University of Toronto (2021)
23. Jessika Guay, I-CUREUS undergraduate intern, Biology Department, Carleton University (2020)
24. Caleigh Delle-Palme, M.Sc. student co-supervised with Dr. Steven Cooke, entitled: From animal movement to knowledge movement: improving science transfer of fish tracking in the Great Lakes (2018)
25. Shannon Clarke, Independent Study, B.Sc. Environmental Science, Carleton University (2016)

Training and Teaching-related Activities

- 2018
 - o **Lead mentor:** Canadian Science Policy Fellowship Mentorship Circle, Ottawa, ON (3 mentees)
 - o **Guest lecturer:** Science Communication Concepts and Applications, Carleton University, Ottawa, ON (35 undergraduate students)
 - o **Founding member:** Aquatrax Learning, Ottawa, ON (Free lesson plans using tracking data funded by NSERC PromoScience grant to promote science communication initiatives)
 - o **Organizer:** World Fish Migration Day and Migration at Nature Nocturne, Museum of Nature, Ottawa, ON (500+ participants of all ages)
 - o **Educator:** Classroom Demonstration, Science Odyssey, Gjoa Haven, Nunavut (5 high school students)
- 2017
 - o **Instructor:** Science Communication Workshop, Ocean Tracking Network Symposium, Halifax, NS (50+ participants from over 5 countries)
 - o **Guest Lecturer:** Environmental Science Seminar, Carleton University, Ottawa, ON
 - o **Lead Organizer and President:** Student Success Workshop, American Fisheries Society, Ontario Chapter Student Subunit, Ottawa, ON
- 2016
 - o **Lead:** World Fish Migration Day, Museum of Nature, Ottawa, ON (500+ participants of all ages)
 - o **Educator:** Science literacy week, Beaverbrook Public Library, Ottawa, ON (Educative event for grades 2-3)
 - o **Lead:** Student Success Workshop, American Fisheries Society, Ontario Chapter Student Subunit, Ottawa, ON
- 2015
 - o Completed **Certificate in University Teaching**, Educational Development Centre, Carleton University, Ottawa, ON
 - o **Instructor:** Science Communication Workshop, International Conference on Fish Telemetry, Halifax, NS (250 participants from 10+ countries)
- 2014
 - o **Guest lecturer:** Environmental Science Seminar, Carleton University, Ottawa, ON
 - o **Author:** "How to" student guide series contribution in *Fisheries*, American Fisheries Society, Education Section
 - o

UNIVERSITY SERVICE

- 2021-
 - o **Hiring Committee:** Conservation hire for Biology Department
- 2022
 - o **Tenure and Promotion Committee Member** for Department of Biology and Institute of Environmental and Interdisciplinary Science

- **MSc Defence External Examiner:** Shannon Landovski, Department of Biology, Dalhousie University, Dec 13, 2021 (Co-supervisors: Drs. Sara Iverson and Megan Bailey)
- **MSc Defence Chair:** Luc LaRochelle, Biology Department, Carleton University, DATE
- **MSc Committee Member:** Jessica Duffey, Biology Department, Carleton University
- 2020 ○ **PhD Defence External Examiner:** Samuel van Ginkel, Department of Psychology, Carleton University, May 1, 2020
- **PhD External Examiner:** Edward C Butler, Rhodes University, South Africa, Feb 25, 2020
- **PhD Qualifying Examiner:** Amanda Jeanson, Biology Department, Carleton University January 9, 2020
- **Lead Faculty Member:** University-level Science Policy Initiative
- 2019 ○ **PhD Committee Member:** Dennis Zimmerman
- **Lead Faculty Member:** University-level Science Policy Initiative
- **Tenure and Promotion Committee Member:** Joe Bennett

COMMUNITY LEADERSHIP AND INVOLVEMENT

- **Ocean Tracking Network International Science Advisory Board Member** (2022- present)
- **Adjudication Committee Member:** Genome BC (April 2022)
- **Adjudication Committee Member:** Mitacs Science Policy Fellowship (April 2022)
- **Associate Editor:** American Fisheries Society *Fisheries Magazine* (Oct 2021)
- **Proposal referee:** Ontario Ministry of Agriculture, Food and Rural Affairs (Feb 2021)
- **Adjudication Committee Member:** SSHRC Partnership Engage Grant (June 2020)
- **Associate Editor:** *Social-Ecological Research and Practice* (2019-present)
- **Associate Editor:** *Ecological Solutions and Evidence* (2019-present)
- **Panelist:** Turning the Tide for Women in Science: Untold Stories and Ideas for Change, Faculty of Science International Women’s Day Event, Ottawa, ON, Canada (Mar 4, 2020)
- **Contributing Member:** InFish (Inland Fisheries Research) Network (2013-2018)
- **Chair:** J Frances Allen Scholarship Committee, American Fisheries Society (2017-2018)
- **Synthesis Committee member:** ideasOTN, Ocean Tracking Network, Halifax, NS (2015-2017)
- **President:** Student Subunit of the American Fisheries Society Ontario Chapter (2016-2017)
- **Founding member and Lead:** World Fish Migration Day Ottawa Chapter (2014-2018)
- **Vice President:** Student Subunit of the American Fisheries Society Ontario Chapter (2014-2016)
- **Northeastern student representative:** Student Subunit of the American Fisheries Society’s Education Section (2014-2015)
- **Head of Fundraising and Financing Committee:** Canadian Conference for Fisheries Research (1 year)
- **Founder and President:** Carleton University Students for the Environment Society (3 years)

Referee Experience

Environmental Science and Policy (2022), Ocean and Coastal Management (2022), Fisheries x3 (2022), FACETS (2021), Ecology and Society (2021), Restoration Ecology (2021), Environmental Science and Policy (2020), Environmental and Sustainability Indicators (2020) Ambio (2020, 2021), Land (2020), Fisheries (2019), Ambio (2019), Conservation Biology (2019), Social-Ecological Research and Practice (2019), Frontiers in Ecology (2018), Journal of Environmental Management x 2 (2018), North American Journal of Fisheries Management (2018), Marine Ecology Progress Series (2017), Journal of Fisheries x 2 (2017, 2019), Journal of Fish Biology (2011), Fisheries Management and Ecology x 2 (2011), American Fisheries Society *Future of Fisheries: Perspectives for Emerging Professionals* book (2013), Fisheries Research (2014, 2017, 2018), Journal of Fish Biology (2014), Mangroves as Fish Habitat Symposium Proceedings

book (2014), Endangered Species Research (2014), Journal of Fish Biology (2014), Fisheries Management and Ecology (2015)

GRANTS

Total PI Funding: \$ 977, 564; Total Funding Overall: \$7,493,000

		\$15K of \$506K for 2 yrs
2022-23	NSERC Mission Alliance Grant: Generating actionable science to inform sustainable freshwater ecosystem use and shoreline development in Canada in the face of increasing human pressure (Co-applicant/grantee) Co- applicants: Steven Cooke (CU; lead), A Kirkwood (On Tech U), J Vermaire (CU), C Rennie (UofO), S Melles (Ryerson)	
2021-25	Genome Canada Large-Scale Applied Research Project Competition: TRIA-FOR – Transformative Risk Assessment and Forest Resilience Using Genomic Tools for the Mountain Pine Beetle Outbreak (GE3LS co-PI with S Schott) Co-applicants: J Cooke and C Cullingham (lead PIs), J Bohlmann (UBC), D Coltman(UofA), M Evenden (UofT), M Lewis (UofA), H MacMillan (CU)	\$440K of \$6.4 M for 4 yrs
2021-22	Great Lakes Fishery Commission Sea Lamprey Board Grant: Understanding Indigenous Perspectives on Sea Lamprey Controls in the Laurentian Great Lakes (Co-applicant) Co-applicants: A Reid (PI, UBC), N Young (U Ottawa), S Cooke (Carleton U), M Steeves DFO), J Barber (USFWS), B Mason (GLFWIC), Ga Pritchard (Cambium Aboriginal Consulting), M Gaden (GLFC)	\$100K/1yr
2021-25	Great Lakes Fishery Commission BOTE Grant: Understanding the Importance of Provisioning Fisheries in the Great Lakes (PI) Co-applicants: L Castello (Virginia Polytechnic Inst and State U), AMacNeil (Dalhousie U), R Stedman (Cornell U), S Simpson (Carleton U), A Fisk (Windsor U)	\$203K of \$475K for 4yrs
2020-23	Department of Natural Resources Canada, Forest Innovation Program Grant: A framework of anticipating risks, trade-offs and fostering resilience related to MPB outbreaks and genomic-enhanced tools for risk management planning (PI) Co-applicants: S Schott (Carleton U), N Klenk (UofT), C Cullingham (Carleton U), JCooke (U Alberta)	\$260K for 3 yrs
2020-21	SSHRC Knowledge Synthesis Grant: What are the knowledge gaps for evaluating the effectiveness and social impacts of “Living Labs” focused on environmental and agricultural sustainability? (PI) Co-applicants: K Bronson (U Ottawa), C McPhee (Collaborator AAFC)	\$50k/1y
2020-21	SSHRC Knowledge Synthesis Grant: Developing an evidence-based toolbox for addressing freshwater biodiversity threats (Co-Applicant) Co-applicants: S Cooke (Carleton U), I Creed (U Saskatchewan), J Smol (Queen’s U), I Gregory-Eaves (McGill), J Bennett (Carleton U)	\$50K/1y
2020-21	SSHRC Partnership Engage Grant: Overcoming the science-policy gap: knowledge exchange and brokering for sustainable natural resource management (PI) Co-applicants: N Young (U Ottawa), A Westwood (NRCan)	\$25k/1y
2019-20	NSERC PromoScience Grant: Aquatrax Learning (Co-Applicant)	\$27K/1y

	Co-applicants: S Cooke (Carleton U), J Brooks (Carleton U), J Chapman (Carleton U), J Taylor (Carleton U), Lisa Donaldson (Carleton U), N Sopinka (CSP), E Verhoek (Queen's U)	
2018-19	NSERC PromoScience Grant: launch of Aquatrax Learning	\$33K/1y
2016-18	GLFC Science Transfer Grant: From fish movement to knowledge movement: understanding and improving science transfer related to telemetry (Co-applicant)	\$58k/3y
	Co-applicants: S Cooke (PI, Carleton U), N Young (U Ottawa), C Vandergoot (Ohio DNR), C Krueger (MSU)	
2013	International Development Research Council: Canada-Latin America and the Caribbean Research Exchange Grant (Co-PI with Drs. Michael Power, Steven Cooke, Priscila Lopes and Eduardo Martins)	\$15K/1y

AWARDS & SCHOLARSHIPS

2021	Digital Poster Award, INGSA: Westwood et al. Knowledge exchange frameworks in natural resource management	N/A
2020	Faculty of Science Excellence Award – Impact Award	\$2K
2019	Employee Excellence Award for lead on the Scientific Integrity Policy, Office of the Chief Scientist, Natural Resources Canada	N/A
2018	Most Valuable Player, Ottawa Swans Australian Football Club	N/A
2017	American Fisheries Society, J.F. Allen Scholarship Recipient (Best female fisheries scientist)	\$3K
	American Fisheries Society Ontario Chapter BASS Nation Award (Best Student Poster)	N/A
2016	NSERC Canada Graduate Scholarship (Doctorate level)	\$105K/3y
	Ontario Graduate Scholarship (Doctorate level)	\$15K
	American Fisheries Society, J.F. Allen Scholarship (Runner up)	N/A
	Ottawa Sports Award – Australian Football	N/A
	Most Valuable and Most Consistent Player, Ottawa Swans Australian Football Club	N/A
2015	American Fisheries Society, J.F. Allen Scholarship (Runner up)	N/A
	Wyndham Scholarship for Excellence in Environmental Biology	\$1K
	Most Valuable Player (runner up) and Most Consistent, Ottawa Swans Australian Football Club	N/A
2014	Ocean Tracking Network Travel Award (Pathways 2014)	\$1.5K
	Peter A. Larkin Award in Fisheries Excellence (Doctorate Level)	\$200
	Most Improved Player, Ottawa Swans Australian Football Club	N/A
2012	Ontario Graduate Scholarship (M.Sc. level)	\$15K
2011	NSERC Michael Smith Foreign Study Supplement (M.Sc. Level)	\$6K

2010 NSERC Canada Graduate Scholarship (M.Sc. Level) \$17.5K

KNOWLEDGE MOBILIZATION (KMB), PARTNERSHIP, AND IMPACT

Partnership	Community engagement with City of Quesnel (Major Bob Simpson), BC; Cypress Hills Interprovincial Park, SK; and SK provincial government	Oct 12-15, 2021
KMb	Great Lakes Forestry Seminar Series: Research work on knowledge exchange in forestry and the CFS	May 14, 2021
KMb	Policy presentation by UG student, Julie Sell, at AAFC Living Labs Working Group	May 27, 2021
KMb/Scicomm	Science Café, Carleton University: Science Afterlife: Where does the Science Go?	Sept 16, 2020
Partnership	Canadian expert representative for CEC Integrating Human Dimensions to Build Collaborative Pollinator Conservation in North America Workshop Series (one of three experts)	1,2,8 Dec, 2020
Partnership	Academic representative and presenter for AAFC Living Labs/ USDA LTAR Joint Workshop on Socio-Economic Aspects/Human Dimensions	Sept 15-16, 2020

Professional Development

- Student Support Certificate: Indigenous Cultural Awareness Workshop (Jan 31, 2022)
- Building Resilience Workshop (Dec 4, 2021)
- Student Support Certificate: Effective Communication and De-Escalation Workshop (Mar 22, 2022)

JEAN-SÉBASTIEN PARENT, PH.D.

Research Scientist
Agriculture and Agri-Food Canada
Ottawa Research Center for Development
960 Carling Avenue, Ottawa
613-759-1705
jean-sebastien.parent@agr.gc.ca

SUMMARY STATEMENT

Group leader at Agriculture and Agri-Food Canada since February 2019. Our research focus on the influence of epigenetic pathways on gametogenesis, fertility and seed development in flowering plants. Our goal is to help increase agricultural yields, control gene flow and improve the quality of the gene pool for different crops.

DEGREES

- 2011 **Ph.D. in biochemistry**
Université de Montréal, Canada
- 2004 **Bachelor in biochemistry**
Université de Montréal, Canada

EMPLOYMENTS AND AFFILIATIONS

- 2020- **Adjunct Professor**, Department of Biology, Carleton University
- 2019- **Research Scientist**, Group leader in plant reproduction
Ottawa Research Center for Development, Ottawa, Canada
- 2013-2018 **Postdoctoral fellow**, Supervisor: Prof. Robert A. Martienssen
Plant Biology Department, Cold Spring Harbor Laboratory, USA
- 2010-2013 **Postdoctoral fellow**, Supervisor: Dr. Hervé Vaucheret
Équipe Dynamique et Expression des Génomes, INRA Versailles, France
- 2006-2007 **Tutor (part-time)**, Biochemistry Department, Université de Montréal
- 2005-2009 **Teaching assistant (part-time)**, Biochemistry Department, Université de Montréal
- 2004-2010 **Ph.D. candidate**, Supervisor: Prof. Normand Brisson
Département de biochimie, Université de Montréal, Canada

FELLOWSHIPS AND GRANTS

- 2022-2025* **Science and Technology Branch Grant (AAFC)**
Title: Epigenetics of higher seed quality in Soybean
Role: Lead investigator
- 2021-2024 **Canola Agronomic Research Program Grant (Canola Council of Canada)**
Title: Building bridges to success - Accessing Brassica diploid variation for Canola improvement
Role: Co-investigator
- 2019-2024 **Science and Technology Branch Grant (AAFC)**
Title: Systematics of Weeds, Crops and Crop Wild Relatives
Role: Co-investigator
- 2019-2023 **Large-Scale Applied Research Project Competition (AAFC)**

Title: Application of genomics to the adaptation of the polyploid *Camelina sativa*

Role: Co-investigator

2012-2013 **Long Term Postdoctoral Fellowship**, European Molecular Biology Organization (EMBO)

2010-2012 **Postdoctoral Fellowship**, Fond Québécois de la Recherche en Sciences Naturelles et Technologies (FQRNT)

*Under consideration

ACTIVITIES

1- Mentoring graduated students

Summer 2021- Supervision of a Master student from the Department of Biology, Carleton University

2- Supervising students

Summer 2018 Supervision of an undergraduate from the College of Agricultural and Life Sciences at Cornell University.

Summer 2017 Supervision of an undergraduate from the College of Agricultural and Life Sciences at Cornell University and a high school student from George W. Hewlett high school in Hewlett (NY).

2016-2017 Part-time supervision of a student from the Partners For the Future program (PFF, <https://www.cshl.edu/education/partners-for-the-future/>).

2008-2010 Part-time supervision of two Ph.D. candidate and one M.Sc. candidate from the Biochemistry Department of the Université de Montréal. Led to two publications:

Summer 2008 Supervision of an undergraduate from the Biochemistry Department of the Université de Montréal.

Summer 2007 Supervision of an undergraduate from the Biochemistry Department of the Université de Montréal.

Summer 2006 Supervision of an undergraduate from the Biochemistry Department of the Université de Montréal.

Summer 2005 Supervision of an undergraduate from the Biology program of the Université de Lausanne.

3- Administrative

2020- Member of the communication committee of the Ottawa Research and Development Center

2009-2010 Elected member of the executive committee of the Association des étudiantes et étudiants aux cycles supérieurs en biochimie (AEECSBUM).

COMMUNICATIONS

1- Invited speaker

- Department of Biology, Carleton University (January 2020): Epigenetic Reprogramming in plants: small RNA goes a long way.
- Department of Cell & Systems Biology, University of Toronto (January 2020): Epigenetic Reprogramming in plants: small RNA goes a long way.
- Institut de Recherche pour le Développement, Montpellier, France (Mai 2018): Epigenetic Reprogramming by small RNA in the Plant Embryo.

- EMBO Fellows Meeting, EMBL Heidelberg, Germany (June 2015): Deciphering Antisense-Triggered RNA Silencing.
- Regulatory and non-coding RNAs, Cold Spring Harbor Meeting, USA (August 2012): Post-Transcriptional Gene Silencing Triggered by Convergent Transcription and Antisense RNA Read-Through in Arabidopsis.

2- Presentations at national conferences

- 12th annual chemistry and biochemistry graduate research conference, Concordia University (November 2009): Whirly Proteins Maintain Chloroplast Genome Stability.

3- Presentations at regional conferences

- Montreal Plant Meeting, Concordia University (March 2010): Whirly Proteins Maintain Chloroplast Genome Stability.
- Journée Centre Sève, Parc du Mont Orford (April 2010): Les protéines Whirly maintiennent la stabilité du génome du chloroplaste.

4- Presentations at departmental conferences

- Journée Simon-Pierre Noël, Université de Montréal (April 2010): Les protéines Whirly sont requises pour la réparation des bris double brin dans l'ADN des chloroplastes d'Arabidopsis.

5- Posters at international conferences

- Transposable Elements, Cold Spring Harbor Meeting, USA (November 2018): Epigenetic Reprogramming by small RNA in the Plant Embryo.
- International Conference on Arabidopsis Research, Madison (WI), USA (June 2011): Divergent Roles for the Two PolII-like Organelle DNA Polymerases of Arabidopsis.
- The EMBO Meeting, Barcelona, Spain (September 2010): Whirly Proteins Prevent DNA Rearrangements and Maintain Chloroplast Genome Stability.
- International Conference on Arabidopsis Research, Edinburgh, UK (July 2009): Whirly Proteins Maintain Plastid Genome Stability in Arabidopsis.
- International Conference on Arabidopsis Research, Montréal, Canada (July 2008): Overexpression of mtDNA-associated AtWhy2 Compromises Mitochondrial Functions.

PUBLICATIONS

1- Peer-reviewed articles

- **J.-S. Parent**, J. Cahn, R. P. Herridge, D. Grimanelli, R. A. Martienssen (2021) Small RNAs guide histone methylation in Arabidopsis embryos. *Genes Dev.*, **35**(11-12): 841–846.
- S. C. Lee, E. Ernst, B. Berube, F. Borges, **J.-S. Parent**, P. Ledon, A. Schorn, R. A. Martienssen (2020) Arabidopsis retrotransposon virus-like particles and their regulation by epigenetically activated small RNA. *Genome Res.*, **30**(4): 576–588.
- F. Borges, **J.-S. Parent**, F. van Ex, P. Wolff, G. Martínez, C. Köhler, R. A. Martienssen (2018) Transposon-derived small RNAs triggered by miR845 mediate genome dosage response in Arabidopsis. *Nat. Genet.* **50**(2): 186–192.
- **J.-S. Parent**, V. Jauvion, N. Bouché, C. Béclin, M. Hachet, M. Zytnicki, H. Vaucheret (2015) Post-transcriptional gene silencing triggered by sense transgenes involves uncapped antisense RNA and differs from silencing intentionally triggered by antisense transgenes. *Nucleic Acids Res.* **43**, 8464–8475.
- A. Yu, B. Saudemont, N. Bouteiller, E. Elvira-Matlot, G. Lepère, **J.-S. Parent**, J.-B. Morel, J. Cao, T. Elmayan, H. Vaucheret (2015) Second-Site Mutagenesis of a Hypomorphic *argonaute1* Allele Identifies *SUPERKILLER3* as an Endogenous Suppressor of Transgene Posttranscriptional Gene Silencing. *Plant Physiol.* **169**, 1266–1274.

- L. Cappadocia, **J.-S. Parent**, J. Sygusch, N. Brisson (2013) A family portrait: Structural comparison of the Whirly proteins from *Arabidopsis thaliana* and *Solanum tuberosum*. *Acta Crystallogr. Sect. F Struct. Biol. Cryst. Commun.* **69**, 1207–1211.
- L. Cappadocia, **J.-S. Parent**, E. Zampini, E. Lepage, J. Sygusch, N. Brisson (2012) A Conserved Lysine Residue of Plant Whirly Proteins is Necessary for Higher Order Protein Assembly and Protection Against DNA Damage. *Nucleic Acid Res* **40**(1) : 258-269.
- **J.-S. Parent**¹, E. Lepage¹, N. Brisson (2011) Divergent Roles for the Two Poll-like Organelle DNA Polymerases of *Arabidopsis*. *Plant Physiol* **156**: 254-262.
- L. Cappadocia, A. Maréchal, **J.-S. Parent**, E. Lepage, J. Sygusch, N. Brisson (2010) Crystal Structures of DNA-Whirly Complexes and their Role in *Arabidopsis* Organelle Genome Repair. *Plant Cell* **22**: 1849-1867.
- A. Maréchal¹, **J.-S. Parent**¹, F. Véronneau-Lafortune, A. Joyeux, B.F. Lang, N. Brisson (2009) Whirly Proteins Maintain Plastid Genome Stability in *Arabidopsis*. *Proc Natl Acad Sci U S A* **106**: 14693-14698.
- A. Maréchal, **J.-S. Parent**, M. Sabar, F. Véronneau-Lafortune, C. Abou-Rached, N. Brisson (2008) Overexpression of mtDNA-associated AtWhy2 Compromises Mitochondrial Function. *BMC Plant Biol* **8**: 42.

¹The authors contributed equally

2- Reviews

- H. Turcotte, J. Hooker, B. Samanfar, **J.-S. Parent** (2022) Can epigenetics guide the production of better adapted cultivars?. *Agronomy* **12**(4):838.
- S. L. Martin, **J. S. Parent**, M. Laforest, E. Page, J. M. Kreiner, T. James (2019) Population genomic approaches for weed science. *Plants (Basel)* **8**(9).
- **J.-S. Parent**, A. E. Martínez de Alba, H. Vaucheret (2012) The origin and effect of small RNA signaling in plants. *Front. Plant Sci.* **3**:179.

3- Patents

- A. Maréchal, E. Lepage, **J.-S. Parent**, L. Cappadocia, N. Brisson (submitted in May 2010) A Method for Deriving Rearranged Plant Organelle Genomes. Temporary patent.

4- Book chapters

- A.E. Martinez De Alba, **J.-S. Parent**, H. Vaucheret (2013) Small RNA-Mediated Control of Development in Plants. Springer Book, Signaling and Communication in Plants, Vol **18**.
- **J.-S. Parent**, L. Cappadocia, A. Maréchal, P.R. Fobert, N. Brisson (2009) Transcription Factor Families in Plant Defense: from Discovery to Structure. In *Molecular Plant-Microbe Interactions*, CAB International ed., Chapter 6, 142-162.

OTHERS

- Nationality: Canadian
- Languages: French and English, spoken and written

NICOLAS RODRIGUE

Curriculum Vitæ

APPOINTMENTS AND CONTACT INFORMATION

Main appointment: Associate professor, Department of Biology, Carleton University.

Cross-appointment: Associate professor, Institute of Biochemistry, Carleton.

Cross-appointment: Associate professor, School of Math. & Stats., Carleton.

Address: Department of Biology, 1125 Colonel By Drive, Ottawa, ON, Canada, K1S 5B6

Email: nicolas.rodrique@carleton.ca

Tel: +1 613.520.2600 ext 4194

DEGREES

Ph.D. (2008), Bioinformatics, Université de Montréal (UdeM), Montréal, QC;

M.Sc. (2004), Information Technology, École de technologie supérieure, Montréal, QC;

B.Sc. (2002), Biochemistry, McGill University, Montréal, QC;

B.A. (1999), Music, Bishop's University, Lennoxville, QC.

POSITION HISTORY (FROM MOST-RECENT TO PHD STUDENTSHIP)

Associate director, Ottawa-Carleton Joint Bioinformatics program, July 2018 - June 2020;

Associate professor, Biol., Biochem., and Math. & Stats., Carleton, July 2017 - present;

Assistant professor, Biol., Biochem., and Math. & Stats., Carleton, Sept. 2014 - June 2017;

Adjunct professor, Biochem. & Mol. Biol., University of Calgary, Jan. 2014 - Dec. 2020;

Adjunct professor, Struct. Biol. & Biochem., University of Colorado, Jan. 2014 - Dec. 2019;

Assistant professor, Math. & Stats., University of Calgary, Sept. 2013 - August 2014;

Adjunct professor, Biology, University of Ottawa, March 2012 - Feb. 2015;

Adjunct professor, Biochem. & Mol. Med., Université de Montréal, Sept. 2011 - Aug. 2019;

Scientist, Agriculture and Agri-Food Canada (AAFC, Ottawa), April 2011 - August 2013;

Post-doctoral fellow, Biology, McGill University, Jan. 2011 - March 2011;

Post-doctoral fellow, Biology, University of Ottawa, Jan. 2008 - Dec. 2010;

Doctoral student, Bioinformatics, Université de Montréal, Sept. 2003 - Dec. 2007.

GRANTS, SCHOLARSHIPS, AND DISTINCTIONS (FROM MOST-RECENT TO PHD STUDENTSHIP)

NSERC Discovery Grant, \$43,400/year (Carleton, 2019-2024);
NSERC Discovery Grant, \$31,000/year (U. of Calgary, Carleton, 2013-2019);
Growing-forward AgriFlex Grant, \$100,000 (AAFC, 2011-2013);
Quebec Center for Biodiversity Science post-doctoral fellowship (McGill University, 2011);
NSERC post-doctoral fellowship (University of Ottawa, 2008-2010);
L'Académie des Grands Montréalais, finalist for best doctoral thesis (2008);
L'Association des doyens des études sup. au Québec, finalist for best doctoral thesis (2008);
Robert-Cedergren Bioinformatics Colloquium, best PhD poster (UdeM, 2007);
CIHR BiT special bioinformatics grant for PhD studies (UdeM, 2007);
Robert-Cedergren Bioinformatics Colloquium, best PhD oral presentation (UdeM, 2006);
Academic excellence bursary, Faculté des études supérieures (UdeM, 2004-2006);
AstraZéneca prize, excellence in an oral presentation (UdeM, 2005);
CIHR BiT special bioinformatics research supplement (UdeM, 2005);
Robert-Cedergren Bioinformatics Colloquium, best PhD oral presentation (UdeM, 2004);
Génome-Québec scholarship for PhD studies (UdeM, 2003-2006).

POST-DOCTORAL FELLOWS

Supervisor: Simon Laurin-Lemay, Carleton, Jan. 2021-present.
Co-supervisor: Miao Liu, UofO / AAFC, June 2012-June 2013.
Co-supervisor: Jeremy Dettman, UofO / AAFC, Apr. 2011-Aug. 2013.
Co-supervisor: Chris Spies, AAFC, Apr. 2011-Sept. 2013.

GRADUATE STUDENTS

Supervisor: Thomas Bujaki, Carleton, Ph.D., Biology, Jan. 2019-present.
Supervisor: Kassandra Dickson, Carleton, M.Sc., Biology, May 2018-May 2021.
Supervisor: Thomas Bujaki, Carleton, M.Sc., Chemistry, Sept. 2016-Aug. 2018.
Supervisor: Omar Kazmi, Carleton, M.Sc., Biology, Sept. 2015-Dec. 2017.
Co-supervisor: Andrew Low, Carleton, M.Sc., Biology, Sept. 2015-Apr. 2017.
Co-supervisor: Gregg Robideau, Carleton / AAFC, Ph.D., Biology, Apr. 2011-Sept. 2013.

Co-supervisor: Susan Bailey, UofO / AAFC, Ph.D., Biology, Apr. 2011-Sept. 2013.
Co-supervisor: Simon Laurin-Lemay, U. de Montréal, Ph.D., Bioinformatics, 2011-2019.

UNDERGRADUATE STUDENTS

Co-supervisor: Noor Shubair, Carleton, B.Sc., Biology, Sept. 2021-April 2022.
Supervisor: Erin Griffiths, Carleton, B.Sc., Biology, May 2021-August 2021.
Co-supervisor: Marina Maurach, Carleton, B.Sc., Biochemistry, Sept. 2019-April 2020.
Supervisor: Katie Van Looyen, Carleton, B.Sc., Biology, May. 2018-2019.
Supervisor: Adliana Md Desa, Carleton, B.Sc., Biology, Sept. 2017-April 2018.
Supervisor: Kassandra Dickson, Carleton, B.Sc., Biology, May 2017-Aug. 2017.
Co-supervisor: Jackson Eyres, Carleton, B.C.S., (Comp. Sci.), Sept. 2016-April 2017.
Supervisor: Ivory Zhang, Carleton, B.Sc., Biochemistry, Sept. 2016-April 2017.
Supervisor: Oluwadara Elebute, Carleton, B.Sc., Biology, Sept. 2015-April 2016.
Supervisor: Thomas Bujaki, Carleton, B.Sc., Food-science, Sept. 2015-April 2016.
Supervisor: Miao Yu, Carleton, B.Sc., Biology, May-August 2015.
Supervisor: Laura Corrigan, La Cité, B.Sc., Biotechnology, May-August 2015.
Supervisor: Hao Wang, Carleton, B.Sc., Biology and Statistics, May 2015-April 2018.
Supervisor: Bianca De Sanctis, U. of Calgary, B.Sc., Statistics, May-August 2014.

GRADUATE STUDENT COMMITTEES

Advisor: Jeffrey Pepin, Carleton, M.Sc. in Biology, Sept. 2021-present.
Advisor: Sarah Clarke, Carleton, M.Sc. in Biology, Sept. 2021-present.
Advisor: Isaak Bedard, Carleton, M.Sc. in Biology, Sept. 2019-Sept. 2020.
Examiner: Jordan Silke, U. of Ottawa, M.Sc. in Biology, 2019.
Advisor: Gokalp Yildirim, U. of Ottawa, Ph.D. in Biology, Sept. 2018-present.
Examination chair: Leah Clarke, Carleton, M.Sc. in Biology, 2018.
Examiner: Andrew Young, Carleton, M.Sc. in Biology, 2018.
Advisor: Andréanne Bouchard, U. of Ottawa, M.Sc. in Biology, 2018-2020.
Advisor: Tom Witte, Carleton, M.Sc. in Biology, 2017-2019.
Advisor: Éléonore E. Lebeuf-Taylor, U. of Ottawa, M.Sc. in Biology, 2016-2018.
Advisor: Camille St-Onge, U. of Ottawa, M.Sc. in Biology, 2016.

Examiner: Austin Markell, Carleton, M.Sc. in Biology, 2016.
Advisor: Kristina Shostak, Carleton, Ph.D. in Biology, 2016-2020.
Examiner: Robert Peace, Carleton, Ph.D. in Electrical and Comp. Eng., 2016.
Advisor: Kevin Moran, Carleton, Ph.D. in Biology, 2015-present.
Advisor: Demissew Desta, U. of Ottawa, Ph.D. in Biology, 2015-2019.
Advisor: Nicole J. Filipow, Carleton, M.Sc. in Biology, 2015-2017.
Advisor: Beatriz Lujan Toro, Carleton, M.Sc. in Biology, 2015-2017.
Examination chair: Salima Chatur, Carleton, M.Sc. in Biology, 2015.
Examiner: Étienne Léveillé-Bourret, U. of Ottawa, Ph.D. in Biology, 2015.
Advisor: Jean-Claude Nshogozabahizi, U. of Ottawa, M.Sc. in Bioinfo., 2015.
Advisor: Ivan Kryukov, U. of Calgary, Ph.D. in Bioinformatics., 2015-2019.
Advisor: Jonathan Dench, U. of Ottawa, Ph.D. in Biology, 2014-2020.
Advisor: Neke Ibeh, U. of Ottawa, M.Sc. in Biology, 2014-2016.
Advisor: Keely Lefebvre, U. of Ottawa, M.Sc. in Biology, 2014-2016.
Advisor: Stephen Pollard, U. of Colorado Denver, Ph.D. in Biochem., 2014-2019.
Advisor: Prabhjeet Basra, Carleton, M.Sc. in Biology., 2014-2016.
Examiner: Brian McDonald, U. of Calgary, Ph.D. in Biochem. Mol. Biol., 2014.
Advisor: Longlong Huang, U. of Calgary, Ph.D. in Stats., 2013-2014.
Advisor: Arnab Saha-Mandal, U. of Calgary, Ph.D. in Bioinfo., 2013-2019.
Examiner: Tasnima Abedin, U. of Calgary, Ph.D. in Stats., 2013.
Advisor: Sean Walkowiak, Carleton U., Ph.D. in Biology, 2012-2013.

TEACHING

Instructor: Carleton, Evolutionary Bioinformatics (BIOL 5201) ×5, 2017-2022.
Instructor: Carleton, Evolutionary Genetics (BIOL 4104) ×5, 2017-2022.
Instructor: Carleton, Bioinformatics (BIOC 3008 / COMP 3308) ×7, 2014-2022.
Instructor: Carleton, Bioinformatics seminar (BIOL 5517) ×2, 2018-2019.
Invited lecturer: U. of Ottawa, Bioinformatics (BNF5106) ×8, 2008-2018.
Instructor: Carleton, Molecular Evolution and Phylogenetics (BIOL 4901), Winter 2016.
Invited lecturer: Carleton, Biotechnology (BIOL 4301), Fall 2015.
Instructor: Carleton, Directed studies (BIOL 5501), Winter 2015.
Instructor: Carleton, Directed studies (BIOL 4901), Winter 2015.

Invited lecturer: Carleton, Molecular Genetics (BIOL 3104), Winter 2015.
Instructor: U. of Calgary, Introduction to statistical inquiry (STAT205), 2014.
Instructor: U. of Calgary, Statistics in physical & environmental sciences (STAT327), 2014.
Workshop leader: AAFC (Ottawa), Workshop on Bayesian phylogenetics, 2013.
Invited lecturer: U. Laval (QC), Génétique (FOR-7033), Phylogénie probabiliste, 2012.
Workshop leader: AAFC (Ottawa), Probabilistic methods in evolutionary biology, 2012.
Workshop leader: U. of Ottawa, Workshop on bioinformatics of NGS, 2011.

OTHER RECENT SERVICE

Associate Editor for the Journal of Molecular Evolution, 2020-present.
Selection committee for the Fields Post-doctoral Fellowship, Carleton, 2020.
Symposium organizer for the Society of Molecular Biology and Evolution, Quebec, 2020.
Member of the Computational Chemistry hiring committee, Carleton, 2019-2020.
Associate Director of the Ottawa-Carleton Bioinformatics M.Sc. specialization, 2018-2020.
Chair of the Dept. of Biology curriculum committee, Carleton, 2016-2020.
Member of the Dept. of Biology tenure and promotion committee, Carleton, 2015-2016.
Member of the Institute for Data Science board of directors, Carleton, 2014-2016.
Member of the Student Awards committee from Biology, Carleton, 2015.
Member of the Computational Chemistry hiring committee, Carleton, 2014-2015.

REVIEWING

Reviewer for the following journals: Gene, Molecular Biology and Evolution, Bioinformatics, BMC Evolutionary Biology, BMC Bioinformatics, Systematic Biology, PLoS ONE, PLoS Computational Biology, Genome Biology, Journal of Molecular Evolution, Genome, Biology Letters, and New Phytologist.

Reviewer for the following agencies: Marsden Fund Council (New Zealand), Ecofect Projects (France), National Science Foundation (USA), Swiss National Science Foundation, Natural Sciences and Engineering Research Council of Canada, and Agriculture and Agri-Food Canada.

PAPERS

Rodrigue, N., Lartille, T. and Lartillot, N. (2021). A Bayesian mutation-selection framework for detecting site-specific adaptive evolution in protein-coding genes. *Mol. Biol. Evol.* 38:1199-1208.

Shafiei-Koij, F., Ravichandran, S., Barthet, V. J., **Rodrigue, N.**, Mirlohi, A., Majidi, M. M., and Cloutier, S. (2020). Evolution of *Carthamus* species revealed through sequence analyses of the *fad2* gene family. *Physiol. Mol. Biol. Plants*, 26:419-432.

Kazmi, S. O. and **Rodrigue, N.** (2019). Detecting amino acid preference shifts with codon-level mutation-selection mixture models. *BMC Evol. Biol.*, 19:62.

Anderson, J. B., Bruhn, J. N., Kasimer, D., Wang, H., **Rodrigue, N.** and Smith, M. L. (2018). Clonal evolution and genome stability in a 2500-year-old fungal individual. *Proc. R. Soc. B*, 285:20182233.

Laurin-Lemay, S., **Rodrigue, N.**, Lartillot, N. and Philippe, H. (2018). Conditional Approximate Bayesian Computation, a new approach for across-site dependency in high-dimensional mutation-selection models. *Mol. Biol. Evol.* 35:2819-2834.

Laurin-Lemay, S., Philippe, H. and **Rodrigue, N.** (2018). Multiple factors confounding phylogenetic detection of selection on codon usage. *Mol. Biol. Evol.* 33:1463-1472.

Low, A., **Rodrigue, N.** and Wong, A. (2017). COMPASS: The COMpletely Arbitrary Sequence Simulator. *Bioinformatics*, 33:3101-3103.

Rodrigue, N. and Lartillot, N. (2017). Detecting adaptation in protein-coding genes using a Bayesian site-heterogeneous mutation-selection model. *Mol. Biol. Evol.*, 34:204-214.

Dettman, J. R., **Rodrigue, N.**, S. Schoustra and Kassen, R. (2017). Genomics of compensatory adaptation in experimental populations of *Aspergillus nidulans*. *G3 (Bethesda)*, 7:427-436 .

Walkowiak, S., Rowland, O., **Rodrigue, N.** and Subramaniam, R. (2016). Whole genome sequencing and comparative genomics of closely related Fusarium Head Blight fungi: *Fusarium graminearum*, *F. meridionale* and *F. asiaticum*. *BMC Genomics*, 17:1014.

Lee, H.-J., Kishino, H., **Rodrigue, N.** and Thorne, J. L. (2016). Grouping substitution types into different relaxed molecular clocks. *Phil. Trans. R. Soc. B*, 371:20150141.

Lee, H.-J., **Rodrigue, N.** and Thorne, J. L. (2015). Relaxing the molecular clock to different degrees for different substitution types. *Mol. Biol. Evol.*, 32:1948-1961.

Bailey, S. F., **Rodrigue, N.** and Kassen, R. (2015). Selection environment drives the degree of parallel evolution in experimentally evolved populations of *Pseudomonas fluorescens*. *Mol. Biol. Evol.*, 32:1436-1448.

Dettman, J. R., **Rodrigue, N.** and Kassen, R. (2015). Genome-wide patterns of recombination in the opportunistic human pathogen *Pseudomonas aeruginosa*. *Genome Biol. Evol.*, 7:18-34.

Robideau, G. P., **Rodrigue, N.** and Lévesque, C. A. (2014). Codon-based phylogenetics introduces novel flagellar gene markers to oomycete systematics. *Mol. Phylogenet. Evol.*, 79:279-291.

Rodrigue, N. and Lartillot, N. (2014). Site-heterogeneous mutation-selection models within the PhyloBayes-MPI package. *Bioinformatics*, 30:1020-1021.

Liu, M., **Rodrigue, N.** and Kolmer, J. (2014). Population divergence in the wheat leaf rust fungus *Puccinia triticina* is correlated with wheat evolution. *Heredity*, 112:454-462.

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ing strategies in molecular evolution. *Trends in Genetics*, 26:248-252.

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BOOK CHAPTERS

Rodrigue, N. (2022). Le paradigme Bayésien en phylogénie moléculaire. In *Étude de l'évolution par l'approche mathématique et informatique*, Eds. Dider, G. et Guindon, S., ISTE Science Publishing LTD, London, UK. (in press).

Lowe, C. and **Rodrigue, N.** (2020). Detecting adaptation from multi-species protein-coding DNA sequence alignments. In *Phylogenetics in the Genomic Era*, Eds. Scornavacca, C., Del-suc, F. and Galtier, N., No commercial publisher, Authors' open access book.

Aris-Brosou, S. and **Rodrigue, N.** (2019). A not-so-long introduction to computational molecular evolution. In *Evolutionary Genomics*, Ed. Anisimona, M., Methods in Molecular Biology, Vol. 1910, Humana - Springer, New York, NY.

Rodrigue, N. and Lartillot, N. (2012). Bayesian approaches and Markov chain Monte Carlo algorithms for studying codon models of evolution. In *Codon Evolution*, Eds. Schneider, A. and Cannarozzi, G., Oxford University Press, UK, Chapter 4.

Thorne, J. L., Lartillot, N., **Rodrigue, N.** and Sang Chul Choi (2012). Codon models as a vehicle for reconciling population genetics with interspecific sequence data. In *Codon Evolution*, Eds. Schneider, A. and Cannarozzi, G., Oxford University Press, UK, Chapter 7.

Aris-Brosou, S. and **Rodrigue, N.** (2012). The Essentials of Computational Molecular Evolution. In *Evolutionary Genomics: statistical and computational methods*, Ed. Anisimona, M., Methods in Molecular Biology, Vol. 855, Humana - Springer, New York, NY.

INVITED PRESENTATIONS

Rodrigue, N. (2019). New approaches for site-specific detection of adaptation in protein-coding genes. Evolutionary Genetics of Infectious Disease, April 4-5, Ottawa.

Rodrigue, N. (2018). Mutation-selection codon models for site-specific detection of adaptation in protein-coding genes. Université Lyon 1 - Laboratoire de Biométrie et Biologie Évolutive, Nov. 26, Lyon, France.

Rodrigue, N. (2017). Recent advances in methods for detecting adaptation in protein-coding DNA. Center for inference and dynamics of infectious diseases, March 30, Seattle WA, USA.

Rodrigue, N. (2016). Detecting adaptation in protein-coding genes using mutation-selection models. Université Lyon 1 - Laboratoire de Biométrie et Biologie Évolutive, May 19, Lyon, France.

Rodrigue, N. (2013). Efficient computation in Bayesian phylogenetics. Celebrating the In-

ternational Year of Statistics - Mount Royal University, Nov. 29, Calgary.

Rodrigue, N. (2013). Recent developments in Bayesian modeling of molecular evolution. The 35th Annual Meeting of Alberta Statisticians - University of Calgary, Oct. 5th, Calgary.

Rodrigue, N. (2013). Deviations from the mutation-selection balance. Mathematics of sequence evolution, CRM - University of Montreal, Sept. 23rd - 27th, Montreal.

Rodrigue, N. (2012). Phylogénie probabiliste. Université Laval, Faculté de foresterie, géographie et de géomatique, June 5th, Quebec.

Rodrigue, N. (2011). Recent advances in population-genetic inspired codon substitution models. Biology lecture series, University of Ottawa, Nov. 14th, Ottawa.

Rodrigue, N. (2011). How genes changes: Advances in probabilistic modeling of molecular evolution. Agriculture and Agrifood Canada, ECORC seminar series, May 27th, Ottawa.

Rodrigue, N. (2010). Population genetic approaches in phylogenetics. Joint Statistical Meetings, July 31 - August 5, Vancouver.

Rodrigue, N. (2010). Mutation-selection models of substitution for protein-coding genes. Society for Molecular Biology and Evolution Annual meeting, July 4-8, Lyon, France.

Rodrigue, N. (2010). Modèles de substitution issue du principe d'équilibre mutation-sélection. 78e Congrès de l'ACFAS, May 10-14, Montréal.

Rodrigue, N. (2010). Mutation-selection models of molecular evolution. Biology lecture series, University of Ottawa, Mar. 1st, Ottawa.

Rodrigue, N., Philippe, H. and Lartillot, N. (2009). Modèles de mutation sélection pour l'étude de l'évolution de gènes codants. 77e Congrès de l'ACFAS, May 11-15, Ottawa.

Rodrigue, N., Philippe, H. and Lartillot, N. (2008). Across-site heterogeneous models of protein-coding sequence evolution. Biology lecture series, University of Colorado, Oct. 23, Denver, CO.

Rodrigue, N., Lartillot, N. and Philippe, H. (2008). Models of protein-coding sequence evolution. Biology lecture series, Université Laval, Jan. 10, Québec.

Rodrigue, N., Lartillot, N. and Philippe, H. (2007). Bayesian comparison of codon substitution models. Society for Molecular Biology and Evolution Annual meeting, June 24-28, Halifax.

Rodrigue, N., Bryant, D., Philippe, H. and Lartillot, N. (2005). Structural models of sequence evolution. Biology lecture series, University of Ottawa, Oct. 18th, Ottawa.

Rodrigue, N., Bryant, D., Philippe, H. and Lartillot, N. (2005). Statistical comparisons of structural evolutionary models. Canadian Institute for Advanced Research, Program in Evolutionary Biology Meeting, Sept. 15-19, Parksville, BC.

OTHER REFEREED CONTRIBUTIONS (FIRST-AUTHOR PIECES ONLY)

Rodrigue, N., Lartille, T. and Lartillot, N. (2019). Detecting molecular adaptation with modern codon substitution models. Probabilistic Modeling in Genomics, Oct. 6-9, Aussois, France (poster presentation).

Rodrigue, N. and Lartillot, N. (2019). Site-specific detection of adaptive evolution using a mutation-selection model of codon substitution. Evolution, June 21-25, Providence, RI (poster presentation).

Rodrigue, N. (2017). Parallelizable Monte Carlo algorithms for infinite mixtures in the detection of molecular adaptation. Monte Carlo Methods, July 3-7, Montreal (oral presentation).

Rodrigue, N. (2017). Mutation-selection models for the detection of adaptation in protein-coding genes. Evolution, July 3-7, Portland, OR (poster presentation).

Rodrigue, N. and Lartillot, N. (2016). Phylogenetic measurements of departures from the mutation-selection equilibrium. Jacques Monod Conference: Molecules as Documents of Evolutionary History, 50 Years After, May 9-13, Roscoff, France (poster presentation).

Rodrigue, N. and Lartillot, N. (2014). Phylogenetic measurements of departures from the mutation-selection equilibrium. 13th European Conference on Computational Biology, Sept. 7-10, Strasbourg, France (poster presentation).

Rodrigue, N. and Lartillot, N. (2014). Phylogenetic testing of deviations from the mutation-selection balance. Joint Statistical Meetings, August 2-7, Boston, MA (oral presentation).

Rodrigue, N. and Lartillot, N. (2014). A phylogenetic model for measuring departures from the mutation-selection balance. Evolution, June 20 - 24, Raleigh, NC (oral presentation).

Rodrigue, N. and Lartillot, N. (2013). A site-heterogeneous mutation-selection model of codon substitution for measuring deviations from neutrality. Society for Molecular Biology and Evolution annual meeting, July 7 - 12, Chicago, IL (poster).

Rodrigue, N., Stubbs, D., Richer, J. and Lartillot, N. (2012). Distributions of selection coefficients from phylogenomic data. Evolution 2012, July 7 - 10, Ottawa (poster).

Rodrigue, N., Stubbs, D., Richer, J. and Lartillot, N. (2012). Bayesian phylogenomics under mutation-selection models of codon substitution. Society for Molecular Biology and Evolu-

tion annual meeting, June 21 - 25, Dublin, Ireland (poster).

Rodrigue, N. and Aris-Brosou, S. (2011). A data-augmentation approach for Bayesian choice of phylogenetic models. Canadian Society for Ecology and Evolution, May 12 - 15, Banff (oral presentation).

Rodrigue, N. and Aris-Brosou, S. (2010). Improving the computational speed of phylogenetic model ranking with data-augmentation-based thermodynamic integration. Quebec Center for Biodiversity Science, 1st Annual Symposium, Nov. 30 - Dec. 2, Montreal (oral presentation).

Rodrigue, N. and Aris-Brosou, S. (2010). Fast and accurate Bayesian choice of phylogenetic substitution models. RECOMB - 2010 - Comparative Genomics, Oct. 9-11, Ottawa (poster).

Rodrigue, N., Philippe, H. and Lartillot, N. (2010). Modeling molecular evolution from population-genetic theory, and non-parametric statistical devices. SPNHC & CBA-ABC Joint Conference, May 31-June 5, Ottawa (poster).

Rodrigue, N., Philippe, H. and Lartillot, N. (2009). Probabilistic mutation-selection models of codon substitution. Robert Cedergren Bioinformatics Colloquium, Nov. 5-6, Montreal (poster).

Rodrigue, N., Philippe, H. and Lartillot, N. (2009). Mutation-selection models of codon substitution accounting for site-specificities of amino acid fitness profiles. Society for Molecular Biology and Evolution Annual meeting, June 3-7, Iowa City, Iowa (poster).

Rodrigue, N., Philippe, H. and Lartillot, N. (2009). Mutation-selection models of coding sequence evolution. 74th Cold Spring Harbor Symposium on Quantitative Biology, May 27-June 1, Cold Spring Harbor, NY (poster).

Rodrigue, N. (2009). Evaluation of phylogenetic models of coding sequence evolution with dependence between codons. Progress in Systems Biology, April 23-24, Ottawa (poster).

Rodrigue, N., Philippe, H. and Lartillot, N. (2008). Phenomenological modeling of site-heterogeneities in protein-coding nucleotide sequence evolution using the Dirichlet process prior. Robert Cedergren Colloquium, Nov. 3-4, Montreal (oral presentation).

Rodrigue, N., Philippe, H. and Lartillot, N. (2008). Bayesian non-parametric approaches to modeling protein-coding sequence evolution. Society for Molecular Biology and Evolution Annual meeting, June 5-8, Barcelona, Spain (poster).

Rodrigue, N., Lartillot, N. and Philippe, H. (2007). Mechanistic modeling of amino acid or codon preferences for protein-coding nucleotide sequence evolution. Robert Cedergren Colloquium, Nov. 8-9, Montreal (poster).

Rodrigue, N., Philippe, H. and Lartillot, N. (2007). Data augmentation for Bayesian implementations of codon substitution models. Society for Molecular Biology and Evolution Annual meeting, June 24-28, Halifax (poster).

Rodrigue, N., Bryant, D., Philippe, H. and Lartillot, N. (2006). Comparisons of codon substitution models. Robert Cedergren Bioinformatics Colloquium, Nov. 2-4, Montreal (oral presentation).

Rodrigue, N., Philippe, H. and Lartillot, N. (2006). Markov chain Monte Carlo algorithms for likelihood and Bayesian phylogenetic analysis. 4th RECOMB Comparative Genomics Satellite Workshop, Sept. 24-26, Montreal (poster).

Rodrigue, N., Kleinman, C. L., Bonnard, C., Bryant, D., Lartillot, N. and Philippe, H. (2006). Models of protein evolution with interdependence between sites. Phylogenomics Conference, March 15-19, Sainte-Adèle, Québec (oral presentation).

Rodrigue, N., Bryant, D., Philippe, H. and Lartillot, N. (2005). Bayesian assessments of site-interdependent models of sequence evolution. Mathematics of Evolution and Phylogeny Conference, June 17-21, Paris, France (poster).

Rodrigue, N., Bryant, D., Philippe, H. and Lartillot, N. (2005). Considering protein tertiary structure in phylogenetic inference. Simon-Pierre Noel Presentations, March 10, Montreal (oral presentation).

Rodrigue, N., Bryant, D., Philippe, H. and Lartillot, N. (2004). Amino acid sequence evolution and thermodynamic integration. Canadian Institute for Advanced Research, Program in Evolutionary Biology Meeting, Oct. 13-17, Carling Lake, Québec (poster).

Rodrigue, N., Bryant, D., Philippe, H. and Lartillot, N. (2004). Site-interdependent models of evolution. Robert Cedergren Bioinformatics Colloquium, Sept. 23-24, Montreal (oral presentation).

Rodrigue, N., Lartillot, N., Bryant, D. and Philippe, H. (2004). Thermodynamic considerations in amino acid sequence evolution. 5th Open Days in Biology, Computer Science and Mathematics. June 28-30, Montreal (poster).

Rodrigue, N., Lartillot, N., Bryant, D. and Philippe, H. (2004). Thermodynamic stability constraints in molecular phylogenetic inference. Structural approaches to sequence evolution: Molecules, networks, populations, July 5-10, Dresden, Germany (poster).

Curriculum Vitae

Owen Rowland

Department of Biology and Institute of Biochemistry
Carleton University
1125 Colonel By Drive
Ottawa, ON K1S 5B6
Canada

Telephone: (613) 520-2600 x4213
Fax: (613) 520-3539
E-mail: owen.rowland@carleton.ca
Website: <http://rowlandlab.blogspot.ca>

Academic Background:

1998 Ph.D. Dept. of Biochemistry, University of Toronto, Canada
1992 B.Sc. (Honours) Dept. of Biochemistry, University of Alberta, Canada

Professional Employment History:

2005-present *Professor*
Full Professor, Tenured (2019 – present)
Associate Professor, Tenured (2009-2019)
Assistant Professor (2005-2009)
Department of Biology and Institute of Biochemistry
Carleton University, Ottawa

2017-2020 *Chair (Department Head)*
Department of Biology
Carleton University, Ottawa

2002-2005 *Research Associate*
Supervisor: Prof. Ljerka Kunst
Department of Botany
University of British Columbia, Vancouver

1998-2001 *Postdoctoral Fellow, Human Frontiers Science Program*
Supervisor: Prof. Jonathan D.G. Jones
Sainsbury Laboratory
John Innes Centre, Norwich, England

Honorary Academic Appointment:

2015-2020 *Cuiying Chair Professor*
Research Advisor and Lecturer
College of Pastoral Agriculture Science and Technology
Lanzhou University, China

Research Profile and Expertise:

- Plant lipid and phenolic metabolism
- Biosynthesis and functions of plant cell wall-associated polymeric barriers (cuticle and suberin)
- Biosynthesis and functions of plant volatile emissions
- Plant-environment interactions: molecular biology, physiology and ecology
- Plant stress resistance mechanisms: abiotic and pathogens
- Biochemistry of natural products and their applications as industrial bio-materials and medicines
- Seed oil biosynthesis and biotechnology
- Functional genomics including CRISPR- and small RNA-mediated reverse genetics technologies
- Gene expression profiling and transcriptional regulatory mechanisms
- Biochemistry and protein engineering of fatty acid modifying enzymes
- Metabolic engineering of plants and microbes

Publications:

Citations = 6808; h-index = 28; i10-index = 40 (source: Google Scholar, May 17 2022)

(i) *Publications (peer reviewed)*

- (57) de Silva N.D.G., Murmu J., Chabot D., Hubbard K., Ryser P., Molina I., and Rowland O. (2021). Root suberin plays important roles in reducing water loss and sodium uptake in *Arabidopsis thaliana*. **Metabolites**, 11: 735
- (56) de Silva N.D.G., Boutin C., Lukina A.O., Western T.L., Molina I., and Rowland O. (2021). Seed coat suberin forms a barrier against chromium (Cr³⁺) during early seed germination in *Arabidopsis thaliana*. **Environmental and Experimental Botany**, 191: 104632
- (55) Liu L.-B., Bai W.-P., Li H.-J., Tian Y., Yuan H.-J., Garant T.M., Liu H.-S., Zhang J., Bao A.-K., Rowland O.*, and Wang S.-M.* (2021). ZxABCG11 from the xerophyte *Zygophyllum xanthoxylum* enhances drought tolerance in *Arabidopsis thaliana* through modulating cuticular wax accumulation. **Environmental and Experimental Botany**, 190: 104570
*co-corresponding authors
- (54) Kalinger R.S., Williams D., Ahmadi Pirshahid A., Pulsifer I.P. and Rowland O. (2021). Production of C6-C14 medium-chain fatty acids in seeds and leaves via overexpression of single hotdog-fold acyl-lipid thioesterases. **Lipids**, 56: 327-344

- (53) Razeq F.M., Kosma D.K., França D., Rowland O.*, and Molina I.* (2021). Extracellular lipids of *Camelina sativa*: Characterization of cutin and suberin reveals typical polyester monomers and novel functionalized dicarboxylic fatty acids. **Phytochemistry**, 184: 112665
*co-corresponding authors
- (52) Bonner C., Sproule A., Rowland O., Overy D., and Subramaniam R. (2021). DNA methylation is responsive to the environment and regulates the expression of biosynthetic gene clusters, metabolite production, and virulence in *Fusarium graminearum*. **Frontiers in Fungal Biology**, 1: 614633
- (51) Kalinger R.S., Pulsifer I.P., Hepworth S.R. and Rowland O. (2020). Fatty acyl synthetases and thioesterases in plant lipid metabolism: diverse functions and biotechnological applications. **Lipids** 55: 435-455
- (50) Wang P., Wang C.-M., Gao L., Cui Y.-N., Yang H.-L., de Silva N.D.G., Ma Q., Bao A.-K., Flowers T.J., Rowland O.*, and Wang S.-M.* (2020). Aliphatic suberin confers salt tolerance to *Arabidopsis* by limiting Na⁺ influx, K⁺ efflux and water backflow. **Plant and Soil** 448: 603-620
*co-corresponding authors
- (49) Wang W.-Y., Chai W.-W., Zhao C.-Y., Rowland O., Wang B.-S., Song X., Liu Y.-Q., Ma Q., and Wang S.-M. (2019). Under drought conditions NaCl improves the nutritional status of the xerophyte *Zygophyllum xanthoxylum* but not the glycophyte *Arabidopsis thaliana*. **Journal of Plant Nutrition and Soil Science** 182: 597-606
- (48) Pascal S., Bernard A., Deslou P., Gronnier J., Fournier-Goss A., Domergue F., Rowland O., and Joubès J. (2019). *Arabidopsis* CER1-LIKE1 functions in a cuticular very-long-chain alkane-forming complex. **Plant Physiology** 179: 415-432
- (47) Gunenc A., Rowland O., Xu H., Marangoni A., and Hosseinian F. (2019). *Portulaca oleracea* seeds as a novel source of alkylresorcinols and its phenolic profiles during germination. **LWT – Food Science and Technology** 101: 246-250
- (46) Fernando U., Chatur S., Joshi M., Bonner C.T., Fan. T., Hubbard K., Chabot D., Rowland O., Wang L., Subramaniam R., and Rampitsch C. (2019). Redox signalling from NADPH oxidase targets metabolic enzymes and developmental proteins in *Fusarium graminearum*. **Molecular Plant Pathology** 20: 92-106
- (45) Kalinger R.S., Pulsifer I.P., and Rowland O. (2018). Elucidating the substrate specificities of acyl-lipid thioesterases from diverse plant taxa. **Plant Physiology and Biochemistry** 127: 104-118
- (44) Delude C., Vishwanath S.J., Rowland O., and Domergue F. (2017). Root aliphatic suberin analysis using non-extraction or solvent-extraction methods. **Bio-Protocol** 7(12): e2331
- (43) Walkowiak S., Rowland O., Rodrigue N., and Subramaniam R. (2016). Whole genome sequencing and comparative genomics of closely related *Fusarium* Head Blight fungi: *Fusarium graminearum*, *F. meridionale* and *F. asiaticum*. **BMC Genomics**, 17: 1014
- (42) Lukina A., Boutin C., Rowland O., and Carpenter D.J. (2016). Evaluating trivalent chromium toxicity on wild terrestrial and wetland plants. **Chemosphere**, 162: 355-364
- (41) Legay S., Guerriero G., André C., Guignard C., Cocco E., Chartan S., Boutry M., Rowland O., and Hausman J.-F. (2016). MdMyb93 is a regulator of suberin deposition in russeted apple fruit skins. **New Phytologist**, 212: 977-991

- (40) Delude C., Fouillen L., Bhar P., Cardinal M.-J., Pascal S., Santos P., Kosma D.K., Joubès J., Rowland O., and Domergue F. (2016). Primary fatty alcohols are major components of suberized root tissues of *Arabidopsis* in the form of alkyl hydroxycinnamates. **Plant Physiology** 171: 1934-1950
- (39) Kosma D.K., and Rowland O. (2016). Answering a four decade-old question on epicuticular wax biosynthesis. **Journal of Experimental Botany** 67:2538-2540
- (38) Monreal C.M., Chahal A., Schnitzer, M., and Rowland O. (2016). Chemical characterization of fatty acids, alkanes, *n*-diols and alkyl esters produced by a mixed culture of *Trichoderma koningii* and *Penicillium janthinellum* grown aerobically on undecanoic acid, potato dextrose and their mixture. **Journal of Environmental Science and Health, Part B** 51: 326-339
- (37) Kosma D.K., Molina I., and Rowland O. (2015). Analysis of suberin-associated root waxes from *Arabidopsis* and other plant species. **Bio-Protocol** 5(24): e1679
- (36) Walkowiak S., Bonner C., Wang L., Blackwell B., Rowland O., and Subramaniam R. (2015). Intraspecies interaction of *Fusarium graminearum* contributes to reduced toxin production and virulence. **Molecular Plant-Microbe Interactions** 28: 1256-1267
- (35) HadiNezhad M., Rowland O., and Hosseinian F. (2015). The fatty acid profile and phenolic composition of *Descurainia sophia* seeds extracted by supercritical CO₂. **Journal of the American Oil Chemists' Society** 92: 1379-1390
- (34) Vishwanath S.J., Delude C., Domergue F., and Rowland O. (2015) Suberin: biosynthesis, regulation, and polymer assembly of a protective extracellular barrier. **Plant Cell Reports** 34: 573-586
- (33) Kosma D.K., Murmu J., Razeq F.M., Santos P., Bourgault R., Molina I., and Rowland O. (2014). AtMYB41 activates ectopic suberin synthesis and assembly in multiple plant species and cell types. **The Plant Journal** 80: 216-229
- (32) Razeq F.M, Kosma D.K., Rowland O.*, and Molina I.* (2014). Extracellular lipids of *Camelina sativa*: Characterization of chloroform-extractable waxes from aerial and subterranean surfaces. **Phytochemistry** 106: 188-196 *co-corresponding authors
- (31) Monreal C.M., Chahal A., Rowland O., Smith M., and Schnitzer M. (2014). Metabolism of *n*-C11 fatty acid fed to *Trichoderma koningii* and *Penicillium janthinellum* II: Production of intracellular and extracellular lipids. **Journal of Environmental Science and Health, Part B** 49: 955-965
- (30) Chahal A., Monreal C.M., Bissett J., Rowland O., Smith M.L., and Shea Miller S. (2014). Metabolism of *n*-C10:0 and *n*-C11:0 fatty acids by *Trichoderma koningii*, *Penicillium janthinellum* and their mixed culture: I. Biomass and CO₂ production, and allocation of intracellular lipids. **Journal of Environmental Science and Health, Part B** 49: 945-954
- (29) Vishwanath S.J., Domergue F., and Rowland O. (2014). Seed coat permeability test: tetrazolium penetration assay. **Bio-Protocol** 4(13): e1173
- (28) Pulsifer I.P., Lowe C., Narayanan S.A., Busuttill A.S., Vishwanath S.J., Domergue F., and Rowland O. (2014). ACYL-LIPID THIOESTERASE1-4 from *Arabidopsis thaliana* form a novel family of fatty acyl-acyl carrier protein thioesterases with divergent expression patterns and substrate specificities. **Plant Molecular Biology** 84: 549-563

