

## CURRICULUM VITAE William Glen Willmore

**Professor and Director of Biochemistry  
Departments of Biology and Chemistry  
Carleton University, Ottawa, Ontario, Canada**

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**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-present

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) Canadian Institutes of Health Research (CIHR), Grant Reviewer, Project Grant Competition, 1st Live Pilot, 2016; Stage 1 and Stage 2 (Final Assessment Stage)
- 2) 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
- 3) 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
- 4) 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
- 6) 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/Chair position, Health Sciences, Carleton University, 2017
- 2) Biohazards Safety Committee, Carleton University, 2013-present
- 3) Chair, search committee for one Faculty position, Biochemistry, Carleton University, 2015
- 4) Chair, search committee for one Faculty position, Biology, Health Science, Carleton University, 2013
- 5) Director, Institute of Biochemistry, Carleton University, 2010-2013.
- 6) Ontario Graduate Scholarship, Selection Committee, Chemistry, Ontario Level, 2009.
- 7) Tenure and Promotion Committee, Chair, Chemistry, Carleton University, 2006.
- 8) Coordinator for the Ottawa-Carleton Chemistry and Environmental Toxicology (OCCET) Graduate Program, 2006-2008.
- 9) Search committee for two Faculty positions, Biology, University of Ottawa, 2006.
- 10) Search committee for one Faculty position, Biology, Carleton University, 2005.
- 11) Search committee for new Instructor position, Biochemistry, Carleton University, 2004.
- 11) NSERC and OGS Scholarship Selection Committee, Biology, 2004, 2005, 2006, 2007.
- 12) Associate Coordinator for the Ottawa-Carleton Chemistry and Environmental Toxicology (OCCET) Graduate Program, 2004-2006.
- 13) Biology Curriculum Committee, 2004.
- 14) 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)).
- 15) Biology Graduate Selection Committee, 2003, 2004, 2005, 2006, 2007.
- 16) VITESSE Bridging Program in Biotechnology (NRC), Carleton Academic Advisor, 2003.
- 17) Search committee for new Faculty position, Biochemistry/Biology, 2003.
- 18) 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 in Intel International Science and Engineering Fair (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

### **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) 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.
- 2) **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.
- 3) **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.
- 4) **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.
- 5) **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.
- 6) **Hassan EM**, Willmore WG, DeRosa MC. 2016. Aptamers: promising tools for the detection of circulating tumor cells. *Nucleic Acid Therapeutics* 26(6): 335-347.
- 7) 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.
- 8) 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.
- 9) **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*. 2016 Jun 15. pii: S1095-6433(16)30131-3. [in press].
- 10) **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.
- 11) 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.
- 12) **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.
- 13) **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.
- 14) **Mailloux RJ**, Willmore WG. 2014. S-glutathionylation reactions in mitochondrial function and disease. *Frontiers in Cell and Developmental Biology*. 2: 68.
- 15) **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.
- 16) **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.
- 17) 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.

- 18) **Mailloux RJ**, Jin X, Willmore WG. 2013. Redox regulation of mitochondrial function with emphasis on cysteine oxidation reactions. *Redox Biology* 2: 123-139.
- 19) **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.
- 20) **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.
- 21) 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.
- 22) 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.
- 23) **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.
- 24) **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.
- 25) 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.
- 26) **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.
- 27) **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.
- 28) **Chepelev NL** and Willmore WG. 2010. Regulation of iron pathways in response to hypoxia. *Free Radical Biology & Medicine*. 50(6): 645-666.
- 29) 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.
- 30) 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.
- 31) 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.
- 32) **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.
- 33) **Belew MS\***, Quazi FI\*, Willmore WG† and Aitken SM†. 2008. Kinetic characterization of recombinant human cystathionine  $\beta$ -synthase purified from *E. coli*. *Protein Expression and Purification* 64: 139-145. \*†contributed equally to this publication.
- 34) 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.
- 35) Willmore WG and Storey KB. 2007. Characterization of glutathione reductase from the slider turtle *Trachemys scripta elegans*. *Molecular and Cellular Biochemistry* 297: 139-149.
- 36) **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.

