



Very-Small-Nuclear Circulating Tumor Cell (vsnCTC) as a Diagnostic Biomarker of Visceral Metastasis in Advanced Prostate Cancer

Tech ID: 30306 / UC Case 2015-172-2

SUMMARY

UCLA researchers in the Department of Molecular and Medical Pharmacology have identified a novel biomarker that can be used to diagnose prostate cancer patients for the presence of visceral metastasis with 54% sensitivity and 100% specificity.

BACKGROUND

Prostate cancer is the second most frequently diagnosed cancer in men, accounting for 15% of all male cancers. While the 5-year survival rate of prostate cancer patient is near 99%, the survival rate significantly drops when patients have visceral metastasis of the tumor (i.e. metastasis to the liver or lungs). In such cases, the survival rate drops to as low as 28%. Biomarkers to predict the onset or presence of visceral metastasis are lacking. The identification of early biomarkers to predict visceral metastasis will be highly valuable for patient diagnosis and can lead to earlier medical intervention.

INNOVATION

Though the combined use of immunocytochemistry, nanotechnology, and fluorescence microscopy, Dr. Hsian-Rong Tseng's group at UCLA has identified the presence of vsnCTCs to be a correlative biomarker to visceral metastasis of prostate cancer. Dr. Tseng's method to isolate and characterize these rare cell populations overcomes challenges associated with existing methods that lead to higher false-positive and false-negative rate.

APPLICATIONS

- Clinical test to identify visceral metastasis in prostate cancer patients

ADVANTAGES

- Method can potentially be extrapolated for different cancers
- Biomarker can be easily acquired and analyzed from patient blood—rapid testing
- Technology can better diagnosis patients with prostate cancer compared to conventional methods
- Earlier detection of visceral metastasis will allow for earlier intervention

STATE OF DEVELOPMENT

The technology has been successfully applied on patient samples and the correlation between visceral metastasis and vsnCTCs has been established.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,823,736	11/03/2020	2015-172

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- [A Supramolecular Approach for Preparation of Size-Controllable Nanoparticles](#)
- [Capture And Stimulated Release Of Circulating Tumor Cells On Polymer Grafted Silicon Nanostructures](#)

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INVENTORS

- Tseng, Hsian Rong

OTHER INFORMATION

KEYWORDS

Cancer Metastasis, Flow Cytometry, Cell-Sorting, Circulating Biomarker, Cancer Diagnostic, Disease Signature, liquid biopsy, tumor cell

CATEGORIZED AS

- **Medical**
 - Devices
 - Diagnostics
 - Disease: Cancer
 - Other
 - Research Tools
 - Screening
- **Research Tools**
 - Screening Assays

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