

## 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

- ▶ Monodisperse Emulsions Templated By 3D-Structured Microparticles
- ▶ 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

### CONTACT

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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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