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Patent Pending

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Automation of Sample Processing for High-Throughput Proteomics

AzTE Case # M11-154

Invention Description

As mass spectrometry technology continues to develop and increase in sensitivity and throughput, its sample preparation needs to develop as well. Automation can increase throughput, increase reproducibility, and decrease operator-induced variability. Developing technologies have allowed for online control of the individual processing steps for biological samples, but no process has yet linked all of the steps together into one continuous workflow.

Researchers at the Biodesign Institute of Arizona State University, TGen, and Upchurch Scientific have developed a process to automate the preparation of complex biological samples for mass spectrometry. This process, which can be performed online, includes steps for filtration, enrichment (by using immunodepletion, immunoselection, or other affinity columns), reduction, alkylation, digestion, and final processing to produce a mass spec-ready sample.

This process has the potential to minimize operator-induced variability, increase reproducibility, improve sample throughput, and lower operating costs.

Potential Applications

- mass spectrometry for
  - biomarker discovery
  - diagnostics (using known biomarkers)

Benefits and Advantages

- fully automated sample preparation workflow:
  - online control of each step
  - minimized operator-induced variability
  - increased reproducibility
  - increased sample throughput
  - lower operating costs