- (27) Vishwanath S.J., Kosma D.K., Pulsifer I.P., Scandola S., Pascal S., Joubès J., Dittrich-Domergue F., Lessire R., Rowland O.*, and Domergue F.* (2013). Suberin-associated fatty alcohols in *Arabidopsis thaliana*: distributions in roots and contributions to seed coat barrier properties. **Plant Physiology** 163: 1118-1132 *co-corresponding authors
- (26) Chacón M.G., Fournier A.E., Tran F., Dittrich-Domergue F., Pulsifer I.P., Domergue F., and Rowland O. (2013). Identification of amino acids conferring chain-length substrate specificities on fatty alcohol-forming reductases FAR5 and FAR8 from *Arabidopsis thaliana*. **Journal of Biological Chemistry** 288: 30345-30355
- (25) Tran F., Penniket C., Patel R.V., Provart N.J., Laroche A., Rowland O., and Robert L.S. (2013). Developmental transcriptional profiling reveals key insights into Triticeae reproductive development. **The Plant Journal** 74: 971-988
- (24) Bird D., and Rowland O. (2013). Cuticular Waxes. In “Acyl-Lipid Metabolism” by Li-Beisson *et al.*, **The Arabidopsis Book** (www.aspb.org/publications/arabidopsis), doi: 10.1199/tab0133. Associated website: <http://aralip.plantbiology.msu.edu/>
- (23) Lü S., Zhao H., Des Marais D.L., Parsons E.P., Wen X., Xu X., Bangarusamy D.K., Wang G., Rowland O., Juenger T., Bressan R.A., and Jenks M.A. (2012). Mutation of Arabidopsis *ECERIFERUM9* alters cuticle metabolism and improves tolerance to water deficit. **Plant Physiology** 159: 930-944
- (22) Pulsifer I.P., Kluge S., and Rowland O. (2012). Arabidopsis LONG-CHAIN ACYL-COA SYNTHETASE 1 (LACS1), LACS2, and LACS3 facilitate fatty acid uptake in yeast. **Plant Physiology and Biochemistry** 51: 31-39
- (21) Boutin C., Aya K.L., Carpenter D., Thomas P.J., and Rowland O. (2012). Phytotoxicity testing for pesticide regulation: shortcomings in relation to biodiversity and ecosystem services in agrarian systems. **Science of the Total Environment** 415: 79-92
- (20) Rowland O., and Domergue F. (2012). Plant fatty acyl reductases: enzymes generating fatty alcohols for protective layers with potential for industrial applications. **Plant Science** 193-194: 28-38
- (19) Doan T.T.P., Domergue F., Fournier A.E., Vishwanath S.J., Rowland O., Moreau P., Wood C.C., Carlsson A.S., Hamberg M., and Hofvander P. (2012). Biochemical characterization of a chloroplast localized fatty acid reductase from *Arabidopsis thaliana*. **Biochimica et Biophysica Acta** 1821: 1244-1255
- (18) Domergue F., Vishwanath S.J., Joubès J., Ono J., Lee J.A., Alhattab R., Lowe C., Pascal S., Bourdon M., Lessire R., and Rowland O. (2010). Three Arabidopsis fatty acyl-coenzymeA reductases, FAR1, FAR4, and FAR5, generate primary fatty alcohols associated with suberin deposition. **Plant Physiology** 153: 1539-1554
- (17) Lü S., Song T., Kosma D., Parson E., Rowland O.*, and Jenks M.A.* (2009). Arabidopsis *CER8* encodes Long-Chain Acyl CoA Synthetase 1 (LACS1) and has overlapping functions with LACS2 in plant cutin and wax biosynthesis. **The Plant Journal** 59: 553-564 *co-corresponding authors
- (16) Arsovski A.A., Villota M., Rowland O., Subramaniam R., and Western T.L. (2009). *MUM ENHANCERS* are required for seed coat mucilage production and mucilage secretory cell differentiation in *Arabidopsis thaliana*. **Journal of Experimental Botany** 60: 2601-2612

- (15) van den Burg H.A., Tsitsigiannis D.I., Rowland O., Lo J., Rallapalli G., Maclean D., Takken F., and Jones J.D.G. (2008). The F-box protein ACRE189/ACIF1 regulates cell death and defense responses activated during pathogen recognition in tobacco and tomato. **Plant Cell** 20: 697-719
- (14) Rowland O., Lee R., Franke R., Schreiber L., and Kunst L. (2007). The *CER3* wax biosynthetic gene from *Arabidopsis thaliana* is allelic to WAX2/YRE/FLP1. **FEBS Letters** 581: 3538-3544
- (13) Rothfels K., Rowland O., and Segall J. (2007). Zinc fingers 1 and 7 of yeast TFIIIA are essential for assembly of a functional transcription complex on the 5 S RNA gene. **Nucleic Acids Research** 35: 4869-4881
- (12) Rowland O., Zheng H., Hepworth S.R., Lam P., Jetter R., and Kunst L. (2006). *CER4* encodes an alcohol-forming fatty acyl-coenzyme A reductase involved in cuticular wax production in *Arabidopsis*. **Plant Physiology** 142: 866-877
- (11) Yang C.W., Gonzalez-Lamothe R., Ewan R.A., Rowland O., Yoshioka H., Shenton M., Ye H., O'Donnell E., Jones J.D.G., and Sadanandom A. (2006). The E3 ubiquitin ligase activity of *Arabidopsis* PLANT U-BOX17 and its functional tobacco homolog ACRE276 are required for cell death and defense. **Plant Cell** 18: 1084-1098
- (10) Zheng H., Rowland O., and Kunst L. (2005). Disruptions of the *Arabidopsis* enoyl-CoA reductase gene reveal an essential role for very-long-chain fatty acid synthesis in cell expansion during plant morphogenesis. **Plant Cell** 17: 1467-2481
- (9) Rowland O., Ludwig A.A., Merrick C.J., Baillieul F., Tracy F.E., Durrant W.E., Fritz-Laylin L., Nekrasov V., Sjolander K., Yoshioka H., and Jones J.D.G. (2005). Functional analysis of *Avr9/Cf-9* rapidly elicited genes identifies a protein kinase, ACIK1, that is essential for full Cf-9-dependent disease resistance in tomato. **Plant Cell** 17: 295-310
- (8) Katou S., Yoshioka H., Kawakita K., Rowland O., Jones J.D.G., Mori H., and Doke N. (2005). Involvement of PPS3 phosphorylated by elicitor-responsive MAPKs in the regulation of plant cell death. **Plant Physiology** 139: 1914-1926
- (7) Moon H. *, Chowrira G. *, Rowland O.*, Blacklock B.J., Smith M.A., and Kunst L. (2004). A root-specific condensing enzyme from *Lesquerella fendleri* that elongates very-long-chain saturated fatty acids. **Plant Molecular Biology** 56: 917-927 *co-first authors
- (6) Navarro L., Zipfel C., Rowland O., Keller I., Robatzek S., Boller T., and Jones J.D.G. (2004). The transcriptional innate immune response to flg22: interplay and overlap with Avr gene-dependent defense responses and bacterial pathogenesis. **Plant Physiology** 135: 1113-1128
- (5) Yoshioka H., Numata N., Nakajima K., Katou S., Kawakita K., Rowland O., Jones J.D.G., and Doke N. (2003). *Nicotiana benthamiana* gp91phox homologs NbrbohA and NbrbohB participate in H₂O₂ accumulation and resistance to *Phytophthora infestans*. **Plant Cell** 15: 706-718
- (4) Rowland O., and Jones J.D.G. (2001). Unraveling regulatory networks in plant defense using microarrays. **Genome Biology** 2:reviews1001.1-1001.3
- (3) Durrant W.E., Rowland O., Piedras P., Hammond-Kosack K.E., and Jones J.D.G. (2000). cDNA-AFLP reveals a striking overlap in race-specific resistance and wound response gene expression profiles. **Plant Cell** 12: 963-977
- (2) Rowland O., and Segall J. (1998). A hydrophobic segment within the 81-amino-acid domain of TFIIIA from *Saccharomyces cerevisiae* is essential for its transcription factor activity. **Molecular and Cellular Biology** 18: 420-432

- (1) Rowland O., and Segall J. (1996). Interaction of wild-type and truncated forms of transcription factor IIIA from *Saccharomyces cerevisiae* with the 5S RNA gene. **Journal of Biological Chemistry** 271: 12103-12110

(ii) Manuscripts In Revision or Submitted

- (1) Li H.-J., Bai W.-P., Liu L.-B., Liu H.-S., Wei L., Garant T.M., Kalinger R.S., Deng Y.-X., Wang G.-N., Bao A.-K., Ma Q., Rowland O.*, and Wang S.-M.* (2022). C31 alkane predominates cuticular wax accumulation and confers excellent abiotic stress adaptability to the succulent xerophyte *Zygophyllum xanthoxylum*. **Plant Physiology**, Manuscript ID: PP2022-RA-00043 (Submitted)

*co-corresponding authors

Presentations (Papers Presented):

(i) Selected recent conference presentations (68 in total):

- (8) Montoya T., Hepworth S.R., and Rowland O. (2021). Abscission in plants: structural, chemical and transcriptomic analysis of protective surface layers. Annual Meeting of the Canadian Society of Plant Biologists. Virtual. June 7-10, 2021. (Oral)
- (7) Kalinger R.S., Pulsifer I.P., and Rowland O. (2019). Towards understanding the basis of substrate specificity in a newly characterized class of plant acyl-ACP thioesterases that produce high-value medium-chain fatty acids. Plant Canada 2019, Joint Meeting of the Federation of Canadian Plant Science Societies. Guelph, Canada. July 7-10, 2019. (Oral)
- (6) Garant T., Wei L., Roberts J., Kalinger R.S., Wang S.-M., and Rowland O. (2018). The effects of drought and salt stress on cuticular wax composition in the leaves and stems of the extremophile *Zygophyllum xanthoxylum*. Eastern Regional Meeting of the Canadian Society of Plant Biologists. London, Canada. Nov. 24, 2018. (Poster)
- (5) Kalinger R.S., Pulsifer I.P., and Rowland O. (2018). Functional characterization of acyl-lipid thioesterase (ALTs) from diverse plant taxa. 23rd International Symposium on Plant Lipids. Yokohama, Japan. July 8-13, 2018. (Poster)
- (4) Klein D., Hu H., Murmu J., and Rowland O. (2018). The downstream targets of MYB-type transcription factors involved in suberin biosynthesis. Plant Biology 2018, Joint International Meeting of the American and Canadian Societies of Plant Biologists. Montreal, Canada. July 14-18, 2018. (Poster)
- (3) Hu H., Klein D., Murmu J., and Rowland O. (2016). A family of Arabidopsis MYB transcription factors that control the regulation of suberin deposition. Plants from Sea to Sky, Annual Meeting of the Canadian Society of Plant Biologists. Vancouver, Canada. July 4-7, 2017. (Talk)
- (2) Murmu J., Razeq F.M., Laflamme B., de Silva N., Chabot D., Kosma D.K., and Rowland O. (2016). Mechanisms governing the regulated production of plant extracellular lipid barriers. 22nd International Symposium on Plant Lipids. Goettingen, Germany. July 3-8, 2016. (Talk)
- (1) Wu J., Martin S., and Rowland O. (2016). Natural trait variation for taxonomic classification and breeding potential assessment within the genus *Camelina*. Plant Biotech 2016, Joint Meeting of the Canadian Society of Plant Biologists and the Canadian Association for Plant Biotechnology. Kingston, Canada. June 19-21, 2016. (Poster)

(ii) Selected invited lectures (30 in total)

- (13) Invited Plenary Speaker, Symposium on Plant Cell Walls and Element Transport. The University of Tokyo, Japan, October 24, 2018
- (12) Invited Seminar Speaker, Southwest Minzu University, Chengdu, China, June 8, 2018
- (11) Invited Seminar Speaker, Hexi University, Zhangye City, China, June 8, 2017
- (10) Invited Seminar Speaker, Shaanxi Normal University, Xi'an, China, May 31, 2017
- (9) Invited Seminar Speaker, Dept. of Biology, University of Ottawa, Dec. 12, 2016
- (8) Invited Plenary Speaker, 22nd International Symposium on Plant Lipids, Goettingen, Germany, July 3-8, 2016
- (7) Invited Seminar Speaker, Dept. of Biology, University of Western Ontario, March 19, 2016
- (6) Invited Plenary Speaker, 2nd International Symposium on Plant Apoplastic Barriers (PADIBA), Nantes, France, Sept. 3, 2015
- (5) Invited Seminar Speaker, Lanzhou University of Technology, China, June 17, 2015 (also 2016 and 2017)
- (4) Invited Seminar Speaker, College of Pastoral Agriculture Science and Technology, Lanzhou University, China, June 17, 2015 (also 2016, 2017 and 2018)
- (3) Invited Plenary Speaker, Canadian Society of Plant Biologists – Eastern Regional Meeting, Guelph, Ontario, Nov. 28-29, 2014
- (2) Invited Seminar Speaker, Dept. of Biology, McGill University, Montreal, Feb. 17, 2014
- (1) Invited Seminar Speaker, Dept. of Biological Sciences, University of Calgary, Jan. 16, 2014

Major Collaborations:

- (10) Prof. Sheryl Boyle, Carleton University, Ottawa, Canada. Prefabricated Building Components using nano/microfibrillated cellulose (NMFC). 2018-2020
- (9) Prof. Suo-Min Wang, Lanzhou University, China. The protective roles of extracellular lipids in extreme stress-tolerant plants that grow in arid or high salinity soils. 2015-present
- (8) CamOil - Biotechnological Improvement of *Camelina sativa* for Increased Seed Oil Production. International collaboration involving six research groups from Germany (University of Bonn and Georg-August-Universität Göttingen) and Canada (Carleton University, University of Alberta, and Agriculture and Agri-Food Canada). Project Leader: Prof. Ivo Feussner, Georg-August-Universität Göttingen, Germany. 2015-2017.
- (7) Prof. Farah Hosseinian, Carleton University, Ottawa, Canada. Profiling the oil and phenolic compositions from plants of high medicinal value. 2013-present.
- (6) Prof. Dylan Kosma, University of Nevada, Reno, USA. Transcriptional regulation of suberin biosynthetic genes. 2012-present.
- (5) Prof. Isabel Molina, Algoma University, Sault Ste. Marie, Canada. Extracellular lipids of the oilseed crop *Camelina sativa*. 2012-present.
- (4) Prof. Myron Smith, Carleton University, Ottawa, Canada. Plant natural products and plant-pathogen interactions. 2010-present.
- (3) Dr. Frederic Domergue, CNRS - University of Bordeaux, Bordeaux, France. Characterization of alcohol-forming fatty acyl-CoA reductases from plants. 2008-2018.

- (2) Dr. Gopal Subramaniam, Ottawa Research and Development Centre, Agriculture and Agri-Food Canada, Ottawa, Canada. Molecular plant-pathogen interactions. 2007-present
- (1) ICON - Industrial Crops producing added value Oils for Novel chemicals. Large international collaboration of 25 partners from Europe, USA, Canada, and China, awarded \$5.8 million euros by the European Framework 7 program plus industry monies. Leader: Prof. Sten Stymne, Swedish University of Agricultural Sciences, Sweden. 2008-2013. Website: <http://icon.slu.se/ICON/>

Research Grants:

Title	Source*/Type	Role	Co-Applicants	Status/Amount**	Term
Prefabricated Building Components Using Nano/microfibrillated cellulose (NMFC) Produced From Industrial Hemp and Old Corrugated Cardboard (OCC)	Mitacs (Operating)	Co-PI	S. Boyle J. Erochko C. Cruickshank	Awarded \$60,000	2019-2020
Sustainable Communities	Multidisciplinary Research Catalyst Fund - Carleton Univ. (Operating)	Co-PI	M. Smith S. Hepworth and 8 other Co-PIs	Awarded \$30,000	2019-2020
Platform for the Analysis of Microbial Growth, Competition, and Interaction	NSERC - RTI-1 (Equipment)	Co-PI	A. Wong B. Örmeci M. Smith	Awarded \$88,745	2017
Identifying Protein Interactors for AtGRP1	AAFC Contract (Operating)	Sole PI	None	Awarded \$12,000	2016
Plant Surface Lipid Barriers: Biosynthesis, Regulation and Protective Functions	NSERC - DG Accelerator Supplement (Operating)	Sole PI	None	Awarded \$120,000 (\$40K/year)	2016-2019
Plant Surface Lipid Barriers: Biosynthesis, Regulation and Protective Functions	NSERC - DG (Operating)	Sole PI	None	Awarded \$366,000 (\$61K/year)	2016-2023
Biotechnological Improvement of <i>Camelina sativa</i> for Increased Seed Oil Production (CamOil)	German Federal Ministry, AAFC, Carleton Univ. (Operating)	Co-PI	I. Feussner, P. Dörmann, S. Martin, M.L. Smith R. Weselake	Awarded €649,000 plus \$634,000	2015-2017
Cloning/Expression of Plant ABC Transporters	AAFC Contract (Operating)	Sole PI	None	Awarded \$24,500	2015
Workstation for High Throughput Genetic and Phenotypic Assays	NSERC - RTI-1 (Equipment)	Co-PI	A. Wong and 4 other Co-PIs	Awarded \$108,868	2014

Sputter Metal/Carbon Coater for Electron Microscopy	NSERC - RTI-1 (Equipment)	Co-PI	S. Hepworth and 6 other Co-PIs	Awarded \$46,904	2014
Molecular Analyses of Arbuscular Mycorrhizal Fungi	AAFC Contract (Operating)	Sole PI	None	Awarded \$17,500	2012
Biosynthesis of Plant Extracellular Lipids	NSERC - DG Accelerator Supplement (Operating)	Sole PI	None	Awarded \$120,000 (\$40K/year)	2011-2014
Biosynthesis of Plant Extracellular Lipids	NSERC - DG (Operating)	Sole PI	None	Awarded \$235,000 (\$47K/year)	2011-2016
Roles of Extracellular Lipid-Based Biopolymers in Protecting Plants Against Environmental Stresses	France-Canada Research Fund (Operating)	Co-Lead PI	F. Domergue (CNRS, France)	Awarded \$10,000 (\$5K/year)	2010-2012
Biosynthesis of Plant Cuticular Wax Components	NSERC - DG (Operating)	Sole PI	None	Awarded \$185,000 (\$37K/year)	2006-2011
Carleton Facility for the Study of Plant Development and Metabolism	CFI/ORF - LOF (Infrastructure)	Co-Lead PI	S. Hepworth	Awarded \$488,400	2006-2011
Infrastructure Operating Fund For CFI/ORF Award	CFI - IOF (Operating)	Co-Lead PI	S. Hepworth	Awarded \$48,000	2006-2011
Motorized Rotary Microtome	NSERC - RTI-1 (Equipment)	Co-PI	J. Yack S. Hepworth	Awarded \$37,859	2010
Variable Pressure Scanning Electron Microscope	NSERC - RTI-1 (Equipment)	Co-PI	S. Hepworth and 6 other Co-PIs	Awarded \$145,000	2008
Gas Chromatograph for Metabolic Profiling	NSERC - RTI-1 (Equipment)	Sole PI	None	Awarded \$54,484	2006
Stereo Fluorescence Microscope and Digital Camera for Bioimaging	NSERC - RTI-1 (Equipment)	Co-PI	S. Hepworth	Awarded \$52,327	2006
Plant Growth Chamber	NSERC - RTI-1 (Equipment)	Co-PI	S. Aitken S. Hepworth A. Simons	Awarded \$49,068	2006
Plant Molecular Biology Lab Start-Up Funds	Carleton Univ. (Operating)	Sole PI	None	Awarded \$60,000	2005

*Abbreviations: AAFC = Agriculture and Agri-Food Canada, NSERC = Natural Sciences and Engineering Research Council of Canada (DG=Discovery Grant, RTI-1= Research Tools and Instruments Category 1), CFI = Canada Foundation for Innovation (IF=Innovation Fund, LOF=Leaders Opportunity Fund, IOF= Infrastructure Operating Fund), ORF = Ontario Research Fund **All money amounts are in Canadian dollars unless otherwise specified

Service to the Profession:

Executive Committees:

- (1) Science Policy Director, Canadian Society of Plant Biologists, Nov. 2016 – June 2021

Scientific Conference Organizing and Scientific Advisory Committees:

- (6) Co-Lead Organizer, Canadian Society of Plant Biologists - Eastern Regional Meeting. Ottawa, Nov. 27, 2021
- (5) Scientific Advisory Committee, 22nd International Symposium on Plant Lipids, Goettingen, Germany, July 3-8, 2016
- (4) Co-Lead Organizer and Chair of Scientific Advisory Committee, 21st International Symposium on Plant Lipids, Guelph, ON July 6-11, 2014
- (3) Lead Organizer, Canadian Society of Plant Biologists - Eastern Regional Meeting. Ottawa, Dec. 2-3, 2011
- (2) Organizing Committee, 41st Plant Development Workshop, Ottawa, ON. November 10, 2007
- (1) Organizing Committee, 4th Canadian Plant Genomics Workshop, Ottawa, ON. August 27-30, 2006

Research Grant Reviewer:

- 2022: Mitacs Accelerate
- 2020: NSERC Discovery Grant, Reinforcing Women In Research (REWIRE) Postdoctoral Fellowship Program (University of Vienna / European Commission), Poland National Science Centre
- 2018: Mitacs Elevate, Nanyang Technological University (Singapore) Tier 1 Grant, Alberta Agriculture and Forestry - Strategic Research and Development Program
- 2017: NSERC Discovery Grant (x2)
- 2015: Israeli Ministry of Agriculture (Biotechnology Committee), Mitacs Elevate
- 2014: Israel Science Foundation (China-Israel Research Program), NSERC Discovery Grant
- 2013: NSERC Discovery Grant (x2), Biotechnology and Biological Research Council Grant (United Kingdom)
- 2012: NSERC Collaborative Research and Development Grant, Agence National de la Recherche, Programme: Jeunes Chercheuses et Jeunes Chercheurs (France), (3) NSERC Discovery Grant
- 2011: Israel Science Foundation (Individual Research Grant), National Science Foundation Grant (U.S.A.)
- 2009: NSERC Strategic Grant, Binational Agricultural Research & Development Fund (United States of America-Israel)
- 2008: Canadian Foundation for Innovation (Leaders Opportunity Fund)

Manuscript Reviewer:

- 2022: Cell Wall Book Chapter
- 2021: Plant Physiology and Biochemistry, Lipids, Nature Communications, Journal of Experimental Botany, Molecular Plant-Microbe Interactions
- 2020: Lipids, Plant Cell (x2), Nature Plants, Planta, Plant Direct, The Plant Journal
- 2019: Plant Cell
- 2018: Plant Physiology and Biochemistry, Plant Physiology
- 2017: Frontiers in Plant Science, Plant Cell, The Plant Journal (x2)
- 2016: Nature Plants, Botany, Plant and Cell Physiology, Plant Physiology, Plant Molecular Biology (x2), Biotechnology and Bioengineering

- 2015: Plant Physiology, Frontiers in Chemistry, AoB Plants, Plant and Cell Physiology, Plant Molecular Biology, Phytochemistry
- 2014: Plant Cell Reports, Plant Signaling and Behavior, Journal of Integrative Plant Biology, Plant and Cell Physiology, Plant Cell, New Phytologist, Plant Physiology
- 2013: Biocatalysis and Agricultural Biotechnology, FEBS Letters, Plant Physiology and Biochemistry, The Arabidopsis Book, Plant Cell, Plant and Cell Physiology, Metabolic Engineering, Biotechnology for Biofuels
- 2012: Nature Chemical Biology, Plant Molecular Biology Reporter, Plant Physiology, Plant Physiology and Biochemistry
- 2011: Plant Cell, Planta, Marine Biotechnology, Canadian Journal of Plant Pathology
- 2010: Botany, Genetics, Plant Cell
- 2009: Planta, Botany, PLoS Genetics, Plant Physiology, and Theoretical & Applied Genetics
- 2008: European Journal of Lipid Science & Technology, and Journal of Plant Physiology
- 2007: The Plant Journal

Academic Activities (2005-present):

1. Post-Doctoral and Graduate Student Supervision and Teaching

Highly qualified personnel supervised (2005-present):

In Progress: 2 Ph.D. Students (sole-supervised)
2 M.Sc. Students (sole supervised)

Completed: 2 Research Associates (sole-supervised)
2 Postdoctoral Fellows (1 sole-supervised, 1 co-supervised)
4 Ph.D. Students (3 sole-supervised, 1 co-supervised)
23 M.Sc. Students (9 sole-supervised, 14 co-supervised)
1 Diploma Student (via Algonquin College) (sole-supervised)
3 Research Technicians (2 sole-supervised, 1 co-supervised)

In Progress (Sole-Supervised):

Alicia Halhed: Ph.D. Student, Sept. 2021-present

Tentative Thesis title: “Plant-microbe interactions in the regulation of root suberin dynamics”

Alexandra King: M.Sc. Student, Sept. 2021-present

Tentative Thesis title: “Elucidation of the biological functions of *ALT1-4* from *Arabidopsis thaliana*”

Kassandra Fugard: M.Sc. Student, Sept. 2021-present

Tentative Thesis title: “The roles of basic helix-loop-helix (bHLH) transcription factors in the regulated deposition of suberin in roots of *Arabidopsis thaliana*”

Rebecca Kalinger: PhD. Student, Sept. 2017-present

Tentative Thesis title: “Medium-chain acyl-lipid thioesterases (ALTs) from plants: protein engineering and function”

Completed (Sole-Supervised):

Tim Garant: M.Sc. Student, Sept. 2018-May 2021

Thesis title: “Transcriptional regulators of suberin biosynthesis in *Arabidopsis thaliana*”

Current Position: Research Technician, Civil and Environmental Engineering, Carleton University

Kyle Tapp: M.Sc. Student, Sept. 2018-Nov 2020

Thesis title: “Characterization of proteins involved in MYB transcription factor complexes that regulate suberin deposition in *Arabidopsis thaliana*”

Current Position: Research Technician, Health Canada, Ottawa

Daniel Klein: M.Sc. Student, Sept. 2016-June 2019

Thesis title: “The downstream targets of MYB-type transcription factors involved in suberin biosynthesis”

Current Position: Research Technician, Canadian Food Inspection Agency, Ottawa

Nayana de Silva: Ph.D. Student, Sept. 2013-Jan. 2019

Thesis title: “The roles of suberin biopolymer and associated waxes in protecting plants against abiotic stresses”

Current Position: Research Technician, Agriculture and Agri-Food Canada, Ottawa

Sofia Khalil: Research Associate, Oct. 2016-Oct. 2018

Main Project title: “Homo- and hetero-dimerization of plant acyl lipid thioesterases that produce bioactive volatile lipid metabolites”

Current Position: Lecturer, Dept. of Biochemistry, Alexandria University, Egypt

Hefeng Hu: M.Sc. Student, Sept. 2015-April 2018

Thesis title: “The role of transcription factor MYB53 from *Arabidopsis thaliana* in the regulated production of suberin”

Current Position: Research Associate, The Ottawa Hospital Research Institute

Alaa Alsaafin: Research Technician (part-time), Sept. 2015-August 2016

Project title: “Screening of *Arabidopsis* mutants affected in root suberin deposition”

Current Position: Research Technician, Environment and Climate Change Canada, Ottawa

Jhadeswar Murmu: Research Associate, Oct. 2012-July 2016 and Feb. 2020-April 2021

Project title: “Transcription factors controlling the regulated deposition of suberin”

Current Position: Research Technician, Agriculture and Agri-Food Canada, Ottawa

Fatma Shalabi: Diploma in Biotechnology (with Algonquin College), May 2015-Dec. 2015

Project Title: “Optimization of tissue culture transformation system for Poplar and various Brassicaceae species”

Current Position: Research Associate, Agriculture and Agri-Food Canada, Ottawa

Ian Pulsifer: Ph.D., Sept. 2007-August 2014

Thesis title: “Novel roles for acyl-synthetases and acyl-thioesterases in plant lipid metabolism”

Current Position: Lab Coordinator, Dept. of Biology, Carleton University, Ottawa

Micaëla Chacón: M.Sc., Sept 2011-Sept 2013

Thesis title: “Identification of amino acids conferring chain-length substrate specificities on fatty alcohol-forming reductases FAR5 and FAR8 from *Arabidopsis thaliana*”

Current Position: Postdoctoral Fellow, University of Leeds, United Kingdom

Sollapura Vishwanath: Ph.D., Sept. 2007-May 2013

Thesis title: “Suberin-associated fatty acyl reductases from *Arabidopsis thaliana*”
Current Position: Postdoctoral Fellow, Agriculture and Agri-Food Canada, Ottawa

Dr. Palash Bhar: Postdoctoral Fellow (short-term), Feb. 2012- May 2012

Project Title: “Investigating the anti-microbial properties of suberin-associated alkyl hydroxycinnamates produced in plants”

Current Position: Synthetic Chemist, Dalton Pharma Services, Toronto

Ashley Fournier: M.Sc., Sept. 2009-May 2012

Thesis title: “Substrate specificities of plant alcohol-forming fatty acyl reductases”

Current Position: Research Technician, Byrd Alzheimer’s Institute, University of South Florida, Tampa

Christine Lowe: M.Sc., Sept. 2008-Dec. 2010

Thesis title: “A novel family of fatty acyl thioesterases from *Arabidopsis thaliana*”

Current Position: Bioinformatician, Agriculture and Agri-Food Canada, Ottawa

Xiaoxue Wen: M.Sc., Sept. 2007-Sept. 2009

Thesis title: “Characterization of mutants affecting cuticle formation in *Arabidopsis thaliana*”

Current Position: Research Lab Manager, Ottawa Hospital Research Institute, Ottawa

Tao Song: M.Sc., Sept. 2006-Aug. 2008

Thesis title: “Identification and characterization of *Arabidopsis ECERIFERUM8 (CER8)*, a Gene Important for Cuticular Wax Biosynthesis

Current Position: Research Scientist, Syngenta - Beijing Innovation Centre

Wei-Wan Liang: Research Technician, Sept. 2007-Aug. 2008

Project title: “Gas chromatography analyses of cuticular wax components”

Current Position: High School Teacher, Fort St. John, British Columbia

Completed (Co-Supervised):

Cleoniki Kesidis: M.Sc. Student, Jan. 2017-Dec. 2018 (co-supervised with Dr. Sara Martin, ORDC, Agriculture and Agri-Food Canada, Ottawa)

Thesis title: “The effect of allopolyploidy on hybridization and gene transfer between *Brassica carinata* and *Sinapis arvensis*”

Current Position: Copywriter, CEK Copywriting (self-employed)

Beatriz Lujan Toro: M.Sc. Student, Sept. 2015-Sept. 2017 (co-supervised with Dr. Sara Martin, ECORC, Agriculture and Agri-Food Canada, Ottawa)

Thesis title: “Genome Assembly of *Camelina microcarpa* Andr. Ex DC, A step towards understanding genome evolution in *Camelina*”

Current Position: Bioinformatician, Agriculture and Agri-Food Canada, Ottawa

Christopher Bonner: M.Sc. Student, Sept. 2015-Sept 2017 (co-supervised with Dr. Gopal Subramaniam, ECORC, Agriculture and Agri-Food Canada, Ottawa)

Thesis title: “The Epigenetics of a Cereal Killer: The role of DNA methylation in pathogenicity and development of *Fusarium graminearum*”

Current Position: Research Technician, Agriculture and Agri-Food Canada, Ottawa

Sean Walkowiak: Ph.D., May 2012-Sept. 2016 (co-supervised with Dr. Gopal Subramaniam, ECORC, Agriculture and Agri-Food Canada, Ottawa)

Thesis title: “Whole Genome Sequencing and Comparative Genomics of *Fusarium* Head Blight Fungi”

Current Position: Research Scientists/Program Manager, Grain Research Laboratory, Canadian Grain Commission, Winnipeg

Jerry Wu: M.Sc. Student, Sept. 2014-Sept. 2016 (co-supervised with Dr. Sara Martin, ECORC, Agriculture and Agri-Food Canada, Ottawa)

Thesis title: “Natural trait variation for taxonomic classification and breeding potential assessment in the genus *Camelina*”

Current Position: Data Analyst, Environmental Risk Information Services (ERIS), Toronto

Anna Lukina: M.Sc., Sept. 2013-August 2015 (co-supervised with Dr. Celine Boutin, Environment Canada, Ottawa.)

Thesis title: “Effects of trivalent chromium toxicity on plants commonly found in Ontario”

Current Position: Scientific Evaluator, Environmental Health Science and Research Bureau, Health Canada, Ottawa

Salima Chatur: M.Sc., Sept. 2013- August 2015 (co-supervised with Dr. Gopal Subramaniam, ECORC, Agriculture and Agri-Food Canada, Ottawa)

Thesis title: “Role of reactive oxygen species in *Fusarium graminearum*-wheat interactions”

Current Position: Manufacturing and Technology Specialist, Accucaps Industries, Strathroy, Ontario

Sarah Amer: M.Sc. (part-time student), Jan 2010-Sept. 2014 (co-supervised with Dr. Johann Scherthner, ECORC, Agriculture and Agri-Food Canada, Ottawa)

Thesis title: “Characterization of *LATE EMBRYOGENESIS ABUNDANT* genes from *Brassica napus*”

Current Position: Pharmacy Assistant, Shoppers Drug Mart, Ottawa

Mehri HadiNezhad: Postdoctoral Fellow, Sept. 2013-Jan. 2014 (co-supervised with Prof. Farah Hosseinian, Dept. of Chemistry, Carleton University, Ottawa)

Project title: “The fatty acid profile and phenolic composition of *Descurainia sophia* seeds extracted by supercritical CO₂”

Current Position: Research Technician, Agriculture and Agri-Food Canada, Ottawa

Amarpreet Chahal: M.Sc. Candidate, Sept. 2010-Dec. 2012 (co-supervised with Dr. Carlos Monreal, ECORC, Agriculture and Agri-Food Canada, Ottawa)

Thesis title: “Microbial mediated production of alkanes from crude biooils”

Current Position: Lab Analyst, Bio-Chem Consulting Services Ltd., Calgary

Maria Acero: Research Technician, Feb. 2012-June 2012 (co-supervised with Dr. Yolande Dalpe, ECORC, Agriculture and Agri-Food Canada, Ottawa)

Project Title: Molecular Analyses of Arbuscular Mycorrhizal Fungi

Current Position: Research and Development Lab Technologist, DNA Genotek, Ottawa

Sean Walkowiak: M.Sc., Sept 2009-August 2011 (co-supervised with Dr. Gopal Subramaniam, ECORC, Agriculture and Agri-Food Canada, Ottawa)

Thesis title: “Regulation of virulence in the phytopathogen *Fusarium graminearum*”

Current Position: Research Scientists/Program Manager, Grain Research Laboratory, Canadian Grain Commission, Winnipeg

Frances Tran: M.Sc., Sept. 2008-April 2011 (co-supervised with Dr. Laurian Robert, ECORC, Agriculture and Agri-Food Canada, Ottawa)

Thesis title: “Molecular basis of pollen-stigma interactions”

Current Position: Research Technician, Agriculture and Agri-Food Canada, Lacombe, Alberta

Kessiena Laarni Aya: M.Sc., Sept 2008-Dec. 2010 (co-supervised with Dr. Celine Boutin, Environment Canada, Ottawa)

Thesis title: “The analysis of morphological, physiological and ecological traits that influence efficacy to the foliar-applied herbicide glyphosate”

Current Position: Orthopedic Resident Physician, University of Texas Medical Branch at Galveston

Maria Villota: M.Sc., Sept. 2007-Dec. 2009 (co-supervised with Dr. Gopal Subramaniam, ECORC, Agriculture and Agri-Food Canada, Ottawa)

Thesis title: “Enhancers of *mucilage-modified 4* affecting seed coat mucilage production in *Arabidopsis thaliana*”

Current Position: Research and Development Lab Technologist, DNA Genotek, Ottawa

Adel Al-Shammari: M.Sc., Sept. 2007-Sept. 2009 (co-supervised with Dr. Tim Xing, Dept. of Biology, Carleton University)

Thesis title: “Molecular genetic analysis of *WILL DIE SLOWLY* gene family in Arabidopsis”

Current Position: Science Consultant, Government of Kuwait

Winnie Leung: M.Sc., Sept. 2007-Aug. 2009 (co-supervised with Dr. Gopal Subramaniam, ECORC, Agriculture and Agri-Food Canada, Ottawa)

Thesis title: “Differential roles of *Tri10* and *Tri6* in *Fusarium graminearum*”

Current Position: Research Technician, Apotex Pharmachem, Toronto

Mentoring Award:

2016: Carleton University Faculty Graduate Mentoring Award

Membership on Graduate Examining Committees (2005-present):

Ph.D. Defenses: 27 (10 for universities other than Carleton University or University of Ottawa)

Ph.D. Qualifying Exams: 23

M.Sc. Defenses: 71 (10 for departments outside the Dept. of Biology, Carleton University)

Graduate courses taught:

Advanced Plant Biology (BIOL 6300): 2019-2020, 2022 (taught 3 times)

Laboratory Techniques in Molecular Genetics (BIOL 5106): 2018-2020 (taught 3 times)

Advances in Plant Molecular Biology (BIOL 6002): 2007-2018 (taught 11 times)

Directed Studies Courses, one-to-one supervision (BIOL 5501): 2008-2014 (taught 4 times)

2. Undergraduate Teaching and Undergraduate Research Student Supervision

Teaching Summary, Undergraduate courses, 2005-present

Course Title	Years	Mean Evaluation	Number of Students
BIOC 4203 (Advanced Metabolism)	2012-2016 2022	4.89/5.00 (n=5)	7-24/year
BIOL 3104 (Molecular Genetics)	2021	no evaluation	149
BIOL 3303 (Experimental Microbiology)	2019	4.37 [†] (n=1)	31
BIOL 2104 (Introductory Genetics)	2010-2017	4.64/5.00 (n=7)	228-288/year
BIOL 4301 (Current Topics in Biotechnology)	2006-2010	4.78/5.00 (n=5)	32-51/year
BIOC 3102 (General Biochemistry II)	2006-2009	4.43/5.00 (n=4)	39-88/year

BIOL/BIOC/INSC/ENSC 4908 (Research Project)	2006-2022	N/A	51*
BIOL/BIOC/INSC 4907 (Essay / Research Proposal)	2006-2022	N/A	4
BIOC/BIOL 4901 (Directed Studies)	2006-2022	N/A	62
BIOC 2400/3400 (Directed Studies)	2010-2022	N/A	4

†with new teaching evaluation questionnaire, trial run for Full Professors

*fourteen 4908 students were co-supervised with Adjunct Research Faculty Members

**on sabbatical July 1 2020 – June 30 2021 and July 1 2011 – June 30 2012, no teaching

***reduced teaching load July 1, 2017 – present due to being Chair of the Department of Biology

Undergraduate students conducting research under my supervision (2005-present):

Total: 79

NSERC funded summer research students (USRA): 16 (11 sole-supervised, 5 co-supervised)

MITACs Globalink: 1 (sole-supervised)

Walker Fellowship funded summer research students: 2 (sole-supervised)

Dean's Summer Research Internship summer student: 6 (5 sole-supervised, 1 co-supervised)

International exchange student: 1 (sole-supervised)

Co-op students: 1 (sole-supervised)

Research thesis project students: 56 (41 sole-supervised, 15 co-supervised)

Paid Research Assistants: 6 (sole-supervised)

Undergraduate students conducting a directed studies course (e.g. BIOL or BIOC 4901) under my supervision (2005-present):

Total: 65

3. Textbook Reviewer:

2013: (1) Genetics: From Genes to Genomes

2011: (1) Campbell Biology, (2) Genetics: From Genes to Genomes

4. Public Education and Awareness:

- (6) January 31 2020. Discovery Café, Blackburn Hamlet (Ottawa), lecture for general public entitled "Designing life: the power and implications of CRISPR gene editing technology".
- (5) Annually, May 2008-2014: Presentations to high school students on plant biotechnology as part of the annual 'Biotechnology Lecture Series' at the Canada Science and Technology Museum, Ottawa.
- (4) Invited sole-authored popular press article in Ottawa Life Magazine (June 2009 issue) entitled "Green Biotechnology: Harnessing Plant Biomass for Biofuels and Biomaterials."
- (3) April 2009: Judge at Regional Sanofi-Aventis BioTalent Challenge for high school science students.
- (2) February 2009: Science Café, Ottawa, lecture for general public entitled "Green Biotechnology: Harnessing plant biomass for biofuels and biomaterials".
- (1) May 2007 and 2008: Participation in the Ottawa Technology Venture Challenge, which was an annual competition designed to encourage post-secondary students to act upon their innovative ideas.

5. Other Academic Activities:

- (4) July 2020 – July 2022. Hosted a Visiting Professor in my laboratory under the Carleton University Scholars-at-Risk Program: <https://carleton.ca/scholars-at-risk/>, which is dedicated to protecting scholars who are facing threats to their lives due to their scholarship (name of individual is withheld to protect his family still back in the home country).
- (3) April 2019 – June 2021. Sector Expert and RA supervisor for the Carleton University Gendered Design in STEAM (GDS) program, which is funded by the International Development Research Centre (IDRC). The goal of the GDS program is to build capacity for research, design and dissemination of gendered innovations in Science, Technology, Engineering, the Arts and Mathematics (STEAM), addressing challenges faced by women in low- and middle-income countries. I helped to select projects for funding and provide consultation on the funded projects.
- (2) November 2018 – November 2019. Hosted a Visiting Professor, Dr. Hui-Jun Yuan (Lanzhou University of Technology, China) to spend her academic sabbatical conducting research in my laboratory.
- (1) August 2017 – February 2018. Hosted a Visiting Professor, Dr. Suomin Wang (Lanzhou University, China) to spend his academic sabbatical conducting research in my laboratory.

Service to Carleton University:

Department of Biology Administrative Activities:

2021-present: Curriculum Committee

2017-2020: Chair of Biology Department (and active member of various department committees)

2015-2017: Planning and Priorities Committee

2016-2017: Confirmation-Track Instructor Search Committee, Area: Biotechnology (Chair of Search)

2015-2016: Tenure-Track Faculty Search Committee, Area: Animal Physiology and Biochemistry

2013-2014: Undergraduate Awards Committee

2012-2014: Departmental Seminar Organizer

2008-2011: Library Representative

2009-2010: Planning and Priorities Committee

2009-2010: Graduate Studies Committee

2009: Departmental Chair Search Committee

2006-2007: Tenure and Promotion Committee (Chair of Departmental Committee)

Institute of Biochemistry Administrative Activities:

2021-present: Undergraduate Program Advisor

2021-present: Curriculum Committee

2013-2016: Planning and Priorities Committee

2007-2008: Curriculum and Recruitment Committee

Faculty of Science Level Administrative Activities:

2022: Content Committee, Life Sciences Day

2021: Poster Competition Judge, Life Sciences Day 4.1

2019: Scientific Organizing Committee, Life Sciences Day 3.0

2012-2013: Ontario Graduate Scholarships Selection Committee

2011: Deans Summer Research Internships Selection Committee

2007: *ad hoc* committee for undergraduate recruitment, “Hot Careers in Science”, Faculty of Science (Biology/Biochemistry representative)

2006: Tenure and Promotion Committee, Faculty of Science (Biology Representative)

University Level Administrative Activities:

2019-2020: Chief Negotiator, Memorandum of Understanding between Agriculture and Agri-Food Canada and Carleton University (MOU on research collaborations and HQP training)

2017-2019: Academic Heads Roundtable Planning Committee

2016-2017: Graduate Mentoring Award Adjudication Committee

2013-2016: University Senate (Faculty of Science Representative)

2013-2014: Research Space and Facilities Taskforce

2010-2011: Working Group on the International Foundation Year (WIFY)

Service to Other Universities:

2013: External Reviewer, Biochemistry Program, Bishop’s University, Quebec

2011: Selection Committee, Ontario Graduate Scholarships, Provincial General Biological Sciences Panel Member

Curriculum Vitae

Bahram Samanfar, PhD

Canadian Citizen



Research Scientist at Agriculture and Agri-Food Canada, Ottawa Research and Development Centre (AAFC- Ottawa RDC), and Adjunct Research Professor, Department of Biology, Carleton University
960 Carling Avenue, Neatby Building (#20), Ottawa, Canada, K1A 0C6
Cell: (613) 558-0091, Office: (613) 759-1681 Fax: (613) 759-1701

E-mail: bahram.samanfar@agr.gc.ca

E-mail: bahram_samanfar@carleton.ca

AAFC: <https://profils-profiles.science.gc.ca/en/profile/bahram-samanfar>

SamanfarLab: <https://bahramsamanfar.wixsite.com/samanfarlab>

Carleton University: <https://carleton.ca/biology/people/bahram-samanfar/>

SamanfarLab network: <https://public.flourish.studio/visualisation/6162519/>

Education

- ◆ PhD in the area of microbiology, functional genomics, protein synthesis (translation pathway), bioinformatics, genetic and biotechnology, Carleton University, Canada (2010-2014).
- ◆ Master of Science in the area agro-genomics (M.Sc., agro-food chain), Paul Sabatier University, France (2009).
- ◆ Master of Science in the area of plant biotechnology (M.Sc., agricultural plant biotechnology), University of Tehran, Iran (2008).
- ◆ Bachelor of Science in agronomy and plant breeding (B.Sc.), University of Tehran, Iran (2003).

Research Areas of Interest (Keywords)

Soybean Genomics /Proteomics and Transcriptomics, Cell and Molecular Biology, Plant Biotechnology, Genetics and Genomics, DNA-based Markers, Allele-Specific Marker Developments, Systems Biology, Molecular Breeding, Host-pathogen Interactions, Bioinformatics, Computational Biology, QTL and GWAS Analysis, Time of Flowering and Maturity (Genetics of Photoperiod Sensitivity) in Soybean, Soybean Seed Proteins, Functional Genomics of soybean Health attributes, Allergy, Seed Protein Synthesis Pathway in Soybean, Microbiology, Protein Synthesis (Translation) Pathway in Yeast and E.coli, Protein-Protein Interaction (PPI), and Genetic Interaction (GI).

Current Employment

- ◆ Research scientist (soybean genomics) at Agriculture and Agri-Food Canada (AAFC), Ottawa Research and Development Centre (Ottawa RDC), (2017-present).
- ◆ Adjunct research professor, Department of Biology, Carleton University, (2017-2022).

Past Employment

- ◆ Contract instructor (Fundamentals of Genetics, BIOL2107, Microbiology, BIOL2303/ENVE2002, and Biotechnology, BIOL4301), Biology Department, Carleton University, (2014-2019).

- ◆ NSERC-VF (Natural Sciences and Engineering Research Council of Canada, Visiting Fellowship) postdoctoral fellowship at Agriculture and Agri-Food Canada (AAFC) Ottawa Research and Development Centre (Ottawa RDC), (2014-2016).
- ◆ Laboratory manager and research coordinator, Dr. Ashkan Golshani, Biology Department, Carleton University, (2010-2014).
- ◆ Teaching assistant and research assistant, Biology Department, Carleton University, (2010-2014).
- ◆ Research assistant and laboratory coordinator, plant tissue culture and molecular biology laboratory, Department of Agronomy and Plant Breeding, Faculty of Agriculture and Natural Resources, University of Tehran, Iran, (2001-2006).

Research Grant proposals

Active

- ◆ Agriculture and Agri-Food Canada (A-based 2021-2024). Targeting pre-harvest sprouting in barley using a combination of genomics and phenomics.
- ◆ Management Driven Genomics call (MDGC 2019-2023): Soybean Protein and Pathology, Activity 2.
- ◆ Canadian Field Crop Genetics Improvement Cluster (CFCRA 2013-2018; GF2): ASC-09 Soybean Cluster Activity 3 - Meeting the soybean protein meal standard in Western Canada.
- ◆ Canadian Field Crop Genetics Improvement Cluster (CFCRA 2013-2018; GF2): ASC-09 Soybean Cluster Activity 11 - Ultra early herbicide tolerant soybean.

Finished

- ◆ Grain Farmers of Ontario (GFO 2019-2022; CAP): Identification of novel soybean genes involved in resistance to SCN.
- ◆ Development of RNA-seq data analysis pipeline (Genomics Pilot) in AAFC-Bio-Cluster and Cloudera cloud-based computational facilities. AAFC invested funds in Cloud infrastructure and a Cloudera environment (27,000, 2018-2019).
- ◆ Agriculture and Agri-Food Canada (A-based). Moving soybean to Western Canada by PIPE (Protein-protein Interaction Prediction Engine): A bioinformatics approach to identify new early maturity alleles in soybean, (AAFC-ORDC-1711; 2016-2019).
- ◆ Agriculture and Agri-Food Canada, Ottawa Research and Development Centre and Health Canada (AAFC-ORDC and HC). Defined health attributes associated with specific Canadian soybean seeds (AAFC-ORDC, J-001284; 2016-2019).
- ◆ Canadian Field Crop Genetics Improvement Cluster (CFCRA 2013-2018; GF2): Very Short Season Herbicide Tolerant Soybean Development.
- ◆ Canadian Field Crop Genetics Improvement Cluster (CFCRA 2013-2018; GF2): Marker development for FHB-resistance and agronomic traits.

Research Experiences

- 1- Bioinformatics and functional genomics of soybean.

- 2- Bioinformatics and functional genomics approaches in host-pathogen interactions (Soybean-SCN).
- 3- Genomics, proteomics and transcriptomics approaches to identify novel genes involved in protein synthesis pathway (seed proteins) in soybean.
- 4- Genomics, proteomics and transcriptomics approaches to identify novel genes involved in time of flowering and maturity in soybean.
- 5- Bioinformatics and functional genomics approach to identify novel allergens in soybean (human allergy).
- 6- Allele specific marker development for time of flowering and maturity in soybean.
- 7- Applied genomics in soybean for time of flowering and maturity (Diagnostic Toolbox).
- 8- Molecular biology investigations to assisted plant breeding programs in soybean (marker-assisted selection, allele-specific marker developments and molecular breeding).
- 9- Soybean and Arabidopsis functional genomics and bioinformatics.
- 10- Yeast functional genomics, protein synthesis pathway and bioinformatics.
- 11- Oxygen responding pathway (Hypoxia) in yeast (*Saccharomyces cerevisiae*).
- 12- Chemical genetics in yeast and *Escherichia coli*.
- 13- Translation fidelity analysis in *E. coli*.
- 14- Gene transformation and RNAi applications on *Medicago truncatula*.
- 15- Molecular mapping on *Medicago truncatula* (consensus map building based on SSR designed primers).
- 16- Tissue culture in potato (in-vitro micro propagation) and barley (callus formation and thermal applications).
- 17- In-vitro production of virus free potato micro tubers.

Publications

◆ Journals

✓ Submitted

- ✓ Hajikarimlou M, Hooshyar M, Sunba N, Nazemof N, Laliberte B, Takallou S, Omid K, Zare N, Puchecz N, Jagadeesan S, Arasteh F, Burnside D, Moteshareie H, Babu M, Holcik M, **Samanfar B**, Smith M, and Golshani A: A correlation between 3'-UTR of OXA1 gene and yeast mitochondrial translation. *Gene reports*, Submission #: GENREP-D-20-00402.
- ✓ Jagadeesanan SK, Potter T, Al-gafaria M, Hooshyar M, Hewapathirana CM, Takallou S, Hajikarimlou M, Burnside D, **Samanfar B**, Moteshareie H, Smith M, Golshani A: Discovery and identification of genes involved in DNA damage repair in yeast. *Gene*, Submission#: GENEJOURNAL-S-21-03822.

✓ 2022

- ✓ Nissan N, Hooker J, Pattang A, Charette M, Morrison M, Yu K, Hou A, Golshani A, Molnar S, Cober R, and **Samanfar B**: Novel QTL for Low Seed Cadmium Concentration in Soybean. *Plants* 2022, 11(9), 1146.
- ✓ Nissan N, Mimee B, Cober ER, Golshani A, Smith M, and **Samanfar B**: A Broad Review of Soybean Research on the Ongoing Race to Overcome Soybean Cyst Nematode. *Biology*, 2022, 11(2):211 (doi.org/10.3390/biology11020211).

- ✓ Ort NNWW, Morrison MJ, Cober ER, **Samanfar B**, and Lawley YE: Photoperiod Affects Node Appearance Rate and Flowering in Early Maturing Soybean. *Plants*, 2022, 11(7): 871.
- ✓ Turcotte H, Hooker J, **Samanfar B**, and Parent SJ: Can epigenetics guide the production of better adapted cultivars? *Agronomy*, 2022, Accepted.

✓ 2021

- ✓ Dick K, Pattang A, Hooker J, Nissan N, Sadowski M, Barnes B, Tan LH, Burnside D, Phanse S, Aoki H, Babu M, Dehne F, Golshani A, Cober E, Green J, and **Samanfar B**: Human-Soybean Allergies: Elucidation of the Seed Proteome & Comprehensive PPI Prediction. *Journal of Proteome Research (JPR)*, 2021, 20(11):4925-4947 (doi: 10.1021/acs.jproteome.1c00138).
- ✓ Nissan N, Cober ER, Sadowski M, Charette M, Golshani A, and **Samanfar B**: Identifying New Variation at the J locus, Previously Identified as e6, in Long Juvenile ‘Paranagoiana’ Soybean. *Theoretical and Applied Genomics (TAAG)*, 2021, 134:1007-1014 (doi: 10.1007/s00122-020-03746-2).
- ✓ Kato S, **Samanfar B**, Morrison MJ, Bekele WA, Torkamaned D, Rajcan I, O'Donoghue L, Belzile F, and Cober ER: Genome-wide association study (GWAS) to identify soybean stem pushing resistance and lodging resistance loci. *Canadian Journal of Plant Science (CJPS)*, 2021, 101: 663–670 (dx.doi.org/10.1139/cjps-2020-0187).
- ✓ Jessulat M, Amin S, Hooshyar M, Maltby R, Phanse S, Aoki H, Moutaoufik M, Omidi K, Burnside D, Zhang Q, **Samanfar B**, Aly K, Golshani A, and Babu M: The Conserved Tpk1 Regulates Non-Homologous End Joining Double-Strand Break Repair by Phosphorylation of Nej1, a Homolog of the Human XLF. *Nucleic Acid Research (NAR)*, 2021, 49(14): 8145–8160.
- ✓ Hooshyar M, Burnside D, Hajikarimlou M, Omidi K, Jesso A, Vanstone M, Young A, Cherubini P, Jessulat M, Potter T, Schoenrock A, Bhojoo U, Silva E, Moteshareie H, Babu M, Diallo JS, Dehne F, **Samanfar B**, and Golshani A: Actin-Related Protein 6 (ARP6) influences double-strand break repair in yeast. *Applied Microbiology*, 2021, 1(2), 225-238.

✓ 2020

- ✓ Dick K, **Samanfar B**, Barnes B, Cober E, Mimee B, Tan LT, Molnar SJ, Biggar K, Golshani A, Dehne F, and Green JR: PIPE4: Ultra-Fast PPI Predictor for Comprehensive Inter- and Cross-Species Interactomes. *Scientific Report*, 2020, 10(1):1390.
- ✓ Hajikarimlou M, Moteshareie H, Omidi K, Hooshyar M, Shaikho S, Kazmirchuk T, Burnside D, Takallou S, Zare N, Jagadeesan SK, Puchacz N, Babu M, Smith M, Holcik M, **Samanfar B**, and Golshani A: Sensitivity of yeast to lithium chloride connects the activity of YTA6 and YPR096C to translation of structured mRNAs. *PLOS ONE*, 15(7): e0235033.
- ✓ Hajikarimlou M, Hunt K, Kirby G, Takallou S, Jagadeesan SK, Omidi K, Hooshyar M, Burnside D, Moteshareie H, Babu M, Smith M, Holcik M,

Samanfar B, and Golshani A: Lithium chloride sensitivity in yeast and regulation of translation. *International Journal of Molecular Sciences*, 10;21(16): E5730.

✓ **2019**

- ✓ **Samanfar B**, Cober E, Charette M, Tan LH, Bekele WA, Morrison M, Kilian A, Belzile F, and Molnar SJ: Genetic Analysis of High Protein Content in ‘AC Proteus’ Related Soybean Populations Using SSR, SNP, DArT and DArTseq Markers, *Scientific Report*, 2019, 9(1):19657.
- ✓ Burnside D, Schoenrock A, Moteshareie H, Hooshyar M, Basra P, Hajikarimloo M, Dick K, Barnes B, Kazmirchuk T, Jessulat M, Pitre S, **Samanfar B**, Babu M, Green JR, Wong A, Dehne F, Biggar KK, and Golshani A: In silico engineering of synthetic proteins from random amino acid sequences. *iscience (Cell press)*, 2019, 11:375-387.

✓ **2018**

- ✓ Galvan I, Ghiyasvand M, Massatsky A, Babu M, **Samanfar B**, Omidi K, Moon T, Smith M, and Golshani A: Zinc oxide and silver nanoparticles toxicity in the baker's yeast, *Saccharomyces cerevisiae*. *PLOS ONE*, 2018, 13(3): e0193111.
- ✓ Omidi K, Jessulat M, Hooshyar M, Burnside DJ, Schoenrock A, Kazmirchuk T, Hajikarimloo M, Daniel M, Moteshareie H, Bhojoo U, Sanders M, Ramotar D, Dehne F, **Samanfar B**, Babu M, and Golshani A: Uncharacterized ORF HUR1 influences the efficiency of non-homologous end-joining repair in *Saccharomyces cerevisiae*. *Gene*, 2018, 639:128-136.
- ✓ Moteshareie H, Hajikarimloo m, Indrayanti AM, Burnside D, Dias AP, Lettl C, Ahmed D, Omidi K, Kazmirchuk T, Puchacz N, Zare N, Takallou S, Naing T, Hernández RB, Willmore WG, Babu M, McKay B, **Samanfar B**, Holcik M, Golshani A: Heavy metal sensitivities of gene deletion strains for ITT1 and RPS1A connect their activities to the expression of URE2, a key gene involved in metal detoxification in yeast. *PLOS ONE*, 2018, 13(9): e0198704.

✓ **2017**

- ✓ **Samanfar B**, Molnar SJ, Charette M, Schoenrock A, Belzile F, Dehne F, Golshani A, and Cober ER: Mapping and identification of a candidate gene for a novel maturity locus, E10, in soybean. *Theoretical and Applied Genomics (TAG)*, 2017, 130(2):377-390.
- ✓ **Samanfar B**, Shostak K, Moteshareie H, Hajikarimloo M, Shaikho S, Omid K, Hooshyar M, Burnside D, Galván Márquez I, Kazmirchuk T, Naing T, Ludovico P, York-Lyon A, Szereszewski K, Leung C, Yixin Jin J, Megarbane R, Smith ML, Babu M, Holcik M, and Golshani, A: The sensitivity of the yeast, *Saccharomyces cerevisiae*, to acetic acid is influenced by DOM34 and RPL36A. *PeerJ*, 2017, 5:e4037.
- ✓ Kazmirchuk T, Dick K, Burnside D, Barnes B, Moteshareie H, Hajikarimloo M, Hooshyar M, Omidi K, Ahmed D, Low A, Lettl C, Schoenrock A, Pitre S, Babu M, Cassol E, **Samanfar B**, Wong A, Dehne F, Green J, and Golshani A: Designing Anti-Zika Virus Peptides Derived from Predicted Human-Zika Virus Protein-Protein Interactions. *Computational biology and Chemistry*, 2017, 71: 180-187.

✓ 2016

- ✓ Gagarinova A, Stewart G, **Samanfar B**, Phanse S, White CA, Aoki H, Deineko V, Beloglazova N, Yakunin AF, Golshani A, Brown EC, Babu M, Emili A: Systematic genetic screens reveal the dynamic global functional organization of the bacterial translation machinery. *Cell Reports*, 2016, 17(3):904-916.
- ✓ Shaikho S, Dobson CC, Naing T, **Samanfar B**, Moteshareie H, Golshani A, and Holcik M: Elevated levels of ribosomal proteins L36 and L36A control expression of HSP90 in rhabdomyosarcoma. *Translation*, 2016, 4(2): e1244395.

✓ 2015

- ✓ Jessulat M, Malty RH, Nguyen-Tran DH, Deineko V, Aoki H, Vlasblom J, Omidi K, Jin K, Minic Z, Hooshyar M, Burnside D, **Samanfar B**, Phanse S, Freywald T, Prasad B, Zhang Z, Vizeacoumar F, Krogan NJ, Freywald A, Golshani A, and Babu M: Spindle checkpoint factors Bub1 and Bub2 promote DNA double strand break repair by Non-Homologous End Joining. *MCB, Molecular and Cell Biology*, 2015, 35 (14): 2448-2463.

✓ 2014

- ✓ Schoenrock A, **Samanfar B**, Pitre S, Hooshyar M, Jin K, Philips C, Wang H, Phanse S, Omidi K, Gui Y, Alamgir Md, Wong A, Barrenas F, Babu M, Benson M, Langston M, Green JR, Dehne F, and Golshani A: Efficient prediction of human protein-protein interactions at a global scale. *BMC Bioinformatics*, 2014, 15(1): 383-404.
- ✓ **Samanfar B**, Tan LH, Shostak K, Chalabian F, Wu z, Alamgir MD, Sunba N, Burnside D, Omidi K, Hooshyar M, Galván Márquez I, Jessulat M, Smith M, Babu M, Azizi A, and Golshani A: A global investigation of gene deletion strains that affect premature stop codon bypass in yeast, *Saccharomyces cerevisiae*. *Mol Biosyst.*, 2014, 10 (4): 916-924.
- ✓ Vlasblom J, Zuberi K, Rodriguez H, Arnold R, Gagarinova A, Deineko V, Leung E, **Samanfar B**, Chang L, Phanse S, Golshani A, Greenblatt J, Houry W, Emili A, Morris Q, Bader G, and Babu M: Novel function discovery with GeneMANIA: a new integrated resource for gene function prediction in *Escherichia coli*. *Bioinformatics*, 2014, pii:btu671
- ✓ Babu M, Arnold R, Bundalovic-Torma C, Gagarinova A, Wong KS, Phanse S, Kumar A, Wagih O, Lad K, **Samanfar B**, Stewart G, Graham C, Aoki H, Brown E, Golshani A, Kim P, Moreno-Hagelsieb G, Greenblatt J, Houry WA, Parkinson J, and Emili A: Quantitative genome-wide genetic interaction screens reveal global epistatic relationships of protein complexes in *Escherichia coli*. *PLOS Genetics*, 2014, 10(2): e1004120.
- ✓ Omidi K, Hooshyar M, Jessulat M, **Samanfar B**, Sanders M, Burnside D, Pitre S, Schoenrock A, Xu J, Babu M, and Golshani A: Phosphatase complex Pph3/Psy2 is involved in regulation of efficient Non-Homologous End-Joining pathway in the Yeast, *Saccharomyces cerevisiae*. *PLoS ONE*, 2014, 9(1): e87248.

✓ 2013

- ✓ **Samanfar B**, Omidi K, Hooshyar M, Laliberte B, Alamgir M, Seal AJ, Ahmed-Muhsin E, Viteri DF, Said K, Chalabian F, Golshani A, Wainer G, Burnside D,

Shostak K, Bugno M, Willmore WG, Smith ML, and Golshani A: Large-scale investigation of oxygen response mutants in *Saccharomyces cerevisiae*. *Mol Biosyst.*, 2013, 9(6):1351-1359.

✓ **2012**

- ✓ Pitre S, Hooshyar M, Schoenrock A, **Samanfar B**, Jessulat M, Green JR, Dehne F, and Golshani A: Short co-occurring polypeptide regions can predict global protein interaction maps. *Nature Scientific Reports*, 2012, 2:239.

✓ **2011**

- ✓ Jessulat M, Pitre S, Gui Y, Hooshyar M, Omid K, **Samanfar B**, Tan LH, Alamgir MD, Green J, Dehne F, and Golshani A: Recent advances in protein-protein interaction prediction: experimental and computational methods. *Expert Opin. Drug Discov.*, 2011, 6(9): 921-935.

✓ **2008**

- ✓ Omid M, Asadi S, **Samanfar B**, and Nosraty SZ: The effect of thermal treatment and meristem size factor on virus free potato plantlet production. *Iranian Journal of Agriculture*, 2008, 39-1.

◆ **Non peer reviewed**

➤ **2019**

- ✓ Le Hoa Tan, **Bahram Samanfar**, Elroy Cober: Consolidation, GMO and food security: what's the connection? *Germination*, 2019, March edition.

◆ **Books and Chapters**

- ✓ Burnside D, Moteshareie M, Galvan-Marquez I, Hooshyar M, **Samanfar B**, Shostak K, Omid K, Peery H, Smith ML, and Golshani A: Use of chemical genomics to investigate the mechanism of action for inhibitory bioactive natural compounds. In G. Brahmachari (Ed.), *Bioactive Natural Compounds: Biology and Chemistry*. Wiley-VCH publication, 2015, 544 pages. ISBN: 978-3-527-33794-1.
- ✓ Omid M, Alishah O, and **Samanfar B**: Plant cytogenetics. *Tehran University Publication*, 2009, 565 pages. ISBN: 978-964-03-5905-1.

◆ **Conferences**

- 1- Elroy Cober, Anfu Hou, Ramona Mohr, Patrick Mooleki, Erin Karppinen, Aaron Glenn, Mehri Hadinezhad, **Bahram Samanfar**: Western Soybean Protein. *Northern Soybean Summit*, 2022 Canada (Toronto) [Oral].
- 2- Julia Hooker, Elroy Cober, Ashkan Golshani, **Bahram Samanfar**: Transcriptome-wide approach to address lower seed protein content in soybean grown in Western Canada. *Canadian Society of Plant Biologists-Eastern Regional Meeting*, 2021 Canada [Oral].

