

A New Paper-Based Platform Technology for Point-of-Care Diagnostics

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ABSTRACT

The recently invented Paper Based Microfluidic Valve (PBMV) technology constitutes a platform technology that allows for sequential manipulation of fluids on paper without operator intervention. Complex multi-reagent quantitative assays not possible with conventional strip tests can now be performed.

APPLICATION

Lab-on-Paper devices incorporating the University of Rhode Island's proprietary PBMV technology can be used in point of care diagnostics and urgent care, in animal health, identification of environmental contaminants, in biological and chemical threat assessment and other applications. It is a low-cost, rapid, quantitative and autonomous device, requiring no operator intervention.

FEATURES & BENEFITS

The PBMV platform technology has been successfully used to autonomously conduct ELISA on a paper based device. The technology is additionally being applied to quantitative assays for determining the activity of enzymes and inhibitors. Such assays are simply not possible in conventional strip tests without operator intervention.

The capability of the Lab-on-Paper devices to conduct complex assays relies on the presence of fluid actuated unidirectional valves constructed within the paper layers. There are no mechanical components that require actuation by an operator.

Flowing fluids activate the valves in a certain sequence and time delay determined by the design and construction of the particular Lab-on-Paper device. All reagents for a given assay can be preloaded onto the device. Their timed and sequential flow begins when the sample fluid is loaded onto the sample pad.

Lab-on-Paper devices can be made to measure the concentration or biological activity of a wide variety of targets that are represented by the entire or partial molecule. This includes antibodies or antigens, metabolites, peptides, carbohydrates, lipids, nucleic acid or other detector molecules that can be selectively bound or interact with companion detector molecules.

PATENT STATUS

US #8,945,485

AVAILABILITY

Technology is available for licensing.

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URIRF turns discoveries into deliverable products and services, creating jobs and economic growth.

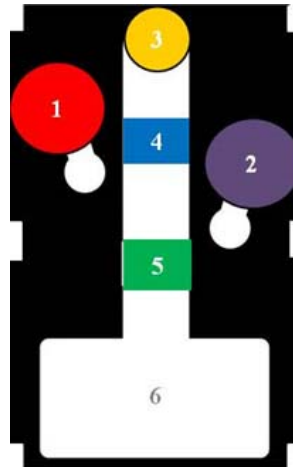
- License URI inventions to industry partners
- Form new ventures
- Commercialize inventions
- Connect industry partners to University technology, facilities and people

CONTACT TO DISCUSS LICENSING OPTIONS

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Three Fluid Lab-on Paper Device Used to Conduct ELISA (Enzyme Linked Immunosorbent Assays) for Various Disease Biomarkers

Top View:



1. Reservoir of Reagent 1
2. Reservoir of Reagent 2
3. Sample Input Pad
4. Conjugate Pad
5. Nitrocellulose Test Area
6. Waste Pad

Exploded View:

