Dynamic Sampling Platform (DSP)

EXECUTIVE SUMMARY

TEAM

Andrei Fedorov, PhD
Technical Investigator
Georgia Tech

Mason Chilmonczyk, PhD
Technical Investigator
Georgia Tech

Edwin Horwitz, MD, PhD
Clinical Investigator
Emory University

FUNDING
$110K Biolocity Grant
$50K Georgia Research Alliance (GRA) Phase IA/B

INTELLECTUAL PROPERTY
Patent pending

Technology available for licensing and partnership

STATUS
Prototype testing

TECHNOLOGY

The Dynamic Sampling Platform (DSP) is a process analytical technology for at-line or inline mass spectrometry analysis of complex biomixtures. The DSP is designed to enhance and/or enable modern biomanufacturing workflows by analyzing small amounts of liquid media (~1 µL) to detect and/or discover quality indicating biomolecules *in vitro*. By utilizing mass spectrometry sensing, DSP is capable of both targeted monitoring applications as well as untargeted discovery applications. As a platform technology, DSP can function at every stage of biomanufacturing development from lab-to-market.

MARKET NEED

Modern biomanufacturing workflows rely on living cells grown in bioreactors to produce a therapeutically potent and lifesaving therapy. Current analytical techniques, whether online or offline, provide spatiotemporal averages of the bioreactor environment that may not indicate cell health, therapeutic potential, or production trajectory. Furthermore, novel advanced therapies are failing to meet the FDA chemistry, manufacturing, and control (CMC) standards because 1) it is difficult to identify critical quality attributes (discovery) and 2) it is challenging to monitor meaningful critical process parameters in real-time (monitoring).

Currently, biomanufacturing relies heavily on rudimentary measurements of pH, temperature, dissolved oxygen, or other real-time outputs. These measures are crucial for maintaining culture viability yet insufficient for providing useful feedback on production status. Unfortunately, the most informative assays for determining the quality, potency, or safety of modern therapies are generally end-point, occurring at the end of a two or three-week manufacturing process. This presents a significant financial risk for a failed batch, or worse, a practical risk in failing to deliver the therapy. Feedback from industry executives corroborates the early state of in-process controls and that improved methods are essential to broaden cell therapy manufacturing. There is a need for solutions that enable batch-specific determination of manufacturing parameters that will yield the desired cell therapy product in terms of purity, cell viability, and yield.

STATUS

To date the DSP team has conducted 75+ customer discovery interviews validating market pain points and honing in on market entry points. In parallel, they have optimized their platform for enhanced sample treatment and increased throughput. Currently, the team is scaling the production of DSP for pilot studies with identified partners in the biomanufacturing industry. They are seeking additional industry partners for pilot studies and are approaching seed investment to bring DSP to market.

For more information on this technology email biolocity@gatech.edu or contact:
Andrei Fedorov, Technical Investigator, agf@gatech.edu
Mason Chilmonczyk, Technical Investigator, mchil@gatech.edu
Edwin Horwitz, Clinical Investigator, edwin.horwitz@emory.edu
Mark Coburn, Senior Associate Licensing Director, mark.coburn@industry.gatech.edu

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