- 3- Simon Lackey, Elroy Cober, Andrew Bird, Ashkan Golshani, **Bahram Samanfar**: Identification of novel maturity-related QTLs in a *G.max/G.soja* RIL population. *Canadian Society of Plant Biologists-Eastern Regional Meeting*, 2021 Canada.
- 4- Nour Nissan, Elroy Cober, Steve Molnar, Ashkan Golshani, **Bahram Samanfar**: Revealing the Truth Behind A Previously Presumed Locus, E6, in Soybean Variety Paranagoiana. *Canadian Society of Plant Biologists-Eastern Regional Meeting*, 2021 Canada [Oral].
- 5- Julia Hooker, Elroy Cober, Ashkan Golshani, **Bahram Samanfar**: Differentially expressed genes involved in low seed protein content in western-Canadian soybeans (*Glycine max*) identified through transcriptomics. *Canadian Society of Plant Biologists(CSPB-SCBV)* 2021 Canada [Oral].
- 6- Julia Hooker, Elroy Cober, Ashkan Golshani, **Bahram Samanfar**: Identifying differentially expressed genes involved in low seed protein in western Canadian soybeans. *18th Annual OCIB Symposium, Ottawa Carleton Institute of Biology*, 2021 Canada.
- 7- Nour Nissan, Elroy Cober, Ashkan Golshani, **Bahram Samanfar**: Proteome-wide computational approaches to identify novel genes involved in soybean resistance to SCN. *18th Annual OCIB Symposium, Ottawa Carleton Institute of Biology*, 2021 Canada.
- 8- Julia Hooker, Elroy Cober, Ashkan Golshani, **Bahram Samanfar**: Transcriptome-wide approach to identifying differentially expressed genes involved in low seed protein content in western-Canadian soybeans, *Glycine max*. *Carleton University Life science day 4.1*, 2021, Canada.
- 9- Nour Nissan, Elroy Cober, Ashkan Golshani, **Bahram Samanfar**: Uncovering A New Allelic Variation j-x Previously Presumed to be a Linked Gene, E6, In Soybean (*Glycine max*). *Carleton University Life science day 4.1*, 2021, Canada.
- 10- Arezo Pattang, Elroy Cober, Stephen J. Molnar, Ashkan Golshani, **Bahram Samanfar**: Moving Soybean to Western Canada and Northern Regions, an Attempt to Identify the Underlying Gene for the E7 Maturity Locus. *Carleton University Life science day 4.1*, 2021 Canada; and *18th Annual OCIB Symposium, Ottawa Carleton Institute of Biology*, 2021 Canada.
- 11- Nour Nissan, Elroy Cober, Ashkan Golshani, **Bahram Samanfar**: Soybean cyst nematode (SCN): overcoming the tiny beast below the surface. *Ontario Soybean and Canola Committee (OSACC)*, 2021, Canada [Oral].
- 12- Julia Hooker, Elroy Cober, Ashkan Golshani, **Bahram Samanfar**: Identification of differentially expressed genes involved in seed protein content in soybean, *Glycine max*. *Soybean breeders workshop*, 2021, Canada.
- 13- Nour Nissan, Elroy Cober, Ashkan Golshani, **Bahram Samanfar**: Identifying new variation and the J locus previously known as E6 in soybean (*Glycine max*). *Soybean breeders workshop*, 2021, Canada.
- 14- Julia Hooker, **Bahram Samanfar**, Elroy Cober, Ashkan Golshani: Identification of differentially expressed genes involved in seed protein content in soybean, *Glycine max*. *Canadian Society of Plant Biology (CSPB)* virtual conference, 2020, Canada [oral].

- 15- Nour Nissan, Elroy Cober, Ashkan Golshani, **Bahram Samanfar**: Soybean cyst nematode (SCN): Overcoming the tiny beast below the surface. *Canadian Society of Plant Biology (CSPB) virtual conference*, 2020, Canada [oral].
- 16- Arezo Pattang, Elroy Cober, Ashkan Golshani, **Bahram Samanfar**: A functional genomics approach in identifying the underlying gene for the E8 maturity locus in soybean (*Glycine max*). *Canadian Society of Plant Biology (CSPB) virtual conference*, 2020, Canada [oral].
- 17- **Bahram Samanfar**, Elroy Cober, Michael Sadowski, Kevin Dick, James Green, Frank Dehne, Ashkan Golshani: A bioinformatics approach (PIPE) in functional genomics of soybean and soybean-cross species interactome. *Plant Biology* 2019, San Jose, USA.
- 18- Michael Sadowski, **Bahram Samanfar**, Elroy Cober, Martin Charette, Frank Dehne, James Green, Ashkan Golshani: A functional genomics approach for the identification of a candidate gene for the E8 maturity locus in soybean. *16th Annual OCIB, Ottawa Carleton Institute of Biology, Symposium* 2019, Ottawa, Canada.
- 19- Kevin Dick, **Bahram Samanfar**, Elroy Cober, James R. Green: Predicting comprehensive interactome: case study of the empirical upper limit. *International Conference on Biomedical and Health Information, IEEE-EMBS* 2019, Chicago, USA.
- 20- **Bahram Samanfar**, Babur Jahid, Elroy Cober, Le Hoa Tan, Doris Luckert, Ashkan Golshani: Identification of differentially-expressed genes involved in seed protein content in soybean (*Glycine Max*) grown In Western Vs. Eastern Canada. *Plant Canada, 2019*, Guelph, Canada [oral] and *16th Annual OCIB, Ottawa Carleton Institute of Biology, Symposium* 2019, Ottawa, Canada [oral].
- 21- Michael Sadowski, **Bahram Samanfar**, Elroy Cober, Martin Charette, Frank Dehne, James Green, Ashkan Golshani: Identification of a potential candidate gene for the E8 maturity locus in soybean (*Glycine max*). *Plant Canada*, 2019, Guelph, Canada [oral].
- 22- **Bahram Samanfar**, Kevin Dick, Brad Barnes, Elroy Cober, Stephen Molnar, Frank Dehne, Ashkan Golshani, James Green: PIPE4: Ultra-Fast PPI prediction for comprehensive Inter- and Cross- species interactomes. *Plant and Animal Genome (PAG)* 2019, San Diego, USA.
- 23- **Bahram Samanfar**, Elroy Cober, Stephen Molnar, Brad Barnes, James Green, Frank Dehne, Ashkan Golshani: (Soybean-SCN PIPE): A Cross Computational Approach in Soybean Functional Genomics. *Soy2018*, 2018, Athens, USA.
- 24- **Bahram Samanfar**, Elroy Cober, Stephen Molnar, Brad Barnes, James Green, Frank Dehne, Ashkan Golshani: (Soybean-Human PIPE): A Computational Approach in Soybean-Human Functional Genomics. *Plant Biology*, 2018, Montreal, Canada.
- 25- **Bahram Samanfar**, Elroy Cober, Stephen Molnar, Brad Barnes, James Green, Frank Dehne, Ashkan Golshani: (Soybean-PIPE): A Computational Approach in Soybean Functional Genomics. *Plant and Animal Genome (PAG)* 2018, San Diego, USA.

- 26- Maryam Hajikarimlou, **Bahram Samanfar**, Ashkan Golshani: Investigating novel genes with helicase activity involved in translation initiation. *Canadian Society for Molecular Biosciences (CSMB)* 2017, Ottawa, Canada.
- 27- Houman Moteshareie, **Bahram Samanfar**, Ashkan Golshani: Exploration of the novel genes that affect IRES-mediated translation of *URE2*, a key gene involved in metal detoxification. *Canadian Society for Molecular Biosciences (CSMB)* 2017, Ottawa, Canada.
- 28- **Bahram Samanfar**, Elroy Cober, Martin Charette, Andrew Schoenrock, Frank Dehne, Ashkan Golshani, Steve Molnar: A functional genomics approach (PIPE, Protein-protein Interaction Prediction Engine) to identify new early maturity alleles in soybean for Western Canada. *Botany* 2016, Savannah, USA. [oral]
- 29- **Bahram Samanfar**, Andrew Schoenrock, Frank Dehne, Ashkan Golshani, Elroy Cober, Martin Charette, Stephen Molnar: PIPE (Protein-protein Interaction Prediction Engine): A computational approach for comprehensive soybean functional genomics. *Great Lakes Bioinformatics and the Canadian Computational Biology Conference (GLBIO/CCBC)* 2016, Toronto, Canada. [oral]
- 30- **Bahram Samanfar**, Martin Charette, Elroy Cober, Stephen Molnar: Early flowering soybean: the art of mixing plant breeding, molecular biology and bioinformatics. *Botany* 2015, Edmonton, Canada. [oral]
- 31- **Bahram Samanfar**, Houman Moteshareie, Andrew Schoenrock, Mohsen Hooshyar, Daniel Burnside, Mohan Babu, Frank Dehne, Ashkan Golshani: Efficient prediction of human protein-protein interactions at a global scale. *4th student/postdoc poster day in computational biology and bioinformatics*, 2015, Ottawa, Canada; *OISBS*, 2015, Mont Tremblant, Canada.
- 32- Houman Moteshareie, **Bahram Samanfar**, Ashkan Golshani: Identification of novel genes in regulation of IRES-mediated translation of *URE2*, a heavy ion detoxification gene. *OISBS (Ottawa Institute of Systems Biology Symposium)*, 2015, Mont Tremblant, Canada.
- 33- **Bahram Samanfar**, Katayoun Omid, Ashkan Golshani: Utilizing yeast genetics to identify novel genes involved in oxygen responding pathway in yeast. *RECOMB/ISCB Conference on Regulatory and Systems Genomics, with DREAM Challenges*, 2013, Toronto, Canada.
- 34- Kristina Shostak, **Bahram Samanfar**, Ashkan Golshani: Systematic analysis of *Saccharomyces cerevisiae* genome for novel genes involved in internal translation initiation. *RECOMB/ISCB Conference on Regulatory and Systems Genomics, with DREAM Challenges*, 2013, Toronto, Canada.
- 35- **Bahram Samanfar**, Ashkan Golshani: Utilizing yeast genetics to identify novel genes involved in translation fidelity. *63rd Annual Conference of the Canadian Society of Microbiologists (CSM)*, 2013, Ottawa, Canada. [oral]
- 36- Kristina Shostak, **Bahram Samanfar**, Ashkan Golshani: The role of internal ribosomal entry sites and associated proteins in eukaryotic translation initiation. *63rd Annual Conference of the Canadian Society of Microbiologists (CSM)* 2013, Ottawa, Canada; *OISBS*, 2015, Mont Tremblant, Canada.

- 37- **Bahram Samanfar**, Sylvain Pitre, Mohsen Hooshyar, Katayoun Omid, James R. Green, Frank Dehne, Ashkan Golshani: Bioinformatics and protein-protein interactions. *8th Iranian Biotechnology Congress and 4th National Congress of Biosafety* 2013, Tehran, Iran. [oral]
- 38- **Bahram Samanfar**, Ashkan Golshani: Large-scale investigation of oxygen response mutants in Yeast. *10th Annual OCIB, Ottawa Carleton Institute of Biology, Symposium* 2013, Ottawa, Canada.
- 39- **Bahram Samanfar**, Le Hoa Tan, Ashkan Golshani: Yeast, *Saccharomyces cerevisiae*, global investigation to identify novel genes involved translation fidelity. *13th International Conference on Systems Biology* 2012, Toronto, Canada.
- 40- **Bahram Samanfar**, Katayoun Omid, Mohsen hooshyar, Myron L. Smith, Ashkan Golshani: Genome -wide investigation of oxygen response mutants in *Saccharomyces cerevisiae*. *2nd China-Canada Systems Biology* and *19th Methods in Protein Structure Analysis* 2012, Ottawa, Canada & *62nd Annual Conference of the Canadian Society of Microbiologists (CSM)* 2012, Vancouver, Canada.
- 41- Katayoun Omid, Matthew Jessulat, Mohsen Hooshyar, **Bahram Samanfar**, Ashkan Golshani: Call cycle proteins NEK1 and BEC3 are involved in regulation of efficient Non-Homologous End-Joining pathway in the yeast *Saccharomyces cerevisiae*. *2nd China-Canada Systems Biology* and *19th Methods in Protein Structure Analysis* 2012, Ottawa, Canada.
- 42- **Bahram Samanfar**, Kama Szereszewski, Ashkan Golshani: Yeast, *Saccharomyces cerevisiae*, genome-wide investigation for internal ribosome entry site (IRES). *9th Annual OCIB, Ottawa Carleton Institute of Biology, Symposium* 2012, Ottawa, Canada.
- 43- Andrew Schoenrock, **Bahram Samanfar**, Mohsen Hooshyar, Charles A. Phillips, Hui Wang, Sylvain Pitre, Katayoun Omid, Yuan Gui, MD Alamgir, Fredrik Barrenas, Mikael Benson, Michael A. Langston, James R. Green, Frank Dehne, Ashkan Golshani: On finding overlapping complexes, with application to PPI network analysis. *UT-ORNL-KBRIN Bioinformatics Summit* 2012, Louisville, KY, USA.
- 44- **Bahram Samanfar**, Le Hoa Tan, Firooze Chalabian, Katayoun Omid, Ashkan Golshani: Functional genomics of translation pathway in the yeast, *Saccharomyces cerevisiae*. *10th Annual Chemical Biophysics Symposium* 2011, Toronto, Canada.
- 45- **Bahram Samanfar**, Ashkan Golshani: Systems biology and yeast, translation approaches. *8th Annual OCIB, Ottawa Carleton Institute of Biology, Symposium* 2011, Ottawa, Canada.
- 46- Le Hoa Tan, **Bahram Samanfar**, Ashkan Golshani: Identification and characterization of novel translation related genes in *Saccharomyces cerevisiae*. *10th Annual Chemical Biophysics Symposium* 2011, Toronto, Canada.
- 47- Katayoun Omid, Matthew Jessulat, Mohsen Hooshyar, **Bahram Samanfar**, Ashkan Golshani: Identification and characterization of novel genes involved in Non-Homologous End-Joining pathway in the yeast, *Saccharomyces cerevisiae*. *10th Annual Chemical Biophysics Symposium* 2011, Toronto, Canada.

- 48- **Bahram Samanfar**, Mansoor Omid, Hooshang Alizade, Katayoun Omid: Growth regulators effect on different barley explants. *The First European Conference of Iranian Scientists in Agriculture and Natural Resources* 2008, Paris, France.
- 49- **Bahram Samanfar**, Mansoor Omid, Hooshang Alizade, Katayoun Omid: Plant growth Regulators effects on direct somatic embryogenesis and multiple shoot formation in barley. *Plant Canada* 2007, Saskatoon, Saskatchewan Canada.

Conferences and Workshops:

✓ **Oral Presentation**

- ◆ Northern Soybean Summit, Canada, January 2022.
- ◆ Canadian Society of Plant Biologists-Eastern Regional Meeting, Canada, November 2021.
- ◆ Canadian Society of Plant Biologists(CSPB-SCBV), Canada, June 2021.
- ◆ Carleton University Life science day 4.1, April 2021.
- ◆ Ontario Soybean and Canola Committee, Canada, February 2021.
- ◆ Canadian Society of Plant Biology (CSPB) virtual conference, November 2020.
- ◆ Plant Canada, Guelph, Canada, July 2019.
- ◆ International Conference on Biomedical and Health Information (IEEE-EMBS). Chicago, USA, May 2019.
- ◆ 16th Annual OCIB, Ottawa Carleton Institute of Biology, Symposium. Ottawa, Canada, May 2019
- ◆ Ontario Soybean and Canola Committee, London, Canada, January 2017.
- ◆ Botany 2016, Savannah, USA, July 2016.
- ◆ Great Lakes Bioinformatics and the Canadian Computational Biology Conference (GLBIO/CCBC), Toronto, Canada, May 2016.
- ◆ Botany 2015, Edmonton, Canada, July 2015.
- ◆ 8th Iranian Biotechnology Congress and 4th National Congress of Biosafety. Tehran, Iran, July 2013 (keynote speaker).
- ◆ 63rd Annual Conference of the Canadian Society of Microbiologists (CSM). Ottawa, Canada, June 2013.
- ◆ 10th Annual OCIB, Ottawa Carleton Institute of Biology, Symposium. Ottawa, Canada, May 2013.

✓ **Poster**

- ◆ Canadian Society of Plant Biologists-Eastern Regional Meeting, Canada, November 2021.
- ◆ 18th Annual OCIB, Ottawa Carleton Institute of Biology Symposium, Ottawa, Canada, June 2021.
- ◆ Soybean Breeders Workshop, February 2021.
- ◆ Plant Biology Conference, San Jose, USA, August 2019.
- ◆ 16th Annual OCIB, Ottawa Carleton Institute of Biology, Symposium. Ottawa, Canada, May 2019.
- ◆ Plant and Animal Genome Conference (PAG), San Diego, California, USA, January 2019.
- ◆ Soy 2018 Conference, Athens, Georgia, USA, August 2018.
- ◆ Plant Biology Conference, Montreal, Canada, July 2018.

- ◆ Plant and Animal Genome Conference (PAG), San Diego, California, USA, January 2018.
- ◆ Canadian Society for Molecular Biosciences (CSMB), Ottawa, Canada, May 2017.
- ◆ Ottawa Institute of Systems Biology Symposium (OISB), Mont Tremblant, Canada, May 2015.
- ◆ 4th student/postdoc poster day in computational biology and bioinformatics, Ottawa, Canada, January 2015.
- ◆ RECOMB/ISCB Conference on Regulatory and Systems Genomics, with DREAM Challenges. Toronto, Canada, November 2013.
- ◆ 63rd Annual Conference of the Canadian Society of Microbiologists (CSM). Ottawa, Canada, June 2013.
- ◆ 13th International Conference on Systems Biology (ICSB). Toronto, Canada, August 2012.
- ◆ 19th Methods in Protein Structure Analysis (MPSA). Ottawa, Canada, June 2012
- ◆ 2nd China-Canada Systems Biology (CCSB). Ottawa, Canada, June 2012.
- ◆ 9th Annual OCIB, Ottawa Carleton Institute of Biology, Symposium. Ottawa, Canada, April 2012.
- ◆ 8th Annual OCIB, Ottawa Carleton Institute of Biology, Symposium. Ottawa, Canada, April 2011.
- ◆ 10th Annual Chemical Biophysics Symposium (CBP). Toronto, Canada, April 2011.
- ◆ Ottawa Regional Microbiology Symposium. Canada, April 2010.
- ◆ The First European Conference of Iranian Scientists in Agriculture and Natural Resources. Paris, France, October 2008.
- ◆ Plant Canada. Saskatchewan, Canada, June 2007.
- ◆ 11th IAPTC&B congress. Beijing, China, August 2006.
- ◆ 9th Iranian Genetic Congress. Tehran, Iran, September 2006.
- ✓ **Workshops**
- ◆ AAFC-USDA Genome Editing Workshop, April 2021 (Virtual).
- ◆ AAFC Bioinformatics Conference and Workshop, Lethbridge Research and Development Centre (AAFC-Lethbridge RDC), Canada, September 2019.
- ◆ Certificate in University Teaching, Carleton University, Ottawa, Canada, September-December 2018.
- ◆ Phenomics Transformative workshop. Ottawa (AAFC, Ottawa RDC), Canada, September 2017.
- ◆ Applied Computational Genomics Course (ACGC) workshop. Ottawa, Canada, August 2010.

Teaching:

- ◆ Fundamentals of Genetics (BIOL2017), Carleton University, Ottawa, Canada, 2014-2019.
- ◆ Microbiology (BIOL2303/ENVE2002), Carleton University, Ottawa, Canada, since 2016-2019.
- ◆ Biotechnology (BIOL4301), Carleton University, Ottawa, Canada, 2015; 2016-2017.
- ◆ Direct Studies in Biology (BIOL5501, BIOL3901), Carleton University, Ottawa, Canada, since 2017.

Guest Lecturer:

- ✓ Carleton University, Ottawa, Canada
 - ◆ Advances in microbiology (BIOL4303)
 - ◆ Molecular Genetics (BIOL3104)
 - ◆ Advances in microbiology (BIOL4303)
 - ◆ Computational systems biology (BIOC4008)
 - ◆ Microbiology (BIOL2303)
 - ◆ Methods in Molecular Genetics (BIOL5105)
 - ◆ Cell Biology (BIOL3201).

Students (Supervision)

- ◆ Supervision of graduate students:
 - Mike Sadowski, M.Sc., Carleton University, 2018-2020.
 - Nour Nissan, Ph.D., Carleton University, since 2019.
 - Arezo Pattang, M.Sc., Carleton University, 2020-2022.
 - Julia Hooker, Ph.D., Carleton University, since 2020.
 - Siwar Haidar, Ph.D., Carleton University, since 2021.
 - Simon Lackey, M.Sc., Carleton University, since 2021(part-time).
- ◆ Supervising casuals, COOPs, and volunteers:
 - Jessica Brown, Algonquin Collage, 2019-2020.
 - Emilie Gervais, Algonquin Collage, 2019-2020.
 - Le Hoa Tan, Volunteer, 2017-2019.
- ◆ Co-supervision undergraduate honors thesis, Carleton University, Ottawa, Canada, since 2017.
- ◆ Co-supervision of Visiting Scientist from NARO, Tohoku Agriculture Research Center, Ottawa, Canada, 2017-2018.
- ◆ Master students' thesis mentor, Carleton University, Ottawa, Canada, 2010-2014.
- ◆ Undergraduate honors thesis mentor, Carleton University, Ottawa, Canada, (September-April) 2011-2014.
- ◆ Undergraduate NSERC summer project mentor, Carleton University, Ottawa, Canada, (May-August) 2011-2014.
- ◆ Lab manager (Dr. Ashkan Golshani), Carleton University, Ottawa, Canada, 2010-2014.

Awards and Honors:

- ◆ NSERC VF, Postdoctoral fellowship, 2014.
- ◆ OGS (Ontario Graduate Scholarship), 2012-2013 and 2014-2015.
- ◆ The best (platinum) oral presentation, 63rd Annual Conference of the Canadian Society of Microbiologists (CSM), 2013.
- ◆ The best graduate-student oral presentation prize, 10th Ottawa Carleton Institute of Biology (OCIB), 2013.
- ◆ Graduate scholarship, Carleton University, 2010-2014.
- ◆ Conference travel award from 10th Annual Chemical Biophysics Symposium, 2011.
- ◆ Dean of Graduate Studies Entrance Scholarship for Domestic Students, Carleton University 2010.

Language:

English (Fluent)

Persian (Native)

Azeri (Native)

French (Intermediate)

Turkish (Fluent)

Core Skills

- ◆ Advanced experience in MS Office (Word, Excel, and PowerPoint).
- ◆ Advanced knowledge using related software in my field of study (R, Cytoscape, Clone Manager, colony size measurement, QTL analysis, PIPE, Tassel etc.) as well as web based interfaces (NCBI, Soybase, TAIR, g:Profiler, GeneMANIA etc).
- ◆ Excellent oral and written presentation skills.

Affiliations and Professional Activities

- ◆ Member of organizing committee, Canadian Society of Plant biologists (CSPB) Eastern Regional, Carleton University, Ottawa, Canada, 2021.
- ◆ Member of AAFC genome editing network working group, Since 2021.
- ◆ Member of Ontario Soybean and Canola Committee (OSACC), since 2017.
- ◆ Member of Canadian Society of Plant Biologists (CSPB), since 2015.
- ◆ Member of American Society of Plant Biologists (ASPB), since 2018.
- ◆ Member of Canadian National Proteomics Network (CNPN), since 2018.
- ◆ Member of International Society for Computational Biology (ISCB), since 2013.
- ◆ Member of Canadian Society of Microbiologists (CSM), 2011-2018.
- ◆ Member of Canadian Society of Molecular Biosciences (CSMB), 2010-2018.
- ◆ Member of editorial board (Associate Editor) of Archives of Phytopathology and Plant Protection (APPP), since 2018.
- ◆ Member of graduated students' thesis advisory committee; since 2018.
- ◆ Scientific reviewer (Journal):
 - Agriculture
 - Agronomy
 - Applied Genetics
 - BMC Plant Biology
 - Canadian journal of Plant Science
 - Cellular and Molecular Biology (CMB)
 - Computational and Structural Biotechnology
 - Frontiers in Plant Science
 - Genome
 - Genomics
 - International Journal of Molecular Sciences
 - International Journal of Plant Genomics
 - Iranian Genetic Engineering and Biosafety
 - Journal of Applied Genetics
 - MethodsX
 - Modern Genetics (Iranian)
 - Physiology and Molecular Biology of Plants (PMBP)
 - Plant Molecular Biology Report
 - PLOS ONE
 - Scientific Reports
 - Theoretical and Applied Genomics (TAG)
- ◆ Scientific reviewer (Grant proposals):

- Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), Ontario, Canada, since 2019.
- NSERC - Industrial Research Chair (IRC) Site Visit Committee, Canada, Toronto, 2018.
- Agriculture funding consortium, Alberta Barley, Alberta Wheat Commission, 2018.
- ◆ Session Chair for Ottawa Microorganism Day 2017, Canadian Society of Microbiologists, Ottawa, Canada.
- ◆ Session Chair for Genomics/proteomics section (#48) of oral presentations in Botany 2015 conference, Edmonton, Canada.
- ◆ Member of departmental seminar series organizing committee, Biology Department, Carleton University, Canada, 2013-2014.
- ◆ Member of scientific committee of 13th International Crop Science Congress and 3rd Seed Science and Technology Conference, University of Tehran, Iran, 2014.
- ◆ Member of Local Organizing Committee (LOC), 63rd Annual Conference of the Canadian Society of Microbiologists (CSM), Ottawa, Canada, 2013.
- ◆ Poster judge (undergraduate students final projects), Carleton University, Canada, since 2012.
- ◆ Poster judge, Canadian Society of Plant Biologists(CSPB-SCBV), Canada, June 2021.
- ◆ Poster judge, 18th Annual OCIB, Ottawa Carleton Institute of Biology Symposium, Ottawa, Canada, June 2021.
- ◆ Canadian Society of Microbiology (CSM), graduate student representative at Carleton University, Ottawa, Canada, 2011-2014.
- ◆ Member of Ottawa Carleton Institute of Biology (OCIB), symposium organizing committee. Ottawa, Canada, 2011-2013.
- ◆ Member of Let's Talk Science, Canada, 2010-2013.
- ◆ Member of organizing committee, 9th Iranian Genetic Congress, Tehran, Iran, 2006.
- ◆ Member of Iranian Genetic Society (IGS), since 2003.

Extracurricular activities

- ◆ Sports: tennis, swimming and strength training.
- ◆ Outdoor activities: hiking, camping and fishing.
- ◆ Books: science and history.
- ◆ Member of Building Emergency Response Team (BERT), Agriculture and Agri-Food Canada, Ottawa Research and Development Centre, Since 2015.

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Professor Jeffrey Charles Smith

Correspondence language: English

Sex: Male

Date of Birth: 7/08

Canadian Residency Status: Canadian Citizen

Country of Citizenship: Canada

Contact Information

The primary information is denoted by (*)

Address

Courier

Carleton University
Department of Chemistry
1125 Colonel By Drive
Ottawa Ontario K1S 5B6
Canada

Primary Affiliation (*)

Carleton University
Department of Chemistry
1125 Colonel By Drive
Ottawa Ontario K1S 5B6
Canada

Telephone

Work (*) 1-613-520-2600 extension: 2408

Email

Work (*) jeff_smith@carleton.ca

Website

Corporate www.carleton.ca/smithlab

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Protected when completed

Professor Jeffrey Smith

Language Skills

Language	Read	Write	Speak	Understand	Peer Review
English	Yes	Yes	Yes	Yes	Yes
French	Yes	No	No	Yes	No

Degrees

- 2005/1 - 2007/8 Post-doctorate, Science, Biochemistry, University of Ottawa
Degree Status: Completed
Supervisors: Professor Daniel Figeys, 2005/1 - 2008/6
- 2000/9 - 2005/6 Doctorate, Science, Chemistry, York University
Degree Status: Completed
Thesis Title: Mass spectrometry-based proteomics: non-covalent interactions and protein identification.
Transferred to PhD without completing Masters?: Yes
Supervisors: Professor K. W. Michael Siu, 2000/9 - 2004/12
- 1996/9 - 2000/6 Bachelor's, Science, Biochemistry, Trent University
Degree Status: Completed
Thesis Title: An ESI-MS investigation of inducible nitric oxide synthase.
Supervisors: Professor Steven P Rafferty, 1999/9 - 2000/4

Credentials

- 2011/12 Carleton University Teaching Award, Carleton University
Recognized for excellence in teaching chemistry

Recognitions

- 2019/4 Raving Raven Award from the Educational Development Centre at Carleton University
Carleton University
Prize / Award
This is a teaching award derived from an unsolicited nomination from a student or group of students
- 2019/4 Raving Raven Award from the Educational Development Centre at Carleton University
Carleton University
Prize / Award
This is a teaching award derived from an unsolicited nomination from a student or group of students

2018/5	Canadian Society for Mass Spectrometry Young Investigator Award Canadian Society for Mass Spectrometry Prize / Award Candidates will be chosen based on the impact they have made thus far in the field of mass spectrometry-based research, with anticipation of the future impact of the work as a secondary consideration
2016/12 - 2016/12	Carleton University Faculty of Science Teaching Award - 500 Carleton University Prize / Award Award for teaching excellence in the Faculty of Science at Carleton University
2011/12 - 2011/12	Carleton University Faculty of Science Teaching Award - 500 Carleton University Prize / Award Award for excellence in teaching at the university level
2006/6 - 2006/6	Genome Canada Travel Award to the 5th Annual HUPO International Congress - 1,667 (Canadian dollar) Genome Canada Prize / Award Travel award to international conference
2004/12 - 2004/12	Canadian Society for Mass Spectrometry Student Travel Award to the 17th Annual Tandem Mass Spectrometry Workshop - 1,500 (Canadian dollar) Canadian Society for Mass Spectrometry Prize / Award Travel award to conference
2000/9 - 2002/9	York Entrance Scholarship - 6,000 (Canadian dollar) York University Prize / Award Entrance scholarship to graduate school
2000/6 - 2000/6	President's Honours Roll Trent University Prize / Award Award for GPA over 80% for all years of undergraduate degree
2000/6 - 2000/6	Dean's Honours Roll Trent University Prize / Award Award for GPA over 80% in final year of undergraduate
1999/10 - 1999/10	Organic Chemistry Prize - 100 (Canadian dollar) Trent University Prize / Award Award for highest mark in 3rd year organic chemistry

User Profile

Engaged in Clinical Research?: No

Research Interests: Protein / post-translational modification dynamics over the course of disease.
Glycerophospholipid dynamics over the course of disease.

Fields of Application: Biomedical Aspects of Human Health

Disciplines Trained In: Biology and Related Sciences, Chemistry

Areas of Research: Functional and Structural Proteomics, Lipid/Lipoprotein analysis, Chemical Composition

Research Specialization Keywords: Bioinformatics, Biomolecular dynamics, Cancer, Cellular signalling, Chemical Derivatization, Chromatography, Lipidomics, Mass spectrometry, Metabolomics, Microfluidics, Oncolytic viruses, Phosphoproteomics, Proteomics, Quantitative analysis, Rapid opioid analysis

Research Disciplines: Chemistry, Biology and Related Sciences

Employment

2019/7	Full Professor Chemistry, Faculty of Science, Carleton University Full-time, Professor Tenure Status: Tenure
2019/7	Director, Ottawa Carleton Chemistry Institute Chemistry, Faculty of Science, Carleton University Full-time Tenure Status: Tenure
2019/7	Full Professor Biochemistry, Institute of, Faculty of Science, Carleton University Full-time, Professor Tenure Status: Tenure
2016/7	Associate Chair, Graduate and Post-Doctoral Affairs Chemistry, Faculty of Science, Carleton University Full-time Tenure Status: Tenure
2015/6	Director, Carleton Mass Spectrometry Centre Chemistry, Science, Carleton University Full-time Tenure Status: Tenure Director of the Carleton Mass Spectrometry Centre
2016/7 - 2019/6	Associate Director, Ottawa Carleton Chemistry Institute Chemistry, Faculty of Science, Carleton University Full-time Tenure Status: Tenure
2014/4 - 2019/6	Academic Colleague Representative on the Ontario Universities Council on Quality Assurance Quality Council, Faculty of Science / Carleton University, Council of Ontario Universities Part-time Tenure Status: Tenure I was an academic colleague member on the COU QC for 5 years evaluating the quality of programs from all 21 Ontario Universities. This involved an in person meeting every month in Toronto.

- 2013/7 - 2019/6
Academic Colleague to the President
Chemistry, Faculty of Science / Carleton University, Carleton University
Part-time
Tenure Status: Tenure
I was the representative from Carleton University on the Council of Ontario Universities. In this position I was the liaison between the Carleton University community (Faculty, Administration, Staff, Students) and the Council of Ontario Universities which directly interfaced with the Ministry of Training Colleges and Universities on policy relating to the post-secondary education sector. There were six two day meetings in Toronto per year as well as reporting requirements to the Academic Senate of Carleton following each meeting. Ad hoc meetings with members from Carleton's community regularly occurred on a monthly basis. Bi-monthly meetings were held with the President of the University to discuss issues and needs relevant to our sector.
- 2012/4 - 2019/6
Associate Professor
Biochemistry, Institute of, Carleton University, Carleton University
Full-time, Associate Professor
Tenure Status: Tenure
Fields of Application: Biomedical Aspects of Human Health
Areas of Research: Functional and Structural Proteomics
Research Disciplines: Chemistry
- 2012/4 - 2019/6
Associate Professor
Chemistry, Carleton University, Carleton University
Full-time, Associate Professor
Tenure Status: Tenure
- 2010/9 - 2019/6
Senator
Chemistry, Faculty of Science / Carleton University, Carleton University
Part-time
Tenure Status: Tenure
I was a Senator on the Carleton University Academic Senate for nine years. Duties included attending monthly meetings to vote on academic matters pertaining to the institution. This also required a great deal of reading on a regular basis to gain a prior understanding of the content of the meetings as well as a perspective on the myriad of issues surrounding self-governance in academia.
- 2013/11 - 2017/8
Carleton University Workplace Mental Health Advisory Committee Member
Chemistry, Faculty of Science / Carleton University, Carleton University
Part-time
Tenure Status: Tenure
Monthly meetings to design and oversee the implementation of a workplace mental health framework for faculty and staff at Carleton University

- 2011/9 - 2013/6
 Alternate Academic Colleague to the President
 Chemistry, Faculty of Science / Carleton University, Carleton University
 Part-time
 Tenure Status: Tenure
 I was the alternate representative from Carleton University on the Council of Ontario Universities. However Carleton's main representative became ill several months into their tenure in this position and I fulfilled the majority of the duties over this time period. In this position I was the liaison between the Carleton University community (Faculty, Administration, Staff, Students) and the Council of Ontario Universities which directly interfaced with the Ministry of Training Colleges and Universities on policy relating to the post-secondary education sector. There were six two day meetings in Toronto per year as well as reporting requirements to the Academic Senate of Carleton following each meeting. Ad hoc meetings with members from Carleton's community regularly occurred on a monthly basis. Bi-monthly meetings were held with the President of the University to discuss issues and needs relevant to our sector.
- 2008/9 - 2012/4
 Assistant Professor
 Biochemistry, Institute of, Carleton University, Carleton University
 Full-time, Assistant Professor
 Tenure Status: Tenure Track
 Fields of Application: Biomedical Aspects of Human Health
 Areas of Research: Functional and Structural Proteomics
 Research Disciplines: Chemistry
- 2008/7 - 2012/4
 Assistant Professor
 Chemistry, Carleton University, Carleton University
 Full-time, Assistant Professor
 Tenure Status: Tenure Track
 Fields of Application: Biomedical Aspects of Human Health
 Areas of Research: Functional and Structural Proteomics
 Research Disciplines: Chemistry
- 2007/8 - 2008/6
 Research Associate
 Biochemistry, microbiology and immunology, Faculty of Medicine / University of Ottawa, University of Ottawa
 Full-time
 Tenure Status: Non Tenure Track
 Fields of Application: Biomedical Aspects of Human Health
 Areas of Research: Functional and Structural Proteomics
 Research Disciplines: Chemistry

Affiliations

The primary affiliation is denoted by (*)

(*) 2012/4 Associate Professor, Chemistry, Carleton University

Leaves of Absence and Impact on Research

2019/1 - 2019/10	<p>Other Circumstances, Carleton University</p> <p>On January 26, 2019 a fire devastated the laboratory above ours. A broken water main combined with the firefighters extinguishing efforts flooded every part of our lab. The fire cut the building power causing extensive smoke damage to the inside and outside of every piece of equipment in our lab. Computers were flooded beyond recovery, every consumable had to be discarded, renovations to our room resulted in long delays. Every MS system required remediation by qualified electronics personnel tasked by the insurance company. Remediation efforts on the MS systems alone cost ~\$750,000.00. Our flagship triple quadrupole MS system required 8 months of service calls to fix, our flagship QTOF instrument was written off and replaced in October 2019. Lab productivity was drastically reduced, the generation of publication quality data was impossible until the end of 2019. The lab is presently 90% restored with the remaining 10% by the end of 2021 (delayed due to COVID-19).</p>
2018/6 - 2019/1	<p>Other Circumstances, Carleton University</p> <p>On June 28, 2018 a flood occurred in a lab above ours. The water drained through a hole in the floor and onto our flagship triple quadrupole MS system (4000 QTrap). The water then flooded the crawlspace below our lab and damaged a UPS that was powering this instrument as well as a second triple quadrupole MS system (API 2000). The damage was remediated via an insurance claim meaning the timing of the repairs was determined by the insurance adjuster working with Carleton's legal personnel as well as the vendors of the equipment. The UPS was repaired in August 2018 allowing us to attempt to turn on the MS systems. The API 2000 was undamaged but the 4000 QTrap was inoperable from the water damage. This instrument was fully repaired on January 8th, 2019 after many iterative service calls. The 4000 QTrap is used to collect publication-quality data. Efforts in the lab were limited to method development and all penultimate experiments were put on hold while the instrument was offline.</p>

Research Funding History

Awarded [n=2]

2020/5 - 2025/4 Principal Applicant	<p>Novel methods and applications in quantitative mass spectrometry-based biomolecule analysis</p> <p>Funding Sources:</p> <p style="padding-left: 40px;">Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Grant Total Funding - 145,000 Funding Competitive?: Yes</p>
2020/7 - 2023/6 Co-applicant	<p>Development of Supporting Analytical Assays and Regulatory Compliance Package for Viral Sensitizer Technology Commercialization</p> <p>Funding Sources:</p> <p style="padding-left: 40px;">BioCanRx BioCanRx Training Programs for Highly Qualified Personnel (HQP) Total Funding - 57,000 Funding Competitive?: Yes</p>

Completed [n=23]

2020/5 - 2020/5	Microwave Plasma Atomic Emission Spectrometer (MPAES) for Elemental Analysis, Grant
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Co-applicant

Funding Sources:

Natural Sciences and Engineering Research Council of Canada
(NSERC)
Research Tools and Instruments
Total Funding - 88,303
Portion of Funding Received - 0
Funding Competitive?: Yes

Co-applicant : Bertram, Sue; Cooke, Steven; McMullin, David;

Principal Applicant : MacMillan, Heath

2018/5 - 2020/4

Collaborator

Investigating the perturbation of molecular and cellular metabolic processes as a result of
internal radiological stress, Contract

Funding Sources:

Health Canada
Research Contract
Total Funding - 20,000
Portion of Funding Received - 20,000
Funding Competitive?: Yes

2015/4 - 2020/3

Principal Applicant

Novel methods and applications in quantitative mass spectrometry-based proteomics and
lipidomics, Grant, Operating
Clinical Research Project?: No
Project Description: Development of new chemical methods and investigating new
applications in the use mass spectrometry to investigate the roles that proteins and lipids
play in cellular life

Funding Sources:

2015/4 - 2020/3 Natural Sciences and Engineering Research Council of Canada
(NSERC)
Discovery Grant
Total Funding - 100,000 (Canadian dollar)
Portion of Funding Received - 100,000 (Canadian dollar)
Funding Renewable?: Yes
Funding Competitive?: Yes

2017/3 - 2020/2

Co-applicant

Viral sensitizer technology for increasing yields of vaccine in cell culture, Grant

Funding Sources:

2017/3 - 2020/2 Natural Sciences and Engineering Research Council of Canada
(NSERC)
Collaborative Research and Development
Total Funding - 270,000 (Canadian dollar)
Portion of Funding Received - 75,600
Funding Competitive?: Yes

2019/3 - 2019/9

Principal Applicant

Determining Presence and Concentration of Opioids in Drug Samples Using Novel Rapid
Non-Invasive Portable Mass Spectrometry Technology, Grant

Funding Sources:

Health Canada
Impact Canada Technology Challenge to address the Opioid Crisis
Total Funding - 25,000
Portion of Funding Received - 25,000
Funding Competitive?: Yes

Co-applicant : Leonard, Lynne

2017/7 - 2018/6

Principal Investigator

Establishing the amino acid kinetic pattern of endurance runners, Grant

Funding Sources:

Ontario Center of Excellence (OCE)
Voucher for Innovation and Productivity
Total Funding - 25,000
Portion of Funding Received - 25,000
Funding Competitive?: Yes

2017/1 - 2018/1

Principal Investigator

Ion Mobility Spectrometry for On-Site Detection of Cannabinoids, Grant

Funding Sources:

Mathematics of Information Technology and Complex Systems (MITACS)
Accelerate
Total Funding - 50,000
Portion of Funding Received - 50,000
Funding Competitive?: Yes

2017/7 - 2017/12

Principal Investigator

Establishing the amino acid kinetic pattern of endurance runners, Grant

Funding Sources:

Natural Sciences and Engineering Research Council of Canada (NSERC)
Engage
Total Funding - 25,000
Portion of Funding Received - 25,000
Funding Competitive?: Yes

2016/9 - 2017/8

Principal Investigator

Identifying chemical markers of aging efficiency in coffee, Grant

Funding Sources:

2016/9 - 2017/8 Ontario Center of Excellence (OCE)
Voucher for Innovation and Productivity
Total Funding - 25,000 (Canadian dollar)
Portion of Funding Received - 25,000
Funding Competitive?: Yes

2016/5 - 2017/4

Principal Investigator

Optimizing growing recipes for leafy green vegetables through nutrient analysis using mass spectrometry, Grant

Funding Sources:

2016/5 - 2016/10 Natural Sciences and Engineering Research Council of Canada (NSERC)
Engage
Total Funding - 25,000 (Canadian dollar)
Portion of Funding Received - 25,000
Funding Competitive?: Yes

2016/5 - 2017/4

Principal Investigator

Optimizing growing recipes for leafy green vegetables through nutrient analysis using mass spectrometry, Grant

Funding Sources:

2016/5 - 2017/5 Ontario Center of Excellence (OCE)
 Voucher for Innovation and Productivity
 Total Funding - 25,000 (Canadian dollar)
 Portion of Funding Received - 25,000
 Funding Competitive?: Yes

2016/9 - 2017/2 Identifying chemical markers of aging efficiency in coffee, Grant

Principal Investigator

Funding Sources:

2016/9 - 2017/2 Natural Sciences and Engineering Research Council of Canada
 (NSERC)
 Engage
 Total Funding - 25,000 (Canadian dollar)
 Portion of Funding Received - 25,000
 Funding Competitive?: Yes

2016/1 - 2016/12 The development of DPIS and associated dopant chemistry for use in standalone IMS
 Principal Investigator systems, Grant

Funding Sources:

2016/1 - 2017/1 Mathematics of Information Technology and Complex Systems
 (MITACS)
 Accelerate
 Total Funding - 45,000 (Canadian dollar)
 Portion of Funding Received - 45,000
 Funding Competitive?: Yes

2015/7 - 2015/12 Molecular fingerprinting of craft beer during the aging process by headspace sampling and
 Principal Investigator GC-MS analysis, Grant

Funding Sources:

2015/7 - 2015/12 Natural Sciences and Engineering Research Council of Canada
 (NSERC)
 Engage
 Total Funding - 25,000 (Canadian dollar)
 Portion of Funding Received - 25,000
 Funding Competitive?: Yes

2012/5 - 2015/5 Development of small molecule viral sensitizers to boost vaccine manufacturing, Grant

Co-investigator

Funding by Year:

2012/4 - 2015/3 Total Funding - 789,160
 Portion of Funding Received - 190,460
 Time Commitment: 20

Funding Sources:

2012/5 - 2015/5 Natural Sciences and Engineering Research Council of Canada
 (NSERC)
 Collaborative Health Research Projects
 Total Funding - 789,160 (Canadian dollar)
 Portion of Funding Received - 190,460
 Funding Competitive?: Yes

Principal Investigator : Boddy, Christopher

2011/5 - 2014/5 Developing new technology and novel strategies to enhance the quality of quantitative
 Principal Investigator proteomic analyses, Grant

Funding by Year:

2011/4 - 2014/3 Total Funding - 15,000
 Portion of Funding Received - 15,000
 Time Commitment: 20

Funding Sources:

2011/5 - 2014/5 Natural Sciences and Engineering Research Council of Canada (NSERC)
 Discovery Grant - Early Career Researcher Supplement
 Total Funding - 15,000 (Canadian dollar)
 Portion of Funding Received - 15,000
 Funding Competitive?: Yes

Principal Investigator : Smith, Jeffrey C

2009/5 - 2014/5 Developing new technology and novel strategies to enhance the quality of quantitative proteomic analyses, Grant
 Principal Investigator

Funding by Year:

2009/5 - 2014/5 Total Funding - 150,000
 Portion of Funding Received - 150,000
 Time Commitment: 20

Funding Sources:

2009/5 - 2014/5 Natural Sciences and Engineering Research Council of Canada (NSERC)
 Discovery Grant
 Total Funding - 150,000 (Canadian dollar)
 Portion of Funding Received - 150,000
 Funding Competitive?: Yes

Principal Investigator : Smith, Jeffrey C

2010/9 - 2010/10 Mass spectrometric instrumentation to enable novel analyses of polar lipids from complex biological samples
 Principal Investigator

Funding by Year:

2010/9 - 2010/10 Total Funding - 140,000
 Portion of Funding Received - 140,000
 Time Commitment: 10

Funding Sources:

2010/9 - 2010/10 Ontario Research Fund (ORF)
 Research Infrastructure Funding
 Total Funding - 140,000 (Canadian dollar)
 Portion of Funding Received - 140,000
 Funding Competitive?: Yes

Principal Investigator : Smith, Jeffrey C

2009/9 - 2010/9 Proteomics of Allogenic Blood or Marrow Grafts: A Pilot Study to Optimize Specimen Preparation for Mass Spectrometric Adjunct Studies for Patients in Prospective CBMTG Studies of Graft Source
 Co-investigator

Funding by Year:

2009/9 - 2010/9 Total Funding - 10,000
 Portion of Funding Received - 5,000
 Time Commitment: 10

Funding Sources:

2009/9 - 2010/9 Canadian Bone Marrow Transplantation Group (CBMTG)
 Canadian Blood and Marrow Transplant Group 2009 Small Budget
 Total Funding - 10,000 (Canadian dollar)
 Portion of Funding Received - 5,000
 Funding Competitive?: Yes

Principal Investigator : Atkins, Harry

2010/6 - 2010/7 Mass spectrometric instrumentation to enable novel analyses of polar lipids from complex
 Principal Investigator biological samples

Funding by Year:

2010/6 - 2010/7 Total Funding - 140,000
 Portion of Funding Received - 140,000
 Time Commitment: 10

Funding Sources:

2010/6 - 2010/7 Canada Foundation for Innovation (CFI)
 Leaders Opportunity Fund
 Total Funding - 140,000 (Canadian dollar)
 Portion of Funding Received - 140,000
 Funding Competitive?: Yes

Principal Investigator : Smith, Jeffrey C

2008/7 - 2009/7 Mass spectrometry-based phosphoproteomics
 Principal Investigator

Funding by Year:

2008/7 - 2009/7 Total Funding - 50,000
 Portion of Funding Received - 50,000
 Time Commitment: 25

Funding Sources:

2008/7 - 2009/7 Carleton University
 Start up grant
 Total Funding - 50,000 (Canadian dollar)
 Portion of Funding Received - 50,000
 Funding Competitive?: Yes

Principal Investigator : Smith, Jeffrey C

2002/5 - 2004/5 NSERC PGS B Award, Fellowship
 Principal Applicant

Funding by Year:

2002/5 - 2004/5 Total Funding - 40,100
 Portion of Funding Received - 40,100
 Time Commitment: 100

Funding Sources:

2002/5 - 2004/5 Natural Sciences and Engineering Research Council of Canada
 (NSERC)
 NSERC PGS B
 Total Funding - 40,100 (Canadian dollar)
 Portion of Funding Received - 40,100
 Funding Competitive?: Yes

2001/5 - 2002/5 OGS Graduate Scholarship, Fellowship

Principal Applicant

Funding by Year:

2001/5 - 2002/5 Total Funding - 15,000
 Portion of Funding Received - 15,000
 Time Commitment: 100

Funding Sources:

2001/5 - 2002/5 Ontario Graduate Scholarship Program
 Ontario Graduate Scholarship
 Total Funding - 15,000 (Canadian dollar)
 Portion of Funding Received - 15,000
 Funding Competitive?: Yes

Declined [n=2]

2020/5 - 2026/4
 Co-applicant

NSERC CREATE FOR THE CANADIAN BIOMANUFACTURING INITIATIVE (CBI), Grant

Funding Sources:

Natural Sciences and Engineering Research Council of Canada
 (NSERC)
 Collaborative Research and Training Experience Program
 Total Funding - 2,922,750
 Portion of Funding Received - 292,275
 Funding Competitive?: Yes

Co-applicant : Bell, John; Boddy, Christopher; Cote, Marceline; Ilkow, Carolina; Kamen, Amine; Kekre, Natasha; Korbitt, Gregory; Twine, Susan;

Principal Applicant : Diallo, Jean-Simon

2006/3 - 2006/3
 Principal Applicant

NSERC IRDF Award, Fellowship

Funding by Year:

2006/3 - 2008/4 Total Funding - 60,000
 Portion of Funding Received - 60,000
 Time Commitment: 100

Funding Sources:

2006/3 - 2008/4 Natural Sciences and Engineering Research Council of Canada
 (NSERC)
 NSERC IRDF Award
 Total Funding - 60,000 (Canadian dollar)
 Portion of Funding Received - 60,000
 Funding Competitive?: Yes

Under Review [n=1]

2022/1 - 2023/3
 Co-applicant

Comparatively Evaluating Three Drug Checking Modalities to Provide Evidence to Drive Pan-Canadian Implementation Scale-up

Funding Sources:

Health Canada
 Substance Use and Addictions Program (SUAP)
 Total Funding - 1,045,598
 Funding Competitive?: Yes

Principal Applicant : Leonard, Lynne

Student/Postdoctoral Supervision

Bachelor's [n=18]

2019/9 - 2020/4 Principal Supervisor	Zarrouki, Malaika (In Progress) , Carleton University Thesis/Project Title: Investigating the effects of buffer composition on the reactivity of iTrEnDi on hydroxyl groups Present Position: Undergraduate Student, Carleton University
2019/5 - 2019/8 Principal Supervisor	Warnes, Ben (In Progress) , Carleton University Thesis/Project Title: Enhancing the analysis of phosphatidic acid via iTrEnDi Present Position: Undergraduate Student, Carleton University
2018/5 - 2018/9 Principal Supervisor	Gebeyehu, Wondewassen (In Progress) , Carleton University Thesis/Project Title: Novel MS instrumentation to detect opioids in street drugs Present Position: Undergraduate Student, Carleton University
2017/5 - 2018/4 Principal Supervisor	Basiri, Morvarid (In Progress) , Carleton University Thesis/Project Title: Enhancing the stability and detectability of Vitamin C using TrEnDi Present Position: Undergraduate Student, Carleton University
2014/5 - 2014/7 Principal Supervisor	Atkins, Michael (Completed) , Carleton University Student Degree Start Date: 2010/9 Thesis/Project Title: Mass spectrometry-based phospholipidomics of oncolytic virus-infected chronic myelogenous leukemia cells [Summer Internship] Present Position: Combined MD/PhD Student, University of Toronto, Toronto, ON
2014/5 - 2014/8 Principal Supervisor	D'Souza, Terri (Completed) , Carleton University Student Degree Start Date: 2010/9 Thesis/Project Title: DART-MS and DESI-MS analyses of explosive materials of forensic interest [Summer Internship] Present Position: Chemistry Analyst, Canadian Food Inspection Agency, Halifax, NS
2013/9 - 2013/12 Principal Supervisor	Cyr, Kathryn (Completed) , Carleton University Student Degree Start Date: 2010/9 Thesis/Project Title: Comparative study of "shotgun" versus HPLC-based quantitative lipidomic methods [Fall Internship] Present Position: Support Worker, Canadian Addiction Treatment Centres, Ottawa, ON
2013/5 - 2013/8 Principal Supervisor	Hill, Kevin (Completed) , Carleton University Student Degree Start Date: 2009/9 Thesis/Project Title: Biopharmaceutical applications of imaged capillary isoelectric focusing [Summer Internship] Present Position: Senior Mechanical Equipment Design Engineer, Intuitive Surgical, San Jose, CA
2013/1 - 2013/4 Principal Supervisor	Atkins, Michael (Completed) , Carleton University Student Degree Start Date: 2010/9 Thesis/Project Title: Insights into a Mass Spectrometry-based Approach to Plasma Lipidome Analysis for Disease Biomarker Identification [Winter Internship] Present Position: Combined MD/PhD Student, University of Toronto, Toronto, ON

- 2012/9 - 2013/4
Principal Supervisor Lee, Hyunmin (Completed) , Carleton University
Student Degree Start Date: 2012/5
Thesis/Project Title: Trimethylation Enhancement using Diazomethane (TrEnDi) Increases Sensitivity in Lipid Analysis Using Tandem Mass Spectrometry [Fall/Winter Internship]
Project Description: Novel MRM-based quantitative MS methods in lipidomic analyses
Present Position: PhD Student in Computational Molecular Genetics, University of Toronto, Toronto, ON
- 2012/5 - 2013/8
Principal Supervisor Serry, Lina (Completed) , Carleton University
Student Degree Start Date: 2012/5
Thesis/Project Title: MS-based lipidomics of cancer [Summer Internship]
Project Description: Optimization of laboratory systems
Present Position: Software Engineer, Microsoft, Vancouver, British Columbia, Canada
- 2011/9 - 2012/4
Principal Supervisor Trouborst, Lennart (Completed) , Carleton University
Student Degree Start Date: 2010/9
Thesis/Project Title: Novel methods for analyzing quantitative lipidomic MS-based datasets [Fall/Winter Internship]
Present Position: Graduate Student, University of Toronto
- 2011/5 - 2011/8
Principal Supervisor Wasslen, Karl (Completed) , Carleton University
Student Degree Start Date: 2007/9
Thesis/Project Title: Novel Microfluidic Methods to Methylate Peptides & Permit Quantitative Analysis Using Tandem Mass Spectrometry [Summer Internship]
Present Position: Verification Specialist, AB Sciex, Concord, ON
- 2011/1 - 2011/4
Principal Supervisor Whitton, Sarah (Completed) , Carleton University
Student Degree Start Date: 2011/1
Student Degree Received Date: 2012/5
Thesis/Project Title: The Study of Lipidomics using Mass Spectrometry for Cancer Research [Winter Internship]
Project Description: A mass spectrometry?based investigation of the effects of hypoxia on cellular lipids in SH-SY5Y cells
Present Position: Technical Representative at Flowmetrix, Dorchester, ON
- 2010/5 - 2010/9
Principal Supervisor Girgrah, Ryan (Completed) , Carleton University
Student Degree Start Date: 2010/5
Thesis/Project Title: Optimization of Immobilized Trypsin Using Microfluidics [Co-op Placement]
Project Description: Optimization of Immobilized Trypsin Using Microfluidics
Present Position: Graduate Student, Carleton University
- 2010/5 - 2011/9
Principal Supervisor Bourassa, Elizabeth (Completed) , Carleton University
Student Degree Start Date: 2010/5
Student Degree Received Date: 2011/9
Thesis/Project Title: Quantitative phosphoproteomic analyses of hypoxic PC12 cells [Summer Internship]
Project Description: Quantitative phosphoproteomic analyses of hypoxic PC12 cells
Present Position: M.Sc. in Forensic Speech Science at the University of York
- 2010/1 - 2010/4
Principal Supervisor Wood, Stephen (Completed) , Carleton University
Student Degree Start Date: 2010/1
Thesis/Project Title: Peptide and protein separation capabilities of free flow electrophoresis [Winter Internship]
Project Description: Peptide and protein separation capabilities of free flow electrophoresis, application of TrEnDi to complex peptide mixtures
Present Position: Graduate Student, University of Toronto

2009/6 - 2010/4
Principal Supervisor Busuttil, Alia (Completed) , Carleton University
Student Degree Start Date: 2009/6
Student Degree Received Date: 2010/12
Thesis/Project Title: Novel methods in MS-based DNA analysis [Summer/Fall/Winter Internship]
Project Description: Novel methods in MS-based DNA analysis
Present Position: Medical student, Queen's University

Bachelor's Equivalent [n=5]

2019/5 - 2019/9
Principal Supervisor Gebeyehu, Wondewassen (In Progress) , Carleton University
Thesis/Project Title: Novel MS instrumentation to detect opioids instreet drugs
Present Position: Undergraduate Student, Carleton University

2014/9 - 2014/12
Co-Supervisor Naperstkow, Zoya (Completed) , Carleton University
Student Degree Start Date: 2001/9
Thesis/Project Title: Development of novel phosphopeptide detection methods using TrEnDi derivatization and mass spectrometry [Fall Internship]
Present Position: Inside Sales Representative, Thermo Fisher Scientific, Toronto, Canada

2014/5 - 2014/8
Principal Supervisor Stalinski, Danisz (Completed) , Carleton University
Student Degree Start Date: 2011/9
Thesis/Project Title: TrEnDi-based analysis of phosphatidylserine [USRA]
Present Position: MASC Student in Electrical and Computer Engineering, Carleton University

2014/5 - 2014/8
Co-Supervisor Lee, Hyunmin (Completed) , Carleton University
Student Degree Start Date: 2011/9
Thesis/Project Title: Analysis of DNA aptamers using MS [USRA]
Present Position: Graduate Student in Computational Molecular Genetics, University of Toronto, Toronto, ON

2014/5 - 2014/8
Principal Supervisor Hill, Kevin (Completed) , Carleton University
Student Degree Start Date: 2010/9
Thesis/Project Title: Lab on a chip – microfluidics and diagnostic advancements [Summer Internship]
Present Position: Senior Mechanical Equipment Design Engineer, Intuitive Surgical, San Jose, CA

Bachelor's Honours [n=43]

2019/9 - 2020/4
Principal Supervisor Gebeyehu, Wondewassen (In Progress) , Carleton University
Thesis/Project Title: Novel MS instrumentation and derivatization strategies to detect opioids in street drugs
Present Position: Undergraduate Student, Carleton University

2019/9 - 2020/4
Principal Supervisor Warnes, Ben (In Progress) , Carleton University
Thesis/Project Title: Enhancing the analysis of phosphatidic acid via iTrEnDi
Present Position: Undergraduate Student, Carleton University

2019/9 - 2020/4
Co-Supervisor Clark, Hunter (In Progress) , Carleton University
Thesis/Project Title: Synthesis of a room-temperature-reactive precursor to 13C-diazomethane for iTrEnDi applications
Present Position: Undergraduate Student, Carleton University

2019/9 - 2020/4
Co-Supervisor Sheedy, Krysten (In Progress) , Carleton University
Thesis/Project Title: Enhancing the analysis of glufonsinate using iTrEnDi
Present Position: Undergraduate Student, Carleton University

- 2019/9 - 2020/4
Co-Supervisor
Faeq, Makki (In Progress) , Carleton University
Thesis/Project Title: Synthesis of diazoalkanes bearing a fixed, permanent positive charge and their application to biomolecule analysis
Present Position: Undergraduate Student, Carleton University
- 2018/9 - 2019/4
Co-Supervisor
Aulenback, Chelsey (Completed) , Carleton University
Thesis/Project Title: Enhancing the analysis of glyphosate using iTrEnDi
Present Position: MSc Student, Department of Chemistry, Carleton University
- 2018/9 - 2019/4
Principal Supervisor
Colquhoun, Fraser (Completed) , Carleton University
Thesis/Project Title: Enhancing the sensitivity of opioid analyses using TrEnDi
Present Position: MSc Student, Department of Chemistry, Carleton University
- 2018/9 - 2019/4
Principal Supervisor
Wright, Christopher (Completed) , Carleton University
Thesis/Project Title: Comprehensive analysis of technology that may be used to police cannabis impairment
Present Position: PharmD Student, University of Alberta, Edmonton, AB
- 2018/9 - 2019/4
Co-Supervisor
Rivada, John (Completed) , Carleton University
Thesis/Project Title: Advancements in GDIA technology using NMU precursors
Present Position: MSc Student, Department of Chemistry, Carleton University
- 2018/9 - 2019/4
Principal Supervisor
Roberts, Joshua (Completed) , Carleton University
Thesis/Project Title: Advancements in GDIA technology using Diazald precursors
Present Position: MSc Student, Department of Chemistry, Carleton University
- 2017/9 - 2018/4
Principal Supervisor
Ramlawi, Serine (Completed) , Carleton University
Thesis/Project Title: Extraction of Fat-Soluble and Water-Soluble Vitamins from *Lactuca sativa* var. capitata L.
Present Position: MSc Student, Department of Chemistry, Carleton University
- 2017/9 - 2018/4
Co-Supervisor
Ebanks, Fiona (Completed) , Carleton University
Thesis/Project Title: The extraction and quantification of 25-hydroxyvitamin D3 using a DNA aptamer-based solid phase extraction column in tandem with liquid chromatography mass spectrometry
Present Position: PhD Student, Department of Chemistry, Carleton University
- 2017/9 - 2018/4
Principal Supervisor
Rosales, Christian (Completed) , Carleton University
Thesis/Project Title: Enhancing lipid ion signal through the use of diazoethane derivatization
Present Position: MSc Student, Department of Chemistry, Carleton University
- 2016/9 - 2017/4
Co-Supervisor
Boudreau, Joshua (Completed) , Carleton University
Student Degree Start Date: 2013/9
Thesis/Project Title: Enhancing the sensitivity of Cardiolipin using TrEnDi
Present Position: Unknown
- 2016/9 - 2017/4
Co-Supervisor
White-Buenger, Edgar (Completed) , Carleton University
Student Degree Start Date: 2013/9
Thesis/Project Title: Development of derivatization chemistry to add fixed negative charges to biomolecules
Present Position: Graduate Student, University of Melbourne, Melbourne, Australia
- 2016/9 - 2017/4
Co-Supervisor
Wahl, Caleb (Completed) , Carleton University
Student Degree Start Date: 2013/9
Thesis/Project Title: Optimization of TrEnDi reaction conditions with respect to the concentration of acid used on PE and SM lipids
Present Position: Employee, Windfirm Resources Inc., Huntsville, ON

- 2015/9 - 2016/4
Principal Supervisor Black, Chelsea (Completed) , Carleton University
Student Degree Start Date: 2012/9
Thesis/Project Title: Novel CI-GC/MS methods to detect nitrated sugars from explosive residues
Present Position: Student, Teachers College, Queen's University
- 2015/9 - 2016/4
Principal Supervisor Thomas, Gilian (Completed) , Carleton University
Student Degree Start Date: 2012/9
Thesis/Project Title: Novel strategies to optimize derivatization yields for sphingomyelin species using TrEnDi
Present Position: PhD Student, Department of Chemistry, University of Victoria, Victoria, BC
- 2015/9 - 2016/4
Principal Supervisor Bigelow, Stewart (Completed) , Carleton University
Student Degree Start Date: 2012/9
Thesis/Project Title: Gas phase charge reversal for TrEnDi modified lipids
Present Position: MSc Student, Department of Chemistry, Carleton University
- 2015/5 - 2016/4
Principal Supervisor Weinert, Hillary (Completed) , Carleton University
Student Degree Start Date: 2012/9
Thesis/Project Title: Use of TrEnDi on plasmalogen species
Present Position: PharmD Student, University of Toronto, Toronto, ON
- 2014/9 - 2015/4
Co-Supervisor Chawner, Emma (Completed) , Carleton University
Student Degree Start Date: 2011/9
Thesis/Project Title: Development of a novel peptide quantitation method using isotopically labelled diazomethane and mass spectrometry [Honours Project]
Present Position: Animal Care Associate, African Lion Safari, Hamilton, ON
- 2014/5 - 2014/8
Co-Supervisor Koudrina, Anna (Completed) , Carleton University
Student Degree Start Date: 2011/9
Thesis/Project Title: Investigation into the fragmentation mechanisms involved in CID of TrEnDi-modified peptides [Honours Project]
Present Position: PhD Student, Department of Chemistry, Carleton University
- 2014/1 - 2014/5
Principal Supervisor D'Souza, Terri (Completed) , Carleton University
Student Degree Start Date: 2010/9
Thesis/Project Title: DESI-MS analysis of explosive materials of forensic interest [I-CUREUS Award Winner]
Present Position: Chemistry Analyst, Canadian Food Inspection Agency, Halifax, NS
- 2013/9 - 2014/4
Principal Supervisor Serry, Lina (Completed) , Carleton University
Student Degree Start Date: 2010/9
Thesis/Project Title: A Comparison of Bligh and Dyer Lipid Extraction and Lipid Extraction Using Methyl-tert-Butyl Ether [Honours Project]
Present Position: Software Engineer, Microsoft, Vancouver, British Columbia, Canada
- 2013/9 - 2014/4
Principal Supervisor Atkins, Michael (Completed) , Carleton University
Student Degree Start Date: 2010/9
Thesis/Project Title: Mass spectrometry-based phospholipidomics of oncolytic virus-infected chronic myelogenous leukemia cells [Honours Project]
Present Position: Combined MD/PhD Student, University of Toronto, Toronto, ON
- 2013/9 - 2014/4
Co-Supervisor Fernandes, Russel (Completed) , Carleton University
Student Degree Start Date: 2010/9
Thesis/Project Title: A Safe and Efficient Method for Peptide Trimethylation Enhancement Using Diazomethane (TrEnDi) [Honours Project]
Present Position: Chemist, Glencore, Waterloo, Ontario, Canada

