Analytical Instrumentation, Methods & Materials

Device for Improved Cell Staining and Imaging

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WARF: P06168US

Inventors: David Beebe

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a microfluidic device that increases the efficiency of sample preparation for cell imaging.

Overview

Preparing cover slips for optical cell imaging is labor intensive and current methods are limited to one treatment per slip. Imaging multiple cover slips is also cumbersome, due to the time needed to remove and replace each cover slip on the microscope.

The Invention

A UW-Madison researcher has developed a multichannel microfluidic device that increases the efficiency of sample preparation for cell imaging. The microfluidic device includes a cartridge with a patterned inlet port to contain reagent droplets and avoid cross-channel contamination. The lower surface of the cartridge includes several recesses that define channels for containing cells. Different reagents can be added to each channel. The upper surface of a cover slip is placed against the lower surface of the cartridge, and the cartridge is mechanically clamped to the cover slip to ensure no leakage during an assay. After staining is complete, the cover slip can be removed and traditionally mounted to a glass slide for standard imaging protocols.

Applications

- Optical cell imaging

Key Benefits

- Increases efficiency
- Multiple treatments can be performed on one cover slip in the time required to process one standard cover slip.
- Moving from one treatment to another does not require removing and replacing the cover slip.
- Saves money by using fewer reagents
- Saves time because cells are in well defined and predictable locations
- A range of channel dimensions is available.
- Fiduciary marks allow autofocusing, either in the channel structure with the channel in place or on the cover slip.
- A funnel-shaped outlet port design facilitates robust and easy mating of a pipette to the port.
- Designed for use with many types of microscopes, including high-resolution confocal microscropes

Additional Information

- David Beebe

Tech Fields

- Analytical Instrumentation, Methods & Materials : Microfluidics

For current licensing status, please contact Jeanine Burmania at jeanine@warf.org or 608-960-9846