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Abstract

CTC Isolation Methods and Clinical Treatment Monitoring

Z. Hugh Fan,^{1,2,3,4} Kangfu Chen,¹ Jose Varillas,² Jinling Zhang,¹ Thomas George^{4,5}

¹Interdisciplinary Microsystems Group (IMG), Department of Mechanical and Aerospace Engineering; ²J. Crayton Pruitt Family Department of Biomedical Engineering; ³Department of Chemistry; ⁴UF Health Cancer Center; ⁵Department of Medicine

University of Florida (UF)

PO Box 116250, Gainesville, FL 32611, USA

email: hfan@ufl.edu; Web: www.mae.ufl.edu/~hfan

This presentation will cover our results of using various microfluidic devices for tumor cell isolation. These devices have been integrated with aptamers, antibodies, nanoparticles, or size-based separation mechanisms for higher isolation efficiency and specificity [1]. We have found that a method based on both physical and biological properties shows better performance than the approaches based on either physical property or biological property only. Using one microfluidic device [2] based on the FDA-approved CTC definition, we have performed a longitudinal study of correlating the number of circulating tumor cells (CTCs) in the blood samples of pancreatic cancer patients with cancer treatment. We have found CTCs can be used a biomarker for monitoring the responses of cancer patients to anticancer therapy.

[1] J. Zhang, K. Chen, Z. H. Fan, "Circulating Tumor Cell Isolation and Analysis," *Advances in Clinical Chemistry*, 75, **2016**, 1-31.

[2] W. Sheng, O. O. Ogunwobi, T. Chen, J. Zhang, T. J. George, C. Liu, and Z. H. Fan, "Capture, release and culture of circulating tumor cells from pancreatic cancer patients using an enhanced mixing chip," *Lab on a Chip*, 14, **2014**, 89–98.