- 2013/9 - 2014/4
Principal Supervisor Brown, Kerene (Completed) , Carleton University
Student Degree Start Date: 2009/9
Thesis/Project Title: A mass spectrometry based lipidomic analyses of hibernation in thirteen-lined ground squirrel liver tissue [Honours Project]
Present Position: PhD Student, Department of Chemistry, York University, Toronto, ON
- 2013/5 - 2013/8
Principal Supervisor D'Souza, Terri (Completed) , Carleton University
Student Degree Start Date: 2010/9
Thesis/Project Title: DART-MS analysis of explosive materials of forensic interest [Honours Project]
Present Position: Chemistry Analyst, Canadian Food Inspection Agency, Halifax, NS
- 2012/9 - 2013/4
Co-Supervisor Cheng, Jeannette (Completed) , Ottawa Hospital Research Institute / Carleton University
Student Degree Start Date: 2012/9
Thesis/Project Title: Vaccinia Virus B18r Recombinant Protein to Enhance Various Interferon Sensitive Oncolytic Virus [Honours Project]
Project Description: B18R – Viral sensitizer working alongside oncolytic viruses
Present Position: Undergraduate Student (Nursing), Trent University, Peterborough, ON
- 2012/9 - 2013/4
Principal Supervisor Joudan, Shira (Completed) , Carleton University
Student Degree Start Date: 2009/9
Thesis/Project Title: A mass spectrometry-based quantitative lipidomic analysis of k562 cells infected with vesicular stomatitis virus [Honours Project]
Present Position: PhD Student, Department of Chemistry, University of Toronto, Toronto, ON
- 2012/9 - 2013/4
Principal Supervisor Wood, Stephen (Completed) , Carleton University
Student Degree Start Date: 2009/9
Thesis/Project Title: Application of TrEnDi to complex peptide samples: optimization of chemistry and evaluation of feasibility towards global proteomics [Honours Project]
Present Position: Nuclear technician, Pickering Nuclear Generating Station, Ontario Power Generation, Pickering, ON
- 2012/9 - 2013/4
Principal Supervisor Canez, Carlos (Completed) , Carleton University
Student Degree Start Date: 2009/9
Thesis/Project Title: MS-based quantitative lipidomic analysis of PC12 cells exposed to hypoxic growth conditions [Honours Project]
Present Position: PhD Student, Department of Chemistry, University of Alberta, Edmonton, AB
- 2012/5 - 2012/9
Principal Supervisor Petriw, Simone (Completed) , Carleton University
Student Degree Start Date: 2012/5
Student Degree Received Date: 2012/9
Thesis/Project Title: Quantitative proteomics of PC-12Adh cells under hypoxic stress [Honours Project]
Project Description: Quantitative proteomics of PC-12Adh cells under hypoxic stress
Present Position: Biologist, Plant Health Laboratory Services, CFIA, Ottawa, ON
- 2011/9 - 2012/8
Principal Supervisor Ansar, Muhammad Usman (Completed) , Carleton University
Student Degree Start Date: 2011/9
Student Degree Received Date: 2012/5
Thesis/Project Title: Using mass spectrometry to determine the dynamics of post-translational modifications in GAPDH from ground squirrel [Honours Project]
Project Description: Using mass spectrometry to determine the dynamics of post-translational modifications in GAPDH from ground squirrel
Present Position: Unknown

- 2011/9 - 2012/4
Principal Supervisor Liu, Robert (Completed) , Carleton University
Student Degree Start Date: 2011/5
Student Degree Received Date: 2012/5
Thesis/Project Title: Uncovering the Emerging Role of Lipid Messengers in Stroke using Mass Spectrometry [Honours Project]
Project Description: Uncovering the Emerging Role of Lipid Messengers in Stroke using Mass Spectrometry
Present Position: Dental Student, McGill University
- 2011/9 - 2012/4
Principal Supervisor Frank, Cairina (Completed) , Carleton University
Student Degree Start Date: 2011/5
Student Degree Received Date: 2012/5
Thesis/Project Title: Comparative lipidomic analysis of PC-12Adh cells cultured under differing oxygen conditions using mass spectrometry [Honours Project]
Project Description: Comparative lipidomic analysis of PC-12Adh cells cultured under differing oxygen conditions using mass spectrometry
Present Position: Clerk, Ottawa Hospital
- 2011/9 - 2012/4
Principal Supervisor Preston, Lindsay (Completed) , Carleton University
Student Degree Start Date: 2011/5
Student Degree Received Date: 2012/5
Thesis/Project Title: Desorption electrospray ionization tandem mass spectrometry could take off at Canadian airports as a method of explosive detection [Honours Project]
Project Description: Desorption electrospray ionization tandem mass spectrometry could take off at Canadian airports as a method of explosive detection
Present Position: Sales Associate, Sleep Country Canada, Ottawa, ON
- 2011/9 - 2012/4
Principal Supervisor Whitton, Sarah (Completed) , Carleton University
Student Degree Start Date: 2008/9
Thesis/Project Title: A mass spectrometry-based investigation of the effects of hypoxia on cellular lipids in SH-SY5Y cells [Honours Project]
Present Position: Technical Representative at Flowmetrix, Dorchester, ON
- 2010/9 - 2011/4
Principal Supervisor Hill, Kayla (Completed) , Carleton University
Student Degree Start Date: 2010/9
Student Degree Received Date: 2011/4
Thesis/Project Title: A mass spectrometry-based analysis of lipid signaling molecules in human blood plasma [Honours Project]
Project Description: A mass spectrometry-based analysis of lipid signaling molecules in human blood plasma
Present Position: Student, Sheridan College
- 2010/9 - 2011/4
Principal Supervisor Wasslen, Karl (Completed) , Carleton University
Student Degree Start Date: 2010/9
Student Degree Received Date: 2011/4
Thesis/Project Title: Novel Microfluidic Methods to Methylate Peptides & Permit Quantitative Analysis Using Tandem Mass Spectrometry [Honours Project]
Project Description: Novel Microfluidic Methods to Methylate Peptides & Permit Quantitative Analysis Using Tandem Mass Spectrometry
Present Position: Verification Specialist, AB Sciex, Concord, ON
- 2010/9 - 2011/4
Principal Supervisor Girgrah, Ryan (Completed) , Carleton University
Student Degree Start Date: 2007/9
Thesis/Project Title: Optimization of Immobilized Trypsin Using Microfluidics [Honours Project]
Present Position: Graduate Student, Carleton University

2009/9 - 2010/4
Principal Supervisor Tan, Le Hoa (Completed) , Carleton University
Student Degree Start Date: 2009/9
Student Degree Received Date: 2010/4
Thesis/Project Title: Novel methods in quantitative phosphoproteomics [Honours Project]
Project Description: Novel methods in quantitative phosphoproteomics
Present Position: Unknown

2009/9 - 2010/4
Principal Supervisor Patel, Jinal (Completed) , Carleton University
Student Degree Start Date: 2006/9
Thesis/Project Title: A Novel Quantitative Microfluidic Strategy for Dimethyl-Labeling Polypeptides From Complex Mixtures [Honours Project]
Present Position: Verification Specialist, AB Sciex, Toronto, ON

Master's Equivalent [n=1]

2013/9 - 2014/8
Co-Supervisor Farmer, Kyle (Completed) , Carleton University
Student Degree Start Date: 2010/9
Thesis/Project Title: Major alterations of phosphatidylcholines and sphingolipids in the substantia nigra using a prodromal model of Parkinson's disease
Present Position: Post-Doctoral Fellow, University of Pittsburgh Medical Center, Pittsburgh, PA

Master's Thesis [n=12]

2019/9 - 2021/8
Co-Supervisor Aulenback, Chelsey (In Progress) , Carleton University
Thesis/Project Title: Synthesis and investigation of shelf-stable, thermally activated reagents containing a fixed, permanent positive charge
Present Position: MSc Student, Department of Chemistry, Carleton University

2019/1 - 2020/12
Principal Supervisor Rosales, Christian (In Progress) , Carleton University
Thesis/Project Title: Enhancing lipid ion signal through the use of diazo-based chemistries
Present Position: MSc Student, Department of Chemistry, Carleton University

2018/9 - 2020/8
Principal Supervisor Wong, Frank (In Progress) , Carleton University
Thesis/Project Title: Lipidomic dynamics of low dose radiation exposure
Present Position: MSc Student, Department of Chemistry, Carleton University

2018/9 - 2020/8
Principal Supervisor Wistaff, Emma (In Progress) , Carleton University
Thesis/Project Title: Determination of viral sensitizer metabolites
Present Position: MSc Student, Department of Chemistry, Carleton University

2017/5 - 2019/4
Principal Supervisor Black, Chelsea (Completed) , Carleton University
Thesis/Project Title: Exploring Applicability of Direct Analysis in Real Time with Mass Spectrometry (DART-MS) to Identify Homemade Explosive Residues Post-Blast
Present Position: Student, Teachers College, Queen's University

2016/9 - 2018/8
Principal Supervisor McFarlan, John (Completed) , Carleton University
Student Degree Start Date: 2016/9
Thesis/Project Title: GC/MS analysis the aging process in coffee
Present Position: Financial Advisor, Scotiabank, Toronto, Canada

2016/5 - 2018/4
Principal Supervisor Thomas, Gilian (Completed) , Carleton University
Student Degree Start Date: 2016/5
Thesis/Project Title: Method Development for Quantification of Vitamins in Spinach using HPLC-MS/MS
Present Position: PhD Student, Department of Chemistry, University of Victoria, Victoria, BC

- 2013/9 - 2015/8
Principal Supervisor Canez, Carlos (Completed) , Carleton University
Student Degree Start Date: 2013/9
Student Canadian Residency Status: Study Permit
Thesis/Project Title: Lipidomic analysis of hypoxic stress in neuronal cells using TrEnDi and mass spectrometry
Present Position: PhD Student, Department of Chemistry, University of Alberta, Edmonton, AB
- 2013/1 - 2015/5
Principal Supervisor Macklin, Andrew (Completed) , Carleton University
Student Degree Start Date: 2013/1
Thesis/Project Title: Inhibitor Affinity Capture / Mass Spectrometry analyses of viral sensitizer molecules to ascertain their mechanism of action
Project Description: Inhibitor Affinity Capture / Mass Spectrometry analyses of viral sensitizer molecules to ascertain their mechanism of action
Present Position: Research Technician, Princess Margaret Cancer Centre, University of Toronto, Toronto, ON
- 2011/9 - 2014/3
Principal Supervisor Wasslen, Karl (Completed) , Carleton University
Student Degree Start Date: 2011/9
Thesis/Project Title: Trimethylation Enhancement using Diazomethane (TrEnDi): Rapid On-Column Methylation of Biological Analytes to Permit Quantitative Analysis Using Tandem Mass Spectrometry
Present Position: Operations Manager, Carleton Mass Spectrometry Centre, Carleton University
- 2010/5 - 2012/5
Principal Supervisor Patel, Jinal (Completed) , Carleton University
Student Degree Start Date: 2010/5
Thesis/Project Title: A quantitative mass spectrometry-based proteomic analysis of mammalian cell-lines, SH-SY5Y, Homo sapiens neuroblastoma cell line, and PC-12Adh, Rattus norvegicus pheochromocytoma cell line, under hypoxic stress.
Present Position: Verification Specialist, AB Sciex, Toronto, ON
- 2009/1 - 2011/5
Principal Supervisor Huebsch, Matthew (Completed) , Carleton University
Student Degree Start Date: 2009/1
Student Degree Received Date: 2011/5
Thesis/Project Title: A novel mass spectrometry-based proteomic and phosphoproteomic strategy for the quantitative analysis of a leukemic cell line infected by an oncolytic virus.
Project Description: A novel mass spectrometry-based proteomic and phosphoproteomic strategy for the quantitative analysis of a leukemic cell line infected by an oncolytic virus
Present Position: Verification Specialist, AB Sciex, Toronto, ON
- Doctorate [n=9]**
- 2021/1 - 2025/12
Principal Supervisor Buckingham, Christian, Carleton University
Thesis/Project Title: Pharmacokinetic analysis of viral sensitizers used in oncolytic virology
Present Position: Graduate Student
- 2020/1 - 2024/12
Principal Supervisor Rosales, Christian, Carleton University
Thesis/Project Title: Derivatization chemistry to enhance the analysis of biomolecules and xenobiotics
Present Position: Graduate Student
- 2019/9 - 2023/8
Principal Supervisor Roberts, Joshua, Carleton University
Thesis/Project Title: Analysis of lipid dynamics during oncolytic viral treatment
Present Position: Graduate Student

- 2015/9 - 2025/4
Principal Supervisor
Fulton, Kelly (In Progress) , Carleton University
Student Degree Start Date: 2015/9
Thesis/Project Title: TrEnDI MS on glycosylated peptides
Present Position: PhD Student, Department of Chemistry, Carleton University
- 2014/9 - 2019/12
Co-Supervisor
Shields, Sam (In Progress) , Carleton University
Student Degree Start Date: 2014/9
Thesis/Project Title: Development of isotopically labelled Diazomethane for use in TrEnDi proteomics and lipidomics analyses
Present Position: Post-Doctoral Fellow, University of Texas at Austin, Carleton University
- 2014/5 - 2017/5
Principal Supervisor
Blank, Katrin (Completed) , Carleton University
Student Degree Start Date: 2013/5
Thesis/Project Title: Targeted Quantitative Lipidomics of Cold Stress and the Development of Methods to Increase the Sensitivity of Proteomics Analyses using Mass Spectrometry
Present Position: Mass Spectrometry Laboratory Technician in Forensics, Royal Canadian Mounted Police, Ottawa, ON
- 2013/9 - 2014/5
Principal Supervisor
Petriw, Simone (Withdrawn) , Carleton University
Student Degree Start Date: 2013/9
Thesis/Project Title: Characterization of the N-Linked glycoproteome of lentil (*Lens culinaris*) seeds using ESI-LC/MS/MS
Present Position: Biologist, Plant Health Laboratory Services, Canadian Food Inspection Agency, Ottawa, ON
- 2013/9 - 2014/8
Co-Supervisor
Smith, Catherine (Completed) , Carleton University
Student Degree Start Date: 2000/9
Thesis/Project Title: Altered hippocampal lipid profile following acute postnatal exposure to di(2-ethylhexyl) phthalate in rats
Present Position: Post-Doctoral Fellow, Health Canada, Ottawa, ON
- 2013/5 - 2014/5
Co-Supervisor
Blank, Katrin (Withdrawn) , Carleton University
Student Degree Start Date: 2013/5
Thesis/Project Title: The use of LC/MS/MS to discover plasma biomarkers linking maternal toxin exposure to neonatal birth outcomes in Canadian women.
Present Position: Mass Spectrometry Laboratory Technician in Forensics, Royal Canadian Mounted Police, Ottawa, ON

Post-doctorate [n=1]

- 2016/1 - 2018/1
Principal Supervisor
Pallister, Peter (Completed) , Carleton University
Student Degree Start Date: 2016/1
Thesis/Project Title: Ion Mobility Spectroscopy of explosives residues using a novel ion source
Present Position: NMR Facility Technician, University of Ottawa, Ottawa, ON

Research Associate [n=11]

- 2015/9 - 2018/4
Principal Supervisor
Canez, Carlos (Completed) , Carleton University
Thesis/Project Title: Analysis of industrial samples in the CMSC
Present Position: PhD Student, Department of Chemistry, University of Alberta, Edmonton, AB
- 2015/7 - 2025/6
Principal Supervisor
Wasslen, Karl (In Progress) , Carleton University
Thesis/Project Title: Operations manager of the Carleton Mass Spectrometry Centre at Carleton University, Ottawa, ON
Present Position: Operations Manager, Carleton Mass Spectrometry Centre, Carleton University

- 2013/5 - 2013/8
Principal Supervisor Stalinski, Danisz (Completed) , Carleton University
Student Degree Start Date: 2011/9
Thesis/Project Title: A mass spectrometry-based quantitative lipidomic analysis of K562 cells infected with vesicular stomatitis virus [USRA]
Present Position: MASc Student in Electrical and Computer Engineering, Carleton University
- 2012/5 - 2012/8
Principal Supervisor Lee, Hyunmin (Completed) , Carleton University
Student Degree Start Date: 2011/9
Thesis/Project Title: Novel MRM-based quantitative MS methods in lipidomic analyses [Dean's Summer Research Internship]
Present Position: Graduate Student, University of Toronto
- 2012/5 - 2012/8
Principal Supervisor Trouborst, Lennart (Completed) , Carleton University
Student Degree Start Date: 2010/9
Thesis/Project Title: Quantitative lipidomic analysis of oncolytic viral treatment of K562 cells [USRA]
Present Position: Graduate Student, University of Toronto
- 2012/5 - 2012/8
Principal Supervisor Canez, Carlos (Completed) , Carleton University
Student Degree Start Date: 2009/9
Thesis/Project Title: MS-based quantitative lipidomic analysis of PC12 cells exposed to hypoxic growth conditions [Walker Award Internship]
Present Position: Graduate Student, Carleton University
- 2011/5 - 2011/8
Principal Supervisor Trouborst, Lennart (Completed) , Carleton University
Student Degree Start Date: 2011/5
Thesis/Project Title: Novel methods for analyzing quantitative lipidomic MS-based datasets [Dean's Summer Research Internship]
Project Description: Novel methods for analyzing quantitative lipidomic MS-based datasets (2011). Quantitative lipidomic analysis of oncolytic viral treatment of K562 cells (2012).
Present Position: Graduate Student, University of Toronto
- 2011/5 - 2011/8
Principal Supervisor Joudan, Shira (Completed) , Carleton University
Student Degree Start Date: 2011/5
Thesis/Project Title: MS-based quantitative lipidomic analysis of blood plasma from patients undergoing chemotherapy [USRA]
Project Description: MS-based quantitative lipidomic analysis of blood plasma from patients undergoing chemotherapy (2011). MS-based quantitative lipidomic analysis of VSV-induced oncolysis (2012).
Present Position: Graduate Student, University of Toronto
- 2011/5 - 2011/8
Principal Supervisor Canez, Carlos (Completed) , Carleton University
Student Degree Start Date: 2011/5
Thesis/Project Title: Development of an online trypsin digestion microfluidic column [Walker Award Internship]
Project Description: Development of an online trypsin digestion microfluidic column (2011). MS-based quantitative lipidomic analysis of PC12 cells exposed to hypoxic growth conditions (2012).
Present Position: Graduate Student, Carleton University

2009/5 - 2009/8 Principal Supervisor	Patel, Jinal (Completed) , Carleton University Student Degree Start Date: 2010/5 Student Degree Received Date: 2012/5 Thesis/Project Title: A Novel Quantitative Microfluidic Strategy for Dimethyl-Labeling Polypeptides From Complex Mixtures [Walker Award Internship] Project Description: Novel methods in quantitative phosphoproteomics / Quantitative proteomic and phosphoproteomic analyses of hypoxic PC12 cells Present Position: Verification Specialist, AB Sciex, Toronto, ON
2008/11 - 2009/1 Principal Supervisor	Smith, Daryl (Completed) , Carleton University Student Degree Start Date: 2008/11 Student Degree Received Date: 2008/12 Thesis/Project Title: Novel methods in quantitative phosphoproteomics Project Description: Novel methods in quantitative phosphoproteomics Present Position: Research Chemist, Health Canada, Ottawa, ON

Staff Supervision

Number of Scientific and Technical Staff: 3

Number of Visiting Researchers: 1

Event Administration

2019/6 - 2019/12	Secretary, Lake Louise Tandem Mass Spectrometry Workshop, Workshop, 2019/12 - 2019/12
2018/12 - 2019/12	Awards Committee Member, Canadian Society for Mass Spectrometry, Association, 2019/12 - 2019/12
2018/12 - 2019/6	Organizing Committee Member, Lake Louise Tandem Mass Spectrometry Workshop, Workshop, 2019/12 - 2019/12
2018/6 - 2019/5	Steering Committee Board Member, Canadian Forum for Analytical and Bioanalytical Sciences in Mass Spectrometry, Conference, 2019/5 - 2019/5
2017/12 - 2018/12	Awards Committee Member, Canadian Society for Mass Spectrometry, Association, 2018/12 - 2018/12
2017/12 - 2018/11	Organizing Committee Member, Lake Louise Tandem Mass Spectrometry Workshop, Workshop, 2018/12 - 2018/12
2018/1 - 2018/6	Chair, Oral session entitled Native MS in Structural Biology at the 66th American Society for Mass Spectrometry and Allied Topics annual conference in San Diego, CA, Conference, 2018/6 - 2018/6
2017/6 - 2018/5	Steering Committee Board Member, Canadian Forum for Analytical and Bioanalytical Sciences in Mass Spectrometry, Conference, 2018/5 - 2018/5
2016/12 - 2017/12	Awards Committee Member, Canadian Society for Mass Spectrometry, Association, 2017/12 - 2017/12
2016/12 - 2017/11	Organizing Committee Member, Lake Louise Tandem Mass Spectrometry Workshop, Workshop, 2017/12 - 2017/12
2016/8 - 2016/8	Co-chair, 21st International Mass Spectrometry Conference, Conference, 2016/8 - 2016/8 Co-chair for lipidomics sessions at the 21st International Mass Spectrometry Conference
2014/2 - 2015/7	Co-chair, Analytical Chemistry Division at the 98th Canadian Chemistry Conference and Exhibition in Ottawa, ON, Conference, 2015/6 - 2015/6

2013/5 - 2013/5	Invited Session Chair, 96th Canadian Chemistry Conference and Exhibition in Quebec City, QC., Conference, 2013/5 - 2013/5
2013/4 - 2013/4	Invited Session Chair, 7th International Symposium on Enabling Technologies at the Metro Toronto Convention Centre, Toronto, ON., Conference, 2013/4 - 2013/5
2011/11 - 2011/12	Invited Chair, 24th Annual Tandem Mass Spectrometry Workshop in Lake Louise, Alberta., Workshop, 2011/11 - 2011/12
2009/9 - 2009/9	Invited Session Chair, Human Proteome Organization 8th Annual World Congress in Toronto, ON., Conference, 2009/9 - 2009/9

Editorial Activities

2018/2 - 2018/3	Reviewer, Journal of the American Society of Mass Spectrometry, Journal
2018/1 - 2018/2	Reviewer, Journal of Pharmaceutical and Biomedical Analysis, Journal
2017/9 - 2017/9	Reviewer, Journal of Agricultural and Food Chemistry, Journal
2017/2 - 2017/2	Reviewer, Journal of the American Society for Mass Spectrometry, Journal
2017/2 - 2017/2	Reviewer, Journal of Mass Spectrometry, Journal
2016/11 - 2016/11	Reviewer, Nature Scientific Reports, Journal
2016/11 - 2016/11	Reviewer, Nature Scientific Reports, Journal
2016/8 - 2016/8	Reviewer, Journal of Chromatography A, Journal
2016/5 - 2016/5	Reviewer, Journal of Cheminformatics, Journal
2015/5 - 2015/5	Reviewer, Analytical Chemistry, Journal
2015/3 - 2015/3	Reviewer, Structural Dynamics, Journal
2014/2 - 2014/2	Reviewer, Journal of the American Society of Mass Spectrometry, Journal
2013/11 - 2013/11	Reviewer, Advanced LC-MS applications in proteomics, Book Chapter
2013/11 - 2013/11	Reviewer, Clinical Proteomics, Journal
2013/10 - 2013/10	Reviewer, Rapid Communications in Mass Spectrometry, Journal
2013/10 - 2013/10	Reviewer, Advanced LC-MS applications in proteomics, Book Chapter
2013/7 - 2013/7	Reviewer, ELECTROPHORESIS, Journal
2013/6 - 2013/6	Reviewer, Rapid Communication in Mass Spectrometry, Journal
2013/5 - 2013/5	Reviewer, International Journal of Mass Spectrometry, Journal
2012/4 - 2012/4	Reviewer, Journal of Proteome Research, Journal
2012/3 - 2012/3	Reviewer, Molecular Systems Biology, Journal
2011/5 - 2011/5	Reviewer, Rapid Communications in Mass Spectrometry, Journal
2011/4 - 2011/4	Reviewer, Rapid Communications in Mass Spectrometry, Journal
2010/11 - 2010/11	Reviewer, Journal of Proteome Research, Journal
2010/11 - 2010/11	Reviewer, Rapid Communications in Mass Spectrometry, Journal
2010/7 - 2010/7	Reviewer, Rapid Communications in Mass Spectrometry, Journal
2010/1 - 2010/2	Reviewer, Rapid Communications in Mass Spectrometry, Journal
2009/12 - 2009/12	Reviewer, Rapid Communications in Mass Spectrometry, Journal

2009/7 - 2009/7	Reviewer, Molecular Systems Biology, Journal
2009/6 - 2009/6	Reviewer, Journal of Proteome Research, Journal
2009/3 - 2009/3	Reviewer, Rapid Communications in Mass Spectrometry, Journal

Community and Volunteer Activities

2011/2	Co-organizer, Carleton University Carleton University Chemistry Magic Show. Over 4000 members of the community have come to watch the show and be educated about chemistry.
2011/2 - 2011/2	Presenter, Carleton University Invited speaker at the Carleton University Science Café in Ottawa, Ontario on February 23rd, 2011.

Knowledge and Technology Translation

2017/7 - 2018/6	<p>Researcher, R&D Collaboration with Industry Group/Organization/Business Serviced: Staterra Inc Target Stakeholder: General Public Outcome / Deliverable: Establishing the amino acid kinetic pattern of endurance runners to create smart nutritional supplements Evidence of Uptake/Impact: http://theconversation.com/will-a-nutritional-supplement-help-you-run-better-98524 Republished in the National Post on July 11, 2018 - https://nationalpost.com/pmnl/news-pmn/will-a-nutritional-supplement-help-you-run-better as well as 22 other media outlets. References / Citations / Web Sites: Smith, J.C. (2018) Will a nutritional supplement help you run better? Invited contribution reviewed by the scientific staff at The Conversation. July 10, 2018 8:04pm EDT Activity Description: We worked with this company to analyze dried blood spots from runners who were physically exerting themselves over time to determine the dynamics of amino acid concentrations in their bodies. The information was used to create smart supplementation regimes for their clients.</p>
2017/1 - 2017/12	<p>Researcher, R&D Collaboration with Industry Group/Organization/Business Serviced: Scintrex Trace Inc Target Stakeholder: Government Personnel Outcome / Deliverable: Development of ion mobility spectrometry for on-site detection of cannabinoids Activity Description: Worked with Scintrex Trace to develop ion mobility spectrometry technology to detect cannabinoids in human saliva</p>
2016/1 - 2016/12	<p>Researcher, R&D Collaboration with Industry Group/Organization/Business Serviced: Bridgehead Coffee Company Target Stakeholder: General Public Outcome / Deliverable: Identifying chemical markers of aging efficiency in coffee References / Citations / Web Sites: https://newsroom.carleton.ca/story/carleton-bridgehead-research/ Activity Description: Using headspace GC/MS, we identified markers of aging in coffee beans to help the industrial partner improve storage conditions and inform their selling practices</p>

- 2016/1 - 2016/12 Researcher, R&D Collaboration with Industry
 Group/Organization/Business Serviced: Scintrex Trace Inc
 Target Stakeholder: Industrial Association/Producer Group
 Outcome / Deliverable: The development of a novel ion source and associated dopant chemistry for use in standalone ion mobility spectrometry systems
 Activity Description: We worked with Scintrex Trace to develop methods using a novel ion source that they licensed on their ion mobility instrumentation
- 2016/1 - 2016/12 Researcher, R&D Collaboration with Industry
 Group/Organization/Business Serviced: Rebel Farms
 Target Stakeholder: General Public
 Outcome / Deliverable: Evaluation of growing
 Activity Description: Evaluation of the nutrient levels in spinach as different hydroponic growing conditions were tested
- 2015/7 - 2015/12 Researcher, R&D Collaboration with Industry
 Group/Organization/Business Serviced: Broadhead Brewing Company
 Target Stakeholder: General Public
 Outcome / Deliverable: Improvement in the brewing and storage process for beer
 Activity Description: Headspace GC/MS analysis of beer over time to determine optimal storage conditions

International Collaboration Activities

- 2011/12 - 2018/9 Co-PI, Netherlands
 Collaboration to study the MS-based proteomics and phosphoproteomics of VSV-induced cancer cell death.

Committee Memberships

- 2017/6 Committee Member, Canadian Forum for Analytical and Bioanalytical Sciences in Mass Spectrometry, Research interest group
- 2016/12 Committee Member, Canadian Society for Mass Spectrometry Awards Committee
 Member, Research interest group
- 2016/12 Committee Member, Lake Louise Tandem Mass Spectrometry Workshop Organizing Committee, Research interest group

Other Memberships

- 2012/1 - 2021/1 Member, Canadian Society for Mass Spectrometry
- 2012/1 - 2020/1 Member, American Society for Mass Spectrometry
- 2012/1 - 2020/1 Member, Canadian Society for Chemistry

Presentations

1. Shields S, Pallister P, Canez C, Wasslen K, Rivada J, Aulenback C, Roberts J, Colquhoun F, Manthorpe J, Smith J. (2019). iTrEnDi on biomolecules and beyond: enhancing MS-based quantitative analyses using new in situ diazoalkane chemistry. 14th Montreal Canadian Forum for Analytical and Bioanalytical Sciences Post-ASMS meeting of the 67th American Society for Mass Spectrometry and Allied Topics Conference, Montreal, QC, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No
2. Warnes B, Rosales C, Shields S, Wasslen K, Manthorpe J, Smith J. (2019). Diazomethylation Enhancement of Phosphatidic Acid for Application in Mass Spectrometry. Tri-Conference: the 1st Eastern Canada Mass Spectrometry Conference, the 10th International Symposium on Enabling Technologies and the 35th Trent Conference on Mass Spectrometry, Sherbrooke, QC, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
3. Shields S, Pallister P, Canez C, Wasslen K, Rivada J, Aulenback C, Roberts J, Colquhoun F, Manthorpe J, Smith J. (2019). iTrEnDi on biomolecules and beyond: enhancing MS-based quantitative analyses using new in situ diazoalkane chemistry. 9th Vancouver Canadian Forum for Analytical and Bioanalytical Sciences Post-ASMS meeting of the 67th American Society for Mass Spectrometry and Allied Topics Conference, Vancouver, BC, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No
4. (2019). Investigating the lipidomic dynamics of extreme temperature changes. Agilent Innovations Summit, Ottawa, ON, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes
5. (2019). Mass spectrometry-based lipidomics: fundamentals, opportunities and perspectives. Tri-Conference: the 1st Eastern Canada Mass Spectrometry Conference, the 10th International Symposium on Enabling Technologies and the 35th Trent Conference on Mass Spectrometry, Sherbrooke, QC, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No
6. Gebeyehu W, Wasslen K, Smith J. (2019). Method development and implementation of rapid, on-site drug checking in a supervised injection site using portable mass spectrometry. Tri-Conference: the 1st Eastern Canada Mass Spectrometry Conference, the 10th International Symposium on Enabling Technologies and the 35th Trent Conference on Mass Spectrometry, Sherbrooke, QC, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
7. Shields S, Pallister P, Canez C, Wasslen K, Rivada J, Aulenback C, Roberts J, Colquhoun F, Manthorpe J, Smith J. (2019). iTrEnDi on biomolecules and beyond: enhancing MS-based quantitative analyses using new in situ diazoalkane chemistry. 19th Toronto Canadian Forum for Analytical and Bioanalytical Sciences Post-ASMS meeting of the 67th American Society for Mass Spectrometry and Allied Topics Conference, Toronto, ON, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No
8. Shields S, Pallister P, Canez C, Wasslen K, Rivada J, Aulenback C, Roberts J, Colquhoun F, Manthorpe J, Smith J. (2019). iTrEnDi on biomolecules and beyond: enhancing MS-based quantitative analyses using new in situ diazoalkane chemistry. 67th American Society for Mass Spectrometry and Allied Topics Conference, Atlanta, GA, United States
Main Audience: Researcher
Invited?: Yes, Keynote?: No

9. Rosales C, Aulenback C, Shields S, Manthorpe J, Smith J. (2019). Enhancing the Analytical Characteristics of Glyphosate and its Breakdown Product using in situ Trimethylation Enhancement Using Diazomethane (iTrEnDi). 14th Montreal Canadian Forum for Analytical and Bioanalytical Sciences Post-ASMS meeting of the 67th American Society for Mass Spectrometry and Allied Topics Conference, Montreal, QC, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No
10. (2019). How can I get my drugs checked?. Checking out the Drug Workshop, Ottawa, ON, Canada
Main Audience: Knowledge User
Invited?: Yes, Keynote?: No
11. Shields, S.W.J., Pallister, P.J., Rosales, C., Canez, C.R., Wasslen, K.V., Manthorpe, J.M., Smith, J.C. (2018). In situ TrEnDi: enhancing the sensitivity and safety of MS-based quantitative lipidomics analyses via novel chemistry with a new device. 66th American Society for Mass Spectrometry Conference on Mass Spectrometry and Allied Topics, San Diego, CA, United States
Main Audience: Researcher
Invited?: No, Keynote?: No
12. Black, C.E., Smith, J.C., Hearn, N.G.R. (2018). Post-blast residue analysis using Direct-Analysis-in-Real-Time and Mass Spectrometry (DART-MS) for identification of homemade explosives. Canadian Society of Forensic Science Conference, Gatineau, QC, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
13. (2018). In situ TrEnDi: enhancing the sensitivity and safety of MS-based quantitative lipidomics analyses via novel chemistry on a new device. Canadian Forum for Analytical and Bioanalytical Sciences, Toronto, ON, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No
14. Franklin, E., Shields, S.W.J., Smith, J.C., Xia, Y., McLuckey, S.A. (2018). Coupling Headgroup and C=C Specific Solution Modifications with Gas-Phase Ion-Ion Reactions for Sensitive Phospholipid Identification and Characterization. 66th American Society for Mass Spectrometry Conference on Mass Spectrometry and Allied Topics, San Diego, CA, United States
Main Audience: Researcher
Invited?: No, Keynote?: No
15. (2018). Investigating the lipidomic dynamics of extreme temperature changes. 13th Montreal Post-ASMS meeting of the 66th American Society for Mass Spectrometry and Allied Topics Conference, Montreal, QC, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No
16. (2018). Can Humans Hibernate? Maybe. Carleton University Science Café, Ottawa, ON, Canada
Main Audience: General Public
Invited?: Yes, Keynote?: Yes
17. (2018). In situ TrEnDi: enhancing the sensitivity and safety of MS-based quantitative lipidomics analyses via novel chemistry on a new device. Department of Food Science and Agricultural Chemistry at the MacDonald Campus of McGill University Seminar Series, Montreal, QC, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes
18. (2018). Recent Improvements in TrEnDi: Lipid Scope and Signal Consolidation. National Research Council Seminar Series, Ottawa, ON, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes

19. (2018). Investigating the lipidomic dynamics of extreme temperature changes. 8th Vancouver Post-ASMS meeting of the 66th American Society for Mass Spectrometry and Allied Topics Conference, Vancouver, BC, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No
20. Shields, S.W., Canez, C.R., Pallister, P.J., Manthorpe, J.M., Smith, J.C. (2018). Dual Derivatization Strategy for the LCMS Analysis of Plasmalogen Glycerophospholipids. 67th American Society for Mass Spectrometry and Allied Topics Conference, Atlanta, GA, United States
Main Audience: Researcher
Invited?: No, Keynote?: No
21. (2018). In situ TrEnDi: enhancing the sensitivity and safety of MS-based quantitative lipidomics analyses via novel chemistry on a new device. Department of Chemistry at the University of Alberta Seminar Series, Edmonton, AB, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes
22. (2018). Investigating the lipidomic dynamics of extreme temperature changes. Metabolomics Applications and Techniques session at the 101st Canadian Chemistry Conference, Edmonton, AB, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No
23. (2018). In situ TrEnDi: enhancing the sensitivity and safety of MS-based quantitative lipidomics analyses via novel chemistry on a new device. Analytical Mass Spectrometry session at the 101st Canadian Chemistry Conference and Exhibition, Edmonton, AB, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No
24. (2018). Investigating the lipidomic dynamics of extreme temperature changes. 18th Toronto Post-ASMS meeting of the 66th American Society for Mass Spectrometry and Allied Topics Conference, Toronto, ON, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No
25. (2017). Pragmatically Pursuing the Power and Pitfalls of Proteomics Procedures. 34th Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes
26. (2017). Isotopically-labelled TrEnDi: new technology to increase the sensitivity and selectivity of MS-based lipid analysis of complex biological samples. Invited Presentation at the College of Pharmacy and Nutrition at the University of Saskatchewan, Saskatoon, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes
27. Betancourt, S.K., Canez, C.R., Shields, S.W., Smith, J.C., McLuckey, S.A. (2017). Gas-phase charge inversion of Trimethylation Enhancement Using ^{13}C -Diazomethane (^{13}C -TrEnDi)-modified phospholipids via ion/ion reactions. 65th Annual American Society for Mass Spectrometry Conference, Indianapolis, United States
Main Audience: Researcher
Invited?: No, Keynote?: No
28. Thomas, G., Smith, J.C. (2017). Method Development for Quantification of Vitamins in Spinach using HPLC-MS. 34th Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No

29. Blank, K., Williamson, S., Weinert, H., Canez, C.R., Storey, K., Smith, J.C. (2017). Investigating the lipidomic dynamics of torpor through examination of hibernating squirrel liver tissue and frozen frog leg tissue. 65th Annual American Society for Mass Spectrometry Conference, Indianapolis, United States
Main Audience: Researcher
Invited?: No, Keynote?: No
30. McFarlan, J., Smith, J.C. (2017). Analysis of highly aromatic coffees by headspace GC-MS. 34th Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
31. Thomas, G.T., Canez, C.R., Shields, S.W.J., Manthorpe, J.M., Smith, J.C. (2017). Optimization of Trimethylation Enhancement using Diazomethane (TrEnDi) derivatization for MS-based analysis of sphingomyelin and cardiolipin. 9th International Symposium on Enabling Technologies, Ottawa, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
32. Canez, C.R., Weinert, H.P., Thomas, G.T., Pallister, P.J., Shields, S.W.J., Manthorpe, J.M., Smith, J.C. (2017). Recent improvements in TrEnDi to increase the sensitivity and selectivity of plasmalogen PE and plasmalogen PC lipids. 9th International Symposium on Enabling Technologies, Ottawa, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
33. (2017). Suds-sational science: using cutting edge tools to determine the taste fingerprint of beer. NSERC-sponsored Science Odyssey speaking series, Kitchener, Canada
Main Audience: General Public
Invited?: Yes, Keynote?: Yes
34. Canez, C.R., Thomas, G.T., Shields, S.W.J., Wasslen, K.V., Pallister, P.J., Manthorpe, J.M., Smith, J.C. (2017). Recent improvements in TrEnDi: lipid scope and signal consolidation. 65th Annual American Society for Mass Spectrometry Conference, Indianapolis, United States
Main Audience: Researcher
Invited?: No, Keynote?: No
35. (2017). Recent Improvements in TrEnDi: Lipid Scope and Signal Consolidation. the 30th Annual Lake Louise Tandem Mass Spectrometry Workshop, Lake Louise, AB, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No
36. Shields, S., Smith, J.C. (2017). A Novel Approach to the Chemical Derivatization of Glyphosate for the Analysis via HPLC-MS. 34th Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
37. Blank, K., Smith, J.C. (2017). Using MS-based lipidomics to unravel the mysterious circannular rhythms in goldfish nervous tissue. 34th Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
38. Shields, S., Betancourt, S., Canez, C.R., McLuckey, S., Smith, J.C. (2017). Solution phase charge inversion of methylated phosphatidylcholine for the identification of fatty acyl components via collision induced dissociation. 9th International Symposium on Enabling Technologies, Ottawa, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No

39. Black, C., Smith, J.C. (2017). Exploring the use of Direct Analysis Real Time - Mass Spectrometry for the Analysis of Post-Blast Explosive Residues on Samples of Forensic Interest. 34th Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
40. Blank, K., Canez, C.R., Williamson, S., Thomas, G.T., Weinert, H., Brown, K., Story, K., Smith, J.C. (2017). Exploration of glycerophospholipid dynamics during hibernation and freeze tolerance. 9th International Symposium on Enabling Technologies, Ottawa, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
41. (2016). Isotopically-labelled TrEnDi: new technology to increase the sensitivity and selectivity of MS-based lipid analysis of complex biological samples. Department of Physics Seminar Series, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes
42. (2016). Isotopically-labelled TrEnDi: new technology to increase the sensitivity and selectivity of MS-based lipid analysis of complex biological samples. Department of Chemistry at Dalhousie University, Halifax, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes
43. Canez, C.R., Manthorpe, J.M. (2016). TrEnDi using isotopically-labelled diazomethane to increase sensitivity and selectivity of PE, PC and PS derived from complex biological samples. 21st International Mass Spectrometry Conference, Toronto, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
44. (2016). What I wish I knew in my first year. New Faculty Orientation at Carleton University, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No
45. (2016). Chromatographic optimization strategies in the analysis of complex lipid samples. NATO Science for Peace and Security Program Advanced Study Institute symposium on Molecular Technologies for Detection of Chemical and Biological Agents, Calabria, Italy
Main Audience: Researcher
Invited?: Yes, Keynote?: No, Competitive?: Yes
46. (2016). Using Mass Spectrometry to Understand and Drive Innovation in Industry. Thermo Fisher Scientific, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes
47. Shields, S., Bigelow, S., Canez, C.R., Manthorpe, J.M. (2016). Charge Inversion of Phosphatidylcholine for the Identification of Fatty Acyl Substituents via Tandem Mass Spectrometry. 21st International Mass Spectrometry Conference, Toronto, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
48. (2016). Recent improvements in TrEnDi chemistry: enhancing plasmalogen and sphingomyelin signal and allowing fatty acyl identification. 29th Annual Lake Louise Tandem Mass Spectrometry Workshop, Lake Louise, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No

49. (2016). Post-blast explosive residue analysis using MS. NATO Science for Peace and Security Program Advanced Study Institute symposium on Molecular Technologies for Detection of Chemical and Biological Agents, Calabria, Italy
Main Audience: Researcher
Invited?: Yes, Keynote?: No, Competitive?: Yes
50. (2016). Isotopically-labelled TrEnDi: new technology to increase the sensitivity and selectivity of MS-based lipid analysis of complex biological samples. Montreal Mass Spectrometry Discussion Group, Montreal, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No
51. (2016). Chemical strategies to enhance the sensitivity of MS-based protein and lipid analysis. NATO Science for Peace and Security Program Advanced Study Institute symposium on Molecular Technologies for Detection of Chemical and Biological Agents, Calabria, Italy
Main Audience: Knowledge User
Invited?: Yes, Keynote?: No, Competitive?: Yes
52. Shields, S., Bigelow, S., Canez, C.R., Manthorpe, J.M. (2016). Charge Inversion of Phosphatidylcholine for the Identification of Fatty Acyl Substituents via Tandem Mass Spectrometry. Trent Conference Workshop at the 21st International Mass Spectrometry Conference, Toronto, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No
53. Thomas, G., Weinert, H., Canez, C.R., Manthorpe, J.M. (2016). Optimization of TrEnDi derivatization to enhance sphingomyelin signal in mass spectrometry-based studies. 21st International Mass Spectrometry Conference, Toronto, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
54. Blank, K., Weinert, H., Williamson, S., Canez, C.R., Storey, K., Manthorpe, J.M. (2016). Investigating the lipidomic dynamics of torpor through examination of hibernating squirrel liver tissue and dehydrated frog leg tissue. 21st International Mass Spectrometry Conference, Toronto, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
55. Shields, S., Bigelow, S., Canez, C.R., Manthorpe, J.M., Smith, J.C. (2016). Charge Inversion of Phosphatidylcholine for the Identification of Fatty Acyl Substituents via Tandem Mass Spectrometry. Trent Conference Workshop at the 21st International Mass Spectrometry Conference, Toronto, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
56. Canez, C.R., Wasslen, K.V., Lee, H., Shields, S.W.J., Manthorpe, J.M., Smith, J.C. (2015). Isotopically-labelled TrEnDi: new technology to increase the sensitivity and selectivity of MS-based lipid analysis of complex biological samples. Montreal Post-ASMS meeting of the 63rd American Society for Mass Spectrometry and Allied Topics Conference, Montreal, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No, Competitive?: Yes
57. (2015). Enhancing the sensitivity of MS-based proteomics and phosphoproteomics using TrEnDi. 8th International Symposium on Enabling Technologies (ETP 2015), Lake Louise, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No, Competitive?: Yes

58. Canez, C.R., Wasslen, K.V., Lee, H., Shields, S.W.J., Manthorpe, J.M., Smith, J.C. (2015). Isotopically-labelled TrEnDi: new technology to increase the sensitivity and selectivity of MS-based lipid analysis of complex biological samples. 63rd American Society for Mass Spectrometry and Allied Topics Conference, St. Louis, United States
Main Audience: Researcher
Invited?: Yes, Keynote?: No, Competitive?: Yes
59. (2015). Airport Inspection Technology. 12th Annual Almonte Lectures Series, Almonte, Canada
Main Audience: General Public
Invited?: Yes, Keynote?: Yes, Competitive?: No
60. Blank, K., Manthorpe, J.M., Smith, J.C. (2015). Exploring Phosphorylated Peptides using Trimethylation Enhancement using Diazomethane (TrEnDi). 32nd Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
61. Canez, C.R., Wasslen, K.V., Lee, H., Shields, S.W.J., Manthorpe, J.M., Smith, J.C. (2015). Increasing the Sensitivity and Selectivity of MS-based Phospholipid Analysis of Complex Biological Samples via Isotopically labelled TrEnDi. 98th Canadian Chemistry Conference and Exhibition, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No, Competitive?: Yes
62. Weinert, H., Williamson, S., Brown, K., Canez, C., Storey, K., Smith, J.C. (2015). Determination of glycerophospholipid structural dynamics between euthermic and hibernating squirrel tissues by LC/MS/MS. 32nd Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
63. (2015). Airport Inspection Technology. Carleton University Science Café at the Ottawa Public Library, Ottawa, Canada
Main Audience: General Public
Invited?: Yes, Keynote?: Yes, Competitive?: No
64. Atkins, M., Canez, C.R., Hajjar, J., Waghray, G., Atkins, H.,. (2015). Mass spectrometry-based phospholipidomics of oncolytic virus-infected leukemia cells. 29th Annual Medical Student Research Day in the Faculty of Medicine at the University of Toronto, Toronto, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
65. (2015). Trimethylation enhancement using ¹³C-diazomethane (¹³C-TrEnDi): Increased sensitivity and selectivity of phosphatidylethanolamine, phosphatidylcholine and phosphatidylserine lipids derived from complex biological samples. 28th Annual Lake Louise Tandem Mass Spectrometry Workshop, Lake Louise, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No, Competitive?: Yes
66. Farmer, K., Rudyk, C., Fortin, T., Smith, C.A., Prowse, N., Smith, J.C., Hayley, S.P. (2015). Development of an early stage model of Parkinson's disease. 45th Annual Meeting of the Society for Neuroscience, Chicago, United States
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: Yes
67. (2015). Enhancing the sensitivity of MS-based proteomics and phosphoproteomics using TrEnDi. 2015 International Chemical Congress of the Pacific Basin Societies (Pacifichem), Honolulu, United States
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: Yes

68. (2015). TrEnDi: a tool to enhance sensitivity in proteomics and lipidomics. University of Waterloo Seminar Series, Waterloo, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No
69. (2015). Airport Inspection Technology. Blackburn Hamlet Lecture Series, Ottawa, Canada
Main Audience: General Public
Invited?: Yes, Keynote?: Yes, Competitive?: No
70. Canez, C., Manthorpe, J.M., Smith, J.C. (2014). Enhancing the sensitivity of PS, PE, PC and SM analyses using TrEnDi in complex biological samples. 31st Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
71. Blank, K., Manthorpe, J.M., Smith, J.C. (2014). Exploring TEAA gradient elution with TrEnDi-modified tryptic peptides. 31st Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
72. Macklin, A., Krishnan, R., Dornan, M., Boddy, C., Diallo, J-S., Smith, J.C. (2014). Investigating the Pharmacokinetic Properties of Viral Sensitizer Candidates through MRM Method Development. 31st Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
73. Macklin, A., Dornan, M., Krishnan, R., Diallo, J-S., Boddy, C. (2014). Enhancing oncolytic virotherapy: The development ESI-MS methods to evaluate the plasma stability of Vse candidates. 17th Annual Chemistry and Biochemistry Graduate Research Conference at Concordia University, Montreal, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
74. Atkins, M., Canez, C.R., Hajjar, J., Waghay, G., Atkins, H., Smith, J.C. (2014). Mass Spectrometry-Based Phospholipidomics of Oncolytic Virus-Infected Chronic Myelogenous Leukemia Cells. 2014 Ottawa Carleton Chemistry Institute Meeting, Ottawa, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
75. Farmer, K., Smith, C.A., Hayley, S., Smith, J.C. (2014). A lipidomic profile of the substantia nigra reveals major alterations of phosphatidylcholines and sphingolipids in a prodromal rat model of Parkinson's disease. 44th annual meeting of the Society for Neuroscience, Washington, United States
Main Audience: Researcher
Invited?: No, Keynote?: No
76. D'Souza, T., Hearn, N., Smith, J.C. (2014). Exploring the use of DART-MS for the detection of explosives on samples of forensic interest. Canadian Society of Forensic Science Annual Conference, Ottawa / Gatineau, Canada
Main Audience: Knowledge User
Invited?: Yes, Keynote?: No
77. (2014). TrEnDi: a tool to enhance sensitivity in proteomics and lipidomics. 27th Annual Lake Louise Tandem Mass Spectrometry Workshop, Lake Louise, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No

78. Canez, C.R., Wasslen, K.V., Sheilds, S., Lee, H., Manthorpe, J.M.,. (2014). Phospholipidomics & PE, PS, PC and SM sensitivity enhancement via Trimethylation Enhancement using Diazomethane (TrEnDi). 50 years of mass spectrometry at the University of Ottawa” Symposium, John Holmes Mass Spectrometry Facility, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No
79. Koudrina, A., Manthorpe, J.M., Smith, J.C. (2014). Exploring the feasibility of peptide identification tools on TrEnDi-modified peptides. 31st Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
80. D’Souza, T., Hearn, N., Smith, J.C. (2014). Exploring the use of ambient ionization techniques for the detection of explosives on samples of forensic interest. 31st Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
81. Atkins, M., Canez, C.R., Hajjar, J., Waghray, G., Atkins, H. (2014). Mass Spectrometry-Based Phospholipidomics of Oncolytic Virus-Infected Chronic Myelogenous Leukemia Cells. 27th Annual Lake Louise Tandem Mass Spectrometry Workshop in Lake Louise, Alberta, Lake Louise, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No
82. Atkins, M., Canez, C.R., Hajjar, J., Waghray, G., Atkins, H. (2014). Mass Spectrometry-Based Phospholipidomics of Oncolytic Virus-Infected Chronic Myelogenous Leukemia Cells. Canadian Society for Clinical Investigation – Société Canadienne de Recherches Cliniques Young Investigators Forum in Toronto, Toronto, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No
83. Smith, J.C. (2014). Trimethylation Enhancement using Diazomethane (TrEnDi): A rapid technique to improve ionization and enhance sensitivity of biomolecule analysis using tandem mass spectrometry. Lakehead University Department of Chemistry Seminar Series, Thunder Bay, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes
84. Macklin, A., Krishnan, R., Dornan, M., Boddy, C., Diallo, J-S., Smith, J.C. (2014). The Development of MRM Methods to Investigate the Pharmacokinetic Properties of Viral Sensitizer Candidates. 2014 Ottawa Carleton Chemistry Institute Meeting, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No
85. Macklin, A., Dornan, M., Krishnan, R., Diallo, J-S., Boddy, C.,. (2014). Enhancing oncolytic virotherapy: The development ESI-MS methods to evaluate the plasma stability of Vse candidates. 50 years of mass spectrometry at the University of Ottawa” Symposium, John Holmes Mass Spectrometry Facility, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No
86. Wasslen, K., Wood, S., Manthorpe, J., Smith, J.C. (2013). Trimethylation Enhancement using Diazomethane (TrEnDi): Rapid On-Column Methylation of Peptides and Proteins to Permit Quantitative Analysis Using Tandem Mass Spectrometry. 60th Annual American Society for Mass Spectrometry Conference, Minneapolis Convention Center, Minneapolis, MN, Minneapolis, United States
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: Yes

87. Smith, J.C. (2013). Trimethylation Enhancement using Diazomethane (TrEnDi): rapid on-column methylation of peptides to permit quantitative analysis using MS/MS. 7th International Symposium on Enabling Technologies at the Metro Toronto Convention Centre, Toronto, ON, Toronto, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: Yes
88. Joudan, S., Waghray, G., Atkins, H.L., Smith, J.C. (2013). A mass spectrometry-based quantitative lipidomic analysis of K562 cells infected with Vesicular Stomatitis Virus. 30th Annual Trent Conference on Mass Spectrometry, YMCA Geneva Park, Orillia, Ontario, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
89. D'Souza, T., Smith, J.C. (2013). Exploring the use of DART-MS for the detection of explosives on samples of forensic interest. 30th Annual Trent Conference on Mass Spectrometry, YMCA Geneva Park, Orillia, Ontario, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
90. Smith, J.C. (2013). Trimethylation Enhancement using Diazomethane (TrEnDi): Rapid Methylation of Phospholipids to Permit Quantitative Analysis Using Tandem Mass Spectrometry. 60th Annual American Society for Mass Spectrometry Conference, Minneapolis Convention Center, Minneapolis, MN, Minneapolis, United States
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: Yes
91. Wasslen, K., Wood, S., Manthorpe, J., Smith, J.C. (2013). Trimethylation Enhancement using Diazomethane (TrEnDi): Rapid On-Column Methylation of Peptides and Proteins to Permit Quantitative Analysis Using Tandem Mass Spectrometry. 96th Canadian Chemistry Conference and Exhibition in Quebec City, QC, Quebec City, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: Yes
92. Wasslen, K., Tan, L.H., Manthorpe, J., Smith, J.C. (2013). Further advancements in trimethylation enhancement using diazomethane (TrEnDi): rapid on-column methylation of biological analytes to permit quantitative analysis using tandem mass spectrometry. 30th Annual Trent Conference on Mass Spectrometry, YMCA Geneva Park, Orillia, Ontario, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
93. Lee, H., Wasslen, K., Manthorpe, J., Smith, J.C. (2013). Trimethylation enhancement using diazomethane (TrEnDi) increases sensitivity in lipid analysis using tandem mass spectrometry. 30th Annual Trent Conference on Mass Spectrometry, YMCA Geneva Park, Orillia, Ontario, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
94. Chao, S., Green, J.R., Smith, J.C. (2013). De novo peptide sequencing using general-purpose computing on a graphics processing unit. 36th Annual Canadian Medical and Biological Engineering Society Conference in Ottawa, ON, Ottawa, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: Yes
95. Macklin, A.M., Krishnan, R., Diallo, J.S., Smith, J.C. (2013). The detection of viral sensitizers in mass spectrometry-based pharmacokinetic studies. 30th Annual Trent Conference on Mass Spectrometry, YMCA Geneva Park, Orillia, Ontario, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No

96. Canez, C., Lee, H., Trouborst, L., Joudan, S., Willmore, W., Smith, J.C. (2013). A robust and optimized strategy for the separation of complex lipid samples using RP-HPLC to investigate cellular signaling during hypoxic stress. 30th Annual Trent Conference on Mass Spectrometry, YMCA Geneva Park, Orillia, Ontario, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
97. Stalinski, D., Smith, J.C. (2013). Mass spectrometry-based structural identification of phosphocholine-containing lipid molecules. 30th Annual Trent Conference on Mass Spectrometry, YMCA Geneva Park, Orillia, Ontario, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
98. Smith, J.C. (2013). A Robust and Optimized Strategy for the Separation of Complex Lipid Samples Using RP-HPLC to Investigate Cellular Signaling in Oncolytic Viral Therapy. Invited speaker at the 96th Canadian Chemistry Conference and Exhibition in Quebec City, QC, Quebec City, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No, Competitive?: Yes
99. Smith, J.C. (2013). Trimethylation Enhancement using Diazomethane (TrEnDi): Rapid Methylation of Phospholipids to Permit Quantitative Analysis Using Tandem Mass Spectrometry. 8th Montreal Post-ASMS Symposium, Montreal, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No, Competitive?: Yes
100. Petriw, S., Gaget, A., Hosseinian, F., Smith, J.C. (2013). Characterization of the N-Linked glycoproteome of lentil (*Lens culinaris*) seeds using ESI-LC/MS/MS. 30th Annual Trent Conference on Mass Spectrometry, YMCA Geneva Park, Orillia, Ontario, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
101. Smith, J.C. (2012). Studying the lipidomics of viral oncolytics using mass spectrometry. 95th Canadian Chemistry Conference and Exhibition, Calgary, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No, Competitive?: Yes
102. Smith, J.C. (2012). A novel mass spectrometry-based lipidomic strategy for the quantitative analysis of a leukemic cell line infected by an oncolytic virus. Invited speaker at the University of Toronto, Toronto, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No
103. Trouborst, L., Joudan, S., Atkins, H., Smith, J.C. (2012). A quantitative lipidomic investigation into VSV infection of leukemic K562 cells. 29th Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
104. Peace, R., Stewart, T., Green, J., Smith, J.C. (2012). Analysis of Redundant Peaks in LC-MS/MS Datasets. International Workshop on Medical Measurements and Applications, Ottawa, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: Yes
105. Smith, J.C. (2012). Novel chemistry for peptide derivitization to permit quantitation using mass spectrometry. 95th Canadian Chemistry Conference and Exhibition, Calgary, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No, Competitive?: Yes

106. Wasslen, K., Manthorpe, J., Smith, J.C. (2012). Novel Microfluidic Methods to Methylate Peptides & Permit Quantitative Analysis Using Tandem Mass Spectrometry. 60th Annual American Society for Mass Spectrometry Conference, Vancouver, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: Yes
107. Smith, J.C. (2012). Discovering the dynamics of life on a molecular scale: new roles for lipids in cancer and stroke. Invited speaker at the Department of Biology Seminar Series at Carleton University, Ottawa, ON, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No
108. Joudan, S., Trouborst, L., Atkins, H., Smith, J.C. (2012). Investigating the role of lipids in oncolytic viral therapy. 60th Annual American Society for Mass Spectrometry Conference, Vancouver, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: Yes
109. Wasslen, K.V., Smith, J.C., Manthorpe, J.M. (2012). Fun with Heteroatoms: Asymmetric Synthesis of Pseudo-Symmetrical Cyclopropane Fatty Acids and Making Peptides More Detectable by Mass Spectrometry. Invited speaker at the University of Guelph in Guelph, ON, Guelph, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No
110. Smith, J.C. (2012). Investigating the role of lipids in oncolytic viral therapy. Montreal Post-ASMS Symposium, Montreal, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No, Competitive?: Yes
111. Lee, H., Smith, J.C. (2012). An evaluation of the use of multiple reaction monitoring in quantitative lipidomics experiments. 29th Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
112. Patel, J., Willmore, W.G., Smith, J.C. (2012). Quantitative proteomic and phosphoproteomic analysis of a human neuroblastoma cell-line under hypoxic stress using 2-D chromatography and nano-ESI-QqTOF mass spectrometry. Canadian Forum for Analytical and Bioanalytical Sciences Montreal Post-ASMS Meeting, Montreal, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
113. Wasslen, K., Manthorpe, J., Smith, J.C. (2012). Optimization of Novel On-Column Methylation Chemistry to Facilitate Quantitative Analysis Using Tandem Mass Spectrometry. Canadian Society for Chemistry 95th Annual Canadian Chemistry Conference and Exhibition, Calgary, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: Yes
114. Patel, J., Willmore, W.G., Smith, J.C. (2012). Quantitative proteomic and phosphoproteomic analysis of a human neuroblastoma cell-line under hypoxic stress using 2-D chromatography and nano-ESI-QqTOF mass spectrometry. 60th Annual American Society for Mass Spectrometry Conference, Vancouver, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: Yes
115. Smith, J.C. (2012). A novel mass spectrometry-based lipidomic strategy for the quantitative analysis of a leukemic cell line infected by an oncolytic virus. Invited speaker at the University of Utrecht, Utrecht, Netherlands
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No

116. Canez, C., Willmore, W.G., Smith, J.C. (2012). A mass spectrometry-based lipidomics investigation into the effects of hypoxia on SH-SY5Y cells. 29th Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
117. Patel, J., Willmore, W.G., Smith, J.C. (2012). Quantitative proteomic and phosphoproteomic analysis of a human neuroblastoma cell-line under hypoxic stress using 2-D chromatography and nano-ESI-QqTOF mass spectrometry. 29th Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
118. Huebsch, M.P., Dumontier, M., Atkins, H., Smith, J.C. (2012). A quantitative mass spectrometry-based proteomic and phosphoproteomic analysis of VSV-infected K562 cells. 60th Annual American Society for Mass Spectrometry Conference, Vancouver, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: Yes
119. Smith, J.C. (2012). Discovering the dynamics of life on a molecular scale: new roles for lipids in cancer and stroke. Department of Biology Seminar Series at Carleton University, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No
120. Patel, J., Willmore, W.G., Smith, J.C. (2012). Quantitative Proteomic Analysis of Mammalian Neuronal Cell-line under Hypoxic Stress using 2-D Chromatography and nano-ESI-QqTOF Mass Spectrometry. Canadian Society for Chemistry 95th Annual Canadian Chemistry Conference and Exhibition, Calgary, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No, Competitive?: Yes
121. Wasslen, K., Manthorpe, J., Smith, J.C. (2012). Further development of azide-based peptide methylation chemistry to permit quantitative proteomic analyses. 29th Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
122. Huebsch, M.P., Dumontier, M., Atkins, H., Smith, J.C. (2012). A quantitative mass spectrometry-based proteomic and phosphoproteomic analysis of VSV-infected K562 cells. 29th Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
123. Wasslen, K., Manthorpe, J., Smith, J.C. (2012). Novel Microfluidic Methods to Methylate Peptides & Permit Quantitative Analysis Using Tandem Mass Spectrometry. Canadian Forum for Analytical and Bioanalytical Sciences Montreal Post-ASMS Meeting, Montreal, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
124. Smith, J.C. (2011). A quantitative lipidomics analysis of K562 cells infected with Vesicular Stomatitis Virus. 24th Annual Lake Louise Tandem Mass Spectrometry Workshop, Lake Louise, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No, Competitive?: Yes
125. Canez, C., Patel, J., Smith, J.C. (2011). Optimization of protein digestion using microfluidic immobilized trypsin columns. 28th Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No

126. Smith, J.C. (2011). Mass spectrometry: Keeping an ion your safety and health. Carleton University Science Café, Ottawa, Canada
Main Audience: General Public
Invited?: Yes, Keynote?: Yes, Competitive?: No
127. Smith, J.C. (2011). A novel mass spectrometry-based proteomic and phosphoproteomic strategy for the quantitative analysis of a leukemic cell line infected by an oncolytic virus. Chemical Institute of Canada Local Section Annual General Meeting, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No
128. Smith, J.C. (2011). From diatomic molecules to eight thousand two hundred and three-atomic molecules: MS-based biomolecule analysis at the Trent Conference on Mass Spectrometry over the past decade. 28th Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No
129. Smith, J.C. (2011). Shad Valley 2011 – Analytical chemistry. 2011 Shad Valley Camp for Gifted Students, Ottawa, Canada
Main Audience: General Public
Invited?: Yes, Keynote?: Yes, Competitive?: No
130. Wasslen, K., Smith, J.C. (2011). Novel microfluidic methods to methylate peptides and permit quantitative analysis using tandem mass spectrometry. 28th Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
131. Smith, J.C. (2011). Shad Valley 2011 – Mass spectrometry. 2011 Shad Valley Camp for Gifted Students, Ottawa, Canada
Main Audience: General Public
Invited?: Yes, Keynote?: Yes, Competitive?: No
132. Huebsch, M.P., Smith, J.C. (2011). A quantitative mass spectrometry-based proteomic and phosphoproteomic analysis of VSV-infected K562 cells. 28th Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
133. Smith, J.C. (2011). A quantitative mass spectrometry-based lipidomic analysis of oncolytic viral therapy in leukemia. 57th ICASS International Conference on Analytical Sciences and Spectroscopy and 3rd Canada-China Analytical Chemistry Conference, Toronto, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No, Competitive?: Yes
134. Joudan, S., Trouborst, L., Smith, J.C. (2011). Quantitative lipidomics of K562 leukemic cells infected with Vesicular Stomatitis Virus. 28th Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
135. Smith, J.C. (2011). Using Cell Phone/Smart Phone/Laptop-Based Clickers in the Chemistry Classroom. Second Annual Carleton University Chemistry Department Professional Development Day, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No, Competitive?: No
136. Smith, J.C. (2011). A quantitative mass spectrometry-based lipidomic analysis of oncolytic viral therapy in leukemia. Ottawa Mass Spectrometry Society Meeting, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No

137. Trouborst, L., Joudan, S., Smith, J.C. (2011). Towards automating quantitative analyses of blood plasma lipids. 28th Annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
138. Smith, J.C. (2010). Assistant Professorship 101: Attaining an academic position and surviving year 1. Career Day, hosted by the Department of Biochemistry, Microbiology and Immunology in the Faculty of Medicine, University of Ottawa, Ottawa, Ontario, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No, Competitive?: No
139. Smith, J.C. (2010). Novel strategies to investigate intracellular communication using mass spectrometry. Department of Chemistry and Biochemistry, University of Windsor, Windsor, Ontario Seminar Series, Windsor, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No
140. Smith, J.C. (2010). Tips on using Clickers to maximize your classroom experience. Education Development Centre Faculty Roundtable, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No
141. Smith, J.C. (2010). What I wish someone had told me in my first year. Education Development New Faculty Orientation at Carleton University, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No
142. Smith, J.C. (2010). Novel strategies to investigate intracellular communication using mass spectrometry. Ottawa Hospital Research Institute Seminar Series, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No
143. Smith, J.C. (2010). Mass spectrometry-based lipidomics. The ABC of Mass Spectrometry for Biology Workshop, hosted by the Ottawa Institute of Systems Biology, Faculty of Medicine, University of Ottawa, Ottawa, Ontario, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No, Competitive?: No
144. Peace, R., Stewart, T., Smith, J.C., Green, J., Smith, J.C. (2010). Peptide Sequence Tag Identification Using the Cell BE. 33rd Conference of the Canadian Medical and Biological Engineering Society, Vancouver, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: Yes
145. Smith, J.C. (2010). Understanding the Academic Job Search and Interview Process. Career Development and Co-operative Education Office Seminar Series, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No, Competitive?: No
146. Smith, J.C. (2010). Creating Classroom Chemistry with Clickers. First Annual Carleton University Chemistry Department Professional Development Day, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: No, Competitive?: No
147. Smith, J.C. (2009). Identification of isobaric glycerophospholipid species using sodiated LC/MS3. 26th annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No

