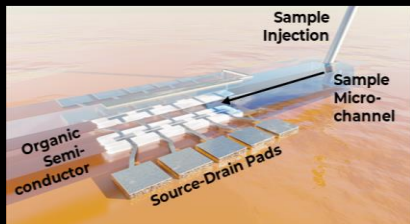


A Novel Bio-Analyzer Platform For Point-of-Care Testing of Fluid Biomarkers



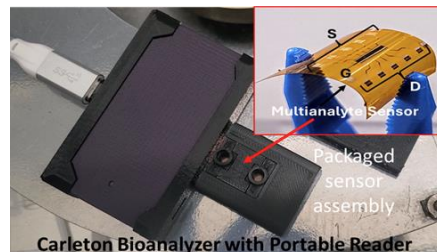
Bio-Analyzer Platform Schematic

Background

Biomarkers are a potent source of information about patient health, environmental and agricultural monitoring as well as food and beverage safety. Unfortunately, there is limited fast, economic, non-invasive, but accurate methods of quantifying biomarkers particularly at low concentrations such as biomarkers in saliva. Many useful biomarkers are thus still going untested.

Description of the Invention

Carleton researchers have developed a novel bioanalysis platform. This reliable, non-invasive device can quantitatively measure multiple useful biomarkers (proteins, hormones, etc.) in biofluids. Prototypes have been validated with salivary and blood serum biomarkers of varying types (including alpha-synuclein – neural protein used as Parkinson’s biomarker, amyloid beta peptides and phosphorylated tau-proteins – protein biomarkers for Alzheimer’s) and is being developed for various Cardiac Failure markers.



Packaged Bioanalyzer with portable reader; inlet showing fabricated sensor

Inventors:

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Protection Status:

US Provisional application
filed (July 25, 2023)
PCT application
filed (July 25, 2024)

Stage of

Development:

Prototype
Validation with salivary and
blood serum biomarkers

Seeking:

Development Partners
Licensees

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Key Benefits

- **Low sample volumes** required: 10µL for each analysis test
- **Excellent specificity and strong sensitivity:** over a broad analyte concentration range (from 100 µM to 100 fM) enabling early detection of the above three proteomic biomarkers
- **Multiplexing** capabilities within the same device
- **Ideal for Point-of-Care deployment**
- **Suitable for low-cost manufacturing** and production scale-up
- **Cost effective:** Reduces expenses over traditional lab tests and competing sensor technologies
- **Faster** time to result through Point-of-care deployment

Applications

- **Healthcare:** Point-of-Care devices with saliva, blood or other samples for diagnostics or patient health monitoring
- **Environment and Agriculture:** testing and monitoring for regulatory compliance, quality control and/or efficiency enhancement
- **Food and Beverage:** food safety quality control and analysis

Publications:

Massey, et al. ACS Sensors, vol. 8, no. 8, 2023, pp. 3116–26 ([doi/10.1021](https://doi.org/10.1021));
Massey, et al. IEEE Sensor Letters, vol.8, 2024, pp 1-4 ([doi/10.1109](https://doi.org/10.1109))