- 37) **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.
- 38) **Farha MA, Niles J** and Willmore WG. 2005. Post-translational modification and protein stabilization of erythroid-specific 5-aminolevulinate synthase under hypoxia. *Biochemistry and Cell Biology* 83: 620-630.
- 39) **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.
- 40) **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.
- 41) **Farha MA** and Willmore WG. 2004. Hypoxic stabilization and proteolytic degradation of erythroid-specific 5-aminolevulinate synthase. *International Congress Series* 1275: 71-78.
- 42) 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.
- 43) Willmore WG, English TE, and Storey KB. 2001. Mitochondrial gene responses to low oxygen stress in turtle organs. *Copeia* 2001: 628-637.
- 44) 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.
- 45) 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.
- 46) 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.
- 47) 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.
- 48) 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.
- 49) 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) **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.
- 2) **Cameron S, Hovey O**, Hosseiniana 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.

- 3) **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.
- 4) **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.
- 5) **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.
- 6) **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.
- 7) **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.
- 8) **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.
- 9) **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.
- 10) 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.
- 11) **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.
- 12) 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.
- 13) **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.)**
- 14) **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.)**
- 15) **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**
- 16) **Chepelev NL**, Wright JS and Willmore WG. Oxidative modification and inactivation of citrate synthase by peroxy radicals and protective effects of novel antioxidants. Oxygen Radicals Gordon Research Conference, Ventura, California, February 3-8, 2008.
- 17) 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.
- 18) 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.
  - 19) **Chepelev NL**, Wright JS and Willmore WG. Oxidative modification and inactivation of citrate synthase by peroxy 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.)**
  - 20) **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.
  - 21) **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.
  - 22) 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.
  - 23) 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.
  - 24) 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) NRF1: The lesser-known player in the antioxidant response. Canadian Oxidative Stress Consortium 2016, University of Guelph, Guelph, Ontario, June 3, 2016.
- 2) 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.
- 3) 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.
- 4) 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.
- 5) 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.
- 6) 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.
- 7) 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.
- 8) 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.
- 9) Adaptation to hypoxia: control by oxygen-dependent protein modification. Department of Biology, Guest Seminar Series, University of Waterloo, Waterloo, Ontario. November 16, 2007.
- 10) 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.
- 11) "Oxygen on the brain": cellular adaptation to low oxygen conditions. Department of Chemistry and Biochemistry, Laurentian University, Sudbury, Ontario. September 21, 2006.
- 12) 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.



- 13) 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
- 14) The oxygen paradox: life at oxygen extremes. Carleton University Spring Conference, Opinicon Lodge, Chaffey's Lock, Ontario. May 1, 2004.
- 15) 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.
- 16) 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.
- 17) Protein regulation by oxygen: a tale of two extremes. Department of Biology, Queen's University. Kingston, Ontario. February 11, 2003.
- 18) 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.
- 19) 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.
- 20) 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) Chair, 8<sup>th</sup> 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 re-creating the Consortium's website ([www.carleton.ca/cosc](http://www.carleton.ca/cosc)).
- 2) 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*)
NSERC <sup>(1)</sup> 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 <sup>(1)</sup> 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 <sup>(1)</sup> 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 <sup>(1)</sup> CREATE Grant (Awarded)	Research in Environmental, Analytical Chemistry and Toxicology (REACT) Laurie Chan and eight others	co-applicant 05/14-05/20	\$ 1,650,000 (6)
NSERC <sup>(1)</sup> 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 <sup>(1)</sup> 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, Indian and Northern Affairs Canada (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 <sup>(1)</sup> 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 <sup>(1)</sup> 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 <sup>(3)</sup> 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 <sup>(1)</sup> Discovery Grant (Awarded)	Role of protein hydroxylation in cellular response to hypoxia Carleton University	05/07-05/12	\$ 165,000 (5)
MRI <sup>(4)</sup> Early Researcher Award (Awarded)	Adaptation to low oxygen in cardiovascular disease. Carleton University	09/07-09/12	\$ 150,000 (5)
NSERC <sup>(1)</sup> 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)
NSERC <sup>(1)</sup> 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 <sup>(1)</sup> 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 <sup>(2)</sup> 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 <sup>(5)</sup> 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)