148. Smith, J.C. (2009). Using mass spectrometry to investigate the phosphoproteomic and glycerophospholipidomic dynamics of neuronal differentiation. Health Canada Seminar Series, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No
149. Smith, J.C. (2009). Using mass spectrometry to quantitatively analyze proteins and their post-translational modifications in biological systems. Monthly meeting of the Canadian Blood and Marrow Transfer Group at the Ottawa Hospital Research Institute, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No
150. Huebsch, M., Smith, J.C. (2009). Quantitative Proteomics: Novel Applications in Protein Phosphorylation and Biomedical Screening. 26th annual Trent Conference on Mass Spectrometry, Orillia, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: No
151. Smith, J.C. (2009). Using mass spectrometry to investigate the phosphoproteomic and glycerophospholipidomic dynamics of neuronal differentiation. Centre for Research in Mass Spectrometry Seminar Series, Toronto, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No
152. Smith, J.C. (2009). Using mass spectrometry to investigate the glycerophospholipidomic dynamics of neuronal differentiation. Ottawa Carleton Chemistry Institute Day, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: No
153. Smith, J.C. (2009). Discovering the world one ion at a time..Carleton University Spring Conference, Chaffey's Lock, Canada
Main Audience: General Public
Invited?: Yes, Keynote?: No, Competitive?: No
154. Smith, J.C. (2008). Using mass spectrometry to investigate the phosphoproteomic and glycerophospholipidomic dynamics of neuronal differentiation. Invited speaker at Illinois State University, Normal, United States
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: Yes
155. Smith, J.C. (2008). Using mass spectrometry to investigate the phosphoproteomic and glycerophospholipidomic dynamics of neuronal differentiation. Invited speaker at Brock University, St. Catharines, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: Yes
156. Smith, J.C. (2008). Using mass spectrometry to investigate the phosphoproteomic and glycerophospholipidomic dynamics of neuronal differentiation. Invited speaker at the University of Toronto, Toronto, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: Yes
157. Smith, J.C. (2008). Using mass spectrometry to investigate the phosphoproteomic and glycerophospholipidomic dynamics of neuronal differentiation. Invited speaker at Carleton University, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: Yes

158. Smith, J.C. (2008). Using mass spectrometry to investigate the phosphoproteomic and glycerophospholipidomic dynamics of neuronal differentiation. Invited speaker at the Université de Montréal, Montreal, Canada
Main Audience: Researcher
Invited?: Yes, Keynote?: Yes, Competitive?: Yes
159. Smith, J.C., Duchesne, M.A., Tozzi, P., Ethier, M., Figeys, D. (2007). Monitoring the dynamics of retinoic acid-treated P19 cells. 50th Annual Meeting and Conference of the Canadian Society of Biochemistry, Molecular and Cellular Biology, Montreal, Canada
Main Audience: Researcher
Invited?: No, Keynote?: No, Competitive?: Yes
160. Duchesne, M.A., Tozzi, P., Ethier, M., Figeys, D. (2007). Monitoring the dynamics of retinoic acid-treated P19 cells. 50th Annual Meeting and Conference of the Canadian Society of Biochemistry, Molecular and Cellular Biology, Montreal, Canada
Main Audience: Researcher
Invited?: Yes
161. Duchesne, M.A., Tozzi, P., Ethier, M., Figeys, D. (2007). Monitoring the dynamics of retinoic acid-treated P19 cells. 7th International Conference of the Canadian Proteomics Initiative, Ottawa, Canada
Main Audience: Researcher
Invited?: Yes
162. Northey, J., Garg, J., Pearlman, R.E., Siu, K.W.M., Rafferty, S.P., Vasilescu, J., Ethier, M., Figeys, D. (2005). Mass spectrometry: A power tool in the biologist's toolbox. Trent University Biology Department Seminar Series, Peterborough, Canada
Main Audience: Researcher
Invited?: Yes
163. Vasilescu, J., Ethier, M., Figeys, D. (2005). The analysis of post-translational modifications using mass spectrometry-based proteomic techniques. 32nd Federation of Analytical Chemistry and Spectroscopy Societies and 51st International Conference on Analytical Sciences and Spectroscopy Conference, Quebec City, Canada
Main Audience: Researcher
Invited?: Yes
164. Northey, J., Pearlman, R.E., Siu, K.W.M. (2004). Analysis of the ciliome of the protozoan *Tetrahymena thermophila* using translated and unannotated genomic sequences. Toronto Mass Spectrometry Seminar Series, Toronto, Canada
Main Audience: Researcher
Invited?: Yes
165. Northey, J., Pearlman, R.E., Siu, K.W.M. (2004). Analysis of the ciliome of the protozoan *Tetrahymena thermophila* using translated and unannotated genomic sequences. Invited speaker at the "Protein characterization by mass spectrometry" workshop at the University of Toronto, Toronto, Canada
Main Audience: Researcher
Invited?: Yes
166. Northey, J., Pearlman, R.E., Siu, K.W.M. (2004). Analysis of the ciliome of the protozoan *Tetrahymena thermophila* using translated and unannotated genomic sequences. Invited speaker at Yale University, New Haven, United States
Main Audience: Researcher
Invited?: Yes
167. Rafferty, S.P., Siu, K.W.M. (2003). Recent advances in the observation of non-covalent interactions within the nitric oxide synthase oxygenase domain. Trent University Department of Chemistry Seminar Series, Peterborough, Canada
Main Audience: Researcher
Invited?: Yes

Broadcast Interviews

- 2018/05/27 - OCE-Engage project with Staterra Inc. looking at runner's metabolites over the course of a
2018/05/27 race, Talk News, CFRA 580
- 2015/09/24 - CMSC and Broadhead NSERC Engage Collaboration, All in a Day, CBC, Alan Neal
2015/09/24 <http://www.cbc.ca/news/canada/ottawa/broadhead-beer-carleton-1.3242139>
- 2015/09/16 - Exposure / advertising for Science Café talk on Airport Security, Ottawa Morning, CBC,
2015/09/16 Robyn Bresnahan
<http://www.cbc.ca/player/AudioMobile/Ottawa%2BMorning/ID/2675503395/>

Text Interviews

- 2018/08/03 Discovery that most heroin samples in Ottawa contain fentanyl, <https://www.universityaffairs.ca/news/news-article/new-technology-aims-to-prevent-drug-overdoses/>
- 2018/08/03 Discovery that most heroin samples in Ottawa contain fentanyl, <http://www.cbc.ca/news/canada/ottawa/fentanyl-drugs-tests-ottawa-1.4771934>
- 2018/07/10 OCE-Engage project with Staterra Inc. looking at runner's metabolites over the course of a
race, <https://theconversation.com/will-a-nutritional-supplement-help-you-run-better-98524>
- 2018/07/10 OCE-Engage project with Staterra Inc. looking at runner's metabolites over the course of a
race, <https://nationalpost.com/pmnn/news-pmn/will-a-nutritional-supplement-help-you-run-better>
- 2018/06/22 Discovery of carfentanil in street drugs in Ottawa, <http://ottawacitizen.com/news/local-news/deadly-carfentanil-turning-up-in-crack-advocates-warn>
- 2018/05/28 Announcement of CSMS Young Investigator Award, <http://www.csms-scsm.ca/gallery/winners-of-the-young-investigator-award/>
- 2018/05/28 Announcement of CSMS Young Investigator Award, <https://carleton.ca/chemistry/2018/professor-jeff-smith-wins-csms-young-investigator-award/>
- 2018/05/03 Media announcement about new Mass Spectrometry-based technology to
investigate the contents of illegal opioid-containing drugs in safe injection sites, <http://www.timescolonist.com/portable-device-can-detect-fentanyl-in-street-drugs-within-seconds-researchers-1.23290720>
- 2018/05/03 Media announcement about new Mass Spectrometry-based technology to investigate the
contents of illegal opioid-containing drugs in safe injection sites, <http://www.cbc.ca/news/canada/ottawa/new-drug-check-technology-prevent-opioid-overdose-deaths-1.4646663>
- 2018/05/03 Media announcement about new Mass Spectrometry-based technology to
investigate the contents of illegal opioid-containing drugs in safe injection sites, <http://toronto.citynews.ca/2018/05/03/portable-device-can-detect-fentanyl-in-street-drugs-within-seconds-researchers/>
- 2018/05/03 Media announcement about new Mass Spectrometry-based technology to investigate the
contents of illegal opioid-containing drugs in safe injection sites, <http://nationalpost.com/pmnn/news-pmn/canada-news-pmn/portable-device-can-detect-fentanyl-in-street-drugs-within-seconds-researchers>
- 2017/05/12 Advertisement for oral presentation given at THEMUSEUM in Kitchener, <http://www.themuseum.ca/events/science-odyssey-beer-o-logue>

- 2017/02/24 Bridgehead collaboration cover story for Eureka magazine, <http://online.flipbuilder.com/bftp/xcjh/mobile/index.html#p=1>
- 2017/02/08 Article on Bridgehead coffee collaboration, <https://carleton.ca/our-stories/story/carleton-bridgehead-research/>
- 2016/07/14 Article on Nature Scientific Report Article being published, <http://carleton.ca/our-stories/story/creative-collaboration/>
- 2016/06/14 Article on CHRP Collaboration, <http://www.ohri.ca/newsroom/newsstory.asp?ID=794>
- 2015/09/25 CMSC and Broadhead NSERC Engage Collaboration, Ottawa Beer Events <http://www.ottawabeerevents.ca/2015/09/beer-science-broadhead-carleton-mass-spectrometry-centre-beer>
- 2015/09/25 CMSC and Broadhead NSERC Engage Collaboration, Carleton University Website <http://carleton.ca/our-stories/story-archives/solving-community-problems>
- 2015/09/25 CMSC and Broadhead NSERC Engage Collaboration, Canadian Beer News <http://www.canadianbeernews.com/2015/09/25/broadhead-chromato-released-to-mark-partnership-with-carl>
- 2015/09/23 CMSC and Broadhead NSERC Engage Collaboration, Ottawa Business Journal <http://www.obj.ca/Technology/2015-09-23/article-4286884/Carleton-Opens-Mass-Spectrometry-Centre/1>
- 2015/09/16 Exposure / advertising for Science Café talk on Airport Security, CBC Radio 1
- 2013/02/23 Carleton University Chemistry Magic Show coverage on CBC, Canadian Broadcasting Corporation Television Coverage on evening news - <http://www.cbc.ca/player/News/Canada/Ottawa/ID/2338184343>
- 2012/10/15 Announcement of CHRP funding on Carleton University Faculty of Science website, <http://science.carleton.ca/news/12/carleton-professor-awarded-grant-chrp-vaccine-project>
- 2012/10/01 Announcement of CHRP funding on Carleton Now website, Carleton Now - <http://carletonnow.carleton.ca/october-2012/vaccine-research-could-put-end-to-flu/>
- 2012/09/25 Announcement of CHRP funding on Carleton University Research website, <http://www1.carleton.ca/research/2012/carleton-professor-awarded-grant-for-chrp-vaccine-project>
- 2012/03/01 Article in Globe and Mail about my professional relationship with professional MMA athlete, Globe and Mail - <http://www.theglobeandmail.com/sports/more-sports/nick-denis-trades-in-laboratory-for-the-octagon/article2356062/>
- 2011/04/01 Announcement in Carleton Now of CFI funding decision to purchase infrastructure for the Smith laboratory, Carleton Now: <http://carletonnow.carleton.ca/april-2011/new-instrument-to-advance-stroke-and-cancer-research-at-carleton/>
- 2011/02/23 Announcement in the Carleton Newsroom (online) of the lecture given at Carleton University's Science Café on February 23rd, 2011 by Jeff Smith entitled Mass spectrometry: Keeping an ion your safety and health, Carleton Newsroom - <http://www1.carleton.ca/newsroom/psa/science-cafe-%E2%80%93-mass-spectrometers-keeping-an-%E2%80%93-ion-your-safety-and-health/>
- 2011/02/08 Announcement in the Carleton Newsroom (online) of CFI funding decision to purchase infrastructure for the Smith laboratory, <http://www1.carleton.ca/newsroom/news-releases/carleton-researchers-awarded-530000-from-the-canada-foundation-for-innovation/>
- 2009/04/01 Article in Research Works regarding Jeff Smith's research and the benefits of conducting it in the Canadian Capital Region, Research Works - http://researchworks.carleton.ca/2009_April/293.htm

Publications

Journal Articles

1. Country, M; Haase, K; Blank, K; Canez, C; Roberts, J; Campbell, B; Smith, J; Pelling, A; Jonz, M. (2022). Seasonal changes in membrane structure and excitability in central neurons of goldfish (*Carassius auratus*). *Journal of Experimental Biology*. NA: NA.
Submitted,
Refereed?: Yes
2. Shields, SWJ; Rosales, CA; Roberts, JA; Pallister, PJ; Wasslen, KV; Manthorpe, JM; Smith, JC. (2021). *iTrEnDi: In Situ* Trimethylation Enhancement using Diazomethane: Improved and Expanded Glycerophospholipid and Sphingolipid Analyses via a Microscale Autonomous Derivatization Platform. *Analytical Chemistry*. 93(2): 1084-1091.
Published,
Refereed?: Yes, Open Access?: No
3. Forn-Cuní, G; Fulton, KM*; Smith, JC; Twine, SM; Mendoza-Barberà, E; Tomás, JM; Merino, S. (2021). Polar Flagella Glycosylation in *Aeromonas*: Genomic Characterization and Involvement of a Specific Glycosyltransferase (Fgi-1) in Heterogeneous Flagella Glycosylation. *Frontiers in Microbiology*. 11: 3551.
Published,
Refereed?: Yes, Open Access?: Yes
4. Franklin E, Shields S, Manthorpe J, Smith J, Xia Y, McLuckey S. (2020). Coupling Headgroup and Alkene Specific Solution Modifications with Gas-Phase Ion/Ion Reactions for Sensitive Glycerophospholipid Identification and Characterization. *Journal of the American Society for Mass Spectrometry*. 31(4): 938-945.
Published,
Refereed?: Yes, Open Access?: No
5. Black C*, D'Souza T*, Hearn N, Smith J. (2019). Identification of post-blast explosive residues using Direct-Analysis-in-Real-Time and Mass Spectrometry (DART-MS). *Forensic Chemistry*. 16(100185): TBD.
Published,
Refereed?: Yes, Open Access?: No
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Book Chapters

1. Shields S*, Canez C*, Wasslen K*, Lee H*, Stalinski D*, Trouborst L*, Joudan S*, Whitton S*, Weinert H*, Manthorpe J, Smith, J. (2017). Enhancing the analysis of complex lipid samples through developments in chromatography and chemical derivatization. Banoub J and Caprioli R. *Molecular Technologies for Detection of Chemical and Biological Agents, NATO Science for Peace and Security Series A: Chemistry and Biology*. : 177-206.
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Refereed?: Yes

2. Pallister P*, D'Souza T*, Black C*, Hearn N, Smith J. (2017). Explosive Detection Strategies for Security Screening at Airports. Banoub J and Caprioli R. Molecular Technologies for Detection of Chemical and Biological Agents, NATO Science for Peace and Security Series A: Chemistry and Biology. : 243-251. Published, Springer Science and Business Media, United States
Refereed?: Yes
3. Macklin A* and Smith J. (2016). Modern techniques in quantitative proteomics. Pennington S. Advanced LC-MS applications in proteomics. eISBN 978-1-910419-17-5. DOI: 10.4155/FSEB2013.13.: unknown.
Last Author
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Refereed?: Yes

Thesis/Dissertation

1. Mass spectrometry-based proteomics: non-covalent interactions and protein identification. (2005). York University. Supervisor: K. W. Michael Siu

Conference Publications

1. Smith, J.C., Duchesne, M.A., Tozzi, P., Ethier, M., Figeys, D. (2008). Monitoring the dynamics of retinoic acid-treated P19 cells. 50th Annual Meeting and Conference of the Canadian Society of Biochemistry, Molecular and Cellular Biology, ,
Conference Date: 2007/7
Abstract
First Listed Author
Published
Refereed?: Yes, Invited?: No

Intellectual Property

Patents

1. Compositions and methods for viral sensitization. Canada. 62/107,908. 2015/01/26.
Patent Status: Granted/Issued
Year Issued: 2015
Year of End Term: 2016
Inventors: Diallo J-S, Boddy C, Dornan M, Krishnan R, Arulanandam R, Le Boeuf F, Macklin A, Smith J
2. Compositions and methods for enhancing oncolytic virus efficacy. Canada. 62/107,923. 2015/01/26.
Patent Status: Granted/Issued
Year Issued: 2015
Year of End Term: 2016
Inventors: Diallo J-S, Boddy C, Dornan M, Krishnan R, Le Boeuf F, Bell J, Macklin A, Smith J

Myron L. Smith

Mailing Address: Department of Biology, Carleton University,
1125 Colonel By Drive, Ottawa ON K1S 5B6

Telephone: 613-520-2600 x 3864

Email: myron_smith@carleton.ca

Website: <https://carleton.ca/biology/people/myron-smith/>

A) EDUCATION

1987-1992, Ph.D. in Genetics, Department of Botany, University of Toronto at Mississauga, Mississauga, ON, Canada. Supervisor=James B. Anderson

1985-1987, M.Sc. in Genetics, Department of Botany, University of Toronto at Mississauga, Mississauga, ON, Canada. Supervisor=James B. Anderson,

1981-1984, B.Sc., Department of Botany, University of Alberta, Edmonton, AB, Canada

B) EMPLOYMENT

B1) Primary Affiliations

2017-present, Professor (tenured). Department of Biology, Carleton University

1999-2017, Associate Professor (tenured). Department of Biology, Carleton University

2012-2016, Chair, Department of Biology, Carleton University

2002-2007, Director, Institute of Biochemistry, Carleton University

2001-2002, Visiting Scientist in Plant Pathology, College of Agriculture and Life Sciences, Cornell University, Ithaca, NY, USA

1995-1999, Assistant Professor, Department of Biology, Carleton University

1992-1995, Post-Doctoral Fellow in Genetics, Institute of Biotechnology, University of British Columbia, Vancouver, BC, Canada. Supervisor=N. Louise Glass

B2) Other Affiliations

1995- present, Council Member, Institute of Environmental Science, Carleton University

1996- present, Faculty member, Institute of Biochemistry, Carleton University

C) RECOGNITIONS/AWARDS

2018, Carleton Educational Development Centre 'Raving Raven' for undergraduate teaching

2017, Carleton University Graduate Mentoring Award

2016, Best Faculty 3 min talk! Judged by Carleton and Ottawa U Graduate Students at Annual OCIB Conference, University of Ottawa, Ottawa, ON, Canada

1992-1994, Izaak Walton Killam Postdoc Fellowship, U British Columbia, Vancouver, BC, Canada

1992-1994, NSERC Postdoc Fellowship, U British Columbia, Vancouver, BC, Canada

1991, U of Toronto Open Fellowship

1991, Luella K. Weresub Memorial Award (Canadian Botanical Association)

1991, Grant D. Darker Memorial Award, U Toronto

1990-1991, Ontario Graduate Scholarship

1988-1990, NSERC Postgraduate Scholarship

1989, Mycological Society of America Best Oral Presentation

D) RESEARCH

D1) Funding History

Source	Role	Year(s)	Grant total CNS\$/y	ML Smith Total CNS\$
Carleton MRCF	co-app (+12 others)	2022-2023	\$50,000	\$50,000
MITACs Accelerate	PI	2022-2023	\$60,000	\$60,000
Carleton MRCF	co-app (+9 others)	2019-2020	\$30,000	\$30,000
NSERC & OCE VIP	PI	2018-2019	\$50,000	\$50,000
NSERC RTI	co-app (+3 others)	2017	\$88,745	\$22,000
NSERC ENGAGE	PI	2016	\$25,000	\$25,000
LACREG	PI	2015	\$14,986	\$14,986
MITACS	PI	2015	\$19,500	\$19,500
NSERC Discovery	PI	2014-2019	\$71,000	\$355,000
NSERC RTI	co-app (+4 others)	2014	\$108,868	\$108,868
NSERC Engage	PI	2014	\$25,000	\$25,000
Natura Biologics Inc.	PI	2012-2015	\$58,000	\$175,000
NSERC Discovery	PI	2009-2014	\$71,000	\$355,000
Health Canada	co-PI	2008-2010	\$302,000	\$170,000
Nat Resources Canada	co-app (+2 others)	2008-2009	\$72,787	\$26,000
NSERC MRS	co-app (+ 6 others)	2007-2012	\$75,000	\$50,000
NSERC RTI	co-app (+5 others)	2005-2006	\$30,010	\$30,010
NSERC RTI	co-app (+4 others)	2005-2006	\$25,943	\$25,943
NSERC Discovery	PI	2004-2008	\$71,000	\$305,000
Environ Canada	PI	2004-2006	\$164,700	\$329,400
Environ Canada	PI	2003-2005	\$110,000	\$329,000
NSERC Strategic	co-app (+5 others)	2002-2005	\$195,300	\$97,500
NSERC Equipment	PI (+2 others)	2001-2002	\$20,057	\$20,057
NSERC Discovery	PI	2000-2004	\$44,000	\$220,000
NSERC Equipment	co-app (+2 others)	1999-2000	\$75,000	\$75,000
NSERC Equipment	co-app (+2 others)	1999-2000	\$40,650	\$40,650
NSERC Equipment	co-app (+2 others)	1998-1999	\$14,225	\$14,225
Carleton GR-5	PI	1997	\$5,000	\$5,000
NSERC Research	PI	1996-2000	~\$27,500	\$135,000
Carleton (Start-up)	PI	1995	\$39,056	\$39,056
TOTAL				\$3,202,195

D2) Most Significant Research Contributions

i) *Discovery of antimicrobials and their mode of action.*

New antimicrobials have applications in human and veterinary medicine, agriculture and materials spoilage. We have characterized more than 14 antimicrobial compounds derived from ethnobotanicals. We are now working on an additional >100 antimicrobials that we have recently identified from bacteria and fungi. Through this work we have developed expertise with bioassay-guided fractionation to isolate and identify antimicrobials, high-throughput assays to infer mode of activity and secondary assays. Understanding mode of activity is needed for predicting off-target effects and for regulatory approval of new antimicrobials. For high-throughput assays, we use *E. coli* and yeast Gene Deletion Arrays (GDAs) to infer the protein/pathway target(s) of inhibitory compounds. We developed bioinformatics tools to identify the cellular roles of deleted genes in the most susceptible mutants to infer potential targets of the inhibitory compound. Following this, we develop secondary assays to further test modes of action. I have published more than 30 papers in this area of antimicrobial discovery.

ii) *Genetics of nonself recognition.*

Fungal nonself recognition is a kind of immune system that triggers cell death to protect the organism from viruses and other invasive elements. I have made significant contributions to understanding eukaryotic nonself recognition processes through my genetic studies of vegetative incompatibility systems in fungi. I played key roles in locating, cloning and molecular analyses of 10 of the 19 vegetative incompatibility genes that are now characterized. My work on nonself recognition genes in the fungus *Neurospora crassa* was instrumental in developing a ‘search image’ with which incompatibility genes can now be recognized using comparative genomics. Initially, we had no idea of how to identify an incompatibility gene other than by its function. I used genetic mapping and chromosome walking techniques to identify regions of the chromosome that were associated with incompatibility gene activity. Fine-scale dissections and molecular genetic assays were then used to narrow down on potential genes that had incompatibility activity. Through this work I discovered a conserved ‘HET’ domain that is now recognized as the major component of nonself recognition systems in fungi. With detailed physical genetic analyses we also found that allelic variants of incompatibility genes contain highly polymorphic ‘specificity’ domains, and that incompatibility genes in fungi are often clustered as ‘supergene’ complexes. These attributes (recognizable domains, extreme allelic sequence diversity and gene clusters) provide useful cues that can be combined with intraspecific comparative genomics and linkage analysis to now identify new nonself recognition genes in other fungi. For example, we used this approach with *Cryphonectria parasitica*, the causal agent of chestnut blight, to characterize 7 incompatibility genes at 4 nonself recognition loci. Further to this work, we have characterized 2 protein interaction networks that trigger fungal incompatibility.

iii) *Development of genetic tools.*

We have developed novel genetic tools, including ones for identifying and enumerating microbes in the environment using *strain*-specific qPCR methods, fluorescence-based PCR protocols to detect DNA photoadducts, and for gene copy number determination. In addition, we developed safe DNA extraction protocols for bioterror agents to integrate into ‘forensic chain of custody’ procedures used by RCMP labs. I provide molecular genetics expertise to collaborators, for e.g., microsatellite DNA markers of Convict Cichlid fish, tests of ‘bet-hedging’ with *N. crassa* and

yeast, and phylogenetic tests on acoustic signaling and natural history in insects and worms.

iv) *Concept of the ‘individual’: giant, old fungi.*

A Nature publication from my PhD generated a great deal of international attention. The paper developed a means to genetically define a fungal individual, using classical and molecular genetic markers, and showed that a contiguous set of isolates covering 15 hectares were from a single individual (as opposed to, say, from multiple closely related individuals). Once unambiguously identified, estimates could be made, for the first time, of the age, weight and genetic stability of a naturally occurring fungal individual. The study generated an interesting debate on the concept of an ‘individual’ (e.g. Gould, SJ (1992) *Natural History* July, pp.10-14). The popular press named this individual the ‘humungous fungus’ and helped propagate the meme, encapsulated by the title of our paper, that fungi are ‘among the largest and oldest living organisms’. Our findings have stood the test of time: during 2015-19, nearly 30 years after completion of my PhD studies, we used whole-genome sequencing to investigate aging, genome stability, and internal growth patterns of the ancient, giant fungus.

v) *Technology transfer to government and industry.*

Methods for tracking industrially-relevant microbial strains in soil ecosystems were developed in my laboratory and transferred for use under the Canadian Environmental Protection Act, 1999. For Health Canada we developed sensitive qPCR methods for detection and enumeration of bacterial strains released into buildings as bioterror agents and to test the efficacy of remediation procedures required to return affected buildings back to service. We used our strain-tracking methods to test whether the introduction of biocontrol agents we developed can remediate White Nose Disease of bats in hibernation caves. More broadly, I have used applied microbiology for biofuel studies with Forest Products Association Canada and with Natural Resources Canada to develop microbe detection at acid mine drainage sites. A provisional patent was filed from research on bioactive compounds from Prickly Ash and I have recently worked with Natura Biologics on phage-based reagents for antimicrobial applications.

D3) Refereed Publications submitted and published during past 6 years

[Superscripts indicate undergraduate student (UG), graduate student (GS) and postdoctoral (PD) contributions; funding source in parentheses]

Submitted

- 1) Barghouth Z^{GS}, Khazzam E^{UG}, Ramlawi S^{UG}, Wong A, Smith ML and Avis TJ. (Submitted) Compost tea properties affecting inhibition of plant pathogens and suppression of strawberry gray mold (*Botrytis cinerea* Pers.). Submitted to ***Biol. Control***, March 2022. (NSERC Discovery – ATJ, Carleton Internal - MLS)
- 2) Raghu S^{GS}, Smith ML, Simons AM (Submitted) Avoiding dead ends: the experimental evolution of constraint as adaptation to environmental variation in *Saccharomyces cerevisiae*. Submitted to ***Nat Commun***, Jan 2022. (NSERC Discovery – ATJ & MLS)
- 3) Jagadeesan SK^{GS}, Potter T^{GS}, Al-gafari M^{GS}, Hooshyar M^{GS}, Hewapathirana CM^{GS}, Takallou S^{GS}, Hajikarimlou M^{GS}, Omid K^{GS}, Burnside D^{GS}, Samanfar B, Moteshareie H, Smith ML, Golshani A (Submitted) Discovery and identification of genes involved in DNA damage repair in yeast. Submitted to ***Gene***, Sep 2021. (NSERC Discovery – AG & MLS)

- 4) Wang Y^{GS}, Bergin CJ^{GS}, Oyetoran BO^{GS}, Chatfield S, Datla R, Xiang D, Liu Y, Li L, Wang Z, Bonner C, Manes N, Smith ML, Subramaniam R, Hepworth SR. (Submitted) Arabidopsis BLADE-ON-PETIOLE1 and 2 interact with clade I TGA and WRKY transcription factors to promote plant defense. Submitted to *New Phytologist*, May 2021. (NSERC Discovery – SRH & MLS)

In Revision

- 5) Velicogna JR^{GS} et al., Nano copper oxide and copper sulphate sub-lethal toxicity and bioaccumulation in soil invertebrates. In Revision at *Ecotoxicology and Environmental Safety*. Ms. No. EES-20-2602R1 (NWRC Special Project)
- 6) Hajikarimlou M^{GS}, Hooshyar M^{GS}, Sunba N^{GS}, Nazemof N^{GS}, Laliberte B^{GS}, Takallou S^{GS}, Omidi K^{GS}, Zare N^{GS}, Puchecz N^{GS}, Jagadeesan S^{GS}, Arasteh F^{GS}, Burnside D^{GS}, Moteshareie H^{GS}, Babu M, Holcik M, Samanfar B, Smith ML, Golshani A. A correlation between 3'-UTR of OXA1 gene and yeast mitochondrial translation. In Revision at *PeerJ*. (NSERC Discovery – AG)

Published

- 7) Yadav C^{GS}, Yack JE, Smith ML (Accepted April 2022) Grouping behavior is disrupted by RNA interference of octopamine receptor in a social caterpillar. Submitted to *BMC Res Notes*. (NSERC Discovery – JEY & MLS)
- 8) Arnason J, Cuerrier A, Smith ML (2022) Ethnobotany and ethnopharmacology in the Americas. *Botany* 100: <https://doi.org/10.1139/cjb-2021-0189> (various – JTA, AC, JTA).
- 9) Nissan N^{GS}, Mimee B, Cober ER, Golshani A, Smith ML, Samanfar B (2022) A broad review of soybean research on the ongoing race to overcome soybean cyst nematode. *Biology* 11: 211; <https://doi.org/10.3390/biology11020211> (AAFC – BS)
- 10) Witte TE^{GS}, Shields S, Heberlig G, Darnowsky M, Belov A^{GS}, Sproule A, Boddy C, Overy DP, Smith ML. (2021) A metabolomic study of vegetative incompatibility in *Cryphonectria parasitica*. *Fungal Genetics and Biology*, 2021 Oct 5;157:103633. doi: 10.1016/j.fgb.2021.103633. (NSERC Discovery – MLS)
- 11) Micalizzi E^{GS}, Golshani A, Smith ML. (2021) Propionic acid disrupts endocytosis, cell cycle, and cellular respiration in yeast. *BMC Res Notes* 14:335 <https://doi.org/10.1186/s13104-021-05752-z> (NSERC Discovery – MLS)
- 12) Velicogna JR^{GS}, Schwertfeger D, Jesmer A, Beer C, Kuo J, DeRosa M, Scroggins R, Smith ML, Princz J (2021) Soil invertebrate toxicity and bioaccumulation of nano copper oxide and copper sulphate in soils, with and without biosolids amendment. *Ecotox Environ Safety* 217:112222 <https://doi.org/10.1016/j.ecoenv.2021.112222> (NWRC Special Project)
- 13) Belov AA^{GS}, Witte TE^{GS}, Overy DP, Smith ML. (2021) Transcriptome analysis implicates secondary metabolite production, redox reactions and programmed cell death during allorecognition in *Cryphonectria parasitica*. *G3 Genes| Genomes| Genetics* 11:1-13 <https://doi.org/10.1093/g3journal/jkaa021> (NSERC Discovery – MLS)

- 14) Yadav C^{GS}, Smith ML, Ogunremi D, Yack JE, (2020) Draft genome assembly and annotation data of the masked birch caterpillar, *Drepana arcuata* (Lepidoptera: Drepanoidea). **Data in Brief** DIB-D-20-01722R2. (NSERC Discovery – JEY & MLS)
- 15) Hajikarimlou M^{GS}, Moteshareie H^{GS}, Omidi K^{GS}, Hooshyar M^{GS}, Shaikho S^{GS}, Burnside D^{GS}, Takallou S^{GS}, Zare N^{GS}, Kumar Jagadeesan S^{GS}, Puchacz N, Babu M, Smith ML, Holcik M, Samanfar B, Kazmirchuk T, Golshani A. (2020) Sensitivity of yeast to lithium chloride connects the activity of *YTA6* and *YPR096C* to translation of structured mRNAs. **PLOS ONE**, PONE-D-19-21480R3 (NSERC Discovery – AG)
- 16) Yadav C^{GS}, Smith ML, Yack JE. 2020. Transcriptome analysis of a social caterpillar, *Drepana arcuata*: de novo assembly, functional annotation and developmental analysis. **PLOS ONE**, PONE-D-19-27440R1 (NSERC Discovery – JEY & MLS)
- 17) Hajikarimlou M^{GS}, Hunt K^{GS}, Kirby G^{GS}, Takallou S^{GS}, Kumar Jagadeesan S^{GS}, Omidi K^{GS}, Hooshyar M^{GS}, Burnside D^{GS}, Moteshareie H^{GS}, Babu M, Smith ML, Holcik M, Samanfar B, Golshani A. 2020. Lithium chloride sensitivity in yeast and regulation of translation. **Intl J Mol Sci**, ijms-826787 (NSERC Discovery – AG)
- 18) Micalizzi E^{GS}, Smith ML. (2020) Volatile organic compounds kill the white-nose syndrome fungus, *Pseudogymnoascus destructans*, in hibernaculum sediment. *Can J Microbiol*, **Can J Microbiol**, 66:593-599. doi: 10.1139/cjm-2020-0071 (NSERC Discovery – MLS)
- 19) Crouch JA, Dawe A, Aerts A, Barry K, Churchill ACL, Grimwood J, Hillman BI, Milgroom MG, Pangilinan J, Smith ML, Salamov A, Schmutz J, Yadav JS, Grigoriev IV, Nuss DL. (2020) Genome sequence of the chestnut blight fungus *Cryphonectria parasitica* EP155: A fundamental resource for an archetypical invasive plant pathogen. **Phytopathology** <https://doi.org/10.1094/PHYTO-12-19-0478-A> (various – all authors)
- 20) Galván IJ^{GS}, McKay B, Wong A, Cheetham J, Bean C^{UG}, Golshani A, Smith ML (2020) Mode of action of nisin on *Escherichia coli*. **Can J Microbiol** 66: 161-168, <https://doi.org/10.1139/cjm-2019-0315> (NSERC Discovery – MLS)
- 21) Mogg C^{GS}, Bonner C, Wang L, Scherthner J, Smith M, Desveaux D, Subramaniam R (2019) Genomic Identification of the TOR signaling pathway as a target of the plant alkaloid antofine in the phytopathogen *Fusarium graminearum*. **mBio** 10: 00792-19 (AAFC – RS)
- 22) Anderson JB, Bruhn JN, Kasimer D, Wang H^{UG}, Rodrigue N, Smith ML. 2018 Clonal evolution and genome stability in a 2500-year-old fungal individual. **Proc. R. Soc. B** 285: 20182233. <http://dx.doi.org/10.1098/rspb.2018.2233> (NSERC Discovery – MLS)
- 23) Parsons JL^{GS}, Cameron SI, Harris CS, Smith ML 2018 Echinacea biotechnology: advances, commercialization and future considerations. **Pharmaceutical Biology** 56: 485–494. (NSERC Discovery – MLS)
- 24) Galván Márquez I^{GS}, Ghiyasvand M^{GS}, Massarsky A, Babu M, Samanfar B, Omidi K^{GS}, Moon TW, Smith ML, Golshani A (2018) Zinc oxide and silver nanoparticles toxicity in

- the baker's yeast, *Saccharomyces cerevisiae*. **PLOS ONE** 13(3): e0193111. <https://doi.org/10.1371/journal.pone.0193111> (NSERC Discovery – MLS, AG)
- 25) Parsons JL^{GS}, Liu R^{GS}, Smith ML, Harris CS (2018) Echinacea fruits: Phytochemical localization and germination in four Echinacea species. **Botany**: 96: 461–470. (NSERC Discovery – MLS)
- 26) Milgroom MG, Smith ML, Drott MT^{GS}, Nuss DL (2018) Balancing selection at nonself-recognition loci in the chestnut blight fungus, *Cryphonectria parasitica*, demonstrated by transspecies polymorphisms, positive selection and even allele frequencies. **Heredity**: 121: 511–523. <https://doi.org/10.1038/s41437-018-0060-7> (USDA - MGM, NSERC Discovery – MLS)
- 27) Samanfar B^{GS}, Shostak K^{GS}, Moteshareie H^{GS}, Hajikarimlou M^{GS}, Shaikho S^{GS}, Omidi K^{GS}, Hooshyar M^{GS}, Burnside D^{GS}, Galván Márquez I^{GS}, Kazmirchuk T^{GS}, Naing T^{GS}, Ludovico P^{GS}, York-Lyon A^{UG}, Szereszewski K^{UG}, Leung C^{UG}, Yixin Jin J^{UG}, Megarbane R, Smith ML, Babu M, Holcik M, Golshani A (2017) The sensitivity of the yeast, *Saccharomyces cerevisiae*, to acetic acid is influenced by DOM34 and RPL36A. **PeerJ**: 5:e4037 DOI 10.7717/peerj.4037(NSERC Discovery – AG)
- 28) Micalizzi EW^{GS}, Mack JN^{UG}, White GP, Avis TJ, Smith ML (2017) Microbial inhibitors of the fungus *Pseudogymnoascus destructans*, the causal agent of white-nose syndrome in bats. **PLOS ONE** 12: e0179770. <https://doi.org/10.1371/journal.pone.0179770>(NSERC Discovery – MLS)

D4) Other Scholarly or Professional Activities (past 6 years)

- 2018 – present, Scientific Advisor, Buchipop Inc, Ottawa ON
- 2018 – present, Scientific Advisor, Fieldless Farms, Ottawa ON
- 2018 – present: Carleton Biology, Professional Masters / Biotech Diplomas, Lead
- 2014 – present, Associate Editor, *Botany*, CRC Press
- 2020 – 2021, Guest Editor, *Botany*, for Special Issue: ‘Ethnobotany and Ethnopharmacology of the Americas’
- 2015 – 2021, peer review 15 journal submissions
- 2015 – 2021, 6 invited talks for public outreach
- 2015 – 2021, 9 national/international media interviews
- 2015 – 2021, 4 invited presentations at scientific meetings
- 2015 – 2021, 15 contributed presentations, authored and co-authored
- 2015 – 2021, undergrad & graduate teaching in genetics, mycology, biotechnology
- 2021 & 2022, Reviewer of Rutherford Discovery Fellowship (Australia)
- 2014 – 2020, External Undergrad Program Examiner, Faculty of Science and Technology, University of West Indies, St Augustine, Trinidad and Tobago
- 2019, External PhD Examiner, Department of Biochemistry, University of West Indies, St Augustine, Trinidad and Tobago
- 2008-2019, member of Chestnut Blight (*Cryphonectria parasitica*) genome consortium
- 2016-2019, Treasurer, 33rd Annual Great Lakes Mycology Conference, Queen's Biology Station, Chaffey's Locks, ON, Canada & Brock U, St Catharines, ON
- 2015-2017, Published 2 non-refereed papers on microbial genomics
- 2015-2019, Organizer and Event Leader, Ottawa Field Naturalists' Club, MacSkimming Outdoor Education Centre, Cumberland, ON, Canada
- 2012-2018: 5 Carleton Committees: Biology Curriculum Com; Biology Planning and

Priorities Com; Biology Promotion and Tenure Com., Biology Grad Studies Com.
 2013 – 2016, Technology Development & Business Innovation for *Natura Biologics Inc.*
 Selection and characterization of bacteriophage for attenuating *E. coli* K88 and K99.
 Early-stage biotechnology product development.
 <2015 – Technology Development for RCMP, Health Canada, Environment Canada.
 <2015 – Smith ML, Bafi-Yaboa NFA, Baker J, Arnason JT (2004) USA Provisional
 Patent No 60/608,410 with *Bioniche Life Science Inc.*

D5) Graduate Student Supervision and Co-supervision (past 6 years)

Student Name	Degree	Year	Supervisor/		Topic	Status
			Co-supervisor			
Jonathan Mack	M.Sc.	2018-22	co-sup		Fungi associates of sugar maple	In progress
Rafael Garduno	Ph.D.	2018-	co-sup		Conversion of brewery waste	In progress
Ghazaleh Nourparvar	Ph.D.	2016-	sup		Genetic interactions of <i>het-6</i> incompatibility	In progress
Fatima Haider	M.Sc.	2017-19	sup		New antibiotics from fungi	unknown
Hayley Paquette	M.Sc.	2017-19	co-sup		Lichens of Forillon Nat. Park	Ph.D. candidate, Memorial
Shravan Raghu	M.Sc.	2017-19	co-sup		Bet-hedging in yeast	Ph.D. Candidate
Tom Witte	M.Sc.	2017-19	Sup		Metabolomics of <i>Cryphonectria parasitica</i> nonself recognition	Ph.D. candidate, U Ottawa
Jessica Velicogna	M.Sc.	2016-19	co-sup		Nanoparticle toxicity in soil	Research Associate, Env Can
Emma Groulx	M.Sc.	2015-17	co-sup		Genome analysis of biocontrol microbes	Technician, Carleton U
Emma Micalizzi	M.Sc.	2016-18	sup		Biotic and antibiotic control of bat WNS disease	Ph.D. candidate, U Calgary
Leena Tabaja	M.Sc.	2015-17	sup		Antibiotics from edible mushrooms	unknown
Olanike Oyetoran	Ph.D.	2015-21	sup		Genetic interactions in <i>Arabidopsis</i> plant pathology	AAFC Ottawa
Jessica Parsons	M.Sc.	2013-15	sup		Antibiotics from Echinacea endophytes	Research Associate, Tweed Medical Group
Joey Tanney	Ph.D.	2012-17	co-sup		Antibiotic from fungal endophytes of black spruce	Research Scientist, Can For Service, Victoria BC
Anatoly Belov	Ph.D.	2011-17	sup		Bioinfo of virus-vegetative incompatibility interactions	PDF, U Toronto
Abiodun Laoye	M.Sc.	2014-16	sup		Genetic interactions of <i>vib-1</i> & <i>het-6</i> in <i>N. crassa</i>	Freelance science writer, Ottawa ON
Daniela Morales	M.Sc.	2016-16	sup		Antibiotic discovery	Ph.D. candidate, UOttawa

Sasi Kumar	M.Sc.	2015-16	co-sup	Calcitriol biochemical interactions in yeast	Ph.D. candidate, Carleton U
Ghyda Hashim	M.Sc.	2014-16	sup	Antifungal mode-of-action of berberine	Ph.D. candidate, U Toronto
Imelda Galvan	Ph.D.	2010-16	co-sup	ID and mode-of-action of probiotic antibiotics	Research Scientist, CFIA Ottawa
Ghazaleh Nourparvar	M.Sc.	2013-16	sup	Mechanism of escape from <i>het-6</i> incompatibility	Ph.D. Carleton U
Samantha Frasz	M.Sc.	2012-15	co-sup	Genetic ID and bioactives of endophytes	Technician, Carleton U

D6) Post-doctoral Fellows, Research Associates and Technicians (past 6 years)

Student Name	Degree	Year	Supervisor/ Co-supervisor	Topic	Status
Katayoun Omidi	PDF	2018-19	sup	Tissue culture and indoor farming of strawberry	Lecturer, Algonquin C Real Estate
Molly Neave	Res. Assoc.	2018-19	sup	Tissue culture and indoor farming of strawberry	Research Associate, The Growcer Inc, Ottawa ON
Kishore Murthy	Res. Assoc.	2012-17		Phage-based antibiotics	CEO, Natura Biologics

D7) Undergraduate Research Students over past 6 years (2016-2022)

I develop and supervise research projects up to ~ 8 undergraduate students each year. These projects normally run for 8 months. Funds for this research comes from my NSERC and other grants. The projects occasionally yield findings that can be published with the student as a co-author. In my full publications list, 25 undergraduate students are listed as co-authors on 18 papers. (Co-supervisions below are indicated with superscript 'CO')

2021-22, (6 BSc honours thesis students) Nick Curran, Daniel Gladish, Mohamed Dualeh, Rahat Rusha, Noah Potter, Iain McDonald

2020-21, (2 BSc honours thesis students) Woleola Banjoko, Ugochi Oledibemma

2018-19 (3 BSc honours thesis students) Marina Maurach, Jonathan Mack^{CO}, Cody Bean

2017-2018 (1 BSc honours thesis students) Emerson Wheeler

2016-2017 - sabbatical

2015-2016 (6 BSc honours thesis students) Trinda Crippin^{CO}, Chris Cogle, Raghd Algawas, Mustafa Hamid, Emma Micalizzi, Yahima Hernández Rojo^{CO}

Agriculture and AgriFood Canada 613-759-7619
 KW Neatby Building subramaniamra@agr.gc.ca
 960 Carling Avenue http://intranet.agr.gc.ca/agrisource/eng?id=1287261736402
 Ottawa, Ontario K1A 0C6

Academic History

Year	Degree/Position	Field of Study	University/Department
2001-2004	NSERC Postdoc Fellow	Plant-Microbe Interactions	University of North Carolina/ Biology
2000-2001	Postdoctoral Fellow	Biochemistry	University of Montreal
1993-1999	Ph.D.	Mol Biol/Biochemistry	University of Montreal
1977-1981	B.Sc.	Microbiology/Biochemistry	University of Manitoba

Employment History

Year	Degree/Position	Field of Study	University/Department
2004-pres	Research Scientist	Plant-Microbe Interactions	AAFC/Cereals & Pulses
2008-pres	Adjunct Professor	Plant-Microbe Interactions	Carleton University/Biology
2014-pres	Adjunct Professor	Plant-Microbe Interactions	University of Toronto/Cell & Systems Bio

A. PERSONAL STATEMENT

I am a Research Scientist with Agriculture Canada and lead several teams across Canada that study Fusarium head blight disease (FHB) in wheat. The team includes molecular biologists, chemists and plant breeders and our collective goal is to find long-term solutions against this disease and increase productivity of Canadian farms. The team employs uses a suite of O'mics tools to investigate the strategies used by the pathogen, *Fusarium graminearum* and provide both genetic and chemical solutions to combat the pathogen. With respect to mitigation strategies, our team collaborates extensively with private enterprises to develop novel biopesticides against the pathogen and molecular markers to identify resistance wheat varieties.

I am an adjunct research professor at Carleton University and at the University of Toronto, which enables me to co-supervise students and postdocs in collaborative research programs with various stakeholders including the Grain farmers of Ontario (GFO) and the Vineland research centre. In this regard, I currently collaborate with Dr. Guttman with a grant from the GFO to catalogue endophytes and epiphytes from wheat, in the anticipation of using microbiome as a viable and alternate strategy to control FHB. I have been invited both nationally and internationally to give lectures in Fusarium/wheat pathology.

In addition to academic and research commitments, I served on the discovery grant panel of NSERC (National Sciences and Engineering Research Council of Canada) and on the research area committee of the US wheat & barley scab initiative where we assessed research proposals. More recently, I was invited to participate to develop strategies to establish a Canadian Fungal Network, funded by CIHR. In the past, I chaired and organized the 4th Plant genomics workshop held in Ottawa and currently serve in the executive board of the International Fusarium head blight workshop committee. As part of a public policy forum

seminar series on “keeping with the speed of disruption” organized by Deloitte Greenhouse in Oct 2016 and Dec 2017, I served as an expert panel member regarding the use of CRISPR in crop plants. I was also a AAFC representative to the Workshop on Gene Editing organized by the Organisation for Economic Co-operation and Development (OECD) in 2016 to develop a green paper on the scientific, economic and social Issues with respect to the use of gene editing technologies. I recently (March 2021) organized a “transformative workshop” on synthetic biology that brought together various stakeholders across the country to develop networks to operationalize microbial collection at AAFC-Ottawa for bioprospecting.

B. CONTRIBUTIONS TO SCIENCE

Selected Invited Presentations (Present- 2017)

1. Biopesticides and Adjuvants: Bioproducts cluster Webinar – Bioinnovation Canada, Ottawa April 2021. Virtual - **keynote**
2. Intl Plant Proteomics – March, 2021. Virtual- **Plenary**
3. Bioproducts cluster Webinar- Bio-innovation innovation Canada – invited speaker, Feb, 2021. Virtual
4. Joint 9th Canadian Workshop on Fusarium Head Blight and 4th Canadian Wheat Symposium, Nov, 2018. Winnipeg - **Plenary**
5. Joint Meeting of the Canadian Phytopathological Society and the Canadian Society of Agronomy. June 2017, Winnipeg - **Plenary**
6. Eastern regional Can Phytopathological society. Nov 2017, Ottawa - **Keynote**
7. Frontiers in Fusarium-Host Interactions, Shanghai (Chinese Academy of Sciences) Aug 2017, Shanghai, China- **Keynote**
8. A Public policy forum seminar series organized by Deloitte Greenhouse, Oct 2017, Ottawa – **Plenary**
9. The 29th Fungal Genetics Conference, March 2017, Pacific Grove, California, USA - **Session**
10. *A Dewar-Cooper lecture* in Michael Smith laboratories, University of British Columbia, Feb, 2017

Selected List of Publications (Present- 2010)

1. Eranthodi A, et al., (2022) Cerato-platanin protein 1 is not critical for *Fusarium graminearum* growth and aggressiveness, but its overexpression provides an edge to Fusarium head blight in wheat. **Can. J. Plant Pathology**
<https://doi.org/10.1080/07060661.2022.2044910>
2. Seto D, Khan M, Bastedo DP, Martel A, Vo T, Guttman D, Subramaniam R, Desveaux D (2021) The Small Molecule Zearactin Activates ZAR1-Mediated Immunity in Arabidopsis. **PNAS** <https://doi.org/10.1073/pnas.2116570118>
3. Manes N, Brauer EK, Hepworth S, Subramaniam R (2021). MAMP and DAMP signalling contributes resistance to *Fusarium graminearum* in Arabidopsis. **J Expt Botany**.
<https://doi.org/10.1093/jxb/erab285>
4. Khan M., Subramaniam R., Desveaux D. (2021) Biotin-Based Proximity Labeling of Protein Complexes in Planta. In: Sanchez-Serrano J.J., Salinas J. (eds) **Arabidopsis**

- Protocols. Methods in Molecular Biology**, vol 2200. Humana, New York, NY.
https://doi.org/10.1007/978-1-0716-0880-7_21
5. Bonner, C. et al., (2020) DNA methylation is responsive to the environment and regulates the expression of biosynthetic gene clusters, metabolite production, and virulence in *Fusarium graminearum*. **Front. Fungal Biol.**
 6. Geiser, D.M. et al., (2020) Phylogenomic analyses of a 55.1 kb 19-gene dataset resolves a monophyletic *Fusarium* that includes the *Fusarium solani* species complex. **Phytopathology**. <https://apsjournals.apsnet.org/doi/10.1094/PHYTO-08-20-0330-LE>
 7. Shostak, K. et al., (2020) Activation of biosynthetic gene clusters by the global transcriptional regulator TRI6 in *Fusarium graminearum*. **Mol Microbiol**. <https://doi.org/10.1111/mmi.14575>
 8. Horianopoulos, L.C. et al., (2020) The Canadian Fungal Research Network: current challenges and future opportunities. **Can. J. Microbiol**. <https://doi.org/10.1139/cjm-2020-0263>.
 9. Sridhar, P.S. et al., (2020). Ste2 receptor-mediated chemotropism of *Fusarium graminearum* contributes to its pathogenicity against wheat. **Scientific Reports**. <https://doi.org/10.1038/s41598-020-67597-z>
 10. Brauer, EK, et al., (2020) Regulation and Dynamics of Gene Expression During the Life Cycle of *Fusarium graminearum*. **Phytopathology**. <https://doi.org/10.1094/PHYTO-03-20-0080-IA>
 11. Brauer, EK, et al., (2020) Genome Editing of a Deoxynivalenol-Induced Transcription Factor Confers Resistance to *Fusarium graminearum* in Wheat. **MPMI**. <https://doi.org/10.1094/MPMI-11-19-0332-R>
 12. Brauer, EK, et al., (2019) Two 14-3-3 proteins contribute to nitrogen sensing through the TOR and glutamine synthetase-dependent pathways in *Fusarium graminearum*. **Fungal Genetics Biology** 134: . 103277
 13. Cui X, et al., (2019) An optimised CRISPR/Cas9 protocol to create targeted mutations in homoeologous genes and an efficient genotyping protocol to identify edited events in wheat. **Plant Methods** 15, 119.
 14. Mogg C, Bonner C, Wang L, Scherthner J, Smith M, Desveaux D, Subramaniam R, Desveaux D (2019) Genomic Identification of the TOR Signaling Pathway as a Target of the Plant Alkaloid Antofine in the Phytopathogen *Fusarium graminearum*. **mBio** DOI: 10.1128/mBio.00792-19
 15. Wang Y, Chisanga Salasini B, Khan M, Devi B, Bush M, Subramaniam R, Hepworth SR (2019) Clade I TGAs mediate BOP1/2 development functions. **Plant Physiology** DOI:10.1104/pp.18.00805
 16. Fernando U, Chatur S, Joshi M, Bonner C.T., Fan T, Hubbard K, Chabot D, Rowland O, Wang L, Subramaniam R, Rampitsch C (2018) Redox signalling from NADPH oxidase targets metabolic enzymes and developmental proteins in *Fusarium graminearum*. **Mol Plant Pathol**. doi.org/10.1111/mpp.12742
 17. Khan M, Ji-Young Y, Gingras A-C, Subramaniam R, Desveaux D (2018) *In Planta* proximity dependent biotin identification (BioID). **Scientific Reports** (8): 9212.
 18. Mirmiran A, Desveaux D, Subramaniam R (2018) Building a protein-interaction network to study *Fusarium graminearum* pathogenesis. **Can. J. Plant Pathol**. [10.1080/07060661.2018.1442370](https://doi.org/10.1080/07060661.2018.1442370)

19. Khan M, Seto D, Subramaniam R, Desveaux D (2018) Oh, the places they'll go! A survey of phytopathogen effectors and their host targets. **The Plant Journal** 93: 651-663
20. Walkowiak S, Rowland O, Rodrigue N, Subramaniam R (2016) Whole genome sequencing and comparative genomics of closely related Fusarium Head Blight fungi: Fusarium graminearum, F. meridionale and F. asiaticum. **BMC Genomics** 17:1014.
21. Khan M, Subramaniam R, Desveaux D (2016) Of Guards, Decoys, Baits and Traps: Pathogen Perception in Plants by Type III Effector Sensors. **Current Opinion in microbiology**, 29: 49-55.
22. Ta CAK., Guerrero-Analco,A, Roberts E, Liu R, Mogg CD, Saleem A, Otárola-Rojas M, Poveda L, Sanchez-Vindas P, Cal V, Caal F, Subramaniam R, Smith ML, Arnason JT (2016) Antifungal saponins from the Maya medicinal plant Cestrum schlechtendahlil G.Don (Solanaceae). **Phytotherapy Research**, 30(3): 439-446.
23. Subramaniam R, Narayanan S, Walkowiak S., Wang L, Joshi M, Rocheleau H, Ouellet T, Harris LJ (2015) Leucine metabolism regulates *TRI6* expression and affects deoxynivalenol production and virulence in *Fusarium graminearum*. **Mol Micro** 98 (4): 760-769.
24. Walkowiak S, Bonner CT, Wang L, Blackwell, B, Rowland O, **Subramaniam R** (2015) Intraspecies interaction of *Fusarium graminearum* contributes to reduced toxin production and virulence. **MPMI** 28(11): 1256-1267.
25. Carballo-Arce A.F, Ta, CAK, Rocha L, Liu R, Harmsen I, Mogg C, Otárola-Rojas M, Garcia M, Sanchz-Vindas P, Poveda L, Subramaniam R, Smith ML, Kaplan MAC, Figueiredo MR, Durst T, and Arnason JT (2015) Antimicrobial activities of Marcgraviaceae species and isolation of a naphthoquinone from Marcgravia nervosa (Marcgraviaceae). **Botany** 93: 1-12.
26. Hurley B, Subramaniam R, Guttman DS, Desveaux D (2014) Proteomics of effector-triggered immunity (ETI) in plants. **Virulence** 5(7): 752-760.
27. Lumba S, Toh S, Handfield L-F, Swan M, Liu R, Youn J-Y, Cutler SR, Subramaniam R, Provart N, Moses A, Desveaux D, McCourt, P (2014) A Mesoscale Abscisic Acid Hormone Interactome Reveals a Dynamic Signaling Landscape in *Arabidopsis*. **Developmental Cell** 29(3): 360-372.
28. Walkowiak S, Subramaniam R (2014) A nitrogen-responsive gene affects virulence in *Fusarium graminearum* **Can J plant pathol** 36(2): 224-234.
29. Ravensdale M, Rocheleau H, Wang L, Nasmith C, Ouellet T, **Subramaniam R** (2014) Components of priming-induced resistance to *Fusarium* head blight in wheat revealed by two distinct mutants of *Fusarium graminearum*. **Mol. Plant Pathol** DOI:10.1111/mpp.12145.
30. Wang L, Josh, M, Walkowiak S, Subramaniam R. (2014) NADPH Oxidase genes *NoxA* and *NoxB* contribute to perithecia development and virulence in *F. graminearum*. **Can J plant pathol** 36(1): 12-21.
31. Murmu M, Wilton M, Allard G, Pandeya R, Desveaux D, Singh J, Subramaniam R. (2014) *Arabidopsis* Golden2-like transcription factors (GLK) activate JA-dependent disease susceptibility against the biotrophic pathogen *Hyaloperonospora arabidopsidis* as well as JA-independent plant immunity against the necrotrophic pathogen *Botrytis cinerea*. **Mol. Plant Pathology** 15(2): 174-184.
32. Rampitsch C, Subramaniam R. (2013) Towards systems biology of mycotoxin regulation. **Toxins** 5 (4): 675-682.

33. Rampitsch C, Day J, Subramaniam R, Walkowiak S. (2012) Comparative secretome analysis of *Fusarium graminearum* and two of its non-pathogenic mutants upon deoxynivalenol induction in vitro. **Proteomics** 12(7): 1002-1005.
34. Balcerzak M, Harris LJ, Subramaniam R, Ouellet T (2012). The feruloyl esterase gene family of *Fusarium graminearum* is differentially regulated by aromatic compounds and hosts. **Fungal Biol.** 116 (4): 478-488.
35. Rampitsch C, Tinker NT, Subramaniam R, Barkow-Oesterreicher S, Laczko E. (2012) Phosphoproteome profile of *Fusarium graminearum* grown in vitro under nonlimiting conditions. **Proteomics**, 12 (7):1002-1005.
36. Nasmith C, Walkowiak S, Wang L, Leung W, Gong Y, Johnston A, Harris L, Guttman D, Subramaniam R. (2011) Tri6 is a global transcription regulator in the phytopathogen *Fusarium graminearum*. **PLoS Pathogens** 7(9): e1002266.
37. Schreiber K, Nasmith C, Allard G, Singh J, Subramaniam R, Desveaux D. (2011) Found in translation: High-throughput chemical screening in *Arabidopsis thaliana* identifies small molecules that reduce *Fusarium* head blight disease in wheat. **Mol. Plant Microbe Interaction** 24: 640-648.
38. Wilton M, Subramaniam R, Elmore J, Felsensteiner C, Coaker G, Desveaux D. (2010) The type III effector HopF2Pto targets *Arabidopsis* RIN4 protein to promote *Pseudomonas syringae* virulence. Proceedings of the National Academy of Sciences of the USA (**PNAS**), 107(5), 2349-2354.
39. Rampitsch C, Subramaniam R, Djuric-Ciganovic S, Bykova NV. (2010) The phosphoproteome of *Fusarium graminearum* at the onset of nitrogen starvation. **Proteomics**, 10(1): 124-140.

Book Chapters

1. (2021). A genotyping protocol to identify CRISPR/Cas9-edited events in hexaploid wheat. Bilichak A., Laurie AD. (eds) in **Accelerated Breeding of Cereal Crops**. Accelerated Breeding of Cereal Crops DOI:10.1007/978-1-0716-1526-3, Springer,
2. Harris LJ, Ouellet T, Subramaniam R (2013) Applying proteomics to investigate the interactions between pathogenic *Fusarium* species and their hosts. **Fusarium: genomics and molecular and cellular biology** (Horizon Bioscience) Brown, D and Proctor, R. (eds.).

Non-Government Publications

1. "Advances against *Fusarium* in wheat" in Top Crop Manager by Heather Hager, August, 2010
2. "Researchers find innovative new weapons in battle against *Fusarium* head blight" in The Manitoba Co-operator, Dec 8, 2011

D. RESEARCH SUPPORT AND SCHOLASTIC PERFORMANCE

Selected Current Research Support

1. 2022-2027 – NSERC Discovery – Functional Characterization of fungal effectors- Total Value \$160K.
2. 2021-2027- “EvoFunPath”- a training program on the evolution of fungal pathogens NSERC CREATE – Co-PI – total value \$1.65M
3. 2019-2023: Establishing resistance to Fusarium head blight by improving the wheat immune system. Subramaniam, R. (PI) and one Co-PI. Total value \$360K. funded by the Agriculture Development Fund, Gov’t Saskatchewan
4. 2018-2021: Systems biology and FHB/DON mitigation. Subramaniam, R (PI) and 8 others. Total Value: \$750K.
5. 2017-2019: Durable Fusarium and Rust resistance. Subramaniam, R (Co-PI) and 11 others. Total Value: \$1, 144K.
6. 2018-2023: Biopesticides and Fungicide adjuvants. Subramaniam, R (PI) and teams from Vive Life sciences, Arysta crop protection. Total value: \$1, 000K funded by Canadian agriculture partnership (CAP) program.

CURRICULUM VITAE

STOYAN TANEV, PhD, MSc, MEng, MA

Assoc. Professor, Technology Entrepreneurship & Innovation Management
Technology Innovation Management Program, Sprott School of Business, Carleton University
1125 Colonel By Drive, Ottawa, ON K1S 5B6, Canada; e-mail: stoyan.tanev@carleton.ca

SUMMARY OF QUALIFICATIONS

- A multidisciplinary background in science, engineering and technology management
- Extensive research and teaching experience in technology entrepreneurship, innovation management, responsible AI, and the application of text analytics to real-life business problems
- Research focus on
 - Responsible AI frameworks and business intelligence tools for value creation
 - Role of AI technologies in company value propositions
 - A multiple stakeholder perspective on value proposition development in new companies committed to scale
 - Design principles and growth formulas of global technology startups and transnational new ventures
 - Frameworks enabling new firms to scale early and rapidly
- Significant experience in curriculum/program development and coordination of extracurricular activities including mentorship of student startups and new product development in technology firms
- Excellence in the supervision of graduate and undergraduate students in culturally diverse student environments
- Proven record in interdisciplinary research collaboration, research-based teaching and student research
- Extensive knowledge of the Ottawa-Carleton entrepreneurial ecosystem
- Four years high-tech industry experience plus three years program management of interdisciplinary knowledge sharing initiatives in the biophotonics technology sector
- Co-leader of the AI & Innovation Management Special Interest Group of the International Society for Professional Innovation Management: <https://www.ispim-innovation.com/sig-ai-innovation-management>
- 2019-2021 Editor-in-Chief of the Technology Innovation Management Review: <https://timreview.ca/>
- Senior member of the IEEE Technology and Engineering Management Society

PROFESSIONAL EXPERIENCE

Associate Professor, Technology Innovation Management

Sprott School of Business, Carleton University, Ottawa, Canada

(Jul 2017–pres.)

- Associated with the Technology Innovation Management (TIM) Program
- Teaching core courses on text analytics and responsible AI in the new Master of Applied Business Analytics program option
- Part of a team of scholars developing the curriculum for an entrepreneurship “train the trainer” program for high school teachers in Nigeria
- Contributing to the research activities of the SERS (Scaling Early, Rapidly and Securely) project
- Coordinated the development and application of machine learning tools within the Global Cybersecurity Resource – a project funded by the FedDev Agency for Southern Ontario
- Established new courses focusing on
 - Using machine learning tools to solve real-life company problems
 - Responsible AI & Ethics
- Interdisciplinary research focus
 - Multiple stakeholder perspective on value proposition development in new companies committed to scale
 - The role of responsible AI in company value creation and scaling
 - Using online textual data and text analytics tools to generate business insights for international new ventures
 - Design principles and growth formulas of transnational technology startups
 - Epistemological issues on the interface of natural sciences, social sciences & philosophy of religion

Editor-in-Chief of the Technology Innovation Management Review (2019-2021)

Adjunct Associate Professor

Department of Technology and Innovation, University of Southern Denmark (Feb 2018-pres.)

