

Accessible, Efficient, and Reusable Cytospinning Apparatus for Cancer Diagnostics

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Cytospinning is a technique used to process cell suspensions from biopsy samples for testing. Cytospinning is the process by which cells suspended in fluid are exposed to an applied force and disperse concentrated onto a microscope slide. Aperture Bio practices extreme precision in profiling minute samples from the tumor microenvironment. Fine needle aspiration (FNA) biopsies are collected at clinical sites and sent to Aperture Bio for processing and analysis via cytospinning, staining, and imaging for biomarkers using immunofluorescence technology. Biomarkers are a measurable substance (proteins, molecules, etc.) in an organism whose presence is indicative of some phenomenon such as disease or infection. Within the images of cytospinned cells, the specific biomarkers detected are analyzed to determine cancer type and severity, and the results are reported back to clinics. The current system used by Aperture Bio for cytospinning (Octospot, Eprexia, Kalamazoo, MI, USA) has inherent flaws that decrease sample capacity by 50%, significantly delay processing with backordered items, and impose plastic waste onto the environment. This project will serve to improve upon the cancer diagnostics process at Aperture Bio by creating a new reusable cytospinning apparatus with increased sample capacity and in-house manufacturability. This will ensure efficient sample processing and quicker results for patients, doctors, and other company partners.

