

HIGHLY SENSITIVE MULTIPLEXED PROTEIN ANALYSIS IN PLASMA AND EXTRACELLULAR VESICLES. Rebecca Goodrum, **Huiyan Li**, School of Engineering, University of Guelph, Canada. (huiyanli@uoguelph.ca)

Proteins are the nanomachines in the body that function in various biological processes. Quantifying protein concentrations in complex biological samples such as plasma and extracellular vesicles can provide important information on health and diseases [1]. Conventional methods, such as enzyme-linked immunosorbent assay (ELISA) is a sensitive and reliable approach for protein quantification, but has limited analytical sensitivity and multiplexing capability that cannot meet clinical needs for early diagnosis of some complex diseases such as cancer. Other methods such as conventional mass spectrometry and western blotting have limited sensitivity, and sometimes are semi-quantitative [2]. In this talk, I will present several new biosensing platforms that we have recently developed. These platforms have been applied for protein quantification in plasma, cells, and extracellular vesicles, and have achieved higher assay sensitivity by a few orders of magnitude compared to those of conventional assays. The high sensitivity, multiplexing capability, and ease of use makes these new biosensing platforms suitable for a variety of applications in biological and biomedical research, such as early cancer diagnostics and biomarker discovery.

[1] A. Bodaghi, N. Fattahi, A. Ramazani. Heliyon. 2023. E13323.

[2] N. Momenbeitolahi, T. Cloet, H. Li. Anal. Bioanal. Chem. 2021. 5995-6011.