- Integrating transnational entrepreneurship and responsible design principles in shaping new venture value propositions and business models
- Growth formulas of lean and transnational new ventures

Associate Professor, Technology Entrepreneurship & Innovation Management

Department of Technology and Innovation, University of Southern Denmark, Odense, DK (2014–2017)

- Research on integrating lean startup approach, born global firms and technology entrepreneurship focusing on new venture formation and growth
- Leading the establishment of a new technology entrepreneurship profile of the Product Development and Innovation Program
- Supervising student projects and teaching courses focusing on technology entrepreneurship
- Contributed to the resourcing of the university business incubator

Associate Professor, Technology Innovation Management

Integrative Innovation Management Unit, Department of Marketing Management & Department of Technology & Innovation, Univ. of Southern Denmark, Odense, DK (2009–2014)

- Research on the interface of marketing management and technology innovation
- Contributed to the establishment of the MSc Eng Product Development and Innovation program
- Teaching courses focusing on innovation management, technology marketing & commercialization

Adjunct Research Professor

Dept Systems and Computer Engineering, Carleton University, Ottawa, ON (2010-2014)

Sprott School of Business, Carleton University, Ottawa, ON (2017-2017)

- Associated with the Technology Innovation Management Program
- Enhancing the global reach of Lead-to-Win program & the VENUS Cybersecurity Institute

Adjunct Professor

Faculty of Mathematics and Informatics, Sofia University, Sofia, Bulgaria (2010-2017)

- Associated with the Technology Entrepreneurship program at the Department of Software Engineering
- Responsible for the design of the innovation management teaching stream
- Supervision of master thesis projects focusing on technology commercialization strategies & web search techniques for the development of business intelligence tools

Assistant Professor

Dept of Systems and Computer Engineering, Carleton University, Ottawa, ON (2006-2009)

- Taught technology marketing, research methods & technological standards courses
- Initiated a research initiative focusing on value co-creation platforms

Innovation Development Officer

Technology Transfer and Business Enterprise office, University of Ottawa, Ottawa, CA (2006-2006)

- Working for the Ottawa-Gatineau University-College Innovation Alliance
- Initiated, designed and managed science & technology commercialization initiatives for the University of Ottawa, Carleton University & Université du Québec en Outaouais

Adjunct Professor

Departement d'Informatique et d'ingénierie, Université du Québec en Outaouais (2006-2008)

- Designing & teaching a simulation-based course on optical communication systems

Program Manager – Photonics and Biophotonics Programs

Vitesse Re-Skilling™ Canada, Ottawa, ON (2003-2006)

- Designing and organizing international forums focusing on interdisciplinary knowledge sharing and identification of new science- & technology-based business opportunities
- Contributed to the emergence of the biophotonics sector in Canada

Optical Link Design Engineer

Innovance Networks, Ottawa, ON (2001-2002)

Director, Customer Support and Training

Optiwave Corporation, Nepean, ON (2000-2001)

- Designed and trained a team of application engineers focusing on customer relationship management for technical support and product innovation

Research Engineer/Scientist

Optiwave Corporation, Nepean, ON (1997-2000)

- Design and development of software simulation and design products

Post-Doctoral Research Fellow

Université du Québec à Hull, Hull, Québec (1996-1997)

- Design and modeling of optical waveguide structures

Assistant Professor of Physics

Institute of Applied Physics, Technical University of Sofia, Bulgaria (1995-1996)

Assistant Professor of Physics

Higher Institute for Transport Engineering "Todor Kableshkov", Sofia, Bulgaria (1991-1995)

Physicist

Higher Institute for Transport Engineering "Todor Kableshkov", Sofia, Bulgaria (1989-1991)

EDUCATION

M. Eng. in Telecommunications Technology Management

Department of Systems & Computer Engineering, Carleton University, Ottawa, Ontario 2005

- Master thesis: "Competitive intelligence information and innovation in small Canadian firms"

Ph. D. in Physics (Optics & Photonics)

University Pierre and Marie Curie, Paris, France 1995

M. Sc. in Physics (Major in Eng. Physics)

Sofia University, Sofia, Bulgaria 1989

Ph. D. in Systematic Theology

Sofia University, Bulgaria 2012

Master of Arts in Orthodox Theology

University of Sherbrooke, Sherbrooke, Québec, Canada (Montreal Campus) 2009

LANGUAGES

- English, French, Russian, Bulgarian, beginner Danish

AWARDS AND GRANTS

- 2018, Best Paper Award, “A topic modeling approach to categorizing the value propositions of cybersecurity startups using machine learning as a differentiator”, by H. Hou, S. Tanev, A. Gorra & T. Bailetti, 8th Int. Conference of the Association of Global Management Studies, Montreal, Canada, June 21–22, 2018.
- 2014, Grant from the Danish Foundation for Entrepreneurship (20,000 euro) to manage the project “Global Technology Entrepreneurs”, focusing on students in the Product Development and Innovation SDU program.
- 2010-2012, Grant from Sir John Templeton Foundation (46,800 euro) to design, organize and manage the International Interdisciplinary Conference “Orthodox Theology and the Sciences” in Sofia, Bulgaria.
- 2010, Special award for the paper “The Challenges of New Innovation Paradigms for the Danish Research and Innovation Policies” (co-authored with T. Bisgaard, M. Knudsen & M. Thomsen)

SELECTED PROFESSIONAL ACTIVITIES AND MEMBERSHIPS

- 2019-2021, Editor-in-Chief of the Technology Innovation Management Review: <https://timreview.ca/>
- 2018, Co-leader of the Special Interest Group on AI & Innovation Management of the International Society for Professional Innovation Management: <https://www.ispim-innovation.com/sig-ai-innovation-management>
- 2018, Co-Chair of Photonics Technology Entrepreneurship and Commercialization Session, Photonics North 2018 Conference, Montreal, QC, Canada
- 2016, Organizer of the PhD Summer School “Synergizing Entrepreneurship and Production in High Wage Economies”, June 6-10, 2016, Cortex Park, University of Southern Denmark, Odense, DK.
- 2014, Co-organizer of the Workshop “Managing Innovation in the Cyber Security Technology Sector: Tech Entrepreneurship and Research Opportunities”, ISPIM Americas Conference, Oct. 5-8, Montreal, QC, Canada
- 2013, Associate editor, International Journal of Actor-Network Theory and Technological Innovation (IJANTTI)
- 2013, Guest editor, Special issue: Human-Technology Interaction and Technology Adoption: Exploring Frameworks other than ANT, Int. Journal of Actor-Network Theory and Technological Innovation (IJANTTI)
- Guest Editor, Technology Innovation Management Review, 2012 May Special Issue on Business Co-creation
- 2011, Member, Editorial Review Board, Technology Innovation Management Review: www.timreview.ca
- Chair, Photonics Innovation and Commercialization Session, International Conference in Information Photonics, May 18-20, 2011, Ottawa, Canada
- 2010, Member of the European Roundtable for Entrepreneurship Education (EREE)
- Member of the International Jury, First Global Academic Cup Project Competition, EBRF Conference, Sept. 15-17, 2010, Nokia, Finland
- Chair, Photonics Design and Simulation Conference, Photonics North 2010, June 1-3, 2010, Niagara Falls, Canada (with Dr. Pavel Cheben, Optoelectronics Research Group, IMS-NRC, Ottawa, Canada)
- 2008, IEEE Senior member, Technology and Engineering Management Society

SELECTED RECENT PUBLICATIONS

A. Book chapters

1. Tanev, S., Bailetti, T., Keen, C. & Hudson, D. The Potential of AI to Enhance the Value Propositions of New Companies Committed to Scale Early and Rapidly. In Tanev, S. & Blackburn, H., Eds., *Artificial Intelligence and Innovation Management*. To be published by World Scientific in 2022.
2. Tanev, S., Rasmussen, E. S. & Hansen, K. Business plan basics for engineers and new technology firms. Ch 2 in: Pacheco-Torgal, F., Rasmussen, E., Granqvist, C., Ivanov, V., Kaklauskas, H., Makonin, S. (Eds.) *Start-Up Creation. The Smart Eco-efficient Built Environment*. 2nd ed. Duxford, UK: Woodhead Publishing, 2020, p. 21-38.
3. S. Tanev, E. Rasmussen, E. Zijdemans, R. Lemminger & L. Svendsen (2019). Lean and Global Technology Start-ups: Linking the Two Research Streams. Ch 7 in: Brem, A., Tidd, J., & Daim, T., Eds. *Managing Innovation: Internationalization of Innovation*. Series on Technology Management. World Scientific, pp. 199-239.
4. S. Tanev, Global from the Start: The Characteristics of Born-Global Firms in the Technology Sector. In: Chris McPhee, Ed., *Most Popular Articles: Best of TIM Review*. Talent First Network, Carleton University. Kindle Edition, 2016 (Kindle Edition, ISBN: 978-0-7709-0594-1).

B. Articles in refereed journals

1. Aweisi, A., Arora, D., Emby, R., Rehman, M., Tanev, G. & Tanev, S. Using web text analytics to identify digital health company market offers. To be published in the *Technology Innovation Management Review*, July edition, 2021.
2. Prabakaran, R., Bliemel, M., & Tanev, S. 2021. Value Proposition Misalignment and the Failure to Become a Born-Global Company. *Technology Innovation Management Review*, 11(4): 38-51.
3. Bailetti, T., Tanev, S., & Keen, C. 2020. What Makes Value Propositions Distinct and Valuable to New Companies Committed to Scale Rapidly? *Technology Innovation Management Review*, 10(6): 14-27.
4. A. Droll, S. Khan, E. Ekhlās & S. Tanev. Using Artificial Intelligence and Web Media Data to Evaluate the Growth Potential of Companies in Emerging Industry Sectors. *Technology Innovation Management Review* June 2017 (Vol. 7, Issue 6), pp. 26-38:
5. S. Tanev. Is There a Lean Future for Global Startups? *Technology Innovation Management Review*, May 2017 (Volume 7, Issue 5), pp. 6-15: <http://timreview.ca/article/1072>.
6. N. Coviello & S. Tanev. Initiating a New Research Phase in the Field of International Entrepreneurship: An Interview with Professor Nicole Coviello. *Technology Innovation Management Review*, May 2017 (Vol. 7, Issue 5), pp. 52-56: <http://timreview.ca/article/1077>.
7. E. Rasmussen & S. Tanev. The Emergence of the Lean Global Startup as a New Type of Firm. *Technology Innovation Management Review*, November 2015 (Vol. 5, Issue 11), pp. 12-19: <http://timreview.ca/article/941>.
8. G. di Tollo, S. Tanev, G. Liotta. Using online textual data, principal component analysis and artificial neural networks to study business and innovation practices in technology-driven firms. *Computers in Industry*, 74, 2015, pp. 16–28: <http://dx.doi.org/10.1016/j.compind.2015.08.006>
9. S. Tanev, E. Rasmussen, E. Zijdemans, R. Lemminger & L. Limkilde. Lean and global technology startups: Linking the two research streams. *International Journal of Innovation Management*, 19(3), June 2015, 41 p.

E. Conference publications

1. Tanev, S., Bailetti, T., Keen, C. & Hudson, D. Can AI empower value propositions of new globally-driven companies? ISPIIM Connects Global Conference, 6-8 December, 2020.
2. Tanev, S., Bailetti, T. & Keen, C. (2020) A value proposition framework for new companies committed to scale. CCSBE 2020 Virtual Conference, October 16-17th, 2020.
3. Singh, J., Tanev, S. & Bailetti, T. (2020). Using text analytics to discover business scaling research gaps. *Proceedings of the ISPIIM Innovation Conference – Innovating in Times of Crisis*, 7-10 June 2020. LUT Scientific and Expertise Publications, 13 p.
4. S. Tanev, E. Edim & A. Nazari. A topic modeling approach to identifying emerging innovation management research themes. *Proceedings of the ISPIIM Innovation Conference*. June 16-19, 2019, Florence, Italy.
5. H. Mamosian, S. Tanev, T. Bailetti & V. Tzolov. Using online text analytics to differentiate the market offers of technology firms. *Proceedings of the ISPIIM Connects Fukuoka Conference*, Iain Bitran et al., Eds., LUT Scientific and Expertise Publications, Dec. 2-5, 2018, Fukuoka, Japan.
6. H. Hou, S. Tanev, A. Gorra & T. Bailetti. A topic modeling approach to categorizing the value propositions of cybersecurity startups using machine learning as a differentiator (Best Paper Award). *Proceedings of the 2018 (8th) International Conference of the Association of Global Management Studies*, Montreal, QC, Canada, June 21–22, 2018, D. Tomiuk et al., Eds. Fredericksburg: Association of Global Management Studies, 2018, pp. 96-118.

FULL LIST OF PUBLICATIONS

STOYAN TANEV, PhD, MSc, MEng, MA

Associate Professor, Technology Entrepreneurship & Innovation Management
Technology Innovation Management Program, Sprott School of Business, Carleton University
1125 Colonel By Drive, Ottawa, ON K1S 5B6, Canada

A. Articles in refereed journals

A1. *Technology Entrepreneurship & Innovation*

1. Sieklicki, S., & Tanev, S., 2021. From Description to Action: Actor-Network Theory and Innovation Management. *International Journal of Innovation Management*, October issue, pp. 2140006-1-18.
2. Aweisi, A., Arora, D., Emby, R., Rehman, M., Tanev, G., & Tanev, S. 2021. Using Wb Text Analytics to Categorize the Business Focus of Innovative Digital Health Companies. *Technology Innovation Management Review*, 11(7/8): 65-78. <http://doi.org/10.22215/timreview/1457>.
3. Prabakaran, R., Bliemel, M., & Tanev, S. 2021. Value Proposition Misalignment and the Failure to Become a Born-Global Company. *Technology Innovation Management Review*, 11(4): 38-51. <http://doi.org/10.22215/timreview/1435>.
4. Payne, A., Frow, P., & Tanev, S. 2021. Interview: Discussing Value Proposition Research in the Context of New Companies Committed to Scaling Early and Rapidly. *Technology Innovation Management Review*, 11(4): 6-12. <http://doi.org/10.22215/timreview/1432>.
5. Liotta, G., Tanev, S., Gorra, A., & Pospieszala, A. Izabela. 2020. Sustainability-related Communication Patterns on the Websites of European Top R&D Spenders. *Technology Innovation Management Review*, 10(10): 43-54. <http://doi.org/10.22215/timreview/1395>.
6. Bailetti, T., Tanev, S., & Keen, C. 2020. What Makes Value Propositions Distinct and Valuable to New Companies Committed to Scale Rapidly? *Technology Innovation Management Review*, 10(6): 14-27. <http://doi.org/10.22215/timreview/1365>.
7. Bailetti, T., & Tanev, S. Examining the Relationship Between Value Propositions and Scaling Value for New Companies. *Technology Innovation Management Review*, 10(2), 2020: 5-13, <http://doi.org/10.22215/timreview/1324>.
8. Lukosiute, K., Jensen, S., & Tanev, S. Is Joining a Business Incubator or Accelerator Always a Good Thing? *Technology Innovation Management Review*, 9(7), 2019: 5-15. <http://doi.org/10.22215/timreview/1251>.
9. A. Droll, S. Khan, E. Ekhlal & S. Tanev. Using Artificial Intelligence and Web Media Data to Evaluate the Growth Potential of Companies in Emerging Industry Sectors. *Technology Innovation Management Review* June 2017 (Vol. 7, Issue 6), pp. 26-38:
10. S. Tanev. Is There a Lean Future for Global Startups? *Technology Innovation Management Review*, May 2017 (Volume 7, Issue 5), pp. 6-15: <http://timreview.ca/article/1072>.
11. N. Coviello & S. Tanev. Initiating a New Research Phase in the Field of International Entrepreneurship: An Interview with Professor Nicole Coviello. *Technology Innovation Management Review*, May 2017 (Vol. 7, Issue 5), pp. 52-56: <http://timreview.ca/article/1077>.
12. E. Rasmussen & S. Tanev. The Emergence of the Lean Global Startup as a New Type of Firm. *Technology Innovation Management Review*, November 2015 (Vol. 5, Issue 11), pp. 12-19: <http://timreview.ca/article/941>.
13. G. di Tollo, S. Tanev, G. Liotta. Using online textual data, principal component analysis and artificial neural networks to study business and innovation practices in technology-driven firms. *Computers in Industry*, 74, 2015, pp. 16–28: <http://dx.doi.org/10.1016/j.compind.2015.08.006>.
14. S. Tanev, E. Rasmussen, E. Zijdemans, R. Lemminger & L. Limkilde. Lean and global technology startups: Linking the two research streams. *International Journal of Innovation Management*, 19(3), June 2015, 41 p. <http://www.worldscientific.com/doi/abs/10.1142/S1363919615400083?src=recsys>
15. S. Tanev, G. Liotta & A. Kleismantas. A business intelligence approach using web search tools and online data reduction techniques to examine the value of product-enabled services. *International Journal Experts*

Systems with Applications, 42(21), November 2015, pp. 7582-7600.

16. E. Zijdemans & S. Tanev. Conceptualizing innovation in born global firms. *Technology Innovation Management Review*, September, 2014, pp. 5-10: <http://timreview.ca/article/826>

17. S. Tanev & M. Frederiksen. Generative innovation practices, customer creativity, and the adoption of new technology products. *Technology Innovation Management Review*, Feb 2014, pp. 5-10: www.timreview.ca/article/763.

18. M. Frederiksen & S. Tanev. Consumer Creativity as a Prerequisite for the Adoption of New Technological Products: Looking for Insights from Actor-Network Theory. *International Journal of Actor-Network Theory and Technological Innovation*, 6(2), 2014, pp. 45-69, Special issue focusing on Human-Technology Interaction and Technology Adoption: Exploring Frameworks other than ANT.

19. S. Kylandri, G. Blanas, S. Tanev & L. Henriksen. The impact of friendship ties on new product development student projects, *World Transactions on Engineering and Technology Education* 11, No. 3, 2013, pp. 243-248.

20. Z. Ma, C-C. Lin & S. Tanev. The NPD team conflict: insights from cultural diversity and geographical dispersion. *Innovative Marketing* 8, No. 3, 2012, pp. 62-72.

21. S. Tanev. Global from the Start: The Characteristics of Born-Global Firms in the Technology Sector. *Technology Innovation Management Review*, March issue, 2012, pp. 5-8: <http://timreview.ca/article/532>

22. G. Di Tollo, S. Tanev, D. De March, D. & Z. Ma. Neural Networks to model the innovativeness perception of co-creative firms. *Expert Systems with Applications* 39, No. 16, 2012, pp. 12719-12726.

23. S. Tanev, P. Ruskov, L. Georgiev, and T. Bailetti. A business intelligence tool for studying value co-creation and innovation. *Information Technologies and Control* 1, 2011, pp. 2-9, ISSN 1312-2622.

24. S. Tanev, M. P. Knudsen, T. Bisgaard & M. S. Thomsen. Innovation policy development and the emergence of new innovation paradigms. *Technology Innovation Management Review*, November issue, 2011, pp. 14-19: <http://timreview.ca/article/496>

25. M. Seppa & S. Tanev. The future of co-creation, Special Issue on Value Co-creation. *Open Source Business Review Journal*, March, 2011: <http://timreview.ca/article/423>

26. S. Tanev, T. Bailetti, S. Allen, H. Milyakov, P. Durchev & P. Ruskov. How do value co-creation activities relate to the perception of firms' innovativeness? Special issue "Rethinking the boundaries of innovation" of the *Journal of Innovation Economics* 1, No. 7, 2011, pp. 131-159.

27. S. Tanev, M. Knudsen & W. Gerstlberger. Value co-creation as part of an integrative vision for innovation management. Special Issue on Value Co-creation, *Technology Innovation Management Review*, December, 2009: <http://timreview.ca/article/309>

28. S. Allen, S. Tanev & T. Bailetti. Components of co-creation. Special Issue on Value Co-creation, *Technology Innovation Management Review*, November, 2009: <http://timreview.ca/article/301>

29. S. Tanev, A. Xu & J. Wilmore. Open Standards vs. Open Source: The OpenAccess Standard. *Open Source Business Resource Journal*, January 2008: <http://timreview.ca/article/115>

30. S. Tanev and T. Bailetti. Competitive intelligence information and innovation in small Canadian firms. *European Journal of Marketing* 42, No. 7/8, 2008, pp. 786-803.

A2. Science / Engineering

1. S. Tanev, V. Tuchin, P. Cheben, P. Bock, J. Schmid, S. Janz, D. Xu, J. Lapointe, A. Densmore & J. Pond. Advances in the FDTD design and modeling of nano- and bio-photonics applications. *Photonics and Nanostructures – Fundamentals and Applications* 9, No. 4, 2011, pp. 315-327.

2. S. Tanev, W. Sun, J. Pond, V. Tuchin & V. Zharov. Flow cytometry with gold nanoparticles and their clusters as scattering contrast agents: FDTD simulation of light-cell interaction. *Journal of Biophotonics*, 2009, pp. 505-520.

3. S. Dimitrova, I. Georgiev, I. Kanelov, Y. Iliev, S. Tanev & T. M. Georgieva. Intravenous glucose tolerance test and glucose kinetic parameters in rabbits. *Bulgarian Journal of Veterinary Medicine* 11, No 3, 2008, pp. 161-169.

4. T. Georgieva, I. Georgiev, Y. Iliev, V. Petrov, A. Vachkov, I. Kanelov, S. Tanev, D. Zapryanova, A. Pavlov & D. Eckersall. Blood serum concentrations of total proteins and main protein fractions in weaning rabbits

experimentally infected with *E. Coli*. *Revue de Médecine Vétérinaire*, Vol. 159, No. 8-9, 2008, pp. 431- 436.

5. S. Tanev, J. Pond, P. Paddon & V. Tuchin. A new 3D simulation method for the construction of optical phase contrast images of Gold nanoparticle clusters in biological cells. *Advances in Optical Technologies*, Vol. 2008, 2008, 9 pages, doi:10.1155/2008/727418

6. S. Tanev, V. Tuchin & P. Paddon. Cell membrane and gold nanoparticles effects on optical immersion experiments with non-cancerous and cancerous cells: FDTD modeling. *J. Biomed. Optics* 11, 2006, 064037.

7. S. Tanev, V. Tuchin & P. Paddon. Light scattering effects of gold nanoparticles in cells: FDTD modeling. *Laser Physics Letters* 3, 2006, pp. 594-598.

8. P. Cheben, S. Janz, D.-X. Xu, A. Delage, B. Lamontagne & S. Tanev. A broad-band waveguide grating coupler with a sub-wavelength grating mirror. *IEEE Photonics Technology Letters* 18, 2006, pp.13-15.

9. W. Sun, N. Loeb, S. Tanev, & G. Videen. Finite-difference time domain solution of light scattering by an infinite dielectric column immersed in an absorbing medium. *Applied Optics* 44, 2005, pp. 1977-83.

10. S. Tanev, W. Sun, R. Zhang & A. Ridsdale. Simulation tools solve light-scattering problems from biological cells. *Laser Focus World*, Jan. 2004, p. 67-70.

11. C. Chen, P. Berini, D. Feng, S. Tanev & V. Tzolov. Efficient and accurate numerical analysis of multilayer optical waveguides in lossy anisotropic media. *Optics Express* 7, No. 8, 2000, pp. 260-272.

12. S. Saltiel, K. Koynov, P. Tzankov, A. D. Boardman & S. Tanev. Nonlinear phase shift as a result of cascaded third-order processes. *Physical Review A* 57, No 4, 1998, pp. 3028-3035.

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53. S. Tanev & P. Ruskov. Value co-creation platform design within the context of technology-driven businesses. *Saratov Fall Meeting, Saratov Russia, September 2009*, published in the *Proceedings of the SPIE*, Vol. 7547, article 17.
54. P. Ruskov & S. Tanev. Discovering innovation patterns. *International Scientific Conference on Applied Informatics and Statistics – Modern Approaches and Methods*, 25-26 Sept. 2009, Ravda, Bulgaria.
55. S. Allen, S. Tanev & Tony Bailetti. Towards the development of research methodology for studying the nature of value co-creation in internet-driven businesses. *Proceedings of the Fifth International Conference on Software, Services & Semantic Technologies*, Dicheva, D., Nikolov, R. & Stefanova, E., Eds., Oct. 28-29, 2009, Sofia, Bulgaria, pp. 200-209.
56. E. Ferreira, S. Tanev & T. Bailetti. Open source hardware market offers and business model components. *Proceedings of the EBRF Conference - Emergent drivers of shared business models in globalizing ecosystems*, Sept. 23-25, 2009, Jyväskylä, Finland, pp. 56-58.
57. S. Allen, S. Tanev & Tony Bailetti. An empirical study of the components of value co-creation. *Proceedings of the EBRF Conference - Emergent drivers of shared business models in globalizing ecosystems*, Sept. 23-25, 2009, Jyväskylä, Finland. pp. 40-43.
58. S. Tanev, E. Ferreira & T. Bailetti. Examining the dimensions of open source hardware business models. *Problems of Optical Physics and Biophotonics*, Materials of the 12th International School for Young Scientists and Students in Optics, Laser Physics and Biophotonics, V.V. Tuchin, Editor, Saratov State University, Saratov, Russia, 2009.
59. S. Tanev. Competitive intelligence information management and innovation in small technology-based companies. *Proc. SPIE 6535, Saratov Fall Meeting 2006: Optical Technologies in Biophysics and Medicine VIII*, V. Tuchin, Editor, pp. 653518-1-17.
60. S. Tanev. Toward a methodology for studying the application of open source innovation practices in non-

software domains. *Proc. SPIE* 6535, Saratov Fall Meeting 2006: Optical Technologies in Biophysics and Medicine VIII, V. Tuchin, Editor, pp. 65350T-1-7.

E2. Science / Engineering

Invited papers

1. S. Tanev, V. Tuchin, P. Cheben, P. Bock, J. Schmid & J. Pond. Advances in Photonics Design and Modeling for Nano- and Bio-photonics Applications. Invited paper presented at the 16th *Int. School on Quantum Electronics: Lasers Physics and Applications*, Sept. 20-24, 2010, Nessebar, Bulgaria, *Proc. of SPIE* Vol. 7747 77470W-1-9, DOI: 10.1117/12.881624.
2. S. Tanev, V. Tuchin & J. Pond. FDTD Modeling of Nano- and Bio-Photonic Imaging. *Third International Workshop on Theoretical and Computational Nanophotonics (TACONA Photonics 2010)*, 2-4 November 2010, Bad Honnef, Germany, published in the American Institute of Physics *Proceedings of the Third International Workshop on Theoretical and Computational Nanophotonics*, D. Chigrin, Ed., Vol. 1291, 2010, pp. 30-34.
3. S. Tanev, J. Pond, P. Paddon & V. Tuchin, Simulation and modeling of optical phase contrast microscope cellular nanobioimaging, 15th *Int. School of Quantum Electronics – Laser Physics and Applications*, 15-19 Sept., 2008, Bourgas, Bulgaria, *Proc. SPIE* Vol. 7027, 702716-1-8.
4. S. Tanev, J. Pond, P. Paddon & V. Tuchin. Simulation techniques enhance cellular nanobioimaging. *SPIE Newsroom - Biomedical Optics & Medical Imaging*, Aug. 2008, <http://spie.org/x26884.xml?highlight=x2416>
5. S. Tanev, D. Feng, S. Dods, V. Tzolov, Z. Jakubczyk, C. Chen, P. Berini, Ch. Wächter, H. F. Pinheiro, A. Barbero & H. Hernández-Figueroa. Advances in the development of simulation tools for integrated optics devices: FDTD, BPM and mode solving techniques. *SPIE Proc.* 4277, 2001, p. 1-20.

Regular papers

1. S. Tanev, J. Pond, P. Paddon & V. Tuchin. FDTD simulation of optical phase contrast microscope imaging. *Biophotonics, Photonic Solutions for Better Health Care*, *SPIE Proc.* 6991, pp. 69912D-1-9, 2008.
2. S. Tanev, J. Pond, P. Paddon & V. Tuchin. Optical phase contrast microscope imaging: a FDTD modeling approach. *Saratov Fall Meeting*, Sept. 25-28, 2007, Russia, *SPIE Proc.* 6791, pp. 67910E-1-11.
3. J. Taylor & S. Tanev. Photonic simulation software tools for education. *Tenth International Topical Meeting on Education & Training in Optics and Photonics, Proceedings of the 2007 ETOP Conference*, Ottawa, Ontario, Canada, June 3-6, 2007.
4. P. Cheben, S. Janz, Dan-Xia Xu & S. Tanev. Highly efficient broad-band waveguide grating coupler with a sub-wavelength grating mirror. *Frontiers in Planar Lightwave Circuit Technology: Design, Simulation and Fabrication*, Eds. S. Janz, J. Ctyroky and S. Tanev, NATO Science Series II: Mathematics, Physics and Chemistry, Vol. 216, Springer, Dordrecht, 2006, pp. 235-43.
5. S. Tanev, V. Tuchin & P. Paddon. FDTD modeling of the cell membrane effect on optical immersion experiments. *Proc. SPIE* 6163, Saratov Fall Meeting 2005: Optical Technologies in Biophysics and Medicine VII, Valery V. Tuchin, Editor, pp. 61630M-1-16.
6. S. Tanev, W. Sun, R. Zhang & A. Ridsdale. The FDTD approach applied to light scattering from single biological cells. *Proc. SPIE* 5474, Opt. Technologies in Biophysics & Medicine, Ed. V. Tuchin, 2004, pp. 162-8.
7. A. Sizmann, M. Yu, C. Kan, M. Lewis, P. Cottin, J. Zhou, C. Scheerer, D. Waldron, R. Kimball, C. Malouin, S. Walklin, D. Gay, S. Tanev, J. Trujillo, Y. Chai & A. Solheim. Polarization Effects in ULH Agile Photonic Networks. *Digest of the IEEE/LEOS 2002 Summer Topical Meetings*, 2002, pp.15-16.
8. S. Tanev, D. Feng, V. Tzolov & Z. Jakubczyk. FDTD simulations of waveguide grating couplers: output efficiency optimization using integrated photonic bad gap structures. *ICAPT 2000 Conference*, 2000, Quebec City, Canada, Article LN.2.3.11.
9. S. Tanev, D. Feng, V. Tzolov & Z. Jakubczyk. Finite-difference time-domain modeling of complex integrated optics structures. *Technical Digest of the Integrated Photonic Research Conference*, Santa Barbara, California, 1999, pp. 202-205.
10. V. Tzolov, D. Feng, S. Tanev & Z. Jakubczyk. Modeling tools for integrated and fiber optics devices. Invited paper, Proceedings of the SPIE Conference: *Integrated Optics Devices III*, vol. 3620, 1999, pp.162-73.
11. S. Tanev, K. Koynov, S. Saltiel, K. Xie & A. D. Boardman. Self-phase modulation due to third-order

cascading: application to all optical switching devices, in *Advanced Electronic Technologies and Systems based on low-dimensional quantum devices*, Kluwer Academic Publishers, Dordrecht, 1998, pp. 281-287.

12. S. Saltiel, S. Tanev & A. D. Boardman. High order nonlinear shift as a result of cascaded third-order processes, *Tech digest, European Quant Electron Conference*, Hamburg, Germany, 8-13 Sept., 1996, p. 116.

13. S. Tanev & D. Pushkarov. Higher-order wave and charge confinement effects in semiconductor double-doped optical fibers: quasi-soliton propagation and bistability. In: M. Balkanski and I. Yanchev, Eds., *Fabrication, Properties and Applications of Low-dimensional Semiconductor Structures*, Kluwer Academic Publishers, Dordrecht, 1995, pp. 311-312.

14. D. Pushkarov & S. Tanev. Bright and dark solitary wave propagation and bistability in the anomalous dispersion region of optical waveguides with third- and fifth-order nonlinearities. *LAMP Series Report 195/5*, International Center for Theoretical Physics, Miramare-Trieste, Italy, 1995, pp. 1-36.

15. S. Tanev, I. Ilev & M. Balkanski. Coupled-mode coefficients of nonlinear interaction in optical fibers, presented at the NATO ASI - *Nonlinear Optical Materials and Devices for Applications in Information Technology*, directed by A. Miller, K.R. Welford & B. Daino, Erice, Italy, 1993.

CURRICULUM VITAE

Mika Westerlund

Carleton University
Sprott School of Business
Technology Innovation Management
5029 Nicol, 1125 Colonel By Drive
Ottawa ON K1S 5B6 Canada

Website:
Email 1: mika.westerlund@carleton.ca
Email 2:
Tel: 613-520-2600 ext. 1679
Skype:

EDUCATION

- 2014– Doctoral student, Doctor of Science in Technology (D.Sc. Tech), Industrial Engineering and Management, Aalto University, School of Science (estimated completion in 2024)
- 2009 Doctor of Science in Economics and Business Administration (D.Sc. Econ), Marketing, Helsinki School of Economics (accredited by AACSB, AMBA, and EQUIS) (currently: Aalto University, School of Business)
- 2002 Master of Science in Economics and Business Administration (M.Sc. Econ), Marketing, Helsinki School of Economics (currently: Aalto University School of Business)

EMPLOYMENT

Academic appointments

- 2015– Associate Professor, Technology Innovation Management (TIM) Sprott School of Business, Carleton University, Canada (accredited by AACSB), teaching area: Technology innovation and entrepreneurship
- 2012–2015 Assistant Professor, Technology Innovation Management (TIM) Sprott School of Business, Carleton University, teaching area: Technology innovation and entrepreneurship
- 2011–2012 Postdoctoral scholar
Haas School of Business, University of California Berkeley, USA; accredited by AACSB; ranked #8 of world universities by the Times Higher Education 2014. Faculty sponsor: Prof. Henry Chesbrough, Institute for Business Innovation
- 2010–2012 Postdoctoral scholar
Dept. of Marketing, Aalto University School of Economics, Finland (Note: known as Helsinki School of Economics until 2009)
- 2010–2011 Visiting scholar
London Business School, United Kingdom; accredited by AACSB, AMBA, EQUIS; ranked #3 of European business schools by Financial Times

2013. Faculty sponsor: Prof. Rajesh Chandy, Marketing; Chair in Entrepreneurship
- 2007–2009 Researcher
Dept. of Marketing and Management, Helsinki School of Economics, Finland
- 2005–2006 Research fellow, Finnish Graduate School of Marketing
Dept. of Marketing and Management, Helsinki School of Economics
- 2004–2004 Researcher
Dept. of Marketing and Management, Helsinki School of Economics
- 2003–2003 Researcher, Institute for Marketing and International Business
LTT Research Ltd. (research firm owned by Helsinki School of Economics)
- 2002–2003 Assistant
Dept. of Marketing and Management, Helsinki School of Economics
- 2001–2001 Research assistant
Dept. of Marketing and Management, Helsinki School of Economics

Other employment

- 1996–2006 Entrepreneur and partner, Chairman of the Board
Datarom Districom Oy, Helsinki, Finland
(B2B systems integration for intelligent building solutions; point-of-sales systems; computer hardware and software)
- 2000–2000 Product assistant (Channel sales and marketing)
BasWare Oyj, Vantaa, Finland (E-invoicing software)
- 1999–1999 Trainee (Consular duties and IT support)
The Finnish Embassy in Japan, Tokyo, Japan
- 1998–1999 Trainee (IT system design and support)
The Finnish Institute in Japan, Tokyo, Japan
- 1989–1999 Part-time jobs and summer jobs at various technology companies in Finland; customer service, marketing and sales (Ekström Power Oy: parts for motorcycles, outboard motors, and small engines; Electronor Oy: digital measuring instruments and sensor technology for manufacturing industries; Paragon Oy: printing works).

RESEARCH INTERESTS

Innovation management, Business models, Industrial ecology, Sustainability, Open innovation, User innovation, Living labs, Inter-organizational networks, Service co-creation, Technology entrepreneurship, Internet of Things, Technology marketing, Food innovation, Food security, Natural language processing, Topic modeling, Social big data, Digital business, Autonomous systems, Robotics, Artificial life

PUBLICATIONS

	Lifetime summary	Carleton (since 2012)
Book chapters	19	13
Books and edited compilations	1	1
Articles in refereed journals ^a	76	56
Articles in refereed conference proceedings ^b	97	45
Conference presentations without a paper	9	4
Other (scientific monographs, case studies, technical reports, working papers, guest editorials, etc.)	25	14
Total research funding (grants, contract research)	279,334 EUR + \$126,700 CAD	\$126,700 CAD
Total awards (research, travel, etc.)	179,693 EUR + \$8,000 CAD	\$8,000 CAD

Note: The table includes works that have been published or are accepted for publication

^a) 2 x FT-45 listed (1 in Carleton)

^b) 7 x Best paper nomination, including 4 x awarded

Note2: The following list shows FT-45, ABDC rankings, and Thomson Reuters ISI impact factors, as well as Sprott PRJ ranking if different from ABDC.

Books and edited compilations

1. Westerlund, M. & Leminen, S. (Eds.) (2015). *Living Labs – Best of TIM Review*. [eBook Kindle Edition]. Talent First Network. 262 pp. ISBN 978-0-7709-0593-4

Articles in refereed journals

2. Isabelle, D. A., Westerlund, M., & Sajuyigbe, V. (accepted). *Building legitimacy and distinctiveness on Nigerian-Canadian transnational ventures' websites*. *Africa Journal of Management*. (Sprott PRJ: B)
3. Isabelle, D. A., Han, Y., & Westerlund, M. (in press). *A Machine-Learning Analysis on the Impacts of the COVID-19 Pandemic on Small Business Owners and Implications from Canadian Government Policy Response*. *Canadian Public Policy*. DOI: 10.3138/cpp.2021-018 (2019 ABDC: B, 2020 ISI: 1.079)
4. Isabelle, D. A., & Westerlund, M. (2022). *A Review and Categorization of Artificial Intelligence-Based Opportunities in Wildlife, Ocean and Land Conservation*. *Sustainability*, 14(4), 1979. DOI: 10.3390/su14041979. (2020 ISI: 3.251, Sprott PRJ list: C)
5. Westerlund, M., Singh, I., Rajahonka, M., & Leminen, S. (2021). *Technology Project Summaries as a Predictor of Crowdfunding Success*. *Technology*

- Innovation Management Review, 11(11-12): 33-44. DOI: 10.22215/timreview/1472 (2019 ABDC: C)
6. Yang, J., Hurmelinna-Laukkanen, P., Sharma, A., & Westerlund, M. (2021). *Value appropriation and innovation collaboration dynamics: A review and research agenda*. International Journal of Innovation Management, 25(10), 2140007. DOI: 10.1142/S1363919621400077 (2016 ABDC: B, Sprott PRJ list: B)
 7. Leminen, S., Rajahonka, M., Westerlund, M., & Hossain, M. (2021). *Collaborative Innovation for Sustainability in Nordic Cities*. Journal of Cleaner Production, 328, 129549. DOI: 10.1016/j.jclepro.2021.129549 (2019 ABDC: A, 2020 ISI: 9.297)
 8. Westerlund, M., Nene, S., Leminen, S., & Rajahonka, M. (2021). *An exploration of blockchain-based traceability in food supply chains: On the benefits of distributed digital records from farm to fork*. Technology Innovation Management Review, 11(6): 6-18. DOI: 10.22215/timreview/1446 (2019 ABDC: C)
 9. Westerlund, M., Isabelle, D. A., & Leminen, S. (2021). *The Acceptance of Digital Surveillance in an Age of Big Data*. Technology Innovation Management Review, 11(3): 32-44. DOI: 10.22215/timreview/1427 (2019 ABDC: C)
 10. Greve, K., De Vita, R., Leminen, S., & Westerlund, M. (2021). *Living Labs: From Niche to Mainstream Innovation Management*. Sustainability, 13(2), 791. DOI: 10.3390/su13020791 (2020 ISI: 3.251, Sprott PRJ list: C)
 11. Leminen, S., Nyström, A.-G. & Westerlund, M. (2020). *Change processes in open innovation networks – Exploring living labs*. Industrial Marketing Management, 91: 701-718. DOI: 10.1016/j.indmarman.2019.01.013 (2019 ABDC: A*, 2020 ISI: 6.960)
 12. Greve, K., Leminen, S., De Vita, R., & Westerlund, M. (2020). *Unveiling the diversity of scholarly debate on living labs: A bibliometric approach*. International Journal of Innovation Management, 24(8), 2040003. DOI: 10.1142/S1363919620400034 (2016 ABDC: B, Sprott PRJ list: B)
 13. Westerlund, M. (2020). *Social Acceptance of Wind Energy in Urban Landscapes*. Technology Innovation Management Review, 10(9): 49-62. DOI: 10.22215/timreview/1389 (2019 ABDC: C)
 14. Isabelle, D., Westerlund, M., Mane, M., & Leminen, S. (2020). *The Role of Analytics in Data-Driven Business Models of Multi-Sided Platforms: An exploration in the food industry*. Technology Innovation Management Review, 10(7): 5-16. DOI: 10.22215/timreview/1371 (2019 ABDC: C)
 15. Westerlund, M. (2020). *Citizen Perceptions of Government's Resistance to Shared Parking*. Technology Innovation Management Review, 10(5): 28-40. DOI: 10.22215/timreview/1354 (2019 ABDC: C)
 16. Westerlund, M. (2020). *Digitalization, Internationalization and Scaling of Online SMEs*. Technology Innovation Management Review, 10(4): 48-57. DOI: 10.22215/timreview/1346 (2019 ABDC: C)
 17. Westerlund, M. (2020). *The Ethical Dimensions of Public Opinion on Smart Robots*. Technology Innovation Management Review, 10(2): 25-36. DOI: 10.22215/timreview/1326 (2019 ABDC: C)

18. Westerlund, M. (2020). *An Ethical Framework for Smart Robots*. *Technology Innovation Management Review*, 10(1): 35-44. DOI: 10.22215/timreview/1312 (2019 ABDC: C)
19. Leminen, S., Rajahonka, M., Wendelin, R., & Westerlund, M. (2020). *Industrial internet of things business models in the machine-to-machine context*. *Industrial Marketing Management*, 84: 298-311. DOI: 10.1016/j.indmarman.2019.08.008 (2019 ABDC: A*, 2020 ISI: 6.960)
20. Westerlund, M. (2019). *The Emergence of Deepfake Technology: A Review*. *Technology Innovation Management Review*, 9(11): 39-52. DOI: 10.22215/timreview/12 (2019 ABDC: C)
21. Isabelle, D., Westerlund, M., Rajala, R. & Leminen, S. (2019). *Understanding the aspirations of Finnish entrepreneurs and venture capitalists: their effects on international operations and growth*. *International Journal of Entrepreneurship and Small Business*, 37(2): 190-213. DOI: 10.1504/IJESB.2019.100106 (2016 ABDC: C, Sprott PRJ list: B)
22. Leminen, S. & Westerlund, M. (2019). *Living Labs: From Scattered Initiatives to a Global Movement*. *Creativity and Innovation Management*, 28(2): 250-264. DOI: 10.1111/caim.12310 (2019 ABDC: C, 2020 ISI: 3.051, Sprott PRJ list: B)
23. Hossain, M., Leminen, S., & Westerlund, M. (2019). *A Systematic Review of Living Lab Literature*. *Journal of Cleaner Production*, 213: 976-988. DOI: 10.1016/j.jclepro.2018.12.257 (2019 ABDC: A, 2020 ISI: 9.297)
24. Westerlund, M., Leminen, S. & Habib, C. (2018). *Key Constructs and a Definition of Living Labs as Innovation Platforms*. *Technology Innovation Management Review*, 8(12): 51-62. DOI: 10.22215/timreview/1205 (2019 ABDC: C)
25. Leminen, S., Rajahonka, M., Westerlund, M. & Wendelin, R. (2018). *The Future of the Internet of Things: Towards Heterarchical Ecosystems and Service Business Models*. *Journal of Business and Industrial Marketing*, 33(6): 749-767. DOI: 10.1108/JBIM-10-2015-0206 (2019 ABDC: A, 2020 ISI: 3.462)
26. Pacauskas, D., Rajala, R., Westerlund, M. & Mäntymäki, M. (2018). *Harnessing user innovation for social media marketing: Case study of a crowdsourced hamburger*. *International Journal of Information Management*, 43(December): 319-327. DOI: 10.1016/j.ijinfomgt.2018.08.012 (2019 ABDC: A*, 2020 ISI: 14.098)
27. Westerlund, M. & Leminen, S. (2018). *Does entrepreneurial marketing underrate competition?* *Technology Innovation Management Review*, 8(9), 16-27. DOI: 10.22215/timreview/1183 (2019 ABDC: C)
28. Westerlund, M., Leminen, S., & Rajahonka, M. (2018). *A Topic Modelling Analysis of Living Labs Research*. *Technology Innovation Management Review*, 8(7): 40-51. DOI: 10.22215/timreview/1170 (2019 ABDC: C)
29. Rajala, R., Hakanen, E., Mattila, J., Seppälä, T., & Westerlund, M. (2018). *How do intelligent goods shape closed-loop systems?* *California Management Review*, 60(3): 20-44. DOI: 10.1177/0008125618759685 (FT-45 [until 2016], 2019 ABDC: A, 2020 ISI: 8.836)

30. Leminen, S., Westerlund, M. & Rajahonka, M. (2017). *Innovating with service robots in health and welfare living labs*. International Journal of Innovation Management, 21(8), 1740013. DOI: 10.1142/S1363919617400138 (2016 ABDC: B, Sprott PRJ list: B)
31. Leminen, S., Rajahonka, M., & Westerlund, M. (2017). *Towards Third-Generation Living Lab Networks in Cities*. Technology Innovation Management Review, 7(11): 21-35. DOI: 10.22215/timreview/1118 (2019 ABDC: C)
32. Westerlund, M., Rajala, R., Leminen, S. & Isabelle, D.A. (2017). *Do relationships facilitate growth in small technology firms?* International Journal of Technoentrepreneurship, 3(3): 228-243. DOI: 10.1504/IJTE.2017.083798 (2016 ABDC: C)
33. Leminen, S. & Westerlund, M. (2017). *Categorization of Innovation Tools in Living Labs*. Technology Innovation Management Review, 7(1): 15-25. DOI: 10.22215/timreview/1046 (2019 ABDC: C)
34. Leminen, S., Rajahonka, M. & Westerlund, M. (2017). *Actors in the emerging Internet of Things ecosystems*. International Journal of E-Services and Mobile Applications, 9(1): 57-75. Featured Article in March 2017 issue of the Informed Librarian Online (www.informedlibrarian.com) DOI: 10.4018/IJESMA.2017010104
 - Republished as a book chapter in three IGI handbooks in 2020 (see chapters).
35. Westerlund, M., Isabelle, D., Rajala, R. & Leminen, S. (2017). *Networks, business models, and competitiveness in small Finnish firms*. International Journal of Business and Globalisation, 18(1): 9-26. DOI: 10.1504/IJBG.2017.081029 (2016 ABDC: C)
36. Westerlund, M., Isabelle, D., Rajala, R. & Leminen, S. (2016). *Funders and founders: Partners in good times and in bad?* International Journal of Globalisation and Small Business, 8(3): 269-288. DOI: 10.1504/IJGSB.2016.080379 (2016 ABDC: C, Sprott PRJ list: C)
37. Leminen, S. & Westerlund, M. (2016). *A framework for understanding the different research avenues of living labs*. International Journal of Technology Marketing, 11(4): 399-420. DOI: 10.1504/IJTMKT.2016.079731 (2019 ABDC: C)
38. Leminen, S., Nyström, A.-G, Westerlund, M. & Kortelainen, M. (2016). *The Effect of Network Structure on Radical Innovation in Living Labs*. Journal of Business and Industrial Marketing, 31(6): 743-757. DOI: 10.1108/JBIM-10-2012-0179 (2019 ABDC: A, 2020 ISI: 3.462)
39. Rajala, R., Westerlund, M. & Lampikoski, T. (2016). *Environmental sustainability in industrial manufacturing: Re-examining the greening of Interface's business model*. Journal of Cleaner Production, 115: 52-61. DOI: 10.1016/j.jclepro.2015.12.057 (2019 ABDC: A, 2020 ISI: 9.297)
40. Leminen, S., Turunen, T. & Westerlund, M. (2015). *The grey areas between open and closed in innovation networks*. Technology Innovation Management Review, 5(12): 6-18. DOI: 10.22215/timreview/948 (2019 ABDC: C)
41. Leminen, S., Nyström, A.-G. & Westerlund, M. (2015). *A Typology of Creative Consumers in Living Labs*. Journal of Engineering and Technology Management,

- 37: 6-20. DOI: 10.1016/j.jengtecman.2015.08.008 (2019 ABDC: B, 2020 ISI: 3.347)
42. Tukiainen, T., Leminen, S. & Westerlund, M. (2015). *Cities as collaborative innovation platforms*. *Technology Innovation Management Review*, 5(10): 16-23. DOI: 10.22215/timreview/933 (2019 ABDC: C)
43. Kavandi, H. & Westerlund, M. (2015). *Using Entrepreneurial Marketing to Foster Reseller Adoption of Smart Micro-Grid Technology*. *Technology Innovation Management Review*, 5(9): 5-16. DOI: 10.22215/timreview/925 (2019 ABDC: C)
44. Lampikoski, T., Westerlund, M., Rajala, R. & Möller, K. (2014). *Green Innovation Games: Value-Creation Strategies for Corporate Sustainability*. *California Management Review*, 57(1): 88-116. DOI: 10.1525/cm.2014.57.1 Featured video: <https://www.youtube.com/watch?v=Qs2u9QKRiDY> 88 (FT-45, 2019 ABDC: A, 2020 ISI: 8.836)
45. Westerlund, M. & Rajala, R. (2014). *Effective Digital Channel Marketing for Cybersecurity Solutions*. *Technology Innovation Management Review*, 4(10): 22–32. DOI: 10.22215/timreview/836 (2019 ABDC: C)
46. Westerlund, M., Leminen, S., & Rajahonka, M. (2014). *Designing Business Models for the Internet of Things*. *Technology Innovation Management Review*, 4(7): 5–14. DOI: 10.22215/timreview/807 (2019 ABDC: C)
47. Nyström, A.-G., Leminen, S., Westerlund, M. & Kortelainen, M. (2014). *Actor roles and role patterns influencing innovation in living labs*. *Industrial Marketing Management*, 43(3): 483-495. DOI: 10.1016/j.indmarman.2013.12.016 (2019 ABDC: A*, 2020 ISI: 6.960)
48. Leminen, S., Nyström, A.-G. & Westerlund, M. (2014). *On Becoming Creative Consumers – User Roles in Living Labs Networks*. *International Journal of Technology Marketing*, 9(1): 33-52. DOI: 10.1504/IJTMKT.2014.058082 (2019 ABDC: C)
49. Rajala, R., Westerlund, M., Vuori, M. & Hares, J.-P. (2013). *From Idea Crowdsourcing to Managing User Knowledge*. *Technology Innovation Management Review*, 3(12): 23–31. DOI: 10.22215/timreview/750 (2019 ABDC: C)
50. Veeckman, C., Schuurman, D., Leminen, S. & Westerlund, M. (2013). *Linking Living Lab Characteristics and Their Outcomes: Towards a Conceptual Framework*. *Technology Innovation Management Review*, 3(12): 6–15. DOI: 10.22215/timreview/748 (2019 ABDC: C)
51. Rajala, A., Westerlund, M., Murtonen M. & Starck, K. (2013). *Servitization in a Security Business: Changing the Logic of Value Creation*. *Technology Innovation Management Review*, 3(8): 65-72. DOI: 10.22215/timreview/718 (2019 ABDC: C)
52. Leminen, S. & Westerlund, M. (2012). *Towards Innovation in Living Labs Networks*. *International Journal of Product Development*, 17(1/2): 43-59. DOI: 10.1504/IJPD.2012.051161 (2016 ABDC: C)
53. Suomala, J., Palokangas, L. Leminen, S., Westerlund, M., Heinonen, J. & Numminen, J. (2012). *Neuromarketing: Understanding Customer's Subconscious*

- Responses to Marketing*. Technology Innovation Management Review, 2(12): 12-21. DOI: 10.22215/timreview/634 (2019 ABDC: C)
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Chapters in refereed books

175. Westerlund, M. & Aman, M. (2022). *Social Media Video Analysis for Entrepreneurial Opportunity Discovery in Artificial Intelligence*. In Tanev, S., & Blackbright, H. (Eds.). *Artificial Intelligence and Innovation Management*. Series on Technology Management, vol. 38 (pp. 75-95). World Scientific Publishing Europe Limited. ISBN: 978-1-80061-132-0. doi: 10.1142/9781800611337_0005
176. International Journal of E-Services and Mobile Applications (2017) article republished as a book chapter: Leminen, S., Rajahonka, M., & Westerlund, M. (2020). *Actors in the Emerging Internet of Things Ecosystems*. In I. Management Association (Ed.), *Disruptive Technology: Concepts, Methodologies, Tools, and Applications* (pp. 265-285). Hershey, PA: IGI Global. doi:10.4018/978-1-5225-9273-0.ch013
- International Journal of E-Services and Mobile Applications (2017) article republished as a book chapter: Leminen, S., Rajahonka, M., & Westerlund, M. (2020). *Actors in the Emerging Internet of Things Ecosystems*. In I. Management Association (Ed.), *Securing the Internet of Things: Concepts, Methodologies, Tools, and Applications* (pp. 1587-1607). Hershey, PA: IGI Global. doi: 10.4018/978-1-5225-9866-4.ch073
 - International Journal of E-Services and Mobile Applications (2017) article republished as a book chapter: Leminen, S., Rajahonka, M., & Westerlund, M. (2020). *Actors in the Emerging Internet of Things Ecosystems*. In I. Management Association (Ed.), *Sustainable Business: Concepts, Methodologies, Tools, and Applications* (pp. 617-637). Hershey, PA: IGI Global. doi:10.4018/978-1-5225-9615-8.ch028

177. Westerlund, M., Craigen, D., Bailetti, T. & Agwae, U. (2018). *A Three-vector Approach to Blind Spots in Cybersecurity*. In: Khosrow-Pour, M. (Ed.). *Encyclopedia of Information Science and Technology* (4th edition). IGI Global: USA. pp. 1684-1693. ISBN 978-1-5225-2255-3
- Republished in Khosrow-Pour, M. (Ed.)(2019). *Advanced Methodologies and Technologies in System Security, Information Privacy, and Forensics*. IGI Global: USA. pp. 93-104. ISBN 978-1-5225-7492-7
178. Suomala, J., Palokangas, L., Leminen, S., Westerlund, M., Heinonen, J. & Numminen, J. (2016). *Neuromarketing: Understanding Customer's Subconscious Responses to Marketing*. McPhee, C. (2016)(Ed.). *Best of TIM Review*. [eBook Kindle Edition]. Talent First Network. ISBN 978-0-7709-0594-1
179. Leminen, S., Huhtala, J.-P., Rajahonka, M. & Westerlund, M. (2016). *Business Model Convergence and Divergence in Publishing Industries*. In Lugmayr, A. & Zotto, C.D. (Eds.). *Media Convergence Handbook – Vol. 1. Journalism, Broadcasting, and Social Media Aspects of Convergence*. Springer-Verlag: Germany. pp. 187-200. ISBN 978-3-642-54483-5
180. Leminen, S. & Westerlund, M. (2015). *Incremental and Radical Service Innovation in Living Labs*. In: Information Resources Management Association (IRMA)(Ed.). *Economics: Concepts, Methodologies, Tools, and Applications*. IGI Global: USA. pp. 445-459. ISBN 978-1-4666-8468-3
181. Leminen, S. & Westerlund, M. (2015). *Cities as Labs: Towards Collaborative Innovation in Cities*. In Lappalainen, P., Markkula, M. & Kune, H. (Eds.). *Orchestrating Regional Innovation Ecosystems – Espoo Innovation Garden*. Otavan Kirjapaino: Finland. pp. 167-175. ISBN 978-952-60-3701-1
182. Leminen, S. Westerlund, M., Sánchez, L. & Serra, A. (2014). *Users as content creators, aggregators, and distributors at Citilab Living Lab*. In DeFillippi, R. & Wikström, P. (Eds.). *International Perspectives on Business Innovation and Disruption in the Creative Industries: Film, Video and Photography*. Edward Elgar Publishing Ltd. pp. 247-265. ISBN 978-1-78347-533-9
183. Leminen, S., & Westerlund, M. (2014). *Incremental and Radical Service Innovation in Living Labs*. In: Christiansen, B., Yildiz, S. & Yildiz, E. (Eds.). *Transcultural Marketing for Incremental & Radical Innovation*, Information Science Reference, Hershey, Pennsylvania, USA. pp. 281-295. ISBN 978-1-46664-749-7
184. Bailetti, T., Weiss, M., Muegge, S. & Westerlund, M. (2014). *Lead to Win - An ecosystem approach to making universities more entrepreneurial*. Meerman, A. & Kliewe, T. (Eds.). *UIIN Good Practice Series 2014: Fostering University-Industry Relationships, Entrepreneurial Universities and Collaborative Innovation*. University Industry Innovation Network, Chapter 29, pp. 307-408. ISBN: 978-94-91901-07-2
185. Leminen, S., Rajahonka, M. & Westerlund, M. (2013). *Modular Business Models Combining Traditional and E-Reading Services*. In: Hafkesbrink, Joachim & Shire, Karen (Eds): *Flexibilität und Stabilität in der Verlags- und Medienbranche [Flexibility and Stability in the Publishing and Media Industry]*. Josef Eul Verlag: Lohmar, Germany. pp. 225-257. ISBN 978-3-8441-0240-6

186. Leminen, S. & Westerlund, M. (2013). *Categorizing the Growth Strategies of Small Firms*. In: Bailetti, T. & Hurley, B. (Eds.). *Best of TIM Review for Technology Entrepreneurs* [Kindle Ed.]. Talent First Network: Ottawa. ISBN: 978-0-7709-0559-0
187. Wiklund-Engblom, A., Leminen, S., Westerlund, M., Staffans, S., Esch, M. & Rajala, R. (2012). *Towards Transmedia Innovation: An Empirical Analysis of a Multiplatform Format*. In: Ibrus, I. & Scolari, C.A. (Eds.). *Crossmedia Innovations: Texts, Markets, Institutions*. Peter Lang Publishing Group: Hamburg. pp. 179-198. ISBN: 978-3-631-62228-5
188. Leminen, S., Westerlund, M., Rajahonka, M. & Siuruainen, R. (2012). *Towards IOT ecosystems and business models*. In: Andreev, S., Balandin, S. & Koucheryavy, Y. (Eds.). *Internet of Things, Smart Spaces, and Next Generation Networking - Lecture Notes in Computer Science, Vol. 7469*. Springer. pp 15-26. ISBN: 978-3-642-32685-1
189. Westerlund, M., Rajala, R., Tuunanen, T. & Salo, J. (2012). *The influence of content and trust on consumers' intention to accept mobile advertisements*. In: Information Resources Management Association IRMA (Ed.). *E-Marketing: Concepts, Methodologies, Tools and Applications, Vol. 1*. Business Science Reference: USA. pp. 836-850. DOI: 10.4018/978-1-4666-1598-4.ch050
190. Rajala, R. & Westerlund, M. (2009). *Verkottuneen liiketoiminnan johtaminen* [Managing networked business]. In: Valkokari, K., Hyötyläinen, R., Kulmala, H., Malinen, P., Möller, K. & Vesalainen, J. (Eds.) (2009). *Verkostot liiketoiminnan kehittämisessä* [The role of networks in business development]. WSOYpro: Helsinki. pp. 155-167. ISBN 978-9-510-34737-9
191. Leminen, S. & Westerlund, M. (2008). *Pk-yritysten kasvustrategiat* [Growth strategies of SMEs]. In: Toivola, T., Tornikoski, E., Tuomi, L. & Varamäki, E. (Eds.). *Rohkeasti kasvuun – Näkökulmia yrityksen kasvuun ja kehittymiseen*. Haaga-Helia puheenvuoroja 1/2008. Haaga-Helia ammattikorkeakoulu: Helsinki. pp. 27-40. ISBN: 978-952-5685-30-5
192. Rajala, R., Nissilä, J. & Westerlund, M. (2007). *Revenue Models in the Open Source Software Business*. In: St. Amant, K. & Still, B. (Eds.) *Handbook of Research on Open Source Software: Technological, Economic, and Social Perspectives*. Information Science Reference: New York. pp. 541-554. DOI: 10.4018/978-1-59140-999-1.ch042
193. Westerlund, M. & Rajala, R. (2006). *Business on Beliefs: Analysis of Business Models and Offerings Based on Inconclusive Evidence*. In: Ioannis-Dionysios, S. (Ed.). *From Small Firms to Multinationals: Industrial, Entrepreneurial, Managerial, Financial, Fiscal, Transaction Cost and Consumer Perspectives in the Era of Globalisation*. Athens Institute for Education and Research (ATINER): Athens. pp. 445-460. ISBN 978-9-608-86725-3

Other – Non-refereed research

194. McPhee, C., Leminen, S., Schuurman, D., Westerlund, M., & Huizingh, E. (2018). *Editorial: Living Labs (December 2018)*. *Technology Innovation Management Review*, 8(12): 3-6. DOI: 10.22215/timreview/1200

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196. McPhee, C., Schuurman, D., Ballon, P., Leminen, S., & Westerlund, M. (2017). *Editorial: Innovation in Living Labs (January 2017)*. Technology Innovation Management Review, 7(1) 3–6. DOI: 10.22215/timreview/1044
197. McPhee, C., Tukiainen, T., Leminen, S. & Westerlund, M. (2016). *Editorial: Smart Cities and Regions (December 2016)*. Technology Innovation Management Review, 6(12): 3-5. DOI: 10.22215/timreview/1037
198. McPhee, C., Leminen, S., Schuurman, D., Westerlund, M. & Huizingh, E. (2016). *Editorial: Living Labs and User Innovation*. Technology Innovation Management Review, 6(1): 3-6. DOI: 10.22215/timreview/955
199. McPhee, C., Leminen, S., Schuurman, D., Westerlund, M. & Huizingh, E. (2015). *Editorial: Living Labs and User Innovation*. Technology Innovation Management Review, 5(12): 3-5. DOI: 10.22215/timreview/947
200. McPhee, C., Tukiainen, T., Leminen, S. & Westerlund, M. (2015). *Editorial: Smart Cities and Regions*. Technology Innovation Management Review, 5(10): 3-6. DOI: 10.22215/timreview/931
201. Leminen, S., Rajahonka, M., Westerlund, M. & Siuruainen, R. (2015). *Ecosystem Business Models for the Internet of Things*. In Varjonen, S. (Ed.) IOT Magazine, 1/2015. Internet of Things – Finland. www.iot.fi, pp. 10-13.
202. McPhee, C., Rajala, R., Toivonen, M. & Westerlund, M. (2014). *Editorial: Service and Innovation [Part 2]*. Technology Innovation Management Review, 4(5): 3-5. DOI: 10.22215/timreview/788
203. McPhee, C., Toivonen, M., Rajala, R. & Westerlund, M. (2014). *Editorial: Service and Innovation [Part 1]*. Technology Innovation Management Review, 4(4): 3-5. DOI: 10.22215/timreview/779
204. Leminn, S., Rajahonka, M., Siuruainen, R. & Westerlund, M., (2014). *Opportunities and Challenges for Innovative IoT Business Models – A Delphi Study*. In Varjonen, S. (Ed.) IOT Magazine, 1/2014. Internet of Things – Finland. www.iot.fi, pp. 12-16.
205. McPhee, C., Westerlund, M. & Leminen, S. (2013). *Editorial: Living Labs and Crowdsourcing*. Technology Innovation Management Review, 3(12): 3-5. DOI: 10.22215/timreview/747
206. McPhee, C., Leminen, S. & Westerlund, M. (2013). *Editorial: Living Labs*. Technology Innovation Management Review, 3(11): 3-4. DOI: 10.22215/timreview/739
207. Leminen, S. Westerlund, M., Rajahonka, M. & Siuruainen, R. (2013). *Internet of Things – Building networked IoT business model scenarios with a Delphi study*. In Varjonen, S. (Ed.) IOT Magazine, 1/2013. Internet of Things – Finland. www.iot.fi, pp. 15-16.

208. McPhee, C., Westerlund, M. & Leminen, S. (2012). *Editorial: Living Labs*. *Technology Innovation Management Review*, 2(9): 3-5. DOI: 10.22215/timreview/601
209. Leminen, S., Fred, M., Kortelainen, M.J. & Westerlund, M. (2011). *Co-Creation with Users and Customers in Living Labs*. Laurea Publications, A-76. Edita: Helsinki. ISBN 978-951-799-243-5
210. Westerlund, M., Rajala, R. & Leminen, S. (2011). *Insights into the dynamics of business models in the media industry*. Laurea Publications, A-74. Edita: Helsinki. ISBN 978-951-799-229-9
211. Westerlund, M. (2009). *The role of network governance in business model performance*. Helsinki School of Economics Working Papers, W-472, Helsinki: HSEPrint. ISBN 978-952-488-361-0
212. Westerlund, M. (2009). *Palvelut: arvoverkostojen johtamisen benchmarking-analyysi – Case: Marketmedia Oy* [Services: benchmarking analysis of value network management – Case Marketmedia Oy]. In: Hakonen, E., Huomo, T., Kallio, J., Kinnunen, J., Tinnilä, M. & Vepsäläinen, A. (Eds.)(2009). *Globaalit arvoverkostot* [Global value networks]. *Technology Review* 257/2009, Tekes: Helsinki. pp. 83-97. ISBN 978-952-457-480-8
213. Westerlund, M. & Rajala, R. (2008). *Networks Ahead! Kristian Möller Provides the Roots for the Finnish Business Network Research Community*. In: Anttila, M. & Rajala, A. (Eds.)(2008). *Fishing with business nets – keeping thoughts on the horizon*. Helsinki School of Economics Publication Series, B-90. pp. 7-9. ISBN 978-952-488-249-1
214. Westerlund, M. (2004). *Relationship Value in Strategic Networks of Software Business Models*. The 14th Nordic Workshop on Interorganizational Research, Oslo, Norway, August 20-22. Workshop proceeding.
215. Rajala, R., Westerlund, M., Rajala, A. & Leminen, S. (2004). *Business Models and Value Nets as the Context of Knowledge-Intensive Service Activities in the Software Business*. LTT Research Publication Series B-170. Helsinki: LTT Research. Research report. ISSN 1456-4882
216. Westerlund, M. (2003). *Evaluating Critical Importance of Network Partners in Business Model Context*. The Doctoral Tutorial in Marketing, Oulu, Finland, November 21-21. Workshop proceeding.
217. Forssén, M.-K., Heikkonen, M., Hietala, J., Hänninen, O., Kontio, J., Rajala, R., Westerlund, M., Rajala, A., Leminen, S., Möller, K. & Rajahonka, M. (2003). *Knowledge-Intensive Service Activities Facilitating Innovation in the Software Industry*. Helsinki: Tekes, HUT, and LTT Research. Research report.

