



Gianna Slusher

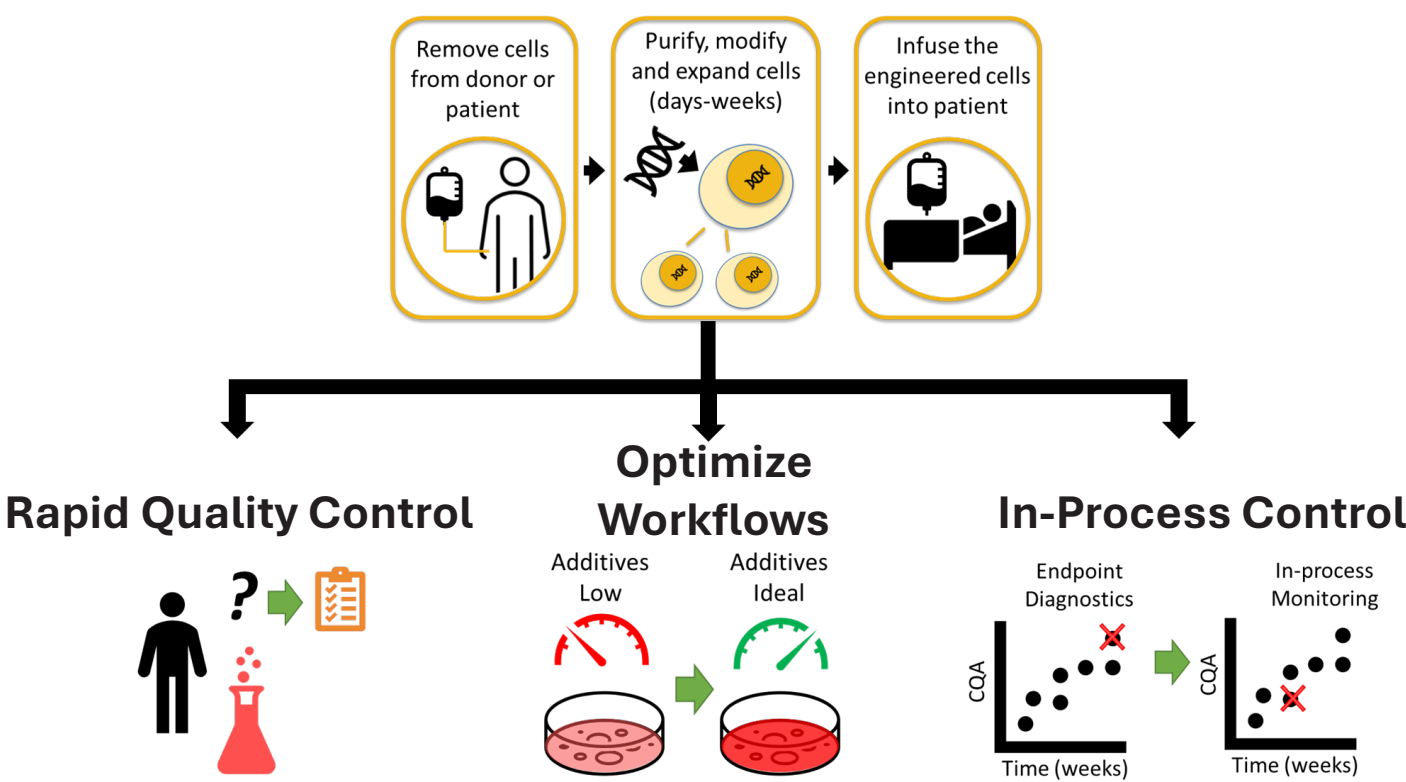
Swensson/Reid Award
Ph.D. Student, Bioengineering in Mechanical Engineering
Second Year ARCS Scholar



