

Integrated Isolation, Emulsification, And Single-Cell Assay

Tech ID: 27458 / UC Case 2016-861-0

SUMMARY

UCLA researchers in the Department of Bioengineering have developed a new technology that can perform robust single-cell isolation and droplet emulsification for assay.

BACKGROUND

Isolation of individual cells or biomarkers such as nucleic acids, protein, or exosomes is a critical step in assaying for disease state and diagnostics. Capturing cells and/or biomarkers from patient serum/sample itself is a challenging task, the ability to then isolate these captured populations into an assay ready format is equally challenging. These processes currently require manual low throughout-multistep procedures to obtain assay ready material.

INNOVATION

UCLA researchers led by Prof. Dino Di Carlo have developed a single-step high throughput method to capture rare cell types and biomarkers and then subsequently form small volume droplets for downstream bio-assay. They demonstrated that they can isolate and capture rare cancer biomarkers from whole blood samples for in vitro analysis for diagnostic and treatment purposes using their technology.

ADVANTAGES

- ▶ Only method to capture rare cell types/biomarkers and encapsulate them into droplets
- ▶ Demonstrated ability to capture and assay circulating tumor cells (CTCs) for whole blood samples

STATE OF DEVELOPMENT

Researchers have validated their device using whole blood samples to capture CTCs and assay for matrix metalloproteinase activity.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10717086	07/21/2020	2016-861

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [Enhanced Fluorescence Readout And Reduced Inhibition For Nucleic Acid Amplification Tests](#)
- ▶ [Label-Free Digital Bright Field Analysis of DNA Amplification](#)
- ▶ [Robust, Ultra-Flexible, Micro-Encoded Ferromagnetic Tape for Bioseparation and Assembly](#)
- ▶ [Controllable Emulsification and Point-Of-Care Assays Driven by Magnetic Induced Movement of the Fluid](#)

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INVENTORS

- ▶ Di Carlo, Dino

OTHER INFORMATION

KEYWORDS

cancer, CTCs, circulating tumor cells, circulating cancer cells, cancer biomarkers, biomarkers, biomarker capture, emulsification, droplet assay, droplet formation, sample encapsulation, sample isolation

CATEGORIZED AS

- ▶ **Biotechnology**
 - ▶ Health
- ▶ **Medical**
 - ▶ Diagnostics
 - ▶ Disease: Cancer
 - ▶ Other
 - ▶ Research Tools
 - ▶ Screening

RELATED CASES

2016-861-0

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