Food for the Twenty-First Century
Bioprocessing and Biosensing Center

Fall 2013 Seminar Series

PRESENTER: Dr. Peter X. Ma, Richard H Kingery Endowed Collegiate Professor
School of Dentistry and College of Engineering, University of Michigan, Ann Arbor

TITLE: Biomimetic Materials for Regenerative Medicine

ABSTRACT: Scaffolds provide three-dimensional environments for stem cells and serve as templates for tissue regeneration. Our lab develops 3D biomimetic scaffolds that recapitulate advantageous features of the extracellular matrix (ECM) and impart engineering design to facilitate regeneration. Novel phase separation techniques have been developed to create ECM-mimicking nanofibrous scaffolds. Porous network design facilitates cell seeding/migration, mass transport, and tissue regeneration. To regenerate complex and irregularly shaped tissue defects using minimal invasive procedures, we developed injectable nanofibrous microspheres to regenerate various tissues. To mimic the biomolecular activities in development, we have developed scaffolds that release various biological molecules in a controlled fashion to direct cell fate and function. These biomimetic scaffolds have been demonstrated to advantageously facilitate stem cell-based regeneration.

BIOGRAPHICAL: Peter X Ma received his BS and MS degrees from Tsinghua University in Beijing. He received his PhD from Rutgers University, and did his post-doctoral research on Biomaterials and Tissue Engineering at MIT and Harvard Medical School. Currently, Dr. Ma is the Richard H Kingery Endowed Collegiate Professor at the University of Michigan. Dr. Ma has published 213 articles in scientific journals, conference proceedings and books. His publications made 11 journal and book covers. He has been an invited/keynote/plenary speaker for more than 200 times. He is an inventor on 28 US patents and patent applications. Dr. Ma is a member of 6 journal Editorial/Advisory Boards. He has served on grant review panels for NIH, NSF, DoD and many other US and international funding agencies. He is currently a Council Member of TERMIS-Americas. He won a Whitaker Foundation Young Investigator Award (1999) and a DuPont Young Professor Award (2000). He was featured as one of five bioengineers by The Whitaker Foundation (2004), and was named one of the Top 100 materials scientists in the world (during 2000-2010) by Thomson Reuters. He received a Distinguished Scientist (Isaac Schour Memorial) Award from the International Association for Dental Research (2013), and a Clemson Award from the Society For Biomaterials (2013). He is a Fellow of the American Institute for Medical and Biological Engineering (AIMBE), Fellow of International Union of Societies of Biomaterials Science and Engineering.

DATE • TIME • LOCATION:
Tuesday, October 22, 2013, 4:00 PM, 105 Agricultural Engineering Building

The Food for the 21st Century (F21C) program at the University of Missouri (MU) was established in the mid-1980's through state funding. The overall goal of the program is to help Missouri food producers and processors maintain their competitive edge in the global marketplace by conducting cutting-edge research in a number of food-related areas. The program involves faculty researchers from multiple colleges including College of Agriculture, Food and Natural Resources; College of Arts and Sciences; College of Engineering; School of Medicine; College of Human Environmental Sciences; and College of Veterinary Medicine. Based on the research emphases, the researchers are grouped into four Clusters: Plant Biotechnology; Animal Sciences; Chemical Engineering; Electrical Engineering; and Mechanical and Aerospace Engineering. This seminar is one of the educational activities in the Bioprocessing and Biosensing Center.

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