



TECHNOLOGY

Multi-Functional Fluid Flow Device

OVERVIEW

Cells within a body are exposed to interstitial fluid movements that stimulate morphologic and biochemical cell changes in response to their environment. The fluid flow device is an inexpensive, multifunctional adapter that fit the wells of traditional tissue culture plates to introduce fluid flow shear stress and pressure onto a monolayer of cells. Flow induced shear stresses and pressures are two parameters that are absent in traditional tissue culture systems. The fluid flow device is designed to sit over a tissue culture well with an inlet and outlet ports to control the shear force and pressure of fluid flow within a well. This device is easily adoptable to any sized tissue culture plate and amenable to real-time, live cell imaging where fluid flow dynamics mechanotransduction can be studied under physiologically relevant conditions.

APPLICATIONS

Fluid flow systems exist in the market that induce fluid flow stress and pressure to a cell monolayer. However, these stand alone systems can be costly and require the purchase of specialized plates, slides, and pumps. The ability to have a simple, versatile, and cost-effective system is highly sought after to conduct research in relevant physiological microenvironments. The microfluidics market is projected to reach \$8.8 billion in 2021 and divided by applications into pharmaceutical research, in vitro diagnostics, and drug delivery. Pharmaceutical research is further divided into lab analytics (cell-based assays, proteomic analysis, genomic analysis, and capillary electrophoresis), dispensing, and microreaction.

ADVANTAGES

Inexpensive

Multifunctional

STAGE OF DEVELOPMENT

Early prototype design and computer modeling

CONTACT INFO

Office of Technology Transfer
620 W Lexington St., 4th Floor
Baltimore, MD 21201
Email: ott@umaryland.edu
Phone: (410) 706-2380

Additional Information

INSTITUTION

University of Maryland, Baltimore

PATENT STATUS

U.S. Patent Appl'n No. 15/466,255, pending

LICENSE STATUS

Available for licensing

CATEGORIES

- Research Tools, Antibodies, & Reagents
- Microfluidics

INVESTIGATOR(S)

James Lyon
Joseph Stains
Christopher Ward

ATTACHMENTS

-  [Download JL-2016-052.docx](#)

EXTERNAL RESOURCES

- [Novel multi-functional fluid flow device for studying cellular mechanotransduction.](#)

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