

Department of Mechanical and Biomedical Engineering

Seminar Series

Microengineered Biosystems for Cancer: From Biology to Mechanics

Dr. Weiqiang Chen

Assistant Professor

Department of Mechanical and Aerospace Engineering,
New York University, USA

Date	April 16, 2018 (Monday)
Time	11:00am
Venue	Room B6619 (MBE Conference Room), 6/F, Yeung Kin Man Academic Building

Abstract

Taking advantages of state-of-art nanotechnologies, fascinating functional biomaterials and integrated biosystems, we can address numerous important problems in fundamental biology as well as clinical applications in cancer diagnosis and treatment. This seminar will discuss interdisciplinary approaches that leverage engineering advances in biomaterials, microfluidics and micromechanical systems for new and better solutions for emerging problems in cancer. Specific examples include microfluidic lab-on-a-chip systems for capture, culture and analysis of single immune cells as well as rare circulating tumor cells for cancer diagnosis. I will also discuss how my lab has developed novel microfluidics-based organotypic leukemia bone marrow and glioma brain tumor models to screen new cancer immunotherapies by reconstituting key cellular and immune interactions from in vivo microenvironments. Furthermore, I will discuss how the distinct biomechanical attributes in tumor microenvironments contribute to the evolution of cancer stem cells and their tendencies toward tumorigenesis and metastasis, which may help identify cancer phenotypes and biomarkers and develop personalized models for therapeutics. I will highlight how our cancer sensing, modeling and mechanical

systems can be used to study underlying mechanisms of tumor progression and screen personalized cancer immunotherapies.

About the Speaker

Dr. Weiqiang Chen is an Assistant Professor in the Department of Mechanical and Aerospace Engineering at New York University. He received his B.S. in Physics from Nanjing University in 2005 and M.S. degrees from Shanghai Jiao Tong University in 2008 and Purdue University in 2009, both in Electrical Engineering. He earned his Ph.D. degree in Mechanical Engineering from the University of Michigan in 2014. He is the receipt of American Heart Association Scientist Development Award, the NYU Whitehead Fellowship, the 2013 Baxter Young Investigator Award, the University of Michigan Richard F. & Eleanor A. Towner Prize for Outstanding PhD Research, and the ProQuest Distinguished Dissertation Award. Dr. Chen's research interests focus on Lab-on-a-Chip, biomaterials, mechanobiology, stem cell biology, cancer biology, immune engineering.

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All are Welcome!