

The Office of Technology Management

UNIVERSITY OF TEXAS  ARLINGTON

Proteomic analysis device for migrating cells

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TECHNOLOGY NEED

Cancer metastasis (aggressive migration) is a leading cause of death due to the trouble of single cells escaping from primary cancer and invading distant sites. Cell migration is also a crucial step in embryonic development, wound healing process, and tissue regeneration. Thus, there are increasing needs for research on the migrating capabilities of the cells in order to better understand the mechanism of these cells. Current cell migration studies involves cell culture on petri dishes treated with various therapeutic means such as chemo-drugs, radiation, or scratch for migration, and collected for proteomic analysis. The major problem with this approach is that the results are from both proliferating and migrating cells so that it is very difficult to exclusively study the therapeutic effects on migrating cells.

INVENTION DESCRIPTION/SOLUTION

We have developed a novel proteomic analysis device and method that can exclusively collect large amounts of migrating cells for proteomic analysis on migrating cells. The proteomic analysis device consists of a Polydimethylsiloxane (PDMS) microchannel device that can be assembled on cell culture well plates. Cells are seeded and allowed enough time to migrate through the microchannels. Once cells have occupied the majority of the microchannels, the PDMS device is isolated for the collection of migrating cells by detaching from the substrate. Using an aggressive brain cancer cell line, as the cell model, we are able to show the possibility of quantifying the expression of numerous biomarkers from migrating cells.

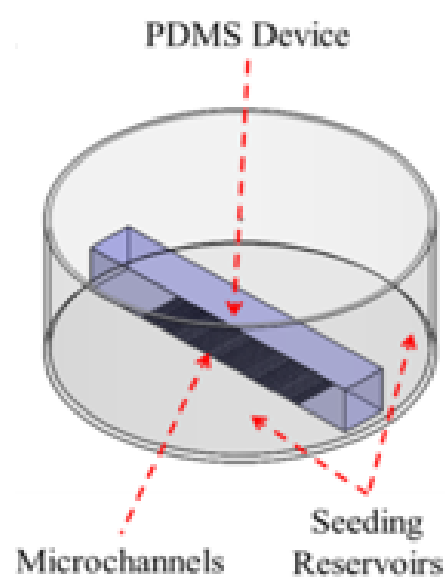


Fig 1 : Schematic of a PDMS microchannel device placed on top of a well for cell culture



Fig 2 : Image of PDMS devices assembled on top of the 6 well plates.

APPLICATIONS

- Quantify and analyze capabilities of migrating cells.

KEY BENEFITS

- Physical confinement of migrating cells.
- Visualization of migrating cells in the microchannels.
- Collection of large amounts of migrating cells for proteomic analysis.

STAGE OF DEVELOPMENT

Prototype

Extensive tests done

INTELLECTUAL PROPERTY STATUS

Provisional patent filed.



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