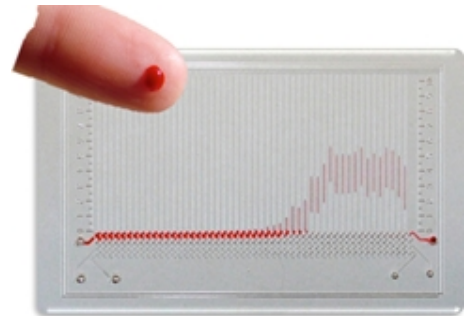


HOUSTON METHODIST INVENTION:

V-Chip – A Multiplexed, Volumetric Bar Chart, Point-of-Care Diagnostic Chip

Invention

The invention is portable glass diagnostic chip, activated by hand sliding two plates to open and close microfluidic channels. Assay results are based on ELISA technology and are visualized by the reaction of catalase and H₂O₂ creating O₂ gas which moves a red dye through the channels to a distance proportional to the concentration of the biomarker being detected.



Background

In order to become widely useful, Point-of-Care diagnostics must overcome several technological challenges so that increased assay throughput, reduced assay time, reduced costs, reduced training needs and real portability can be attained. Microfluidic chips hold promise in overcoming these challenges due to integrated fluid handling and small reagent volumes but themselves add significant challenges due to the additional cost and space requirements for the fluid introducing accessories and fluid pumps, requirement for instrumentation to collect assay results from the readout modality and reduced assay throughput due to the complexity of the fluid networks.

Advantages

The advantages of the V-Chip are:

- Utilizes the hand sliding of two glass plates to activate the microfluidics so no pump needed.
- Provides visual bar chart readout on the chip – no need for instruments to read or quantitate results.
- Easy to use, low cost, handheld, portable device.
- Readout in less than 5 minutes.
- In tests, the V-Chip was more sensitive than the current HCG pregnancy test (2 mIU).
- Can multiplex up to 50 biomarkers on a single chip.
- A small sample size, (10 µl) allows the use of a drop of blood from a finger stick to detect biomarkers.
- An image of the bar chart can be sent by cell phone to a healthcare provider for remote diagnosis.
- Published at: <http://www.nature.com/ncomms/journal/v3/n12/full/ncomms2292.html>

For more information, contact the Office of Technology Transfer by e-mail at OTT@HoustonMethodist.org.



About Houston Methodist

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