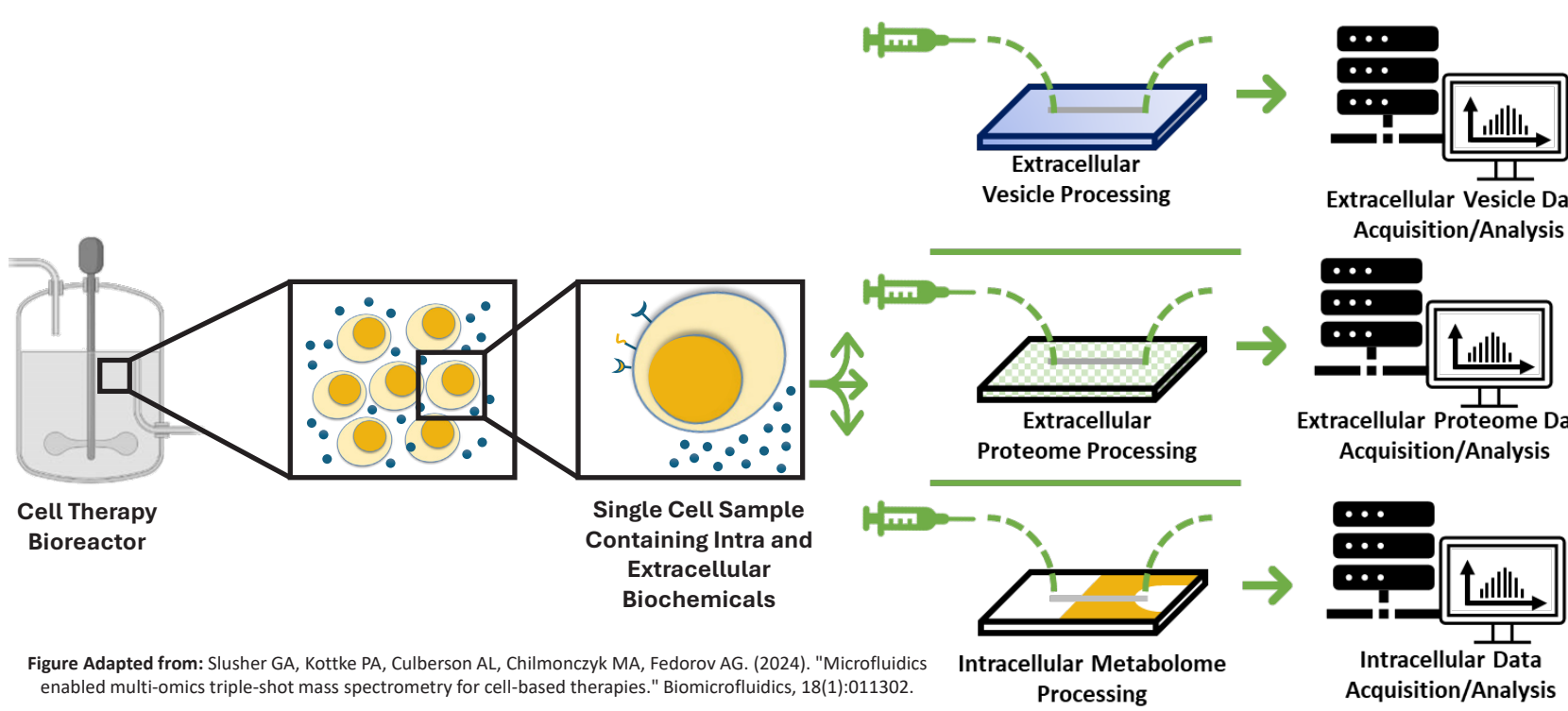
Advancing Cell-Based Therapies with Rapid Intracellular Metabolite Analysis and Precise Exosome Isolation

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



Rapid Processing/Analysis of Intra + Extracellular Biochemicals



Intracellular Metabolome Processing Device

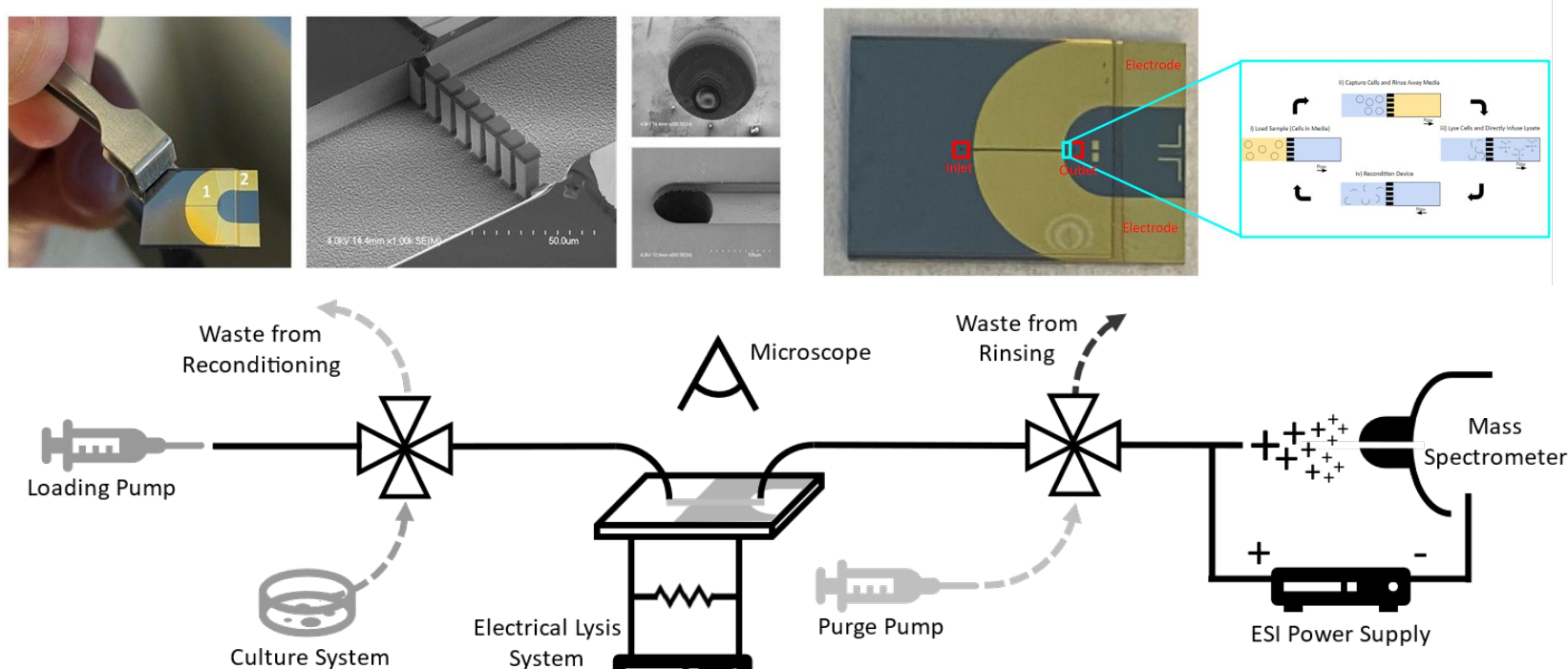
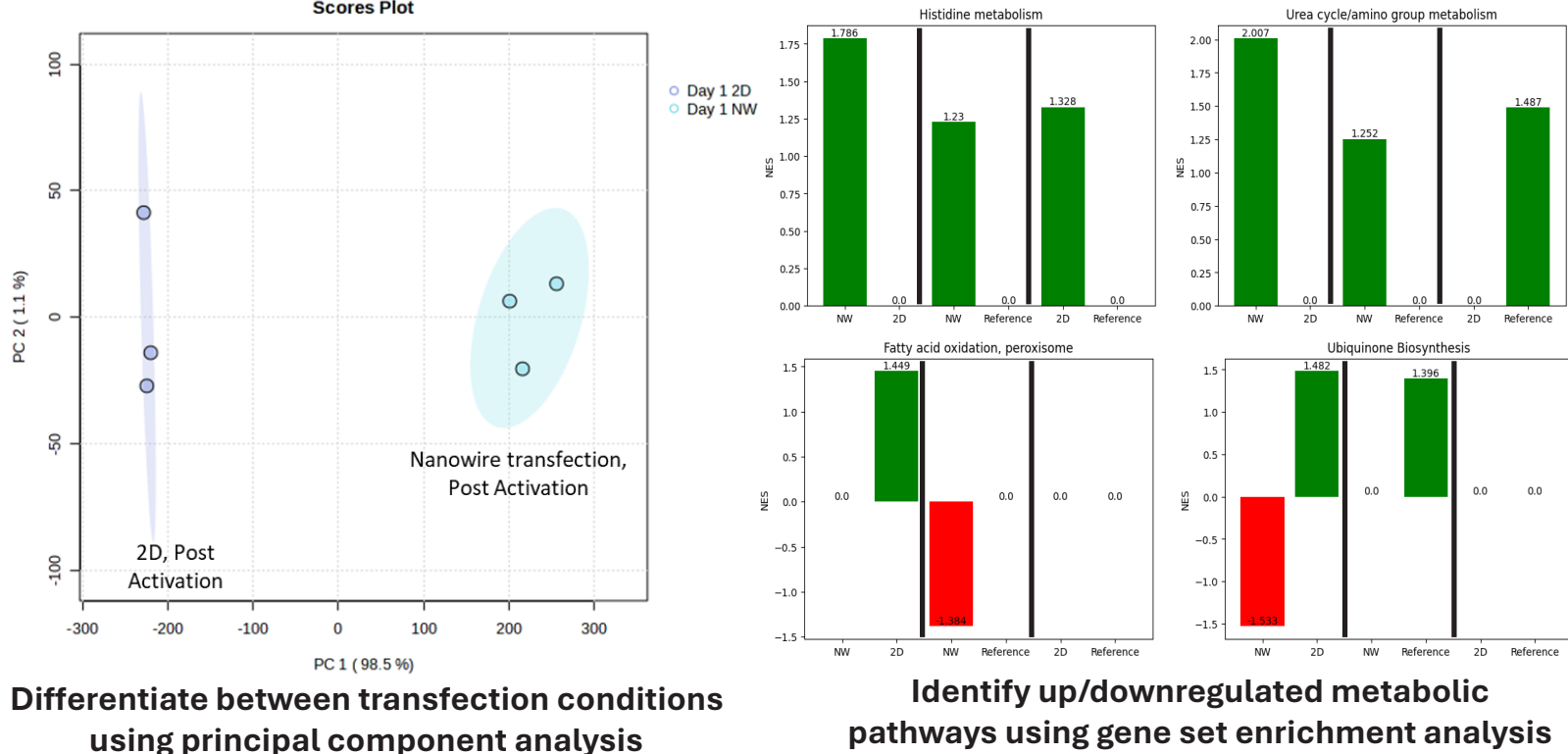


