



Microfluidic System for High Throughput Screening

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a microtiter plate that uses a simple and inexpensive microfluidics channel system in place of wells for standard high throughput screening using commercially available liquid-handling robots.

Overview

Most high throughput screening (HTS) for new chemicals is done in microtiter well plates. Reagents for HTS can be very expensive, making miniaturization of the plates desirable. Microfluidics is an alternative to miniaturization, but previous attempts to develop a microtiter plate with microfluidic channels have required expensive and complicated pumping equipment and have not been robot-friendly.

The Invention

UW-Madison researchers have developed a microtiter plate that uses a simple and inexpensive microfluidics channel system in place of wells for standard high throughput screening using commercially available liquid-handling robots. This technology uses a passive pumping system that eliminates the need for external pumping equipment.

Each microtiter plate includes several microchannels with openings on either end. The input end of each channel consists of a port with multiple pores for receiving drops of fluid. After a liquid-dispensing instrument deposits a drop in the port, the passive pumping system draws it into the channel. To pump liquid through the system, each microchannel is filled with fluid, and a pressure gradient is generated so that fluid flows through the channel toward the output. Assays involving channel networks with multiple ports have also been demonstrated using this system, suggesting that it facilitates high throughput execution of many novel microfluidic cell-based assays as well.

Applications

- High throughput screening of new chemicals

Key Benefits

- Provides a direct, drop-in replacement for standard microtiter plates
- Enables fast, automated washing with simplified robotics
- Easily manufactured through injection molding
- Does not require expensive pumping equipment
- Reduces evaporation - only a small fraction of the liquid surface is exposed to the atmosphere

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Additional Information

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For More Information About the Inventors

- [David Beebe](#)

Related Intellectual Property

- [View Divisional Patent in PDF format.](#)

Tech Fields

- [Analytical Instrumentation, Methods & Materials : Microfluidics](#)

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

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