High-Throughput Method for Evaluating Tumor Aggressiveness

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Technology description

Market Opportunity

Early cancer detection and tumor characterization are critical in determining treatment options available to a patient. Current technologies can identify whether a tumor has already invaded, but they cannot accurately predict whether a tumor will invade. This often results in patients being undertreated, which may be life-threatening. In other cases, it leads to overtreatment, causing patients to endure unnecessary surgery, chemotherapy, and radiation. Developing a faster and more accurate approach to gauge cancer aggressiveness can be a breakthrough in the cancer diagnostics market that is projected to grow to $232 billion by 2025.

USC Solution

USC researchers have developed a novel method to determine the invasive potential of tumors through imaging. Fluorescent reporters are delivered to cancer cells, and the cells are then stimulated with electromagnetic or mechanical means. Measuring the fluorescence activity within the targeted tumor cells can indicate metastatic potential. Tumor aggressiveness can be evaluated within minutes as opposed to days or weeks as in traditional biopsy and pathologist examination.

Key Publication:

Weitz et al., Functional Assay of Cancer Cell Invasion Potential Based on Mechanotransduction of Focused Ultrasound. Front Oncol . 2017 .

Application area

Cytologic assessment of cancer invasiveness
Diagnostics and management of cancer

Advantages

Novel method to determine invasiveness of tumors
Can work in vivo or with biopsied tumor cells

Can assess tumor invasion from biopsied cells, rather than intact tissue (which cannot always be obtained from the patient)
Rapid determination of invasion potential without requiring lengthy laboratory analysis

Institution

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