(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

u = unlimited time

**Appendix 1 (Continued)**  
**SCHOLARSHIPS, FELLOWSHIPS, AND GRANTS**

<b>Name of Scholarship, Fellowship, Grant or Award and Source of Funds</b>	<b>Title</b>	<b>Period Held</b>	<b>Total Grant in CDN (number of years*)</b>
NSERC <sup>(1)</sup> Discovery Grant (Awarded)	Role of reactive oxygen species in hypoxic signal transduction. Carleton University	09/02-09/07	\$ 165,000 (5)
NSERC <sup>(1)</sup> 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 <sup>(2)</sup> 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 <sup>(6)</sup> 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 <sup>(5)</sup> 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 <sup>(1)</sup> 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 <sup>(1)</sup> 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 <sup>(1)</sup> Undergraduate Student Research Award (Awarded)	Role of aldosterone receptors in pinnaped hyponatremia. University of Guelph	04/90-08/90	\$ 3,000 (1)
NSERC <sup>(1)</sup> Undergraduate Student Research Award (Awarded)	Role of aldosterone receptors in pinnaped hyponatremia. University of Guelph	04/89-08/89	\$ 3,000 (1)

<sup>(1)</sup> Natural Science and Engineering Research Council of Canada

<sup>(3)</sup> Canadian Breast Cancer Foundation

<sup>(5)</sup> Canadian Institutes of Health Research

u = unlimited time

<sup>(2)</sup> Canada Foundation for Innovation

<sup>(4)</sup> Ministry of Research and Innovation of Ontario

<sup>(6)</sup> 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
<b>Kavleen Aulakh</b>	Masters (Completed)	Co-Supervised 2015 - 2016	Laser stimulus in human neuroblastoma cell	ongoing
<b>Ramak Esfandi</b>	Masters (In progress)	Co-Supervised 2016 -	Antioxidant effects of peptides isolated from oat bran	ongoing
Dan Budiansky	Undergraduate (In progress)	Supervised 2016 -	Effects of toxins on deacetylation of NFE2L1 by SIRT1	ongoing
<b>Kim Birnie-Gauvin</b>	Masters (In progress)	Co-Supervised 2015 -	Oxidative stress and life history traits in brown trout in Denmark	ongoing
Florian Gounin	Exchange Student From France	Supervised 2016	Effects of hypoxia on PGC-1 $\alpha$ function in C2C12 muscle cells	ongoing
Emily Brown (b)	Undergraduate (In progress)	Supervised 2015 -	Characterization of potential phosphorylation sites on NFE2L1	ongoing
Anand Chopra (b)	Undergraduate (In progress)	Supervised 2015 -	Proteolytic processing of NFE2L1 by calpains.	ongoing
<b>Haiyun Bo</b>	Masters (In progress)	Supervised 2016 -	Effects of hypoxia on NFE2L1 function and cellular location	ongoing
<b>Rowida Mohammed</b>	Doctoral (In progress)	Supervised 2016 -	Effects of endoplasmic reticulum stress on NFE2L1 function	ongoing
