

Gianna Slusher

Swensson Award

Ph.D. Student, Bioengineering

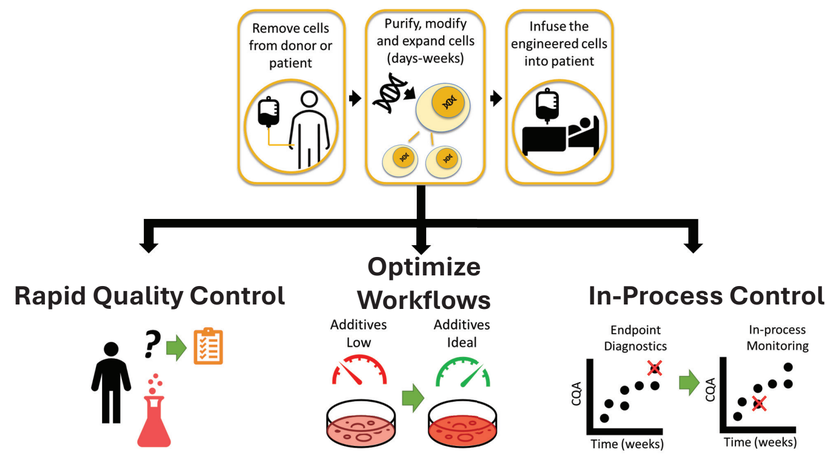
Third Year ARCS Scholar

Georgia Tech

Advancing Cell-Based Therapies with Rapid Intracellular Metabolite Analysis and Precise Extracellular Vesicle Processing

The complexity of cell-based therapies highlight limitations of existing process analytical technologies. Our motivation and objective is to develop and apply a new process analytical technology to increase therapeutic potency, improve product yield, and reduce treatment cost.

Cell-Based Therapy Manufacturing and Monitoring



Intracellular Metabolome Processing Device

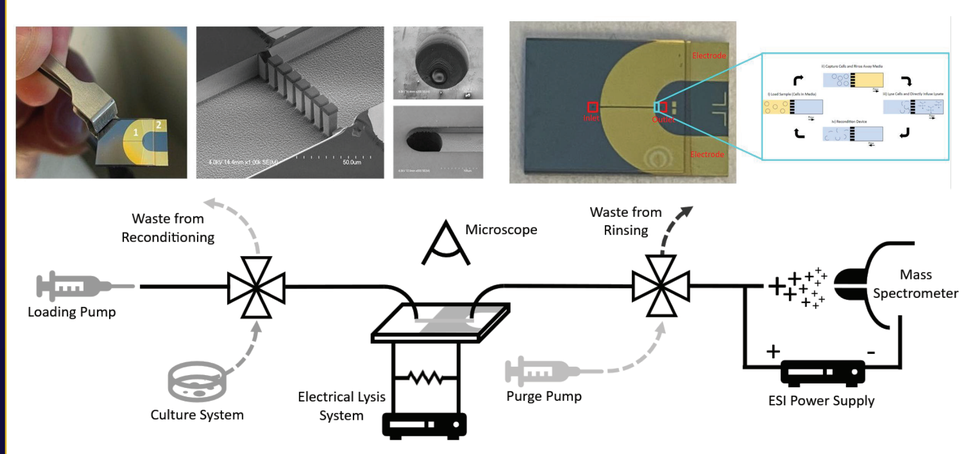


Figure Adapted from: Culberson AL, et al. (2021). "Sample-to-analysis platform for rapid intracellular mass spectrometry from small numbers of cells." *Lab on a Chip*, 21(23): 4696-4706.

Extracellular Vesicle Manufacturing Workflow

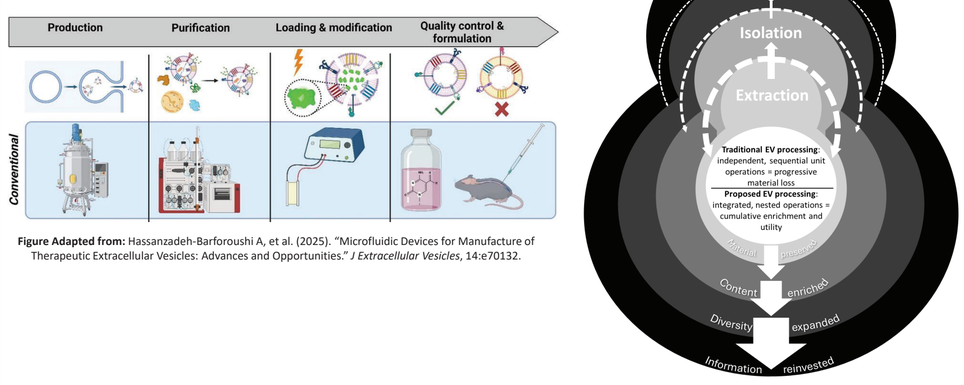
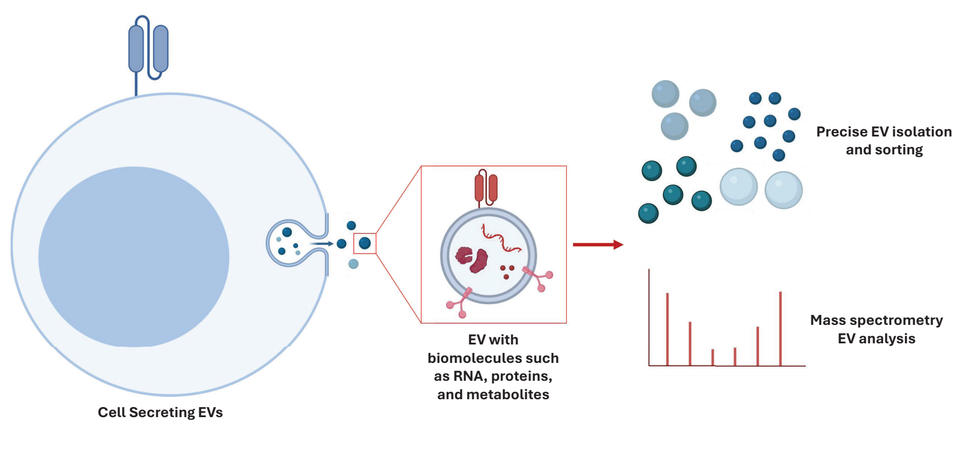


Figure Adapted from: Hassanzadeh-Barforoushi A, et al. (2025). "Microfluidic Devices for Manufacture of Therapeutic Extracellular Vesicles: Advances and Opportunities." *J Extracellular Vesicles*, 14:e70132.

Precise EV Isolation, Sorting, and Analysis



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