



Image Analysis of Circulating Tumor Cell MicroTenticles

Summary

The study of circulating tumor cells (CTC) is of considerable interest because of their prognostic value and for therapeutic development. One interesting morphological aspect of CTCs is the presence of microtenticles. Microtenticles are protusions found on the CTCs that are thought to be critically important for cell reattachment. Current techniques for imaging and analyzing CTCs are limited. In microfluidic systems, CTCs float out of the field of the imaging area. Traditional methods for adhering cells to a substrate result effect the free-floating characteristics of the CTCs. The inventors have previously disclosed a novel cell tethering technique that allows CTCs to be imaged without effecting the free-floating nature of the cells (SM-2013-121 and SM-2015-011). This software is a companion technology that automates the analysis of microtenticles captured from these images.

Key Investigator

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Field

Oncology

Technology

Software
Assay

Status

Available for licensing

UMB Docket

Reference

SM-2018-015

External Reference

[Oncotarget. 2016 Mar
1;7\(9\):10486-97.](#)

Market

There are nearly 2 million new cases of cancer diagnosed each year with nearly 40% of them resulting in death. Death from cancer represents the second most common cause of death. It is estimated that nearly \$60 billion is spent annually on cancer with nearly 40% of that total being spent on cancer research alone.

The liquid biopsy market is estimated to be between \$6-8 billion alone and expected to grow by a factor of 2.5 in the next five years. One of the more promising areas of liquid biopsy research is in the area CTC. Currently CTC biopsies represent only a small fraction of the total biopsy market. Driven by new technologies to isolate CTCs and a greater understanding of CTC in prognosis and drug development, the annual growth of CTC biopsies is expected to be 20-30% over the next couple of years.

Technology

This software provides an automated method for analyzing the physical characteristics of the circulating tumor cells that have been adhered to a substrate using Dr. Martin's novel technique and device. The software, and companion tethering technology, allows investigators to evaluate several important characteristics of microtenticles including number, distance, and stability.

Advantages

- Provides a quantitative way of measuring circulating tumor cell properties.
- Supports selection of appropriate drug therapies
- Allows microtenticle and circulating tumor cell measurements to be used as an assay for cancer progression and drug response.

