

Dynamic Regulation of Breast Cancer Stem Cells

BY Dr. Hexin Chen

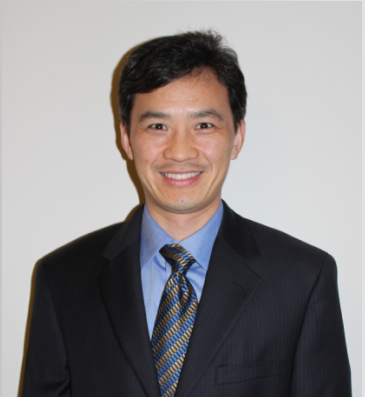
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ABSTRACT

Cancer stem cells (CSCs) are a highly tumorigenic cell type found in a variety of solid tumors, including breast cancers, that are believed to be resistant to standard chemotherapy and responsible for tumor recurrence. The relative frequencies of CSCs span wide ranges even within tumors arising from the same tissue type. Our lab is interested in identifying and studying the intrinsic and extrinsic factors, which can dynamically regulate the CSC population in tumor. We investigate how overexpression of HER2/Neu oncogene leads to expansion of CSC population. Also, we harness the power of nanotechnology to test if micro-environmental factors, such as chemical composition and physical properties of extracellular matrix (ECM) fibers, can regulate the self-renewal and proliferation of breast CSCs. Lastly, we develop mathematical models to simulate the non-linear proliferation kinetics of CSCs both *in vitro* and *in vivo* and explore its potential implications for CSC-targeted therapy.

BIOGRAPHY

Dr. Chen received his Ph.D. degree in Molecular Biology at the University of Nebraska in 2000. He did his postdoctoral research at Johns Hopkins University School of Medicine focused on studying the role of HOX genes in breast tumorigenesis. In 2008, Dr. Chen was recruited as a tenure-track faculty member in the Department of Biological Sciences at the University of South Carolina. His current research interests involve studying the molecular signaling pathways in cancer stem cells, development of CSC-targeted therapy and establishment of 3D-nanofibrous cell culture systems and mathematical models for cancer research.



EVENT DETAILS

DATE:

October 30, 2013

TIME:

11:00 AM

LOCATION:

Morton 103
Stevens Institute of
Technology

ATTENDANCE:

Public

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