Conference presentations (without paper)

218. McPhee, C., Schillo, S.R., Westerlund, M., Nguyen, V., Beaudoin, C., Berberi, A., Bronson, K., Devkota, R., Jasmin, J.-F., Joncoux, S., & Saul, D. (2021). *Evaluation of living labs focused on agricultural or environmental sustainability*. ISPIIM Innovation Conference, Berlin, Germany, June 20-23 (virtual conference).

219. Leminen, S., Westerlund, M., Sánchez, L. & Serra, A. (2013). *Media co-creation with users at Citilab Living Lab*. The 6th Conference of the International Media Management Academic Association (IMMAA), Lisbon, Portugal, May 3-4.
220. Leminen, S., Westerlund, M., Rajahonka, M. & Siuruainen, R. (2013). *Internet of Things – Opportunities for Innovative Services and Networked Business Models*. The 5th Annual International Service Innovation and Design seminar, Espoo, Finland, March 14.
221. Leminen, S., Westerlund, M., Heinonen, J. & Suomala, J. (2013). *Neuromarketing as a tool to understand customers' valuation processes*. The 5th Annual International Service Innovation and Design seminar, Espoo, Finland, March 14.
222. Leminen, S., Westerlund, M., Rajahonka, M. & Siuruainen, R. (2012). *Internet of Things (IoT) – Opportunities for Innovative Service Business Models*. Service Operations Management Forum: Fifth International Workshop, Cambridge, UK, September 19-20.
223. Leminen, S., Nyström, A.-G. & Westerlund, M. (2012). *Users' roles for co-creation of innovation in living lab networks*. INUSE 2012 - Users and Innovation Research Seminar, Espoo, Finland, October 9.
224. Leminen, S., Nyström, A.-G. & Westerlund, M. (2012). *Users' roles for co-creation of innovation in living lab networks*. The 3rd ENoLL Living labs Summer School, Espoo/Helsinki, Finland, August 20-23.
225. Korhonen, H., Westerlund, M., Mikkola, M., Kaarela, I. & Ryyänen, T. (2012). *Practices for Involving Customer Organizations in Service Innovation*. The 7th AMA SERVSIG 2012 International Service Research Conference, Helsinki, Finland, June 7-9.
226. Leminen, S., Westerlund, M. & Kortelainen, M. (2012). *Service Innovation Strategies in Living Labs Networks*. The 7th AMA SERVSIG 2012 International Service Research Conference, Helsinki, Finland, June 7-9.

Theses and monographs

227. Westerlund, M. (2009). *Managing networked business models - Essays in the software industry*. Acta Universitatis Oeconomicae Helsingiensis, A-356. Helsinki: HSE Print. Doctoral dissertation. ISBN 978-952-488-363-4
228. Westerlund, Mika (2002). *The Role of Value Nets in Software Business Models: Case BasWare*. Helsinki School of Economics, Dept. of Marketing and Management. Master of Science (Econ.) thesis.

OTHER SCHOLARLY OR PROFESSIONAL ACTIVITY

Editorial responsibilities – refereed journals

- 2021- Editor-in-Chief of the Technology Innovation Management Journal (tenure started 7/2021→)

- 2021-2022 Guest editor of a 2022 special issue of R&D Management on “Places and Spaces of Collaborative R&D and Innovation: Physical, Virtual and Cognitive Contexts” with S. Leminen, K. Greve & P. Ritala.
- 2018 Guest editor of December 2018 issue of the Technology Innovation Management Review on “New Approaches and Developments in Living Labs” with D. Schuurman, S.R.E. Huizingh & S. Leminen
- 2017 Guest editor of January 2017 and February 2017 issues of the Technology Innovation Management Review on “Innovation in Living Labs” with D. Schuurman, P. Ballon & S. Leminen
- 2016 Guest editor of December 2016 issue of the Technology Innovation Management Review on “Smart Cities and Regions” with T. Tukiainen & S. Leminen
- 2015-2016 Guest editor of December 2015 and January 2016 issues of the Technology Innovation Management Review on “Living Labs and User Innovation”, special issue related to the ISPIM 2015 conference with S. Leminen, D. Schuurman, & E. Huizingh
- 2015 Guest editor of November 2015 issue of the Technology Innovation Management Review on “Smart Cities and Regions” with T. Tukiainen & S. Leminen
- 2014 Guest editor of April 2014 and May 2014 issues of the Technology Innovation Management Review on “Service and innovation”, special issues related to the RESER 2014 conference with M. Toivonen & R. Rajala
- 2013 Guest editor of the December 2013 issue of the Technology Innovation Management Review on “Living Labs & Crowdsourcing” with S. Leminen
- 2013 Guest editor of the November 2013 issue of the Technology Innovation Management Review on “Living Labs” with S. Leminen
- 2012 Guest editor of the September 2012 issue of the Technology Innovation Management Review on “Living Labs” with S. Leminen

Editorial and reviewer responsibilities – refereed books

- 2020 Reviewer for a book proposal submitted to Palgrave Macmillan (Service research area)
- 2019 Co-editor for “Transforming Resources into New Technology Company Growth”, Tanev, S., Westerlund, M., Weiss, M., Muegge, S., & Ballelli, T. (Eds.) (in progress). Advances in Business Strategy and Competitive Advantage (ABSCA) series. IGI Global.
- 2018 Reviewer for a book proposal submitted to Emerald Publishing (Entrepreneurship area)
- 2018 Member of the Editorial Advisory Board and Reviewer for “Global Cyber Security Labor Shortage and International Business Risk”, Christiansen, B. & Piekarz, A. (Eds.) (2019). IGI Global. DOI: 10.4018/978-1-5225-5927-6
- 2017 Member of the Editorial Advisory Board and Reviewer for “Emerging Economic Models for Global Sustainability and Social Development”,

- Christiansen, B., Sysoeva, I., Udovikina, A. & Ketova, A. (Eds.)(2019). IGI Global. DOI: 10.4018/978-1-5225-5787-6
- 2017 Reviewer for a book proposal submitted to Elsevier (Smart Cities and Transportation area)
- 2016 Member of the Editorial Advisory Board for "Cultural Influences on Architecture", Koc, G., Claes, M.-T. & Christiansen, B. (Eds.)(2017). IGI Global. ISBN 978-1-5225-1744-3
- 2016 Member of the Editorial Advisory Board for "Corporate Espionage, Geopolitics, and Diplomacy Issues in International Business", Eds. Christiansen, B. & Kasarci, F. (2017). IGI Global. ISBN 978-1-5225-1031-4
- 2015 Member of the Editorial Advisory Board for "Handbook of Research on Comparative Economic Development Perspectives on Europe and the MENA Region", Eds. Erdođdu, M. & Christiansen, B. (2016). IGI Global. ISBN 978-1-4666-9548-1
- 2015 Editor of the book "Living Labs – Best of TIM Review" [eBook Kindle Edition] by Westerlund, M. & Leminen, S. (Eds.)(2015), foreword by Salmelin, B. Talent First Network. ISBN 978-0-7709-0593-4
- 2015 Member of the Editorial Advisory Board for "Handbook of Research on Global Supply Chain Management", Ed. Christianse, B. (2016). IGI Global. ISBN 978-1-4666-9639-6
- 2015 Member of the Editorial Advisory Board for "Handbook of Research on Public Finance in Europe and the MENA Region", Eds. Erdogdu, M. & Christiansen, B. (2016). ISBN 978-1-5225-0053-7
- 2014 Member of the Editorial Advisory Board and Reviewer for "Neuroeconomics and the Decision-making Process", Eds. Christiansen, B. & Lechman, E. (2016). ISBN 978-1-4666-9989-2
- 2014 Member of the Editorial Advisory Board and Reviewer for "Comparative Economics and Regional Development in Turkey", Eds. Christiansen, B. & Erdođdu, M. (2016). ISBN 9781466687295
- 2014 Member of the Editorial Advisory Board and Reviewer for "Encyclopedia of Global Supply Chain Management", Eds. Efeođlu, I.E. & Christiansen (2014), B. ISBN 9781466665514
- 2014 Member of the Editorial Advisory Board and Reviewer for "Comparative Economic Perspectives on Europe and the MENA Region", Eds. Christiansen, B. & Erdogdu, M. (2016). ISBN 9781466695481
- 2014 Member of the Editorial Advisory Board and Reviewer for "Handbook of Research on Global Business Opportunities", Ed. Christiansen, B. (2015). ISBN 978-1-4666-6551-4
- 2013 Member of the Editorial Advisory Board for "Handbook of Research on Effective Marketing in Contemporary Globalism", Eds. Christiansen, B., Yildiz, S. & Yildiz, E. (2014). ISBN 978-1-4666-6220-9
- 2013 Member of the Editorial Advisory Board and Reviewer for "Transcultural Marketing for Incremental & Radical Innovation", Eds.

Christiansen, B., Yildiz, S. & Yildiz, E. (2014). ISBN 978-1-4666-4749-7

Occasional reviewer – Refereed journals

African Journal of Business Management
African Journal of Management
Agricultural Systems
AI & Ethics
Asia Pacific Management Review
Business Research Quarterly
California Management Review
Canadian Journal of Administrative Sciences
Contemporary Management Research
Energy Research Letters
European Journal of Information Systems
Foundations of Science
GAIA: Ecological Perspectives for Science and Society
Industrial Marketing Management
Information Systems Management
Interdisciplinary Studies Journal
International Journal of Electronic Business
International Journal of E-Services and Mobile Applications
International Journal of Innovation and Sustainable Development
International Journal of Product Development
International Journal of Technology Management
International Marketing Review
Journal of Business and Industrial Marketing
Journal of Consumer Marketing
Journal of Information Technology Theory and Application
Management Decision
Management Research Review (ex: Management Research News)
Marketing Intelligence and Planning
R&D Management
Science and Public Policy
Sustainability
Technology Innovation Management Review
Technovation
Total Quality Management & Business Excellence

Occasional reviewer – Conferences

2022 XXXIII ISPIM Innovation Conference, Copenhagen, Denmark

2021 The ACM CHI 2022 Conference, New Orleans, USA
 2021 EURAM Annual Conference 2021, Montreal, Canada
 2021 XXXII ISPIM Innovation Conference, Berlin, Germany
 2021 EMAC Annual Conference 2021, Madrid, Spain
 2020 ISPIM Connects Global 2020 Virtual Conference
 2020 IMP Asia 2020 Conference, Okinawa, Japan
 2020 EURAM Annual Conference 2020, Dublin, Ireland
 2020 EMAC Annual Conference 2020, Budapest, Hungary
 2019 ISPIM Connects Bangkok 2020 Conference, Bangkok, Thailand
 2019 32nd Bled eConference 2019, Bled, Slovakia
 2019 XXX ISPIM Innovation Conference, Florence, Italy
 2019 EMAC 48th Annual Conference, Hamburg, Germany
 2018 ISPIM Connects Ottawa 2019 Conference, Ottawa, Canada
 2018 9th EMAC Regional Conference, Prague, Czech Republic
 2018 XXIX ISPIM Innovation Conference, Stockholm, Sweden
 2018 AIB 2018 Annual Meeting, Minneapolis, USA
 2017 ISPIM Innovation Forum 2018, Boston, USA
 2017 47th EMAC Annual Conference, Glasgow, UK
 2017 ISPIM Innovation Summit 2017, Melbourne, Australia
 2017 XXVIII ISPIM Innovation Conference, Vienna, Austria
 2017 46th EMAC Annual Conference, Groningen, The Netherlands
 2017 AIB 2017 Annual Meeting, Dubai, UAE
 2016 ISPIM Innovation Forum 2017, Toronto, Canada
 2016 IMP Asia in Africa Conference, Cape Town, South Africa
 2016 EURAM 2016 Conference, Paris, France
 2016 AIB 2016 Annual Meeting, New Orleans, USA
 2016 XXVII ISPIM Innovation Conference, Porto, Portugal
 2016 45th EMAC Annual Conference Oslo, Norway
 2015 2016 Winter AMA Marketing Educators' Conference, Las Vegas, USA
 2015 ISPIM Innovation Forum 2016, Boston, USA
 2015 15th ICEB Conference, Hong Kong, China
 2015 2015 Anzmac Conference, Sydney, Australia
 2015 2015 Summer AMA Marketing Educators' Conference, Chicago, USA
 2015 44th EMAC Conference, Leuven, Belgium
 2015 AIB 2015 Annual Meeting, Bengaluru, India
 2015 23rd ECIS Conference, Münster, Germany
 2014 2014 ISPIM Americas Innovation Forum, Montreal, Canada
 2014 47th AM Conference, Bournemouth, UK
 2013 SIG SVC 2013 Workshop, Milano, Italy
 2013 42nd EMAC Conference, Istanbul, Turkey
 2012 IABE-2012 Las Vegas Annual Conference, Las Vegas, USA
 2012 IABE-2012 Venice: Summer Conference, Venice, Italy

2012	41st EMAC Conference, Lisbon, Portugal
2011	2011 MCPC Conference in 2011, San Francisco, USA
2011	ICIS 2011 Conference, Shanghai, China
2011	40th EMAC Conference, Ljubljana, Slovenia
2010	HICSS-43 Conference, Hawaii, USA
2010	Combi2010 Conference, Vantaa, Finland
2010	39th EMAC Conference, Copenhagen, Denmark
2009	38th EMAC Conference, Nantes, France
2008	ANZMAC Conference, Sydney, Australia
2007	IMP Asia Conference, Phuket, Thailand
2006	22nd IMP Conference, Milan, Italy

Presentations to academic communities

2020	The ISPIM Connects Global Virtual Conference, December 6-8
2019	The ISPIM Connects Ottawa Conference, Ottawa, Canada, April 7-10
2017	The ISPIM Innovation Forum 2017, Toronto, Canada, March 19-22
2015	The INCOM 2015 Conference, Ottawa, Canada, May 11-13
2014	The ISPIM Americas Innovation Forum, Montreal, Canada, October 5-8
2014	The 5th Telfer-Sprott Research Forum, Ottawa, Ontario, Canada, April 24
2012	The HICSS-45 Conference on Systems Sciences, Maui, Hawaii, USA, January 4-7
2011	The Economics, Finance & International Business Research Conference, Miami, USA, December 8-11
2011	The 2011 MCPC World Conference, San Francisco, CA, USA, November 17-19
2011	The 11th IAMB Conference (Winter), San Francisco, CA, USA, November 7-9
2011	The IABE Annual Conference 2011, Las Vegas, NV, USA, October 16-18
2011	Carleton University, Sprott School of Business, Ottawa, Canada, March 18
2009	The 2009 AMS Annual Conference, Baltimore, Maryland, USA, May 20-23
2009	The 15th CBIM Academic Workshop, Atlanta, Georgia, USA, January 16-19
2008	The 5th Research Conference on Relationship Marketing and CRM, Brussels, Belgium, November 20-21
2008	The 2008 AMA Summer Marketing Educators' Conference, San Diego, California, USA, August 8-11
2007	The 2007 INFORMS Annual Meeting, Seattle, Washington, USA, November 4-7
2007	The 16th Annual AMA Frontiers in Service Conference, San Francisco, California, USA, October 4-7
2007	The 2007 AMA Summer Marketing Educators' Conference, Washington, DC, USA, August 3-6

- 2007 The International Conference on Business and Information (BAI) 2007, Tokyo, Japan, July 11-13
- 2006 The ValueNet Workshop on Publishing, Turku, Finland, October 26
- 2006 The 6th Global Conference on Business & Economics, Harvard University, Cambridge, Massachusetts, USA, October 15-17
- 2006 The 5th Global Conference on Business & Economics, Cambridge University, Cambridge, UK, July 6-8
- 2006 The 15th Annual IPSERA Conference: Creating and managing value in supply networks, San Diego, USA, April 6-8
- 2006 The 1st ValueNet Research Workshop, Oulu, Finland, May 3-4
- 2005 The IMP Asia Conference: Building Social Capital in Networks. Phuket, Thailand, December 11-14
- 2005 The 21st Annual IMP Conference: Dealing with Dualities, Rotterdam, The Netherlands, September 1-3
- 2005 The 18th Bled eConference: eIntegration in Action, Bled, Slovenia, June 6-8
- 2005 The 3rd International Conference on Business, Economics, Management and Marketing, Athens, Greece, June 16-18
- 2004 The 20th Annual Conference of the Industrial Marketing and Purchasing (IMP) Group, Copenhagen, Denmark, September 2-4
- 2004 The 14th Nordic Workshop on Interorganizational Research, Oslo, Norway, August 20-22
- 2003 The Doctoral Tutorial in Marketing, Oulu, Finland, November 21-21

Invited talks to professional and managerial audience

- 2014 Lead to Win Bootcamp lecture on 'Design network to make money'. Ottawa, Ontario, Canada, February 19.
- 2013 Lead to Win Bootcamp lecture on 'Design network to make money'. Ottawa, Ontario, Canada, September 25.
- 2013 TIM Lecture on 'Green business models to change the world – How can entrepreneurs ride the sustainability wave?' Ottawa, Ontario, Canada, June 20
Summary of presentation available at <http://doi.org/10.22215/timreview/707>
- 2006 Invited talk on 'Open Innovation & Business Models in Software Business' at the Annual Center for Knowledge and Innovation Research (CKIR) Workshop 2006, Helsinki School of Economics. August 29
- 2004 Invited lecture on 'Business models and networks – What are they?' at the International Business Program (IBP) F.E.C., Helsinki. January 12

RESEARCH GRANTS AND AWARDS

Research grants and contract research

- 2015 Mitacs-Accelerate Grant (Xahive Expansion project; as co-applicant with Prof. S. Muegge, responsible for 50% of the awarded \$30,000 CAD grant), CU Research #102769, awarded by Mitacs (total: \$15,000 CAD)
- 2014 Enhancing the theory of cybersecurity – Task 5 (contract research), awarded by Public Works and Government Services Canada (PWGSC) through Communications Security Establishment (CSE), contract research (total: \$39,600 CAD)
- 2014 Enhancing the theory of cybersecurity – Task 6 (contract research), awarded by Public Works and Government Services Canada (PWGSC) through Communications Security Establishment (CSE), contract research (total: \$58,800 CAD)
- 2014 Market research support for Whyz Technologies' Gnowit CoreAlerts Product; CU Research #101610, awarded by NRC-IRAP, Business Innovation Access Program (BIAP), contract research (total: \$13,300 CAD)
- 2010 Open service innovation – practices and outcomes (OSI) (2011-2012), awarded by The Finnish Funding Agency for Technology and Innovation (Tekes) with matching funds from Aalto University, (total: 176,667 EUR)
- 2009 Demand driven service innovations in B2B relationships (TAPI) (2010) awarded by The Finnish Funding Agency for Technology and Innovation (Tekes) with matching funds from Helsinki School of Economics, (total: 97,667 EUR)
- 2008 Global Value Networks (2008-2009) awarded by The Finnish Funding Agency for Technology and Innovation (Tekes), contract research (total: 5,000 EUR)

Participation in business internship grants

- 2021 Mitacs Business Strategy Internship (BSI) (as the academic advisor of Bushra Munaf's internship at The Society of Obstetricians and Gynecologists of Canada); Ref#IT25243, awarded by Mitacs (total: \$10,000 CAD)
- 2021 Mitacs Business Strategy Internship (BSI) (as the academic advisor of Richard Abakah-Akumah's internship at Tribe Leadership Consulting Inc.); Ref#IT24398, awarded by Mitacs (total: \$10,000 CAD)
- 2020 Mitacs Business Strategy Internship (BSI) (as the academic advisor of Michelle Ekekwe's internship at Shiphrah Biomedicals); Ref#IT23082, awarded by Mitacs (total: \$10,000 CAD)

Awards – Research and travel

- 2017 Carleton University, Spratt Travel Funding for conference travel, awarded \$2,000 CAD
- 2014 Carleton University, Spratt Travel Funding for conference travel, awarded \$2,000 CAD
- 2010–2012 Awards from various sources in Finland for postdoctoral research, awarded total 73,500 EUR
- 2003–2009 Awards from various sources in Finland for doctoral research, awarded total 106,193 EUR

Awards – Academic recognition

2021	The Carol-Ann Tetrault Sirsly Award (The high-quality scholarly publication award by Sprott School of Business, \$4,000)
2020	The Biennial Conference of the Africa Academy of Management 2020 Best Paper award
2017	The ISPIM 2017 Conference Best Paper award (The Technological Implications award by Nokia)
2015	The AIB 2015 Annual Meeting Best Reviewer award
2015	The ISPIM 2015 Conference Best Paper award (The Practical Implications award by Nokia)
2012	The NCSB 2012 Small Business Conference Best Paper award
2010	The Finnish Strategic Management Society (SSJS) Best M.Sc. Thesis on Strategy of the Year 2009 Supervisor award as the supervisor of Anna Multanen's "Corporate Social Responsibility in the Retail Business Model"
2009	The Contemporary Management Research journal's Best Reviewer award
2008	The Helsinki School of Economics (HSE) quality publication award (x 3 times)
2008	The HSE Best Research Team of the Year 2008 award (as team member)
2008	The Contemporary Management Research journal's Best Reviewer award
2005	The HSE Best Research Team of the Year 2005 award (as team member)

SERVICE TO PROFESSION

Offices in learned societies

2020–	Member of the Editorial Board for ROBONOMICS: The Journal of the Automated Economy
2015–	Member of the International Advisory Board for the International Journal of Productivity Management and Assessment Technologies
2014–	Member of the International Society for Professional Innovation Management (ISPIM) Scientific Panel
2014–2015	Member of the Advisory Board for NeuroService (a neuroeconomics research project 2014-2015 by the Laurea University of Applied Sciences, Finland)
2013–	Director of TIM Research, Technology Innovation Management program, Carleton University

Professional affiliations

2020–	Member of the Beta Gamma Sigma society, Sprout chapter
2014–	Member of the International Society for Professional Innovation Management (ISPIM)
2009–2010	Member of the Academy of Marketing Science (AMS)
2008–2009	Member of the Institute for Operations Research and the Management Sciences (INFORMS)
2007–2010	Member of the American Marketing Association (AMA)
2008–	Member of the Business Model Community (BMC)
2004–	Member of the Industrial Marketing and Purchasing Group (IMP)
2004–2009	Fellowship in the Finnish Graduate School of Marketing (FINNMARK)

Scholarly assessments

2022	Ca' Foscari University of Venice (G@V – Research and Training for Global Challenges Cofund Fellowship application assessor), Italy
2021	LIT – Linz Institute of Technology, Johannes Kepler University Linz (Early Career Researchers funding application reviewer), Austria
2020-2021	Assessor for Master's level innovation and entrepreneurship courses at the USN School of Business, University of South-Eastern Norway
2020	MIUR (the Italian Ministry for Education, University and Research) (FISR 2020 research funding application reviewer), Italy
2019	Mitacs Accelerate (research funding application reviewer), Canada
2019	The Netherlands Organisation for Scientific Research (NWO) (research funding application reviewer), Netherlands
2018	MIUR (the Italian Ministry for Education, University and Research) (PRIN 2017 research funding application reviewer), Italy
2017	Knowledge Foundation (research funding application reviewer), Sweden
2017	The Netherlands Organisation for Scientific Research (NWO) (research funding application reviewer), Netherlands
2012	National Science Foundation (research funding application reviewer), USA
2011	Knowledge Foundation (research funding application reviewer), Sweden

Event coordination – Academic events, courses, and programs

2021	Session Facilitator/Track Chair (“Places & spaces of collaborative R&D & innovation 3”), ISPIM Innovation Conference 2021, Berlin, Germany [virtual conference], June 19-22.
2021	Junior Researcher Lab Session Co-facilitator (“AI & innovation”), ISPIM Innovation Conference 2021, Berlin, Germany [virtual conference], June 19-22.

- 2019 Session Facilitator/Track Chair (“Platform based businesses”), ISPIIM Connects Ottawa 2019, Ottawa, Canada, April 7-10.
- 2017 Session Facilitator/Track Chair (“Innovation Implementation”), ISPIIM Innovation Forum 2017, Toronto, Canada, March 19-22.
- 2015 Coordinator of the TIM Research Seminar on “Living Labs”, Carleton University, Technology Innovation Management program, Ottawa, Canada, August 13.
- 2014 Session Facilitator/Track Chair (“Business Model Innovation”), ISPIIM Americas Innovation Forum, Montreal, Canada, October 6.
- 2014 Co-Coordinator of the “Managing innovation in the cyber security technology sector: Bringing together technology entrepreneurship and research opportunities” workshop, ISPIIM Americas Innovation Forum, Montreal, Canada, October 6.
- 2006–2009 Coordinator of the ValueNet consortium, comprising 40 scholars focused on business network research from Helsinki School of Economics, Turku School of Economics, Oulu University, and Åbo Akademi University.
- 2008 Coordinator of “The 3rd ValueNet Consortium Research Workshop”, national workshop on business network research organized by Helsinki School of Economics and the ValueNet research consortium, Finland; February
- 2007 Co-coordinator of “The National Business Networks Research Day”, national meeting on business network research organized by the Helsinki School of Economics and the ValueNet research consortium, Finland; April
- 2007 Coordinator of the “Business Networks - Major Research Approaches” PhD course, organized by the Finnish Doctoral Program in Business Studies (KATAJA), Helsinki, Finland; June 11-15
- 2002 Coordinator of the “Managing in Business Nets” PhD course, organized by the Finnish doctoral program in business studies (KATAJA), Hyvinkää, Finland; September

Project coordination – Major funded research projects

- 2011–2012 Project leader, Open service innovation – practices and outcomes (OSI), Aalto University School of Economics
- 2010 Project leader, Demand driven service innovations in B2B relationships (TAPI), Aalto University School of Economics
- 2008–2010 Project Manager, Innovation networks and open innovation ecosystems (InnoNets), Helsinki School of Economics
- 2006–2009 Project coordinator, Emergence and transformation of business in global competition (ValueNet II), Helsinki School of Economics

Media publicity

- 2014 “Woran Wissenschaftler arbeiten” [What are scientists working on], *Harvard Business Manager* – Online version, October 7, 2014 (Top

- Story of the Day);
<http://www.harvardbusinessmanager.de/blogs/neue-studien-zu-innovation-von-der-ispim-konferenz-in-montreal-a-995660.html>
- 2013 "Living Labs - Bringing together Carleton's research with the community", Carleton University's *Research Works*, February 26, 2013; <http://researchworks.carleton.ca/2013/02/living-labs/>
- 2012 "The world is your company: crowdsourcing", *The Charlatan*, September 10, 2012; <http://www.charlatan.ca/2012/09/the-world-is-your-company-crowdsourcing/>
- 2009 "Verkostoituminen antaa mahdollisuuden keskittyä omaan ydinosaamiseen" [Networking lets you focus on the company's core competency], *Talousteema*, December 18, 2009; <http://www.talousteema.fi>
- 2007 "Services become core business", *Empower Link* magazine 2/2007: 20-22; http://www.empower.fi/public/files/Empowerlink_en_200702.pdf

ACADEMIC RESPONSIBILITIES

Graduate courses taught

Carleton University, Technology Innovation Management

2022	Winter	Issues in technology innovation management (TIMG5003) [online]
2021	Fall	Issues in technology innovation management (TIMG5003) [online]
2021	Summer	Integrated product development: Open and user innovation (TIMG5101) [online]
2021	Winter	Issues in technology innovation management (TIMG5003) [online]
2020	Fall	Issues in technology innovation management (TIMG5003) [online]
2020	Summer	Integrated product development: Open and user innovation (TIMG5101) [online]
2020	Winter	Issues in technology innovation management (TIMG5003)
2019	Fall	Issues in technology innovation management (TIMG5003)
2019	Summer	Integrated product development: Open and user innovation (TIMG5101)
2019	Winter	Issues in technology innovation management (TIMG5003)
2018	Fall	Issues in technology innovation management (TIMG5003)
2018	Summer	Integrated product development: Open and user innovation (TIMG5101)
2018	Winter	Issues in technology innovation management (TIMG5003)
2017	Fall	Issues in technology innovation management (TIMG5003)
2017	Summer	Integrated product development: Open and user innovation (TIMG5101)
2017	Winter	Customer value creation in technology firms (TIMG5005)
2016	Fall	Issues in technology innovation management (TIMG5003)

2016	Summer	Integrated product development: Open and user innovation (TIMG5101)
2016	Summer	Master's project seminar (TIMG5901)
2016	Winter	Issues in technology innovation management (TIMG5003)
2016	Winter	Customer value creation in technology firms (TIMG5005)
2015	Fall	Directed Studies in Technology Innovation Management (TIMG5104)
2015	Fall	Master's project seminar (TIMG5901)
2015	Summer	Integrated product development: Open and user innovation (TIMG5101)
2015	Summer	Directed Studies in Technology Innovation Management (TIMG5104)
2015	Winter	Issues in technology innovation management (TIMG5003)
2015	Winter	Master's project seminar (TIMG5901)
2015	Winter	Directed Studies in Technology Innovation Management (TIMG5104)
2014	Fall	Customer value creation in technology firms (TIMG5005)
2014	Fall	Master's thesis seminar (TIMG5909)
2014	Summer	Integrated product development: Open and user innovation (TIMG5101)
2014	Winter	Issues in technology innovation management (TIMG5003)
2014	Winter	Customer value creation in technology firms (TIMG5005)
2013	Summer	Integrated product development: Open and user innovation (TIMG5101)
2013	Summer	Advanced topics in TIM: Sustainable entrepreneurship (TIMG5103)
2013	Winter	Issues in technology innovation management (TIMG5003)
2012	Fall	Customer value creation in technology firms (TIMG5005)

Table: Teaching evaluation report, Carleton University since 2012 (designated)

Course	Term/ Year	Respondents/ Enrolment	Questions 1-13		
			Mean Score /5	Median Score /5	Faculty Mean /5
TIMG 5003	2019 F	52/69	4.73	5.00	4.26
TIMG 5101	2019 S	15/37	4.57	5.00	4.26
TIMG 5003	2019 W	19/47	4.60	5.00	4.25
TIMG 5003	2018 F	21/50	4.70	5.00	4.25
TIMG 5101	2018 S	27/38	4.63	5.00	4.25
TIMG 5003	2018 W	26/40	4.79	5.00	4.30
TIMG 5003	2017 F	34/44	4.78	5.00	4.30

TIMG 5101	2017 S	28/39	4.79	5.00	4.30
TIMG 5005	2017 W	41/53	4.61	5.00	4.27
TIMG 5003	2016 F	29/47	4.89	5.00	4.27
TIMG 5101	2016 S	12/20	4.61	5.00	4.27
TIMG 5003	2016 W	25/50	4.54	5.00	4.25
TIMG 5005	2016 W	22/51	4.72	5.00	4.25
TIMG 5101	2015 S	20/30	4.70	5.00	4.25
TIMG 5003	2015 W	22/34	4.37	5.00	4.29
TIMG 5005	2014 F	17/24	4.59	5.00	4.29
TIMG 5006	2014 F	9/21	4.49	5.00	4.29
TIMG 5101	2014 S	19/27	4.78	5.00	4.29
TIMG 5005	2014 W	28/40	4.58	5.00	4.28
TIMG 5003	2014 W	29/37	4.59	5.00	4.28
TTMG 5103	2013 S	15/23	4.90	5.00	4.28
TTMG 5101	2013 S	18/24	4.90	5.00	4.28
TTMG 5003	2013 W	26/37	4.40	5.00	4.33
TTMG 5005	2012 F	8/16	4.43	5.00	4.33
Average			4.65	--	4.28

Table: Teaching evaluation report, Carleton University (not designated due to COVID-19)

Course	Term/ Year	Respondents/ Enrolment	Questions 1-13		
			Mean Score /5	Median Score /5	Faculty Mean /5
TIMG 5101	2020 S	55/61	4.72	5.00	4.22

Helsinki School of Economics, Department of Marketing and Management

2008 Fall M.Sc. Thesis seminar (23D340)

2008 Spring M.Sc. Thesis seminar (23D340)

2007 Summer M.Sc. Thesis seminar (23D340)

Guest lectures on graduate courses and seminars (Master's & PhD level)

2021 Summer Advanced topics in TIM: Responsible AI & Ethics (TIMG5103),
Guest lecture on "Ethical issues in AI – illustrated", Carleton
University, Technology Innovation Management (May 26)

2016	Fall	Advanced topics in TIM: Cybersecurity (TIMG5103), Guest lecture on "Cybersecurity: technology adoption", Carleton University, Technology Innovation Management (October 20)
2015	Winter	Sprott PhD Research Seminar Series, Guest lecture on "Tips for (future) supervisors: A practical perspective to research", Carleton University, Sprott School of Business (March 6)
2014	Fall	Advanced Topics in TIM: Cybersecurity (TIMG5103), Guest lecture on "Cybersecurity technology adoption", Carleton University, Technology Innovation Management (November 4)
2014	Summer	Advanced topics in TIM: Cybersecurity (TIMG5103), Guest lecture on "Cybersecurity technology adoption and innovation diffusion" (with R. Rajala), Carleton University, Technology Innovation Management (July 9)
2007	Spring	Software business (37E00800), Guest lecture on "Software business models and business networks", Helsinki School of Economics, Information Systems Science
2006	Spring	Software business (37E00800), Guest lecture on "Software business models and business networks", Helsinki School of Economics, Information Systems Science

Undergraduate courses taught

Helsinki School of Economics, Department of Marketing and Management

2007	Fall	Principles of marketing (A23A00110), Co-lecturer
2007	Summer	Principles of marketing (A23A00110), Co-lecturer
2009	Fall	B.Sc. Thesis seminar (23D001)
2009	Spring	B.Sc. Thesis seminar (23D001)
2008	Fall	B.Sc. Thesis seminar (23D001)
2008	Spring	B.Sc. Thesis seminar (23D001)
2007	Fall	B.Sc. Thesis seminar (23D001)
2007	Spring	B.Sc. Thesis seminar (23D001)
2006	Fall	B.Sc. Thesis seminar (23D001)
2006	Spring	B.Sc. Thesis seminar (23D001)
2005	Fall	B.Sc. Thesis seminar (23D001)
2005	Summer	B.Sc. Thesis seminar (23D001)
2002	Fall	Principles of marketing (23A010), Assistant lecturer

Guest lectures on undergraduate courses

2018	Winter	Introduction to sustainable energy (SREE1000, BEng) guest lecture on "Sustainability and Green Innovation?", Carleton University, Dept. of Mechanical and Aerospace Engineering, Sustainable and Renewable Energy Engineering (March 26)
2017	Winter	Introduction to sustainable energy (SREE1000, BEng) guest lecture on "Sustainability and Green Innovation?", Carleton University, Dept. of Mechanical and Aerospace Engineering, Sustainable and Renewable Energy Engineering (January 31)

2016	Winter	Introduction to sustainable energy (SREE1000, BEng) guest lecture on "Sustainability and Green Innovation?", Carleton University, Dept. of Mechanical and Aerospace Engineering, Sustainable and Renewable Energy Engineering (February 9)
2015	Fall	Industrial Design Seminar (IDES4001, BID) guest lecture on "Living labs – Do we need them?", Carleton University, School of Industrial Design, Faculty of Engineering and Design (October 8)
2015	Winter	Introduction to sustainable energy (SREE1000, BEng) guest lecture on "Sustainability and Green Innovation?", Carleton University, Dept. of Mechanical and Aerospace Engineering, Sustainable and Renewable Energy Engineering (February 3)
2014	Winter	Introduction to sustainable energy (SREE1000, BEng) guest lecture on "Sustainability – Driving Innovation?", Carleton University, Dept. of Mechanical and Aerospace Engineering, Sustainable and Renewable Energy Engineering (February 3)

SUPERVISIONS

Doctoral research

Carleton University, Sprott School of Business

2019– Doctor of Philosophy in Management (PhD): 1 in progress (Arushi Sharma)

Aalto University, School of Science

2013– Doctor of Science in Technology (D.Sc. Tech): 1 completed (Puneet Kaur in 2016) (as co-supervisor with Prof. Risto Rajala), 1 in progress (Derek Smith) (as co-supervisor with Prof. Risto Rajala)

Aalto University, School of Business

2011–2015 Doctor of Science in Economics (D.Sc. Econ): 1 completed (Tommi Lampikoski) (as co-supervisor with Prof. Kristian Möller)

Master's theses and projects

Carleton University, Technology Innovation Management

2012– Master of Applied Science (MASc) theses: 9 completed, 2 in progress

Selected examples:

- Smith, D. (2014). A New Methodology for Citation Dependent Patent Evaluations. *Awarded the Senate Medal for Excellence in 2014.*

2012– Master of Engineering (M.Eng.), Master of Entrepreneurship (M.Ent.) and Master of Applied Business Analytics (MABA) projects: 130 completed, 2 in progress

Selected examples:

- Mohalik, Saswat (2018). Adoption to work from home in Public sector. *Ranked Top 5% projects in the program. Co-recipient of the 1st TIM Impact Award (out of 22 completed projects in W2018); results presented in the ISPIM Ottawa 2019 conference.*
- Solano, Jenniffer (2016). Creating a Marketing plan for the Technology Innovation Management (TIM) Review. *Ranked Top 5% projects in the program. Results published as a refereed conference paper in the ISPIM Innovation Forum 2017 conference.*
- Kannangara, N. (2013). Risk management in Crowdsourcing Based Business Ecosystems. *Published results as an article with a fellow student in the Technology Innovation Management Review, December 2013.*
- Uguzzioni, P. (2013). Business Model Discovery: an Online Service for Indoor Fitness Training CycLoggia. *Presented business opportunity to Lead to Win evaluation panel; received "green" and initiated a new venture.*
- Heidari, E. (2012). Crowdsourcing. *Published results as an article with two fellow students in the Technology Innovation Management Review, October 2012.*

Carleton University, School of Industrial Design

2013– Master of Design (M.Des.) theses: 1 completed (as co-supervisor with Prof. Bjarki Hallgrímsson, 2013-2015), 1 in progress (as co-supervisor with Prof. Tim Haats, 2021-)

Helsinki School of Economics, Dept. of Marketing and Management

2007–2009 Master of Science in Economics (M.Sc. Econ) theses: over 30 completed (as supervisor or co-supervisor)

Selected examples:

- Multanen, A. (2009). Corporate social responsibility in the retail business model. *Ranked Top 5% theses at the department. Awarded the Best Master's Thesis in Strategy award (national competition organized by the Finnish Strategic Management Society in 2010).*
- Tukiainen, H. (2009). Values of members in a virtual travel community. *Ranked Top 5% theses at the department.*
- Sainio, S. (2009). Management of innovation networks. *Ranked Top 5% theses at the department.*
- Virtamo, S. (2008). Consumer responses to out-of-stock situations in grocery stores. *Ranked Top 5% theses at the department.*
- Mäenpää, M. (2008). The formation process of virtual communities: the perspective of member's motivational factors. *Ranked Top 5% theses at the department.*
- Huttunen, H. (2008). Improving the transition from special care to primary care with demand management and incentives – Case Vantaa city. *Nominated for the Best Master's Thesis on Municipal*

Development award (national competition organized by the Association of Finnish Local and Regional Authorities in 2009).

- Pasanen, M. (2007). The role of product involvement in advertising of mobile phones. *Ranked Top 5% theses at the department.*

Bachelor's theses

Helsinki School of Economics, Dept. of Marketing and Management

2005–2009 Bachelor of Science in Economics (B.Sc. Econ) theses: over 90 completed

Other

Carleton University

2020 Directed studies in Sprott School of Business, Information Systems (PhD in Management): 1 completed

2013– Directed studies in Technology Innovation Management program (M.Eng.) (TIMG5104): 8 completed

ADMINISTRATIVE RESPONSIBILITIES

Thesis and project examination committees

Doctoral research

2021 Member of Arushi Sharma's (PhD student in Management, Information Systems) comprehensive examination committee, Carleton University, Sprott School of Business

2020 Member of Rawan Alkurd's PhD thesis examination committee (PhD in Electrical and Computer Engineering (final thesis), Carleton University, Dept, of Systems and Computer Engineering

2020 Member of Ali Nazari's (PhD student in Management, Information Systems) comprehensive examination committee, Carleton University, Sprott School of Business

2018 Member of Hossein Kavand's PhD thesis examination committee (PhD in Economics) (final thesis), Carleton University, Dept. of Economics

2018 Pre-examiner of Lotta Haukipuro's doctoral thesis (D.Sc. in Economics and Business Administration), Oulu Business School, University of Oulu

2017 Pre-examiner of Marko T. Heikkinen's doctoral thesis (D.Sc. in Economics and Business Administration), Oulu Business School, University of Oulu

2014 Pre-examiner of Helena Rusanen's doctoral thesis (D.Sc. in Economics and Business Administration), Turku School of Economics, University of Turku

- 2012–2013 Member of David Hudson's PhD thesis examination committee (PhD in Management) (thesis proposal and final thesis), Carleton University, Sprott School of Business (Note: Hudson received Senate Medal for Outstanding Academic Achievement in 2013)
- 2012 Member of Elias J. Collette's PhD thesis examination committee (PhD in Economics) (final thesis), Carleton University, Dept. of Economics

Master's research

- 2015 Member of Master of Design (MDes) thesis examination committees, Carleton University, School of Industrial Design: 1 completed (as Co-supervisor)
- 2012– Member of Master of Applied Science (MASc) thesis examination committees, Carleton University, Technology Innovation Management: 36 completed (26 as Chair or Internal, 10 as Supervisor)
- 2012– Second reader of Master of Engineering (MEng), Master of Entrepreneurship (MEnt) and Master of Applied Business Analytics (MABA) projects, Carleton University, Technology Innovation Management: 36 completed
- 2003–2009 Second reader of Master of Science in Economics (MSc. Econ) theses, Helsinki School of Economics, Dept. of Marketing and Management: over 40 completed

Departmental or University level committees

- 2022-present Member of the Sprott Shadow School of Entrepreneurship
- 2021 Member of the Sprott Faculty Cluster II Tenure and Promotion Committee (CTPC), Carleton University
- 2019 Member of the SSHRC Explore Development Grants Review Committee, Carleton University
- 2018 Member of the SSHRC Explore Development Grants Review Committee, Carleton University
- 2018 Chair of the TIM Admission Committee for the Fall 2018 term
- 2017 Member of the TIM Office Help recruitment and interview panel, Carleton University
- 2017 Chair of the Faculty hiring committee, Entrepreneurship, Carleton University
- 2016-2017 Member of the Sprott Faculty Cluster II Tenure and Promotion Committee (CTPC), Carleton University
- 2016 Chair of the TIM Admission Committee for the Winter 2017 term
- 2016 Member of the Instructor hiring committee, Entrepreneurship, Carleton University
- 2015-2016 Member of the plenary hiring committee, International Business, Carleton University

2015-2016	Member of the Sprott Faculty Tenure and Promotion Committee (FTPC), Carleton University
2015	Chair of the TIM Admission Committee for the Fall 2015 term
2014	Member of the TIM Administrator recruitment and interview panel, Carleton University
2013–2014	Member of the plenary hiring committee, Global Entrepreneurship, Carleton University
2013	Member of the Sprott Entrepreneurship committee, Carleton University
2012– present	Member of the Sprott MSc/PhD committee, Carleton University
2012– present	Member of the Sprott Research committee, Carleton University
2012–2019	Member of the Technology Innovation Management (TIM) council / ITEC / TIM steering committee, Carleton University

Entrepreneurial committees

2022	Judge (Project competition), 5201 Make a Difference Projects
2021	Judge (Opportunity competition), Cross-border for Local Value (CBLV)
2020	Judge (AI Opportunity), AI for Local Value Competition (SERS)
2014–2016	Member of the Global Start Program council
2013–2016	Member of the Venus Cybersecurity Corporation council
2013–2014	Judge, Nicol Entrepreneurial Awards Competition (Carleton finals 2013 & 2014)
2013–	Member of the Lead to Win Administrative council (LTW Business Development Program)
2012–2014	Member of the Carleton Entrepreneurs Opportunity Review Board
2012–2017	Member of the Lead to Win (LTW) Business Opportunity Review Board

LANGUAGE PROFICIENCY

Finnish	Native level	(read/write/speak)
English	Full proficiency	(read/write/speak)
German	Limited proficiency	(read/write/speak)
Swedish	Limited proficiency	(read/write/speak)
Japanese	Elementary level	(speak)

CURRICULUM VITAE

William Glen Willmore

Professor of Biochemistry
Departments of Biology and Chemistry
Carleton University, Ottawa, Ontario, Canada

- ADDRESS:** Institute of Biochemistry
Departments of Biology and Chemistry
Carleton University
1125 Colonel By Drive
Ottawa, Ontario
Canada
K1S 5B6
- TELEPHONE:** Office: 218B Nesbitt Building (613) 520-2600 ext. 1211
Lab: 226 Nesbitt Building (613) 520-2600 ext. 1220
Fax: (613) 520-3539
Cell: (613) 255-0993
- EMAIL:** Office: Bill_Willmore@carleton.ca
Home: williamwillmore@gmail.com
- WEBPAGE:** www.carleton.ca/willmorelab
- EDUCATION:** B.Sc. (Honours With Distinction) Marine Biology
University of Guelph, 1992
- Ph.D. Biochemistry
Carleton University, 1997
Supervisor: Dr. Kenneth B. Storey
- POSITIONS:** Postdoctoral Researcher
Department of Medicine
Division of Hematology
Harvard Medical School, 1997-2001
Supervisor: Dr. H. Franklin Bunn
- Assistant Professor
Institute of Biochemistry
Departments of Biology and Chemistry
Carleton University, 2002-2005
- Associate Professor
Institute of Biochemistry
Departments of Biology and Chemistry
Carleton University, 2005-2017
- Director
Institute of Biochemistry
Carleton University, 2010-2013
- Full Professor
Institute of Biochemistry
Departments of Biology and Chemistry
Carleton University, 2017-present
- Director
Institute of Biochemistry
Carleton University, 2016-2019

MEMBERSHIP

- 1) Affiliated Faculty, Department of Neuroscience, Faculty of Science, Carleton University
- 2) Associate Investigator, Ottawa Institute of Systems Biology, University of Ottawa

AWARDS

- 1) Carleton University Research Achievement Award, 2016
- 2) Carleton University Faculty Graduate Mentoring Award, 2011

SCHOLARSHIPS, FELLOWSHIPS, AND GRANTS (See Appendix 1)

ACTIVITIES / CONTRIBUTIONS

PROFESSIONAL SOCIETIES

- 1) Canadian Institutes of Health Research (CIHR) College of Reviewers (2017)
- 2) Canadian Society of Molecular Biosciences (CSMB)
- 3) Canadian Society of Zoologists; Comparative Physiology & Biochemistry (CSZ)
- 4) Canadian Association of University Teachers (CAUT)
- 5) Canadian Oxidative Stress Consortium (COSC)
- 6) Society for Free Radical Biology and Medicine (SFRBM)
- 7) Society for Free Radical Research International (SFRRRI)

PEER REVIEW

Peer reviewer for:

- 1) Natural Sciences and Engineering Research Council (NSERC), Grant Reviewer, Committee 1501: Genes, Cells and Molecules (Z-N-1501), Evaluation Group Reviewer, 2018-2020.
- 2) Canadian Institutes of Health Research (CIHR), Grant Reviewer, Project Grant Competition, 1st Live Pilot, 2016; Stage 1 and Stage 2 (Final Assessment Stage)
- 3) Ministry of Research and Innovation of Ontario (MRI), Panel Member, Early Researcher Award, Life Sciences Basic Medical Science and Model, Round 6, 2010, Round 7, 2011
- 4) Natural Sciences and Engineering Research Council (NSERC), Grant Reviewer, Committee 1501: Genes, Cells and Molecules, 2003, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017
- 5) Canadian Institutes of Health Research (CIHR), Grant Reviewer, Biological and Clinical Aspects of Aging, 2007
- 5) The Wellcome Trust, Grant Reviewer, Intermediate Fellowships, 2007; Project Grant, 2008
- 7) Peer Reviewer for the following journals
 - International Journal of Biochemistry and Cell Biology, Richard G. Pestell, North and South American Editor
 - Environmental and Molecular Mutagenesis, Iain B. Lambert, Editor-In-Chief
 - Process Biochemistry, Joseph Boudrant, Editor
 - Cancer Letters, Manfred Schwab, Editor-In-Chief
 - Molecular and Cellular Biochemistry, Naranjan S. Dhalla, Editor
 - Toxicology Letters, Wolfgang Decant, Editor
 - Free Radical Biology and Medicine, Kelvin J.A. Davies, Editor-In-Chief
 - Comparative Biochemistry and Physiology, T.P. Mommsen and P.J. Walsh, Editors
 - Journal of Experimental Biology, H. Hoppeler, Editor-In-Chief
 - FEBS Journal, Rolf Apweiler, Editor
 - Biochimie, Richard H. Buckingham, Editor
 - Scandinavian Journal of Immunology, R. Jonsson and H.-G. Ljunggren, Editors
 - Marine Ecology Progress Series, John M. Lawrence, Editor
 - Marine Biotechnology, Francesco Pietra, Editor
 - Mycological Research, Mark Ramsdale, Editor
 - Journal of Experimental Biology, Steve Perry, Editor
 - BMC Neuroscience, Penelope Webb, Biology Editor
 - Process Biochemistry, Joseph Boudrant, Editor
 - Public Library of Science ONE (PLoS ONE), M. Hermes-Lima, Academic Editor

CARLETON COURSES TAUGHT

- 1) BIOC 3006 Practical Biochemistry
- 2) BIOC 3101 General Biochemistry I
- 3) BIOC 3102 General Biochemistry II
- 4) BIOC 4901 Selected Topics in Biochemistry
- 5) BIOC 4907 Honours Essay and Research Proposal
- 6) BIOC 4908 Research Project
- 7) BIOL 4901 Directed Special Studies
- 8) BIOL 4907 Honours Essay and Research Proposal
- 9) BIOL 4908 Honours Research Thesis
- 10) BIOL 8361/6304 Advance Topics in Animal Physiology (Guest Lecturer)
- 11) BIOL 5502/CHEM 5900 Methods in Proteomics
- 12) CHEM 4908 Research Project and Seminar
- 13) CHEM 5304 (CHM 8349) Free Radicals in Chemistry and Biology
- 14) BIOL 5502 S/BIO 8102 i1/LABMP 553 Advanced Environmental Toxicology Principles of Chemical Hazard Identification and Risk Assessment (part of the NSERC-CREATE-REACT program with Dr. Laurie Chan, Biology, University of Ottawa, as the Principle Investigator)

ADMINISTRATIVE ACTIVITIES

- 1) Search committee for one Faculty position, Chemistry (Toxicology), Carleton University, 2020
- 2) Search committee for one Instructor I position, Biochemistry, Carleton University, 2019-2020
- 3) Search committee for one Faculty/Chair position, Health Sciences, Carleton University, 2017
- 4) Biohazards Safety Committee, Carleton University, 2013-present
- 5) Chair, search committee for one Faculty position, Biochemistry, Carleton University, 2015
- 6) Chair, search committee for one Faculty position, Biology, Health Science, Carleton University, 2013
- 7) Director, Institute of Biochemistry, Carleton University, 2010-2013.
- 8) Ontario Graduate Scholarship, Selection Committee, Chemistry, Ontario Level, 2009.
- 9) Tenure and Promotion Committee, Chair, Chemistry, Carleton University, 2006.
- 10) Coordinator for the Ottawa-Carleton Chemistry and Environmental Toxicology (OCCET) Graduate Program, 2006-2008.
- 11) Search committee for two Faculty positions, Biology, University of Ottawa, 2006.
- 12) Search committee for one Faculty position, Biology, Carleton University, 2005.
- 13) Search committee for new Instructor position, Biochemistry, Carleton University, 2004.
- 14) NSERC and OGS Scholarship Selection Committee, Biology, 2004, 2005, 2006, 2007.
- 15) Associate Coordinator for the Ottawa-Carleton Chemistry and Environmental Toxicology (OCCET) Graduate Program, 2004-2006.
- 16) Biology Curriculum Committee, 2004.
- 17) Biology Seminar Series Coordinator 2003-2004 (invited speakers include Natalie Goto (University of Ottawa), Cristofre Martin (University of Ottawa), Martin Holcik (University of Ottawa), Ahmed El-Sohemy (University of Toronto), Thomas Berleth (University of Toronto) and Balu Chakravarthy (NRC)).
- 18) Biology Graduate Selection Committee, 2003, 2004, 2005, 2006, 2007.
- 19) VITESSE Bridging Program in Biotechnology (NRC), Carleton Academic Advisor, 2003.
- 20) Search committee for new Faculty position, Biochemistry/Biology, 2003.
- 21) CFI Innovations Fund, Grant Assessment Committee, 2003.

COMMUNITY SERVICE AND YOUTH OUTREACH

- 1) Supervisor for Colonel By High School student, **Amit Scheer**, First Place Award in the Sanofi BioGENius Challenge, Google Science Fair 2013 Regional Finalist, First Place in the Ottawa Regional Science Fair, Team Canada at Intel International Science and Engineering Fair (ISEF) (Pittsburg), Daytime Ottawa, CBC News Ottawa, CTV News Ottawa, 2013-2014
- 2) Supervisor for Glebe Collegiate High School Co-operative student, **Amelia Ng**, 2006
- 3) Poster Judge. Ottawa Regional Science Fair, 2004, 2007, 2015; Canada Wide Science Fair, 2008
- 4) Supervisor for Colonel By High School student, **Bhavya Mohan**, First Place in Ottawa Regional Science Fair (2019), **Gold Medal Winner** and First Place in Canada-Wide Science Fair 2019 (Fredericton), Best Project Award at National Science Fair (2019), Team Canada at EU Contest for Young Scientists (EUCYS) (2019) in Sofia, Bulgaria, selected for Team Canada at Intel International Science and Engineering Fair (ISEF) (cancelled due to COVID-19) (2020)
- 5) Supervisor for Brockville Collegiate Institute student, **Prutha Patel**, 2019

GRADUATE COMMITTEE MEMBERSHIP

I have served, to date, on numerous graduate student committees that span 6 Departments at Carleton University (Departments of Biology, Chemistry and Neuroscience) and the University of Ottawa (Departments of Biology, Chemistry and Biochemistry, Microbiology & Immunology (BMI)). These include students at Health Canada, Environment Canada and the Canadian Food Inspection Agency.

UNDERGRADUATE RESEARCH PROJECTS (See also TRAINING OF HQP, Appendix 2)

I have supervised and co-supervised numerous undergraduate student's research thesis projects in Biochemistry and Biology (BIOC/BIOL 4908) during my time at Carleton. I have also supervised numerous students who received NSERC Undergraduate Student Research Awards (USRA), Walker Awards (Department of Chemistry and Institute of Biochemistry, Carleton) and Dean's Summer Research Internships (for first year students in Science at Carleton).

PUBLICATIONS (Supervised or Co-Supervised Trainees In Bold)

REFEREED PAPERS PUBLISHED OR ACCEPTED

- 1) Florian M, Li B, Patry D, Truong J, Caldwell D, Coughlan MC, Woodworth R, Yan J, Chen Q, Petrov I, **Mahemuti L**, Lalande M, Li N, Chan LHM, Willmore WG, Jin X. 2022. Interplay of obesity, ethanol, and contaminant mixture on clinical profiles of cardiovascular and metabolic diseases: Evidence from an animal study. *Cardiovascular Toxicology* Apr 16. doi: 10.1007/s12012-022-09738-6. Epub ahead of print. PMID: 35429258.
- 2) Hoekstra M, **Chopra A**, Willmore WG, Biggar KK. 2022. Evaluation of Jumonji C lysine demethylase substrate preference to guide identification of in vitro substrates. *STAR Protocols* 3(2): 101271.
- 3) **Reid CH**, Patrick PH, Rytwinski T, Taylor JJ, Willmore WG, Reesor B, Cooke SJ. An updated review of cold shock and cold stress in fish. *J Fish Biol.* 2022 Mar 14. doi: 10.1111/jfb.15037. Epub ahead of print. PMID: 35285021.
- 4) Ahmed D, Humphrey A, Roy D, Sheridan ME, Versey Z, Jaworski A, Edwards A, **Donner J**, Abizaid A, Willmore W, Kumar A, Golshani A, Cassol E. 2021. HIF-1 α Regulation of cytokine production following TLR3 engagement in murine bone marrow derived macrophages is dependent on viral nucleic acid length and glucose availability. *Journal of Immunology* 207(11): 2813-2827.
- 5) Earnest KG, McConnell EM, **Hassan EM**, Wunderlich M, Hosseinpour B, Bono BS, Chee MJ, Mulloy JC, Willmore WG, DeRosa MC, Merino EJ. 2021. Development and characterization of a DNA aptamer for MLL-AF9 expressing acute myeloid leukemia cells using whole cell-SELEX. *Scientific reports*, 11(1), 19174.
- 6) **Mohamed R, Kennedy C**, Willmore WG. 2021. Responses of Porcupine and Wntless proteins to oxidative, hypoxic and endoplasmic reticulum stresses. *Cellular Signalling* 85: 110047.
- 7) **Alqarni SA**, Willmore WG, Albert J, Smelser CW. 2021. Self-monitored and optically powered fiber-optic device for localized hyperthermia and controlled cell death *in vitro*. *Applied Optics* 60(8): 2400-2411.
- 8) **Walters ME**, Willmore WG, Tsopmo A. 2020. Antioxidant, physicochemical, and cellular secretion of glucagon-like peptide-1 properties of oat bran protein hydrolysates. *Antioxidants (Basel)* 9(6): 557.
- 9) **Chopra A**, Cho WC, Willmore WG \dagger , Biggar KK \dagger . 2020. Hypoxia-inducible lysine methyltransferases: G9a and GLP hypoxic regulation, non-histone substrate modification, and pathological relevance. *Frontiers in Genetics* 11: 579636. \dagger contributed equally to this publication.
- 10) **Nguyen KC**, Zhang Y, Todd J, Kittle K, Lalande M, Smith S, Parks D, Navarro M, Tayabali AF, Willmore WG. 2020. Hepatotoxicity of cadmium telluride quantum dots induced by mitochondrial dysfunction. *Chemical Research in Toxicology* 33(9): 2286-2297.
- 11) Loyez M, **Hassan EM**, Lobry M, Liu F, Caucheteur C, Wattiez R, DeRosa MC, Willmore WG, Albert J. 2020. Rapid detection of circulating breast cancer cells using a multiresonant optical fiber aptasensor with plasmonic amplification. *ACS Sensors* 5(2): 454-463.
- 12) **Chopra A**, Adhikary H, Willmore WG \dagger , Biggar KK \dagger . 2020. Insights into the function and regulation of Jumonji C lysine demethylases as hypoxic responsive enzymes. *Current Protein and Peptide Science.* 20(27): 642-654. \dagger contributed equally to this publication.
- 13) **Chopra A**, Willmore WG \dagger , Biggar KK \dagger . 2019. Protein quantification and visualization via ultraviolet-dependent labeling with 2,2,2-trichloroethanol. *Scientific Reports* 9(1): 13923. \dagger contributed equally to this publication.

- 14) **Koppert J**, Jean-Ruel H, O'Neill D, Harder C, Willmore W, Ianoul A, Albert J. 2019. Self-heating tilted fiber Bragg grating device for melt curve analysis of solid-phase DNA hybridization and thermal cycling. *Analytical and Bioanalytical Chemistry* 411(26): 6813-6823.
- 15) **Nguyen KC**, Zhang Y, Todd J, Kittle K, Patry D, Caldwell D, Lalande M, Smith S, Parks D, Navarro M, Massarsky A, Moon TW, Willmore WG, Tayabali AF. 2019. Biodistribution and systemic effects in mice following intravenous administration of cadmium telluride quantum dot nanoparticles. *Chemical Research in Toxicology* 32(8): 1491-1503.
- 16) **Esfandi R**, Willmore WG, Tsopmo A. 2019. Antioxidant and anti-apoptotic properties of oat bran protein hydrolysates in stressed hepatic cells. *Foods*. 8(5): E160.
- 17) **Birnie-Gauvin K**, Flávio H, Kristensen ML, Walton-Rabideau S, Cooke SJ, Willmore WG, Koed A, Aarestrup K. 2019. Cortisol predicts migration timing and success in both Atlantic salmon and sea trout kelts. *Scientific Reports* 9(1): 2422.
- 18) **Esfandi R**, Willmore WG, Tsopmo A. 2019. Peptidomic analysis of hydrolyzed oat bran proteins, and their *in vitro* antioxidant and metal chelating properties. *Food Chemistry* 279: 49-57.
- 19) Ahmed D, Jaworski A, Roy D, Willmore W, Golshani A, Cassol E. 2018. Transcriptional profiling suggests extensive metabolic rewiring of human and mouse macrophages during early interferon alpha responses. *Mediators of Inflammation* 5906819.
- 20) Moteshareie H, Hajikarimlou M, Mulet Indrayanti A, Burnside D, Paula Dias A, Lettl C, Ahmed D, Omid K, Kazmirchuk T, Puchacz N, Zare N, Takallou S, Naing T, Hernández RB, Willmore WG, Babu M, McKay B, Samanfar B, Holcik M, Golshani A. 2018. Heavy metal sensitivities of gene deletion strains for ITT1 and RPS1A connect their activities to the expression of URE2, a key gene involved in metal detoxification in yeast. *PLoS One* 13(9): e0198704.
- 21) **Jadavji NM**, Emmerson JT, Shanmugalingam U, MacFarlane AJ, Willmore WG, Smith PD. 2018. A genetic deficiency in folic acid metabolism impairs recovery after ischemic stroke. *Experimental Neurology* 309: 14-22.
- 22) **Cameron SJ**, Hosseinian F, Willmore WG. 2018. A current overview of the biological and cellular effects of nanosilver. *International Journal of Molecular Sciences* 19(7) pii: E2030.
- 23) **Strobel A**, Willmore WG, Sonne C, Dietz R, Letcher RJ. 2018. Organophosphate esters in East Greenland polar bears and ringed seals: Adipose tissue concentrations and *in vitro* depletion and metabolite formation. *Chemosphere* 196: 240-250.
- 24) **Hill KL**, Hamers T, Kamstra JH, Willmore WG, Letcher RJ. 2018. Organophosphate triesters and selected metabolites enhance binding of thyroxine to human transthyretin *in vitro*. *Toxicology Letters* 285: 87-93.
- 25) **Hill KL**, Mortensen ÅK, Teclechiel D, Willmore WG, Sylte I, Jenssen BM, Letcher RJ. *In vitro* and *in silico* competitive binding of brominated polyphenyl ether contaminants with human and gull thyroid hormone transport proteins. *Environmental Science and Technology* 52(3): 1533-1541.
- 26) **Mahemuti L**, Chen Q, Coughlan MC, Qiao C, **Chepelev NL**, **Florian M**, Dong D, **Woodworth RG**, Yan J, Cao XL, Scoggan KA, Jin X, Willmore WG. 2018. Bisphenol A induces DSB-ATM-p53 signaling leading to cell cycle arrest, senescence, autophagy, stress response, and estrogen release in human fetal lung fibroblasts. *Archives of Toxicology* 92(4): 1453-1469.
- 27) **Hill KL**, Hamers T, Kamstra JH, Willmore WG, Letcher RJ. 2017. Optimization of an *in vitro* assay methodology for competitive binding of thyroidogenic xenobiotics with thyroxine on human transthyretin and albumin. *MethodsX* 4: 404-412.
- 28) **Hassan EM**, Willmore WG, McKay BC, DeRosa MC. 2017. *In vitro* selections of mammaglobin A and mammaglobin B aptamers for the recognition of circulating breast tumor cells. *Scientific Reports* 7(1): 14487.
- 29) **Birnie-Gauvin K**, Larsen MH, Aarestrup K, Willmore WG, Cooke SJ. 2018. N-acetylcysteine manipulation fails to elicit an increase in glutathione in a teleost model. *Fish Physiology and Biochemistry* 44(1): 137-142.
- 310) **Jadavji NM**, Emmerson JT, MacFarlane AJ, Willmore WG, Smith PD. 2017. B-vitamin and choline supplementation increases neuroplasticity and recovery after stroke. *Neurobiology of Disease* 103: 89-100.
- 31) **Elmer LK**, O'Connor CM, Philipp DP, Van Der Kraak G, Gilmour KM, Willmore WG, Barthel BL, Cooke SJ. 2017. Oxidative ecology of paternal care in wild smallmouth bass, *Micropterus dolomieu*. *Journal of Experimental Biology* 220(Pt 10): 1905-1914.
- 32) **Birnie-Gauvin K**, Peiman KS, Larsen MH, Aarestrup K, Willmore WG, Cooke SJ. 2017. Short-term and long-term effects of transient exogenous cortisol manipulation on oxidative stress in juvenile brown trout. *Journal of Experimental Biology* 220(Pt 9): 1693-1700.