<b>Mary Daniel</b>	Masters (In progress)	Supervised 2014 -	Effects of toxins on deacetylation of NFE2L1 by SIRT1	ongoing
<b>Jason Koppert (h)</b>	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
<b>Ryan Mailloux</b>	Research Associate (Completed)	Co-Supervised 2013 - 2014	Effects of Northern contaminants on obese mice	Assistant Professor, Department of Biochemistry, Memorial University, Newfoundland
<b>Abdulrahman Almohaisen</b>	Masters (Completed)	Supervised 2014 -	Effects of Northern contaminants on obese mice	Saudi Arabia
<b>Eman Hassan</b>	Doctoral (In progress)	Co-Supervised 2013 -	Development of an aptamer against mammaglobin B; a breast cancer target protein	ongoing
<b>Jessica Taylor</b>	Masters (Completed)	Co-Supervised 2013 -	Transgenerational effects of oxidative stress in sockeye salmon	Technician, Biology Department, Carleton University
<b>Shana Cameron (h)</b>	Doctoral (In progress)	Co-Supervised 2013 -	Oxidative stress caused by nanosilver	ongoing, NSERC Postgraduate Scholarship, Doctoral
<b>Katie Wooding</b>	Masters (part-time) (In progress)	Co-Supervised 2013 -	<i>In vitro</i> competitive binding assay to measure polybrominated diphenyl ethers	ongoing; part-time work at Intrinsik
Amit Scheer	Public School (Completed)	Supervised 2013-2014	Novel aptamer-nanotech treatments for cancer	high school student, Sanofi BioGENius Challenge
<b>QiXuan (Charlie) Chen</b>	Postdoctoral Researcher (Completed)	Co-Supervised 2011 - 2013	Effects of Northern contaminants on obese mice	Research Associate, Canadian Food Inspection Agency
<b>Andrew Seal</b>	Masters (Completed)	Supervised 2011 - 2013	Potential deacetylation of NFE2L1 by SIRT1	Teacher's College
<b>Julia Gliwa</b>	Masters (Completed)	Co-supervised 2011 - 2013	Antioxidant properties of alkylresorcinols in rye bran	Custom Biologics, Toronto
<b>Maria Florian</b>	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
<b>Andrew Robinette</b>	Masters (Completed)	Supervised 2010 - 2013	Effects of hypoxia on PGC-1 $\alpha$ function in C2C12 muscle cells	Willmore Lab, volunteer
<b>Jin Yan</b>	Postdoctoral Researcher (Completed)	Co-supervised 2010 - 2011	Low density lipoproteins and adiponectin in rats treated with Northern contaminants	Health Canada, policy
<b>Festus Iyuke</b>	Masters (Completed)	Co-supervised 2010 - 2012	Computational predictions of post-translational modifications	unknown
<b>Magdalena Bugno</b>	Masters (Completed)	Supervised 2010 -	Role of apoptosis stimulating protein of p53 in hypoxia	Laboratory Technician, Sick Kids Hospital, Toronto
<b>Saad Ulhaq</b>	Masters (Completed)	Co-Supervised 2010 - 2012	Response of eNOS to heavy metal Northern contaminants	Account Manager, KOM Networks

