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**Precision, Innovation, and Legacy in Laboratory Medicine**



# **Chip-centric cell and protein analytic platforms for biomedical application**

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Quantitative analysis of biological systems and associated biomolecules is crucial in advancing the understanding of modern biology and medical sciences. In this presentation, I will share our effort in integrating analytical chemistry, bioengineering, and material chemistry to construct assays for quantitative bioanalysis. Specifically, the talk will describe various chip-centric platforms for both the cell and biomolecular analysis. These included the high-throughput investigation of live single-cell immune NF- $\kappa$ B activation, study of neural stem cell differentiation under dynamic stimulation, and “Chip-DIA” strategy for the streamlined single-cell proteomic and phosphoproteomic analysis. The later assay is composed of a custom chip and data-independent acquisition mass spectrometry (DIA-MS). The presentation will also discuss the key concept and features of these quantitative platforms.