- 33) **Du Y, Esfandi R**, Willmore WG, Tsopmo A. 2016. Antioxidant activity of oat proteins derived peptides in stressed hepatic HepG2 cells. *Antioxidants (Basel, Switzerland)*. 5(4): pii: E39.
- 34) **Mahemuti L**, Chen Q, Coughlan MC, Zhang M, **Florian M, Mailloux RJ**, Cao XL, Scoggan KA, Willmore WG, Jin X. 2016. Bisphenol A exposure alters release of immune and developmental modulators and expression of estrogen receptors in human fetal lung fibroblasts. *Journal of Environmental Science (China)*. 48: 11-23.
- 35) **Hassan EM**, Willmore WG, DeRosa MC. 2016. Aptamers: promising tools for the detection of circulating tumor cells. *Nucleic Acid Therapeutics* 26(6): 335-347.
- 36) Zolderdo AJ, Algera DA, Lawrence MJ, Gilmour KM, Fast MD, **Thuswaldner J**, Willmore WG, Cooke SJ. 2016. Stress, nutrition and parental care in a teleost fish: exploring mechanisms with supplemental feeding and cortisol manipulation. *Journal of Experimental Biology* 219(Pt 8): 1237-1248.
- 37) Canez CR, Shields SW, **Bugno M**, Wasslen KV, Weinert HP, Willmore WG, Manthorpe JM, Smith JC. 2016. Trimethylation enhancement using (13)C-diazomethane ((13)C-TrEnDi): increased sensitivity and selectivity of phosphatidylethanolamine, phosphatidylcholine, and phosphatidylserine lipids derived from complex biological samples. *Analytical Chemistry* 88(14): 6996-7004.
- 38) **Taylor JJ**, Sopinka NM, Wilson SM, Hinch SG, Patterson DA, Cooke SJ, Willmore WG. 2016. Examining the relationships between egg cortisol and oxidative stress in developing wild sockeye salmon (*Oncorhynchus nerka*). *Comparative Biochemistry and Physiology, Part A: Molecular and Integrative Physiology* 200: 87-93.
- 39) **Bugno M, Daniel M, Chepelev NL**, Willmore WG. 2015. Changing gears in Nrf1 research, from mechanisms of regulation to its role in disease and prevention. *Biochimica et Biophysica Acta (BBA) - Gene Regulatory Mechanisms* 1849: 1260-1276.
- 40) Raby GD, Clark TD, Farrell AP, Patterson DA, Bett NN, **Wilson SM**, Willmore WG, Suski CD, Hinch SG, Cooke SJ. 2015. Facing the river gauntlet: understanding the effects of fisheries capture and water temperature on the physiology of coho salmon. *PLoS One*. 10(4): e0124023.
- 41) **Nguyen KC**, Rippstein P, Tayabali AF, Willmore WG. 2015. Mitochondrial toxicity of cadmium telluride quantum dot nanoparticles in mammalian hepatocytes. *Toxicological Sciences*. 146(1): 31-42.
- 42) **Taylor JJ, Wilson SM**, Sopinka NM, Hinch SG, Patterson DA, Cooke SJ, Willmore WG. 2015. Are there intergenerational and population-specific effects of oxidative stress in sockeye salmon (*Oncorhynchus nerka*)? *Comparative Biochemistry and Physiology A Molecular and Integrative Physiology* 184: 97-104.
- 43) **Mailloux RJ**, Willmore WG. 2014. S-glutathionylation reactions in mitochondrial function and disease. *Frontiers in Cell and Developmental Biology*. 2: 68.
- 44) **Mailloux RJ, Florian M**, Chen Q, Yan J, Petrov I, Coughlan MC, **Laziyan M**, Caldwell D, Lalande M, Patry D, Gagnon C, Sarafin K, Truong J, Chan HM, Ratnayake N, Li N, Willmore WG, Jin X. 2014. Exposure to a Northern contaminant mixture (NCM) alters hepatic energy and lipid metabolism exacerbating hepatic steatosis in obese JCR rats. *PLoS ONE* 9(9): e106832.
- 45) **Wilson SM, Taylor JJ, Mackie TA**, Patterson DA, Cooke SJ, Willmore WG. 2014. Oxidative stress in Pacific salmon (*Oncorhynchus spp.*) during spawning migration. *Physiological and Biochemical Zoology* 87: 346-352.
- 46) Nguyen VM, Martins EG, Robichaud D, Raby GD, Donaldson MR, Lotto AG, Willmore WG, Patterson DA, Farrell AP, Hinch SG, Cooke SJ. 2014. Disentangling the roles of air exposure, gill net injury, and facilitated recovery on the postcapture and release mortality and behavior of adult migratory sockeye salmon (*Oncorhynchus nerka*) in freshwater. *Physiological and Biochemical Zoology* 87: 125-135.
- 47) **Mailloux RJ**, Jin X, Willmore WG. 2013. Redox regulation of mitochondrial function with emphasis on cysteine oxidation reactions. *Redox Biology* 2: 123-139.
- 48) **Nguyen KC**, Willmore WG, Tayabali AF. 2013. Cadmium telluride quantum dots cause oxidative stress leading to extrinsic and intrinsic apoptosis in hepatocellular carcinoma HepG2 cells. *Toxicology* 306: 114-123.
- 49) **Chepelev NL**, Zhang H, Liu H, **McBride S, Seal AJ**, Morgan TE, Finch CE, Willmore WG, Davies KJA, Forman HJ. 2013. Competition of nuclear factor erythroid 2 factors related transcription factor isoforms, Nrf1 and Nrf2, in antioxidant enzyme induction. *Redox Biology* 1: 183-189.
- 50) Samanfar B, Omidi K, Hooshyar M, Laliberte B, Alamgir M, **Seal AJ, Ahmed-Muhsin E**, Veteri DF, Said K, Chalabian F, Wainer G, Burnside D, Shostak K, **Bugno M**, Willmore WG, Smith ML, Golshani A. 2013. Large-scale investigation of oxygen response mutants in *Saccharomyces cerevisiae*. *Molecular Biosystems* 9: 1351-1359.

- 51) Agil R, Gagnet A, **Gliwa J**, Avis TJ, Willmore WG and Hosseinian F. 2013. Lentils enhance probiotic growth in yogurt and provide added benefit of antioxidant protection. *LWT – Food Science and Technology* 50(1): 45-49.
- 52) **Chepelev NL**, **Enikanolaiye MI**, **Chepelev LL**, Chen QX, Scoggan KA, Coughlan MC, Cao XL, Jin X and Willmore WG. 2013. Bisphenol A activates Nrf1/2-antioxidant response element pathway in HEK 293 cells. *Chemical Research in Toxicology* 26: 498-506.
- 53) **Wilson SM**, Gravel M-A., **Mackie TA**, Willmore WG and Cooke SJ. 2012. Oxidative stress associated with parental care in smallmouth bass (*Micropterus dolomieu*). *Comparative Biochemistry and Physiology, Part A* 162: 212-218.
- 54) Raby GD, Donaldson MR, Hinch SG, Patterson DA, Lotto AG, Robichaud D, English KK, Willmore WG, Farrell, Davis MW and Cooke SJ. 2012. Validation of reflex indicators for measuring vitality and predicting the delayed mortality of wild coho salmon bycatch released from fishing gears. *Journal of Applied Ecology* 49(1): 90-98.
- 55) **Chepelev NL**, **Bennitz JD**, **Huang T**, **McBride SL** and Willmore WG. 2011. The Nrf1 CNC-bZip protein is regulated by the proteasome and activated by hypoxia. *PLoS ONE* 6(12): e29167.
- 56) **Gliwa J**, Gunenc A, Ames N, Willmore WG and Hosseinian FS. 2011. Antioxidant activity of alkylresorcinols from rye bran and their protective effects on cell viability of PC-12AC cells. *Journal of Agricultural and Food Chemistry* 59: 11473-11482.
- 57) **Chepelev NL** and Willmore WG. 2010. Regulation of iron pathways in response to hypoxia. *Free Radical Biology & Medicine*. 50(6): 645-666.
- 58) Cao X-L, Corriveau J, Popovic S, Coughlan MC, **Chepelev N**, Willmore W, Schrader T and Jin X. 2010. Background bisphenol A in experimental materials and its implication to low-dose *in vitro* study. *Chemosphere* 81: 817-820.
- 59) Cao X-L, Corriveau J, Popovic S, Coughlan MC, **Chepelev N**, Willmore WG, Schrader T and Jin X. 2010. How low can levels of bisphenol A in *in vitro* low dose studies go: limitations from the background levels of experimental materials. *In vitro toxicological studies of bisphenol A: a preliminary report. Data report to the joint FAO/WHO expert meeting to review toxicological and health aspects of bisphenol A (BPA)*. Toxicology Research Division, Bureau of Chemical Safety, Food Directorate, Health Products and Food Branch, Health Canada.
- 60) Hirota SA, Fines K, Ng J, Traboulsi D, Lee J, Ihara E, Li Y, Willmore WG, Chung D, Scully MM, Louie T, Medicott S, Lejeune M, Chadee K, Armstrong G, Colgan SP, Muruve DA, MacDonald J and Beck PL. 2010. Hypoxia-inducible factor signaling provides protection in *Clostridium difficile*-induced intestinal injury. *Gastroenterology* 139(1): 259-269.
- 61) **Chepelev NL**, **Bennitz JD**, Wright JS, Smith JC, Willmore WG. 2009. Oxidative modification of citrate synthase by peroxy radicals and protection with novel antioxidants. *Journal of Enzyme Inhibition and Medicinal Chemistry* 24(6): 1319-1331.
- 62) **Belew MS***, Quazi FI*, Willmore WG† and Aitken SM†. 2008. Kinetic characterization of recombinant human cystathionine β -synthase purified from *E. coli*. *Protein Expression and Purification* 64: 139-145. *†contributed equally to this publication.
- 63) Harris CS, Mo F, Migahed L, **Chepelev L**, Haddad PS, Wright JS, Willmore WG, Arnason JT and Bennett SAL. 2007. Plant phenolics regulate neoplastic cell growth and survival: a quantitative structure-activity and biochemical analysis. *Canadian Journal of Pharmacology and Physiology* 85: 1124-1138.
- 64) Willmore WG and Storey KB. 2007. Characterization of glutathione reductase from the slider turtle *Trachemys scripta elegans*. *Molecular and Cellular Biochemistry* 297: 139-149.
- 65) **Flueraru M**, Willmore WG, Poulter MO, Durst T, Charron M and Wright JS. 2006. Cytotoxicity and cytoprotective activity of naphthalenediols in rat cortical neurons. *Chemical Research in Toxicology* 19: 1221-1227.
- 66) **Flueraru M**, **Chichirau A**, **Chepelev LL**, Willmore WG, Durst T, Charron M, Barclay LRC and Wright JS. 2005. Cytotoxicity and cytoprotective activity in naphthalenediols depends on their tendency to form naphthoquinones. *Free Radical Biology & Medicine* 39: 1368-1377.
- 67) **Farha MA**, **Niles J** and Willmore WG. 2005. Post-translational modification and protein stabilization of erythroid-specific 5-aminolevulinic synthase under hypoxia. *Biochemistry and Cell Biology* 83: 620-630.
- 68) Willmore WG and Storey KB. 2005. Purification and characterization of glutathione S-transferase from the slider turtle *Trachemys scripta elegans*. *FEBS Journal* 272: 3602-3614.
- 69) **Chichirau A**, **Flueraru M**, **Chepelev LL**, Wright JS, Willmore WG, Durst T, Hussain HH and Charron M. 2005. Mechanism of cytotoxicity of catechols and a naphthalenediol in PC-12AC cells: the

connection between extracellular autoxidation and molecular electronic structure. *Free Radical Biology & Medicine* 38: 344-355.

- 70) **Farha MA** and Willmore WG. 2004. Hypoxic stabilization and proteolytic degradation of erythroid-specific 5-aminolevulinic synthase. *International Congress Series* 1275: 71-78.
- 71) Willmore WG, Cowan KJ and Storey KB. 2001. Effects of anoxia exposure and aerobic recovery on metabolic enzyme activities in the freshwater turtle *Trachemys scripta elegans*. *Canadian Journal of Zoology* 79: 1822-1828.
- 72) Willmore WG, English TE, and Storey KB. 2001. Mitochondrial gene responses to low oxygen stress in turtle organs. *Copeia* 2001: 628-637.
- 73) Horiguchi H, Kayama F, Oguma E, Willmore WG, Hradecky P and Bunn HF. 2000. Cadmium and platinum suppression of erythropoietin production in cell culture: clinical implications. *Blood* 96: 3743-3747.
- 74) Willmore WG, Huang LE, Gu J, Goldberg, MA and Bunn HF. 1999. Inhibition of hypoxia-inducible factor 1 activation by carbon monoxide and nitric oxide. *Journal of Biological Chemistry* 274(13): 9038-9044.
- 75) Willmore WG and Storey KB. 1997. Glutathione systems and anoxia tolerance in turtles. *American Journal of Physiology; Regulatory, Integrative and Comparative Physiology* 273 (42): R219-R225.
- 76) Willmore WG and Storey KB. 1997. Antioxidant systems and anoxia tolerance in a freshwater turtle *Trachemys scripta elegans*. *Molecular and Cellular Biochemistry* 170: 177-185.
- 77) Willmore WG and Storey KB. 1996. Multicatalytic proteinase activity during anoxia and recovery in the slider turtle *Trachemys scripta elegans*. *Biochemistry and Molecular Biology International* 38(3): 445-451.
- 78) Hermes-Lima M, Willmore WG, and Storey KB. 1995. Quantification of lipid hydroperoxides in tissue extracts based on Fe (III) xylenol orange complex formation. *Free Radical Biology & Medicine* 19(3): 271-280.

BOOKS PUBLISHED (Supervised or Co-Supervised Trainees In Bold)

- 1) Garrett RH, Grisham CM, Willmore WG*, Andreopoulos R*, Gallouzi I-E*. *Biochemistry*, First Canadian Edition. 2013. Nelson Education, Toronto.

BOOK CHAPTERS PUBLISHED (Supervised or Co-Supervised Trainees In Bold)

- 1) **Chepelev L, Chepelev N**, Shadnia H, Willmore WG, Wright JS, Dumontier M. 2009. Development of Small Molecule Ligands and Inhibitors. In: *Small Molecules for Protein Targeting*. Hiroyuki Osada (ed). John Wiley & Sons, Inc., Hoboken, NJ.
- 2) Willmore WG. 2004. Control of Transcription in Eukaryotic Cells. In: *Functional Metabolism: Regulation and Adaptation*. Kenneth B. Storey (ed). Wiley-Liss, Inc., Hoboken, NJ.
- 3) Willmore WG. 2004. Translational Controls and Protein Synthesis in Eukaryotic Cells. In: *Functional Metabolism: Regulation and Adaptation*. Kenneth B. Storey (ed). Wiley-Liss, Inc., Hoboken, NJ.

ABSTRACTS IN REFEREED CONFERENCE PROCEEDINGS (Supervised or Co-Supervised Trainees In Bold)

- 1) **Chopra A**, Willmore WG†, Biggar KK†. 2019. Systematic discovery of novel KDM3A substrates: First permutation-based exploration of the substrate specificity of an iron(II)/2-oxoglutarate-dependent dioxygenase. †contributed equally to this poster. *Keystone Symposia, Hypoxia: Molecules, Mechanisms and Disease*, Keystone Resort, Colorado, January 19-23, 2020.
- 2) **Mohamed R, Kennedy C**, Willmore WG. 2019. Responses of Porcupine and Wntless proteins to oxidative, hypoxic and endoplasmic reticulum stresses in HEK293T and HCT116 cell lines. 22nd Annual Chemistry and Biochemistry Graduate Research Conference, Concordia University, Montreal, Quebec. November 15, 2019.
- 3) **Mohamed R, Kennedy C**, Willmore WG. 2017. The role of stressors on the expression and function of Porcupine and Wntless in human colorectal carcinoma cells. *Society for Free Radical Biology and Medicine (SFRBM) 24th Annual Meeting*, Baltimore, Maryland. November 29-December 2, 2017. *Free Radical Biology & Medicine* 112(S1): S96.
- 4) **Cameron S**, Hosseinian F, Willmore WG. 2017. Effects of nanosilver on antioxidant and xenobiotic response pathways in HEK293T cells. *Society for Free Radical Biology and Medicine (SFRBM) 24th Annual Meeting*, Baltimore, Maryland. November 29-December 2, 2017. *Free Radical Biology & Medicine* 112(S1): S20.
- 5) **Nguyen KC**, Tayabali AF, Willmore WG. 2016. Hepatotoxicity of cadmium telluride quantum dot nanoparticles: mitochondrial generated reactive oxygen species as a mechanism. *Society for Free*

- Radical Biology and Medicine (SFRBM) 23rd Annual Meeting, San Francisco, California. November 16-19, 2016. Free Radical Biology & Medicine 100(S1): S43.
- 6) Willmore WG. 2016. Nuclear factor (erythroid-derived 2)-like-1 (NFE2L1): at the crossroads of stress responses. Society for Free Radical Biology and Medicine (SFRBM) 23rd Annual Meeting, San Francisco, California. November 16-19, 2016. Free Radical Biology & Medicine 100(S1): S47.
 - 7) **Daniel M** and Willmore WG. 2015. Oxidative stress and cellular aging in response to polybrominated diphenyl ether flame retardants. Society for Free Radical Biology and Medicine (SFRBM) 22nd Annual Meeting, Boston, Massachusetts, November 18-21, 2015. Free Radical Biology & Medicine 87(S1): S128-S129.
 - 8) **Cameron S, Hovey O**, Hosseinian F, Willmore WG. 2015. Nanosilver effects on detoxification pathways in human embryonic kidney cells. Society for Free Radical Biology and Medicine (SFRBM) 22nd Annual Meeting, Boston, Massachusetts, November 18-21, 2015. Free Radical Biology & Medicine 87(S1): S110.
 - 9) **Bugno M, Mailloux RJ**, Willmore WG. 2014. Modulation of Nrf1 by endoplasmic reticulum stress and the unfolded protein response. Society for Free Radical Biology and Medicine (SFRBM) 20th Annual Meeting, San Antonio, Texas, November 20-24, 2014. Free Radical Biology & Medicine 76(S1): S68.
 - 10) **Mahemuti L**, Chen Q, Coughlan MC, Zhang M, **Florian M, Mailloux RJ**, Cao X-L, Scoggan K, Willmore WG, Jin X. 2014. Bisphenol A (BPA) exposure alters release of immune and developmental modulators and expression of estrogen receptors (ERs) in human fetal lung fibroblasts (HFLF). Society for Free Radical Biology and Medicine (SFRBM) 20th Annual Meeting, San Antonio, Texas, November 20-24, 2014. Free Radical Biology & Medicine 76(S1): S62.
 - 11) **Mailloux RJ**, Fu A, Florian M, Petrov I, Chen Q, Coughlan MC, **Mahemuti L**, Yan J, Caldwell D, Patry D, Lalande M, Willmore WG, Jin X. 2014. Northern contaminants disrupt insulin secretion in rat pancreas and Min6 insulinoma cells. Society for Free Radical Biology and Medicine (SFRBM) 20th Annual Meeting, San Antonio, Texas, November 20-24, 2014. Free Radical Biology & Medicine 76(S1): S112.
 - 12) **Nguyen KC**, Tayabali AF, Willmore WG. 2013. Mitochondrial toxicity of cadmium telluride quantum dot nanoparticles in human hepatocytes. Society for Free Radical Biology and Medicine (SFRBM) 19th Annual Meeting, San Diego, California, November 14-18, 2013. Free Radical Biology & Medicine 65(S2): S149.
 - 13) **Mailloux RJ**, Jin X, Willmore WG. 2013. Redox switches and mitochondria; S-glutathionylation in the control of mitochondrial bioenergetics. Society for Free Radical Biology and Medicine (SFRBM) 19th Annual Meeting, San Diego, California, November 14-18, 2013. Free Radical Biology & Medicine 65(S2): S145.
 - 14) **Mailloux RJ**, Coughlan MC, Gagnon C, **Florian M, Mahemuti L**, Lalande M, Caldwell D, Willmore WG, Ratnayake N, Jin X. 2013. Effects of Northern contaminants and alcohol consumption in the JCR/LA Rat, a model of metabolic and cardiovascular diseases. Society for Free Radical Biology and Medicine (SFRBM) 19th Annual Meeting, San Diego, California, November 14-18, 2013. Free Radical Biology & Medicine 65(S2): S30.
 - 15) **Mailloux RJ, Florian M**, Chen Q, Petrov I, Coughlan MC, **Mahemuti L**, Lalande M, Caldwell D, Li N, Willmore WG, Jin X. 2013. Impact of a Northern contaminant mixture (NCM) on energy metabolism and cholesterol homeostasis in the liver of JCR rats. Society for Free Radical Biology and Medicine (SFRBM) 19th Annual Meeting, San Diego, California, November 14-18, 2013. Free Radical Biology & Medicine 65(S2): S31.
 - 16) Willmore WG. 2012. The Nrf1 CNC-bZIP protein is regulated by the proteasome and activated by hypoxia. Oxygen Radicals, Gordon Research Conference, Ventura Beach Marriott, Ventura, California, February 5-10, 2012.
 - 17) **Chepelev NL, Bennitz JD, Huang T, McBride SL**, Willmore WG. 2011. The Nrf1 CNC-bZip protein is regulated by the proteasome and activated by hypoxia. Nrf1 (NFE2L1) transcription factor is regulated by multiple stimuli through the stability of its inhibitory p65 Nrf1 form. Society for Free Radical Biology and Medicine (SFRBM) 18th Annual Meeting, Atlanta, Georgia, November 18-22, 2011. Free Radical Biology & Medicine 51(S1): S12-S13.
 - 18) Willmore WG, **Chepelev NL, Bennitz JD, Huang T, McBride S**. 2011. Regulation of NFE2L1 CNC-bZIP protein by multiple post-translational modifications. Society for Free Radical Biology and Medicine (SFRBM) 18th Annual Meeting, Atlanta, Georgia, November 18-22, 2011, Free Radical Biology & Medicine 51(S1): S17.
 - 19) **Chepelev NL, Enikanolaiye MI**, Chen QX, Coughlan MC, Scoggan KA, Jin X, Willmore WG. Human antioxidant response element-Nrf1/2 pathway-mediated defense against bisphenol A exposure.

- Society for Free Radical Biology and Medicine (SFRBM) 17th Annual Meeting, Orlando, Florida, November 17-21, 2010. Free Radical Biology & Medicine 49(S1): S127-S128. **won Mini-Fellowship Award (\$2,000 U.S.D.)**
- 20) **Chepelev NL** and Willmore WG. The Nrf1 CNC/bZIP protein is regulated by the proteasome and activated by hypoxia. Society for Free Radical Biology and Medicine (SFRBM) 16th Annual Meeting, San Francisco, California, November 18-22, 2009. Free Radical Biology & Medicine 47(S1): S4. **won Young Investigator Award (\$1,000 U.S.D.)**
 - 21) **Chepelev NL**, and Willmore WG. Regulation of Nrf1 levels and ARE binding activity during hypoxia in COS7 cells. 6th Annual Meeting of the Canadian Oxidative Stress Consortium (COSC), Winnipeg, Manitoba May 7-10, 2009. **(talk) won COSC Travel Award**
 - 22) **Chepelev NL**, Wright JS and Willmore WG. Oxidative modification and inactivation of citrate synthase by peroxyl radicals and protective effects of novel antioxidants. Oxygen Radicals Gordon Research Conference, Ventura, California, February 3-8, 2008.
 - 23) Willmore WG. Hydroxylation as an understudied posttranslational modification of proteins controlling hypoxic responses. 7th International Congress of Comparative Physiology and Biochemistry, Salvador, Bahia, Brazil, August 12-16, 2007. Comparative Biochemistry and Physiology 148A(S1): S61.
 - 24) Willmore WG, **Huang S**, **Robbins J**, Zhu H, and Bunn HF. *In vivo* and *in vitro* studies of Hypoxia-Inducible Factor-1 (HIF-1) dimerization and DNA-binding in response to prooxidant stress. Society for Free Radical Biology and Medicine 13th Annual Meeting, Denver, Colorado, November 15-19, 2006. Free Radical Biology & Medicine 41(S1): S44.
 - 25) **Chepelev NL**, Wright JS and Willmore WG. Oxidative modification and inactivation of citrate synthase by peroxyl radicals and protective effects of novel antioxidants. Society for Free Radical Biology and Medicine (SFRBM) 13th Annual Meeting, Denver, Colorado, November 15-19, 2006. Free Radical Biology & Medicine 41(S1): S133. **won SFRBM Travel Award (\$1,000 U.S.D.)**
 - 26) **Flueraru M**, **Chichirau A**, Shadnia H, **Chepelev LL**, Poulter MO, Willmore WG, Durst T, Charron M, Barclay LRC and Wright JS. Testing naphthalenediols for toxicity and protective effects against oxidative stress in rat cortical neurons. Society for Free Radical Biology and Medicine 12th Annual Meeting, Austin, Texas, November 16-20, 2005. Free Radical Biology & Medicine 39(S1): S12.
 - 27) **Farha MA** and Willmore WG. Post-translational modification and protein stabilization of ALAS2 under hypoxia. Canadian Society of Biochemistry, Molecular & Cellular Biology (CSBMCB) 47th Annual Meeting, Mont Tremblant, Quebec, May 27-30, 2004. Biochemistry and Cell Biology 82(6): 755.
 - 28) Willmore WG and Bunn HF. Protection from mixed function oxidation of pyruvate kinase activity by transition metals. 6th Annual Meeting of the Oxygen Society, New Orleans Marriott, New Orleans, Louisiana, November 18-22, 1999. Free Radical Biology & Medicine 27(S1): 34.
 - 29) Willmore WG, Gorr TA and Bunn HF. Effects of ROS on hypoxia- and cobalt-induced HIF-1 binding and erythropoietin expression in Hep3B. 6th Annual Meeting of the Oxygen Society, New Orleans Marriott, New Orleans, Louisiana, November 18-22, 1999. Free Radical Biology & Medicine 27(S1): 164.
 - 30) Willmore WG and Bunn HF. Role of mitochondria in oxygen sensing. 6th Annual Meeting of the Oxygen Society, New Orleans Marriott, New Orleans, Louisiana, November 18-22, 1999. Free Radical Biology & Medicine 27(S1): 190.

INVITED PRESENTATIONS

- 1) Nuclear factor (erythroid-derived 2)-like-1 (NFE2L1 or Nrf1): at the cross roads of stress responses. Canadian Oxidative Stress Consortium 2018, University of Alberta, Edmonton, Alberta, May 30-June 1, 2018.
- 2) NRF1: The lesser-known player in the antioxidant response. Canadian Oxidative Stress Consortium 2016, University of Guelph, Guelph, Ontario, June 3, 2016.
- 3) NFE2L1 (Nrf1): the lesser-known player in the antioxidant response. Seminar Series, Faculty of Pharmacy and Pharmaceutical Sciences, University of Alberta, Edmonton, April 21, 2016.
- 4) Oxidative stress in Pacific salmon (*Oncorhynchus spp.*) during spawning, migration and capture/release. Plenary Talk. Second International Conference on Oxidative Stress in Aquatic Ecosystems, La Paz, Mexico, November 11-14, 2015.
- 5) Bisphenol A (BPA) activates Nrf1/2-antioxidant response element pathway in HEK 293 cells. Health Canada Science Forum, Ottawa Convention Centre, Ottawa, Ontario. December 4, 2012.
- 6) Nuclear factor-erythroid 2 p45 subunit-related factor 1 (Nrf1) as an understudied factor in the xenobiotic/antioxidant response. Canadian Oxidative Stress Consortium, Lakehead University, Thunder Bay, Ontario. May 12, 2012.

- 7) Regulation of NFE2L1 CNC-bZIP (Nrf1) protein by multiple post-translational modifications. Oxygen Radicals, Gordon Research Conference, Ventura Beach Marriott, Ventura, California, February 9, 2012.
- 8) Adaptive responses to oxidative stress encountered during hypoxia: the role of Nrf1 and the antioxidant response element. National Research Council of Canada, Institute of Biological Sciences, March 9, 2011.
- 9) Environmental stressors as chemical mediators of oxygen toxicity. Explore! Environmental Stressors Symposium, Environmental Health and Research Initiative, Senate Room, Robertson Hall, Carleton University, February 27, 2009.
- 10) Adaptation to hypoxia: control by oxygen-dependent protein modification. Department of Biology, Guest Seminar Series, University of Waterloo, Waterloo, Ontario. November 16, 2007.
- 11) Hydroxylation as an understudied posttranslational modification of proteins controlling hypoxic responses. The 7th International Congress of Comparative Physiology and Biochemistry, Pestana Bahia Hotel, Salvador, Bahia, Brazil. August 14, 2007.
- 12) "Oxygen on the brain": cellular adaptation to low oxygen conditions. Department of Chemistry and Biochemistry, Laurentian University, Sudbury, Ontario. September 21, 2006.
- 13) Oxygen-dependent protein modifications and their role in adaptive responses to low oxygen. Protein Function Discovery Group, Queen's University, Kingston, Ontario. March 31, 2006.
- 14) Adaptive responses to low oxygen. Third International Conference of Comparative Physiology & Biochemistry in Africa: Animals and Environments, Ithala Game Reserve, KwaZulu-Natal, South Africa. August 7-13, 2004
- 15) The oxygen paradox: life at oxygen extremes. Carleton University Spring Conference, Opinicon Lodge, Chaffey's Lock, Ontario. May 1, 2004.
- 16) Adaptive response to oxygen stress: nonspecific and specific modification of protein structure and function by oxygen. The 42nd Annual Meeting of the Canadian Society of Zoologists (CSZ). Comparative Physiology and Biochemistry. Metabolic Plasticity in Animal Adaptations. Wilfrid Laurier University, Kitchener/Waterloo, Ontario. May 10, 2003.
- 17) Adaptive response to oxygen stress: nonspecific and specific modification of protein structure and function by oxygen. Ottawa Carleton Chemistry Institute, Ottawa, Ontario. May 6, 2003.
- 18) Protein regulation by oxygen: a tale of two extremes. Department of Biology, Queen's University. Kingston, Ontario. February 11, 2003.
- 19) Oxygen: a two-edged sword. Oxygen control of Hypoxia-Inducible Factor-1 (HIF-1) structure and function. Department of Biology, University of Ottawa, Ottawa, Ontario. November 21, 2002.
- 20) Oxygen: a two-edged sword. Oxygen regulation of protein structure/function and gene expression. Department of Biochemistry, Microbiology, and Immunology, University of Ottawa, Ottawa, Ontario. October 24, 2002.
- 21) Oxygen: a double-edged sword. Oxygen effects on protein structure and function. National Wildlife Research Council, Hull, Quebec. April 17, 2002.

CONFERENCES/WORKSHOPS ORGANIZED

- 1) National Research Council-Carleton University Biotechnology (NRC-CU) Internship, February 2019, One week internship for 30 Carleton University Biotechnology students at the NRC for training in Biotechnology careers. Events included talks by guest speakers from government and industry, group workshops for students and tours of government and industrial facilities. Student received a certificate of completion at the end of the internship.
- 2) Chair, 8th Meeting of the Canadian Oxidative Stress Consortium, Carleton University, Ottawa, June 11 to 13, 2014. Chaired this national conference which included bringing in sponsors (including the Society of Free Radical Biology and Medicine), inviting in Keynote and Guest speakers and creating the Consortium's website (www.carleton.ca/cosc).
- 3) Faculty champion of Explore! Environmental Stressors Symposium, Environmental Health and Research Initiative, Senate Room, Robertson Hall, Carleton University, February 27, 2009.

Appendix 1
SCHOLARSHIPS, FELLOWSHIPS, AND GRANTS

Name of Scholarship, Fellowship, Grant or Award and Source of Funds	Title	Period Held	Total Grant in CDN (number of years*)
Internal Award - Carleton University ⁽⁷⁾	High Resolution Confocal Microscope Carleton University Leila Mostaço-Guidolin and two others	co-applicant 01/22-01/23	\$ 751,994
NSERC ⁽¹⁾ Research Tools and Instruments (Category 1) Grant (Awarded)	Microfluidics high-resolution 3D-bioprinting for a multidisciplinary team Leila Mostaço-Guidolin and two others	co-applicant 05/21-05/22	\$ 150,000 (1)
Carleton University Multidisciplinary Research Catalyst Fund (MRCF)	Multidisciplinary Tissue Engineering Cluster (M-TEC) Leila Mostaço-Guidolin and three others	co-applicant 05/21-05/22	\$ 40,000 (1)
NSERC ⁽¹⁾ Research Tools and Instruments (Category 1) Grant (Awarded)	Hypoxic workstation to conduct studies in low oxygen environments	05/19-05/20	\$ 67,518 (1)
NSERC ⁽¹⁾ Discovery Grant (Awarded)	Signaling cross-talk between endoplasmic reticulum and oxidative stresses	05/17-05/22	\$ 170,000 (5)
Carleton University Research Achievement Award (Awarded)	Development of a BioSensor for the detection of metastasized and circulating breast cancer cells	05/16-04/17	\$ 15,000 (1)
NSERC ⁽¹⁾ Research Tools and Instruments (Category 1) Grant (Awarded)	400 MHz NMR Magnet Sean Barry and seven others	co-applicant 05/15-05/16	\$ 141,475 (1)
NSERC ⁽¹⁾ CRD Grant (Awarded)	Point-of-care fiber optic multifunction platform Jacques Albert and two others	co-applicant 10/14-10/15	\$ 30,000 (1)
NSERC ⁽¹⁾ CREATE Grant (Awarded)	Research in Environmental, Analytical Chemistry and Toxicology (REACT) Laurie Chan and eight others	co-applicant 05/14-05/21	\$ 1,650,000 (6)
NSERC ⁽¹⁾ ENGAGE Grant (Awarded)	Surface Plasmon Resonance -Tilted Fibre Bragg Grating (SPR-TFBG) fibre optic biosensor to detect metastasized cancer cells in cancer patients	11/13-04/14	\$ 25,000 (1)
NSERC ⁽¹⁾ Discovery Grant (Awarded)	Mitochondrial biogenesis and the decline of hypoxia, oxidative stress and toxin tolerance with age	05/12-05/17	\$ 140,000 (5)
Northern Contaminants Project, Aboriginal Affairs and Northern Development Canada (AANDC) (Awarded)	<i>In vivo</i> study of the effects of a Northern contaminant mixture on the development of metabolic and cardiovascular diseases under conditions typifying the diets and lifestyles of Northerners Xiaolei (Dawn) Jin and four others.	co-applicant 09/09-09/11	\$ 233,709 (2)
NSERC ⁽¹⁾ Strategic Grant; Special Capture Fisheries Competition (Awarded)	Increasing the sustainability of multi-sector Pacific salmon fisheries in coastal rivers of British Columbia. Carleton University Steven J. Cooke and four others	co-applicant 09/08-09/11	\$ 587,600 (3)
Chemicals Management Plan (CMP) Fund for Research on Bisphenol A (Awarded)	Investigation of the genomic and nongenomic mechanisms underlying the "low dose effects" of bisphenol A. CMP Research Network, Health Canada Xiaolei (Dawn) Jin and three others	co-applicant 09/08-09/10	\$ 215,000 (3)
NSERC ⁽¹⁾ Research Tools and Instruments (Category 1) Grant (Awarded)	High-throughput fluorescence HPLC detection of low abundance metabolites and functional groups. Carleton University William Willmore and two others	09/08-09/09	\$ 42,782 (1)
CBCF ⁽³⁾ Research Project Grant (Awarded)	Reducing breast cancer risk factors by molecular engineering: the redesign of hormonal supplements. Carleton University James S. Wright and six others	co-applicant 09/07-09/09	\$ 194,000 (2)
NSERC ⁽¹⁾ Discovery Grant (Awarded)	Role of protein hydroxylation in cellular response to hypoxia Carleton University	05/07-05/12	\$ 165,000 (5)
MRI ⁽⁴⁾ Early Researcher Award (Awarded)	Adaptation to low oxygen in cardiovascular disease. Carleton University	09/07-09/12	\$ 150,000 (5)
NSERC ⁽¹⁾ Research Tools and Instruments (Category 1) Grant (Awarded)	Proteomic equipment for profiling nuclear and organellar proteins. Carleton University William Willmore and five others	09/05-09/06	\$ 30,010 (1)

⁽¹⁾ Natural Science and Engineering Research Council of Canada

⁽²⁾ Canada Foundation for Innovation

⁽³⁾ Canadian Breast Cancer Foundation

⁽⁴⁾ Ministry of Research and Innovation of Ontario

⁽⁵⁾ Canadian Institutes of Health Research

⁽⁶⁾ Ontario Innovation Trust/Ontario Research Fund

⁽⁷⁾ Carleton University

u = unlimited time

Appendix 1 (Continued)
SCHOLARSHIPS, FELLOWSHIPS, AND GRANTS

Name of Scholarship, Fellowship, Grant or Award and Source of Funds	Title	Period Held	Total Grant in CDN (number of years*)
NSERC ⁽¹⁾ Research Tools and Instruments (Category 1) Grant (Awarded)	Core facility for biochemistry and molecular biology. Carleton University Susan Aitken and four others	co-applicant 09/05-09/06	\$ 25,943 (1)
NSERC ⁽¹⁾ Strategic Grant (Awarded) (co-applicant in last year of grant)	Anti-aging effects of novel antioxidants. Carleton University James S. Wright and seven others	co-applicant 09/03-09/04	\$ 151,000 (1)
CFI ⁽²⁾ Infrastructure Operating Fund (Awarded)	Facility for free radical research investigating protein structure/function modification in response to oxygen. Carleton University	05/04-05/09	\$ 56,420 (5)
CIHR ⁽⁵⁾ Institutional Development Grant (Awarded)	The role of Hypoxia-Inducible Factor-1 (HIF-1) in Amyloid Precursor Protein (APP) gene expression. Carleton University	09/02-09/03	\$ 10,000 (1)
NSERC ⁽¹⁾ Discovery Grant (Awarded)	Role of reactive oxygen species in hypoxic signal transduction. Carleton University	09/02-09/07	\$ 165,000 (5)
NSERC ⁽¹⁾ Research Tools and Instruments (Category 1) Grant (Awarded)	Role of reactive oxygen species in hypoxic signal transduction. Carleton University	09/02-09/03	\$ 46,401 (1)
CFI ⁽²⁾ New Opportunities Grant (Awarded)	Facility for free radical research investigating protein structure/function modification in response to oxygen. Carleton University	05/02-05/03	\$ 188,068 (1)
OIT/ORF ⁽⁶⁾ New Opportunities Grant (Awarded)	Facility for free radical research investigating protein structure/function modification in response to oxygen. Carleton University	07/02-07/03	\$ 188,069 (1)
Carleton University Startup Funds (Awarded)	Hypoxic inhibition of protein prolyl hydroxylation. Carleton University	01/02-present	\$ 40,000 (u)
CIHR ⁽⁵⁾ Postdoctoral Fellowship (Awarded) (declined after first year)	Regulation of hypoxia-induced gene expression by reactive oxygen species. Harvard Medical School, Boston, MA	04/00-12/01	\$ 38,500 (1)
NSERC ⁽¹⁾ Postgraduate Scholarship B (Awarded)	Enzyme function and gene expression in hypoxic survival of hibernating turtles. Carleton University	04/94-04/96	\$ 34,800 (2)
NSERC ⁽¹⁾ Postgraduate Scholarship A (Awarded)	Enzyme function and gene expression in hypoxic survival of hibernating turtles. Carleton University	04/92-04/94	\$ 30,000 (2)
NSERC ⁽¹⁾ Undergraduate Student Research Award (Awarded)	Role of aldosterone receptors in pinnaped hyponatremia. University of Guelph	04/90-08/90	\$ 3,000 (1)
NSERC ⁽¹⁾ Undergraduate Student Research Award (Awarded)	Role of aldosterone receptors in pinnaped hyponatremia. University of Guelph	04/89-08/89	\$ 3,000 (1)

⁽¹⁾ Natural Science and Engineering Research Council of Canada

⁽³⁾ Canadian Breast Cancer Foundation

⁽⁵⁾ Canadian Institutes of Health Research

⁽⁷⁾ Carleton University

u = unlimited time

⁽²⁾ Canada Foundation for Innovation

⁽⁴⁾ Ministry of Research and Innovation of Ontario

⁽⁶⁾ Ontario Innovation Trust/Ontario Research Fund

Appendix 2

TRAINING OF HIGHLY QUALIFIED PERSONNEL (HQP); GRADUATE STUDENTS IN BOLD

Name	Type of HQP Training and Status	Years Supervised or Co-supervised	Title of Project or Thesis	Present Position
Isaac Wong	Undergraduate (In progress)	Supervised 2021 - 2022	Role of hypoxia in collagen-based ECM remodelling	ongoing
Andrew Stevens	Undergraduate (In progress)	Supervised 2021 - 2022	Role of hypoxia in collagen-based ECM remodelling	ongoing
Erica Cheyne	Undergraduate (In progress)	Supervised 2021 - 2022	The role of NLRP3 and the inflammasome in hypoxia and radiation stress response in TK6 cells	ongoing
Anna Kirkland	Undergraduate (In progress)	Supervised 2021 -	Endoplasmic reticulum (ER) stress caused by nanosilver exposure	ongoing
Julie Hamati	Undergraduate (Completed)	Co-Supervised 2019 - 2020	The characterization of KGE02, a DNA aptamer selected against acute myeloid leukemia cells	
Joshua O'Grady	Undergraduate (Completed)	Co-Supervised 2019 - 2020	The biochemical characterization of a DNA aptamer targeting acute myeloid leukemia cells	
Stephen Holland	Undergraduate (Completed)	Supervised 2016 - 2017	NFE2L1 transcription factor turnover <i>in vitro</i> studies	Doctoral Student, Ottawa Hospital Research Institute
Jenny Vuong	Undergraduate (Completed)	Supervised 2017 - 2018	Role of EGLN1 in hypoxic conditions and on NFE2L1 and NFE2L2	Registered Nurse, Canadian Armed Forces
James Donnor	Undergraduate (Completed)	Co-Supervised 2017 - 2018	Role of glutathione in antioxidant protection of primary macrophages during the inflammatory response	Doctoral Student, Health Sciences, Carleton University
Matthew Hoekstra	Undergraduate (Completed)	Supervised 2017 - 2018	Analysis of NFE2L1: Structure, function, post-translational modifications and homology modelling	Doctoral Student, Biology, Carleton University
Catherine Kennedy	Undergraduate (Completed)	Supervised 2017 - 2018	The role of stressors on PORCN and WLS function in human colorectal carcinoma cells	Masters Student
Bahareh Hosseinpour	Doctoral (In progress)	Co-Supervised 2020 -	The biochemical characterization of a DNA aptamer targeting acute myeloid leukemia cells	ongoing
Myra Thapar	Masters (In progress)	Co-Supervised 2021 -	The role of cold shock proteins in fish freezing survival	ongoing
Stephanie Hewatson	Masters (In progress)	Supervised 2021 -	Role of GRP78/BIP/HSP5A in hypoxic regulation of ER stress	ongoing
Bhavya Mohan	High School Student (In progress)	Supervised 2016 - 2021	ABiTEs aptamers to bring killer T-cells to cancer cells	Biology, University of British Columbia
Alison McVetty	Undergraduate (Completed)	Co-Supervised 2019 - 2020	Determination of post-translational modifications of NFE2L1 by 2-D gel electrophoresis	Job searching
Meriam Tayar	Undergraduate (Completed)	Supervised 2019 - 2020	The role of Osterix and hypoxia in bone homeostasis and disease	Dentistry, McGill University
Jason Kuipers	Undergraduate (Completed)	Supervised 2019 - 2020	Role of HIF in expression of NFE2L1 protein	Job searching
Vanessa Gallo	Masters (In progress)	Co-Supervised 2020 -	Development of antimicrobials against <i>Acinetobacter baumannii</i>	ongoing
Jessica Sheng	Masters (Completed)	Supervised 2019 - 2021	Cellular effects nanosilver on cancer and non-cancer cells: Potential environmental and human health impacts	ongoing
Matt Clinch	Masters (Completed)	Supervised 2019 - 2021	Role of NFE2L1 in ER stress in colon cancer cells	AbCellera, British Columbia
Anand Chopra	Doctoral (In progress)	Co-Supervised 2018 -	The role of KDM3A in oxygen sensing	ongoing
Jacob Billingsley	Masters (Completed)	Supervised 2018 - 2020	The role of p53 in ER stress response	Lab Technician, Ottawa Health Research Institute
Kavleen Aulakh	Masters (Completed)	Co-Supervised 2015 - 2016	Laser stimulus in human neuroblastoma cell	???
Ramak Esfandi	Masters (In progress)	Co-Supervised 2016 -	Antioxidant effects of peptides isolated from oat bran	ongoing
Dan Budiansky	Undergraduate (Completed)	Supervised 2016 -	Effects of toxins on deacetylation of NFE2L1 by SIRT1	Medical School, University of Toronto

Kim Birnie-Gauvin	Masters (Completed)	Co-Supervised 2015 - 2018	Oxidative stress and life history traits in brown trout in Denmark	Doctoral student, Denmark
Florian Gounin	Exchange Student From France (Completed)	Supervised 2016	Effects of hypoxia on PGC-1 α function in C2C12 muscle cells	Masters student, France
Emily Brown (b)	Undergraduate (Completed)	Supervised 2015 - 2018	Characterization of potential phosphorylation sites on NFE2L1	Masters student, University of Ottawa
Anand Chopra (b)	Undergraduate (Completed)	Supervised 2015 - 2018	Proteolytic processing of NFE2L1 by calpains.	Doctoral student, Carleton University
Haiyun Bo	Masters (Completed)	Supervised 2016 - 2021	Effects of hypoxia on NFE2L1 function and cellular location	Biology Administration, Carleton University
Rowida Mohammed	Doctoral (Completed)	Supervised 2016 -	Effects of endoplasmic reticulum stress on NFE2L1 function	Postdoctoral Fellow, University of Ottawa
Mary Daniel	Masters (Completed)	Supervised 2014 -	Effects of toxins on deacetylation of NFE2L1 by SIRT1	???
Jason Koppert (h)	Masters (Bio. Eng.) (Completed)	Co-Supervised 2014-2016	Development of an <i>in vitro</i> optical fibre real-time PCR device (with Spartan Bioscience, Ottawa)	Medical School, University of Toronto
Nafisa Jadavji	Research Associate (Completed)	Co-Supervised 2015 - 2018	Impact of methylenetetrahydrofolate reductase deficiency in primary neuronal and astrocyte cultures	Assistant Professor, Midwestern University
Ryan Mailloux	Research Associate (Completed)	Co-Supervised 2013 - 2014	Effects of Northern contaminants on obese mice	Assistant Professor, Department of Biochemistry, Memorial University, Newfoundland
Abdulrahman Almohaisen	Masters (Completed)	Supervised 2014 - 2017	Effects of Northern contaminants on obese mice	Saudi Arabia
Eman Hassan	Doctoral (Completed)	Co-Supervised 2013 - 2018	Development of an aptamer against mammaglobin B; a breast cancer target protein	Postdoctoral Fellow, Carleton University
Jessica Taylor	Masters (Completed)	Co-Supervised 2013 -	Transgenerational effects of oxidative stress in sockeye salmon	Technician, Biology Department, Carleton University
Shana Cameron (h)	Doctoral (Completed)	Co-Supervised 2013 - 2021	Oxidative stress caused by nanosilver	ongoing, NSERC Postgraduate Scholarship, Doctoral

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(c) Ontario Graduate Scholarship

(e) International Tuition Scholarship

(g) John Lyndhurst Kingston Memorial Scholarship

(i) NSERC Canada Graduate Scholarship (Alexander Graham Bell)

(b) NSERC USRA

(d) Domestic Tuition Scholarship

(f) Indira Gandhi Memorial Fellowship

(h) NSERC Canada Graduate Scholarship

Appendix 2 (continued)

TRAINING OF HIGHLY QUALIFIED PERSONNEL (HQP); GRADUATE STUDENTS IN BOLD

Name	Type of HQP Training and Status	Years Supervised or Co-supervised	Title of Project or Thesis	Present Position
Katie Wooding	Masters (part-time) (Completed)	Co-Supervised 2013 - 2017	<i>In vitro</i> competitive binding assay to measure polybrominated diphenyl ethers	Environment and Climate Change Canada
Amit Scheer	Public School (Completed)	Supervised 2013-2014	Novel aptamer-nanotech treatments for cancer	high school student, Sanofi BioGENius Challenge
QiXuan (Charlie) Chen	Postdoctoral Researcher (Completed)	Co-Supervised 2011 - 2013	Effects of Northern contaminants on obese mice	Research Associate, Canadian Food Inspection Agency
Andrew Seal	Masters (Completed)	Supervised 2011 - 2013	Potential deacetylation of NFE2L1 by SIRT1	Teacher's College
Julia Gliwa	Masters (Completed)	Co-supervised 2011 - 2013	Antioxidant properties of alkylresorcinols in rye bran	Custom Biologics, Toronto
Maria Florian	CIHR Postdoctoral Researcher (In Progress)	Co-Supervised 2010 - 2013	Low density lipoproteins and adiponectin in mice treated with Northern contaminants	Research Associate, Ottawa Hospital Research Institute
Andrew Robinette	Masters (Completed)	Supervised 2010 - 2013	Effects of hypoxia on PGC-1 α function in C2C12 muscle cells	unknown
Jin Yan	Postdoctoral Researcher (Completed)	Co-supervised 2010 - 2011	Low density lipoproteins and adiponectin in rats treated with Northern contaminants	Health Canada, policy
Festus Iyuke	Masters (Completed)	Co-supervised 2010 - 2012	Computational predictions of post-translational modifications	unknown
Magdalena Bugno	Masters (Completed)	Supervised 2010 -	Role of apoptosis stimulating protein of p53 in hypoxia	Laboratory Technician, Sick Kids Hospital, Toronto
Saad Ulhaq	Masters (Completed)	Co-Supervised 2010 - 2012	Response of eNOS to heavy metal Northern contaminants	Account Manager, KOM Networks
Laziyan Mahemuti	Doctoral (In progress)	Co-Supervised 2011 -	Protein and gene responses to bisphenol A	ongoing
Kathy Nguyen	Doctoral (part-time) (Completed)	Co-Supervised 2010-2015	Oxidative stress from quantum nanodots (cadmium telluride)	Health Canada
Samantha Wilson	Masters (Completed)	Co-Supervised 2011 - 2013	Oxidative stress in life history and capture and release of pacific salmon in British Columbia	Laboratory Manager, Simon Fraser University, Vancouver, British Columbia
Gail MacDonald	Technician (Completed)	Supervised 2009 - 2011	Role of muscle form of pyruvate kinase and PIAS3 in hypoxia	National Cancer Institute of Canada, Clinical Trials Group, Kingston, Ontario
Nikita Rayne	Masters (Completed)	Co-supervised 2008 - 2010	Role of mutations in human CBS in glutathione synthesis	Accounting, Ottawa Hospital
Zhen Liu	Masters (Completed)	Co-supervised 2007 - 2009	Computational predictions of post-translational modifications	IBM, Ottawa
Xuena Yang	Masters (Completed)	Supervised 2007 - 2009	Protein interaction with HIF-1 α and role of Nat5 in hypoxia	Merck Sharp & Dohme (China) Co., Ltd., Regulatory Affairs Associate, Beijing, China
Remmick So (h)	Masters (Completed)	Supervised 2007 - 2009	Role of muscle form of pyruvate kinase in hypoxia	PharmaGap Inc., Ottawa, NSERC Canada Graduate Scholarship
Jessica Cherith Bethune	Masters (Completed)	Supervised 2007 - 2009	Role of PIAS3 in hypoxia	Submission Coordinator, Health Canada
Eman Ahmed-Muhsin (b,d,i)	Masters (Completed)	Supervised 2007 - 2009	RNAi of CNOT8 in mammalian cells	Dentistry, McGill University, NSERC Canada Graduate Scholarship
Muluken Shambel Belew (e,f)	Masters (Completed)	Co-supervised 2006 - 2008	Role of homocysteine in glutathione production	Ph.D., Biochemistry, Microbiology & Immunology, University of Ottawa
Nikolai Chepelev (b,c,d,g,h)	Doctoral (Completed)	Supervised 2005 - 2011	Role of protein hydroxylation in adaptation to hypoxia	NSERC Visiting Postdoctoral Fellow, Health Canada
Agnieszka Bielecki (a)	Masters (Completed)	Supervised 2004 - 2006	Role of hypoxia in amyloid-precursor protein expression	Laboratory Technician, Health Canada, Ottawa

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TRAINING OF HIGHLY QUALIFIED PERSONNEL (HQP); GRADUATE STUDENTS IN BOLD

Name	Type of HQP Training and Status	Years Supervised or Co-supervised	Title of Project or Thesis	Present Position
Ahmed Al-Ansari	Masters (Completed)	Supervised 2004 - 2006	Role of CO and NO in ALAS2 regulation	Ph.D., Biology, University of Ottawa
Mohamed Abu-Farha	Masters (Completed)	Supervised 2003 - 2005	Stabilization of erythroid-specific ALAS under hypoxia	Senior Research Associate, Dasman Diabetes Institute, Kuwait
Alexandru Chichirau	Masters (part-time) (Completed)	Co-supervised 2003 - 2008	Cytotoxicity of catechols in PC12 cells	QBM Cell Science, Ottawa
Mihaela Fluerau (c,d)	Doctoral (Completed)	Co-supervised 2002 - 2006	Antioxidant properties of vitamin E analogs	Laboratory Coordinator, Level 10, Carleton University, NSERC Visiting Fellowship (declined)
Naomi Bose	Undergraduate (Completed)	Supervised 2014 - 2015	Effects of hypoxia on PGC-1 α function in C2C12 muscle cells	Medical School, University of Ottawa
Lisa Decotret	Undergraduate (Completed)	Supervised 2014 - 2015	Regulation of Nrf1 by ER stress	Masters, Department of Pathology and Laboratory Medicine, University of British Columbia
Eunnara Cho	Undergraduate (Completed)	Supervised 2014 - 2015	Modulation of Nrf1 by ER stress and the unfolded protein response	Ph.D., Biology, Carleton University, Health Canada
Jessie Thuswaldner	Undergraduate (Completed)	Supervised 2014 - 2015	Oxidative stress from elevated cortisol in smallmouth bass	Nursing, University of Ottawa
Haiyun Bo	Undergraduate (Completed)	Supervised 2014 - 2015	Activity of γ -glutamyltranspeptidase during hypoxic stress	M.Sc., Biology, Carleton University
Longfei Wang	Undergraduate (Completed)	Supervised 2014 - 2015	Purification and stabilization techniques for Taq polymerase	M.Sc., Biology, University of Toronto
Mercy Danquah	Undergraduate (Completed)	Supervised 2014 - 2015	Purification and stabilization techniques for Taq polymerase	Laboratory Volunteer, University of Ottawa
Owen Hovey	Undergraduate (Completed)	Supervised 2014 - 2015	Characterization of potential phosphorylation sites on Nrf1	Laboratory Technician, Health Canada
Peter Stolarski	Undergraduate (Completed)	Supervised 2014 - 2015	Effects of nanosilver on neuronal cells	Health Canada, Administration
Usman Khan	Undergraduate (Completed)	Co-supervised 2014 - 2015	Aptamer binding to MCF7 breast cancer cells	Medical School, University of Ottawa
Andries Seldt	Undergraduate (Completed)	Co-supervised 2014 - 2015	Cloning and expression of mammaglobin B	Unknown.
Julia Kirby	Undergraduate (Completed)	Supervised 2013 - 2014	PGC-1 α function in response to hypoxia	M.Sc., Department of Physiology and Pharmacology, University of Western Ontario
Kelsey Mittlestadt	Undergraduate (Completed)	Supervised 2013 - 2014	PGC-1 α function in response to hypoxia	M.Sc. Department of Pharmacology, University of Toronto
Jason Koppert	Undergraduate (Completed)	Supervised 2013 - 2014	Development of an <i>in vitro</i> optical fibre real-time PCR device	M.Sc. (Bio. Eng.), Carleton University
Marzieh Sarmadi	Undergraduate (Completed)	Supervised 2013 - 2014	Oxygen-dependent modification of ASPP proteins	unknown
Qian Wang	Undergraduate (Completed)	Supervised 2013 - 2014	Novel acetylation sites in Nrf1 and their regulation by SIRT1	M.Sc., Department of Biochemistry, University of Alberta
Thao Nguyen	Undergraduate (Completed)	Supervised 2013 - 2014	Role of erythropoietin in neuroprotection during hypoxia	M.Sc., Department of Chemistry, University of Ottawa
James Podrebarac	Undergraduate (Completed)	Co-supervised 2013 - 2014	MUC-1 aptamer binding to MCF-7 cells	M.Sc., Department of Parasitology, McGill University
Trisha Mackie	Undergraduate (Completed)	Supervised 2010 - 2012	Oxidative stress in aging (spawning) salmon	Doctorate of Veterinary Medicine, University of Guelph
Skye McBride	Undergraduate (Completed)	Supervised 2010 - 2012	Effects of hypoxia on NFE2L1 function and the Antioxidant Response	M.Sc., Biochemistry, University of Ottawa
Arran McBride	Undergraduate (Completed)	Supervised 2010 - 2012	DNA damage in mice exposed to air particulate toxins	M.Sc., Biochemistry, University of Ottawa
Kendra Young	Undergraduate (Completed)	Supervised 2011 - 2012	Hydroxylation of activators and inhibitors of p53	B.Sc., Biology, Carleton University

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TRAINING OF HIGHLY QUALIFIED PERSONNEL (HQP); GRADUATE STUDENTS IN BOLD

Name	Type of HQP Training and Status	Years Supervised or Co-supervised	Title of Project or Thesis	Present Position
Samantha Wilson (b,h)	Undergraduate (Completed)	Co-supervised 2009 - 2011	The effects of parental care in fish on oxidative stress parameters	M.Sc., Carleton University, NSERC Canada Graduate Scholarship
Timothy Beaudoin	Undergraduate (Completed)	Supervised 2009 - 2010	Dimeric and tetrameric forms of pyruvate kinase in hypoxia	Unknown
Noor Ahmed-Muhsin (b)	Undergraduate (Completed)	Supervised 2007 - 2009	Role of succinate semialdehyde dehydrogenase in hypoxia	Dentistry, University of Toronto
Julia DiLabio (b)	Undergraduate (Completed)	Supervised 2008 - 2009	Effects of hypoxia on huntingtin expression	MD program, University of Toronto
Erika Langley	Undergraduate (Completed)	Co-supervised 2009 - 2010	Infectious progeny viruses produced by mumps strains	Unknown
Praveeni Perera	Undergraduate (Completed)	Co-supervised 2008 - 2009	Effects of methylmercury on antioxidant parameters in mammals	MBA program, Sprott School of Business, Carleton University
Guang Shi	Undergraduate (Completed)	Co-supervised 2008 - 2009	A new substrate for human fatty acid desaturase in cell lines	M.Sc., Biochemistry, University of Toronto
Jason Weiss	Undergraduate (Completed)	Supervised 2008	Role of Hypoxia Response Element in Alzheimer's	MDS Nordion, Ottawa
Joshua Bennitz (b)	Undergraduate (Completed)	Supervised 2007 - 2008	Antioxidant Response Element function in hypoxia	MD program, University of Toronto
Ioana Nicolau (b)	Undergraduate (Completed)	Supervised 2007 - 2008	Role of neuronal nitric oxide synthase in hypoxia	Technical Assessment Unit (TAU) Epidemiologist, McGill University
Subhra Mohapatra (b)	Undergraduate (Completed)	Supervised 2007 - 2008	Role of hypoxia response element in Alzheimer's	MD program, St. George University, Grenada
Aishwarya Ramakrishnan	Undergraduate (Completed)	Supervised 2007 - 2008	Role of endothelin converting enzyme-1 in hypoxia	Laboratory Technician, Dept. Microbiology & Immunology, Dalhousie University
Amelia Ng	High School (Completed)	Supervised 2006	Lab maintenance and some experiments	Carleton University undergraduate, Biochemistry
Richard Harris	Undergraduate (Completed)	Supervised 2006	RNAi of HIF-1 alpha in mammalian cells	Ph.D., Biology, University of Guelph
Edward Chouchani	Undergraduate (Completed)	Co-supervised 2006	Hypoxic induction of fatty acid desaturases in yeast	Postdoctoral Fellow, University of Cambridge, England
Shannon Shamsuzzhoa	Undergraduate (Completed)	Supervised 2005 - 2006	Molecular modeling of human prolyl hydroxylases	Fisher Scientific, Inc., Ottawa
Xin Chen	Undergraduate (Completed)	Supervised 2005 - 2006	Redox regulation of glucose-6-phosphate dehydrogenase activity	M.Sc., Pharmaceutical Sciences, University of Toronto
Jacques Niles	Technician (Completed)	Supervised 2004 - 2005	Glutathione status under hypoxic conditions	DNA Genotek, Kanata, Ontario
Suzanne Ferguson	Undergraduate (Completed)	Co-supervised 2005 - 2006	Role of POP2 in hypoxic signal transduction	M.Sc., Biochemistry, Microbiology & Immunology, University of Ottawa
Youser Al-Ali	Undergraduate (Completed)	Supervised 2006	Glutathione synthesis under hypoxic conditions	Unknown
Connie Zhang	Undergraduate (Completed)	Supervised 2005 - 2006	RNAi of HIF-1 alpha in mammalian cells	Unknown
Leonid Chepelev	Undergraduate (Completed)	Co-supervised 2005 - 2006	Disruption of electron transfer by quinone compounds in isolated mitochondria	M.D. Program, University of Ottawa
Jinghua Huang	Undergraduate (Completed)	Supervised 2004 - 2005	Oxidative modification of yeast glutathione reductase	Palcan Fuel Cells Ltd., Vancouver
Ping Ping Tong	Undergraduate (Completed)	Supervised 2004	Cloning and tagging of human Redox Factor-1 (REF-1)	Singvax Pte. Ltd., Singapore
Tarek Abd El Halim (b)	Undergraduate (Completed)	Supervised 2004	Role of glutathione reductase in hypoxia survival	M.D./Ph.D. program, University of Toronto
Vanessa Abd El Halim (b)	Undergraduate (Completed)	Supervised 2004	Determination of intracellular ROS using dichlorofluorescein	M.D. program, University of Ottawa
Dawn Jurgens (b)	Undergraduate (Completed)	Supervised 2003 - 2004	Gamma-glutamyltranspeptidase function under hypoxia	M.Sc., Biochemistry, Microbiology & Immunology, University of Ottawa

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TRAINING OF HIGHLY QUALIFIED PERSONNEL (HQP); GRADUATE STUDENTS IN BOLD

Name	Type of HQP Training and Status	Years Supervised or Co-supervised	Title of Project or Thesis	Present Position
Sandra Mortimer (b)	Undergraduate (Completed)	Supervised 2003 - 2004	Function of Antioxidant Response Element (ARE) under hypoxia	logen Corporation, Ottawa
Sharon Husak (b)	Undergraduate (Completed)	Supervised 2003 - 2004	Role of hypoxia in APP expression and Alzheimer's disease	Ph.D., Chemistry, University of Toronto
Jason O'Brien	Undergraduate (Completed)	Co-supervised 2003 - 2004	Dioxin-responsive gene expression in chicken embryos	M.Sc., Biology, University of Ottawa
Christina Kavanagh	Undergraduate (Completed)	Supervised 2003 - 2004	Role of peroxiredoxins in cellular survival of hypoxia	Unknown
Christopher Jackson (b)	Undergraduate (Completed)	Supervised 2003	Cloning and tagging of human protein disulfide isomerase	Nelson Education, Toronto
Jason McEwan	Undergraduate (Completed)	Supervised 2002 - 2003	Hypoxia-inducible carbonic anhydrases in rainbow trout	M.Sc., Business, University of Ottawa
Justin Soriano	Undergraduate (Completed)	Supervised 2002 - 2003	Role of glutaredoxin in cellular survival of hypoxia	Syn-X Pharma, Toronto
Mathew Hendry	Undergraduate (Completed)	Supervised 2002 - 2003	Cloning and tagging of human glutathione reductase	Biosense Webster (Johnson & Johnson), Ontario Heart Institute, Ottawa
Mitra Tabatabaie Azad (b)	Undergraduate (In Progress)	Supervised 2002 - 2003	Glutathione status in hypoxic mammalian cell lines	Unknown
Amira Sultan (b)	Undergraduate (Completed)	Supervised 2003	Lipid peroxidation under low oxygen conditions	M.Sc., Pharmaceutical Sciences, University of Toronto
Suufi Rirash	Undergraduate (Completed)	Supervised 2003	Role of glutathione peroxidase in cell survival of hypoxia	St. Lawrence River Institute of Environmental Sciences, Cornwall
Farin Hassam	Undergraduate (Completed)	Supervised 2002 - 2003	Glutathione status of K562 cells exposed to hypoxia	Health Law Institute, University of Alberta
Hiree Abdi	Undergraduate (Completed)	Supervised 2002	Glutathione reductase function in hypoxic COS7 cells	B.Sc., Commerce, University of Toronto
Sherif Elsaraj	Undergraduate (Completed)	Supervised 2002 - 2003	Role of superoxide dismutase in cellular survival of hypoxia	Dentist, The Hope Dental Care Centre, Kanata

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⁽ⁱ⁾ NSERC Canada Graduate Scholarship (Alexander Graham Bell)

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Completed				Current			
Undergraduate	Masters	Doctoral	PDF	Undergraduate	Masters	Doctoral	PDF
43 (22)	(19)	(2)	(4)	3 (1)	(5)	(5)	(0)

* Numbers in brackets are **NOT** Biochemistry students.