Figure Adapted from: Culberson AL, et al. (2021). "Sample-to-analysis platform for rapid intracellular mass spectrometry from small numbers of cells." Lab on a Chip, 21(23): 4696-4706.

Intracellular Metabolome Monitoring Improves Process and Understanding of Transfection



Exosomes

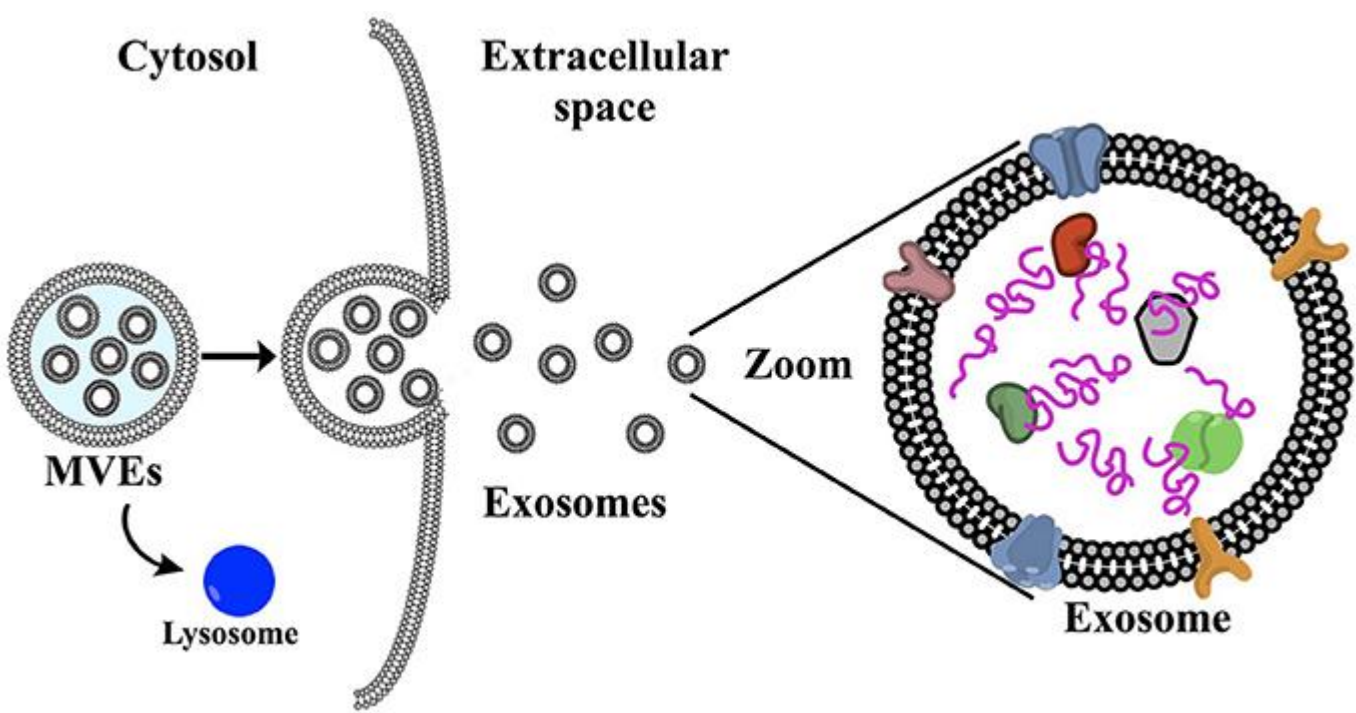


Figure source: de la Torre Gomez C, Goreham RV, Bech Serra JJ, Nann T, Kussmann M. (2018). "Exosomes—A Review of Biophysics, Biology and Biochemistry of Exosomes With a Focus on Human Breast Milk." Frontiers in Genetics, 9:92.

Precise Exosome Isolation, Sorting, and Analysis