(a) NSERC PGS-M

(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**

<b>Name</b>	<b>Type of HQP Training and Status</b>	<b>Years Supervised or Co-supervised</b>	<b>Title of Project or Thesis</b>	<b>Present Position</b>
<b>Laziyan Mahemuti</b>	Doctoral (In progress)	Co-Supervised 2011 -	Protein and gene responses to bisphenol A	ongoing
<b>Kathy Nguyen</b>	Doctoral (part-time) (Completed)	Co-Supervised 2010-2015	Oxidative stress from quantum nanodots (cadmium telluride)	Health Canada
<b>Samantha Wilson</b>	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
<b>Gail MacDonald</b>	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
<b>Nikita Rayne</b>	Masters (Completed)	Co-supervised 2008 - 2010	Role of mutations in human CBS in glutathione synthesis	Accounting, Ottawa Hospital
<b>Zhen Liu</b>	Masters (Completed)	Co-supervised 2007 - 2009	Computational predictions of post-translational modifications	IBM, Ottawa
<b>Xuena Yang</b>	Masters (Completed)	Supervised 2007 - 2009	Protein interaction with HIF-1 $\alpha$ and role of Nat5 in hypoxia	Merck Sharp & Dohme (China) Co., Ltd., Regulatory Affairs Associate, Beijing, China
<b>Remmick So (h)</b>	Masters (Completed)	Supervised 2007 - 2009	Role of muscle form of pyruvate kinase in hypoxia	PharmaGap Inc., Ottawa, NSERC Canada Graduate Scholarship
<b>Jessica Cherith Bethune</b>	Masters (Completed)	Supervised 2007 - 2009	Role of PIAS3 in hypoxia	Submission Coordinator, Health Canada
<b>Eman Ahmed-Muhsin (b,d,i)</b>	Masters (Completed)	Supervised 2007 - 2009	RNAi of CNOT8 in mammalian cells	Dentistry, McGill University, NSERC Canada Graduate Scholarship
<b>Muluken Shambel Belew (e,f)</b>	Masters (Completed)	Co-supervised 2006 - 2008	Role of homocysteine in glutathione production	Ph.D., Biochemistry, Microbiology & Immunology, University of Ottawa
<b>Nikolai Chepelev (b,c,d,g,h)</b>	Doctoral (Completed)	Supervised 2005 - 2011	Role of protein hydroxylation in adaptation to hypoxia	NSERC Visiting Postdoctoral Fellow, Health Canada
<b>Agnieszka Bielecki (a)</b>	Masters (Completed)	Supervised 2004 - 2006	Role of hypoxia in amyloid-precursor protein expression	Laboratory Technician, Health Canada, Ottawa
<b>Ahmed Al-Ansari</b>	Masters (Completed)	Supervised 2004 - 2006	Role of CO and NO in ALAS2 regulation	Ph.D., Biology, University of Ottawa
<b>Mohamed Abu-Farha</b>	Masters (Completed)	Supervised 2003 - 2005	Stabilization of erythroid-specific ALAS under hypoxia	Senior Research Associate, Dasman Diabetes Institute, Kuwait
<b>Alexandru Chichirau</b>	Masters (part-time) (Completed)	Co-supervised 2003 - 2008	Cytotoxicity of catechols in PC12 cells	QBM Cell Science, Ottawa
<b>Mihaela Fluerau (c,d)</b>	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 $\alpha$ 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	M.Sc., Biology, Carleton University
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 $\gamma$ -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

(a) NSERC PGS-M

(c) Ontario Graduate Scholarship

(e) International Tuition Scholarship

(g) John Lyndhurst Kingston Memorial Scholarship

(h) 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
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	ongoing
Julia Kirby	Undergraduate (Completed)	Supervised 2013 - 2014	PGC-1 $\alpha$ 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 $\alpha$ 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
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

(a) NSERC PGS-M

(c) Ontario Graduate Scholarship

(e) International Tuition Scholarship

(g) John Lyndhurst Kingston Memorial Scholarship

(h) NSERC Canada Graduate Scholarship (Alexander Graham Bell)

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**Appendix 2 (continued)**

**TRAINING OF HIGHLY QUALIFIED PERSONNEL (HQP); GRADUATE STUDENTS IN BOLD**

<b>Name</b>	<b>Type of HQP Training and Status</b>	<b>Years Supervised or Co-supervised</b>	<b>Title of Project or Thesis</b>	<b>Present Position</b>
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
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

(a) NSERC PGS-M

(c) Ontario Graduate Scholarship

(e) International Tuition Scholarship

(g) John Lyndhurst Kingston Memorial Scholarship

(h) NSERC Canada Graduate Scholarship (Alexander Graham Bell)

(b) NSERC USRA

(d) Domestic Tuition Scholarship

(f) Indira Gandhi Memorial Fellowship

(h) NSERC Canada Graduate Scholarship

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.