Registration for Minnesota Neuromodulation Symposium on April 13th & 14th is Rapidly Approaching its Limit

The 5th Annual Minnesota Neuromodulation Symposium (MNS) will be held on April 13th and 14th, 2017 at the Commons Hotel on the University of Minnesota’s East Bank campus. Members of Minnesota’s medical technology community are invited to attend this two-day event to discuss recent research and clinical developments in the field of neuromodulation. This year, MNS is proud to host thought leaders from academia, industry, and government who will be presenting on various aspects of neuromodulation and neurotechnology. It will include a number of oral talks in plenary sessions and nearly 120 poster presentations from 58 different institutions, 24 non-profit organizations, 16 corporations, and 16 countries. Spaces are limited, so register soon to be guaranteed a spot. Registration and other information is available at [neuromodulation.umn.edu](http://neuromodulation.umn.edu).

2017 Minnesota Neuromodulation Symposium Scientific Program

John Bischof & IEM Colleagues Achieve Breakthrough in Quest to Preserve Organs for Transplantation

Dr. John C. Bischof, IEM Associate Director for Development, and Professor of Mechanical and Biomedical Engineering, along with his IEM colleagues, have successfully demonstrated a method to safely warm vitrified tissue, a major step toward cryopreservation of human tissues and organs for transplantation. A barrier to preserving large tissues and organs by cooling (or vitrification) is that the tissue crystalizes and can also crack during the warming process, damaging the tissue. As reported by the Associated Press, Dr. Bischof’s team has overcome this by using iron oxide nanoparticles that, when heated by radiofrequency fields, allow for a uniform and rapid warming of the vitrified tissue. This method, known as nanowarming, could eventually be applied to entire organs, and ultimately result in helping to meet tissue and organ demand of those needing transplants. However, this will require more years of research to achieve. “We are cautiously optimistic that we’re going to be able to get into a kidney or maybe a heart. But we are not, in any way, declaring victory here,” says Dr. Bischof. Other IEM members on Dr. Bischof’s team included IEM Executive Committee Member Dr. Christy L. Haynes, Professor and Vice Chair, Department of Chemistry; Dr. Alex Fok, Professor of Restorative Sciences; and Dr. Michael Garwood, Professor of Radiology-CMRR. The research has been published in *Science Translational Medicine*.

First Step to Help Preserved Organs Survive the Deep Freeze

Angela Panoskaltsis-Mortari Leads University’s Joining of Consortium to Bolster Advanced Tissue Biofabrication

IEM Member Dr. Angela Panoskaltsis-Mortari, Professor of Pediatrics and Medicine, and Director of the 3D Bioprinting Facility, led the submission process for the University of Minnesota’s successful bid with the Advanced Regenerative Manufacturing Institute (ARMI), a consortium of nearly 100 organizations spanning industry, government, academia and the non-profit sector, for a new manufacturing institute partly funded by the DoD. Approximately $80 million from the federal government will be combined with more than $200 million in cost share to support the development of tissue and organ manufacturing capabilities. “This initiative is a great way to build our bioprinting and education expertise in a collaborative way with other leading organizations,” says Dr. Panoskaltsis-Mortari. “Regenerative medicine and biofabrication is an opportunity area for our healthcare and manufacturing industries, and we’re excited to be part of an effort that could benefit patients and our economy.”

As part of its role in the consortium, which will be supported with a $3.5 million budget, the University of Minnesota is expected to lead the development and expansion of training curricula for K-12, 2- and 4-year colleges, industry professionals and veterans, that will educate students about Tissue and Organ Biofabrication, 3D Bioprinting and Regenerative Medicine. Dr. Panoskaltsis-Mortari expects allocation and scope of work to be finalized by the summer of 2017. The Institute for Engineering in Medicine, the
IEM-affiliated Medical Devices Center, Stem Cell Institute, Molecular & Cell Therapy Facility, 3D Bioprinting Facility, STEM Education Center and many others will play vital roles in this initiative.

**U. of M. Part of Public-Private Partnership to Bolster Regenerative Medicine**

**David Odde Discusses Effort to Engineer Bacteria-Eating Cells with Baltimore Sun**

IEM Executive Committee Member Dr. David J. Odde, Professor of Biomedical Engineering, discussed with the *Baltimore Sun* a research effort at Johns Hopkins University to engineer amoebas, single-cell organisms, to become bacteria-eating cells. While the research is focused upon using the cells to kill the bacteria that cause Legionnaire’s Disease, and a drug-resistant bacteria that affects hospital patients, what is learned from how the cells can be engineered could lead to advances in treating other diseases, including cancer. Dr. Odde says that a key factor is getting the cells to sense the bacteria. “They might make new discoveries about how these systems cross talk to each other which will be really valuable for this project and many other projects,” says Dr. Odde.

**Hopkins Scientists Are Engineering Cells to Eat Deadly Bacteria**

**Christopher Weight Discusses Prostate Cancer Surgery with KARE 11**

Dr. Christopher J. Weight, Assistant Professor of Urology, and IEM Member, was interviewed by *KARE 11* to discuss prostate cancer surgery, soon before Governor Dayton had surgery to treat his prostate cancer at the Mayo Clinic on March 2nd. Dr. Weight says that most of these procedures are performed with robotic assistance and that they are among the most common types of cancer surgeries performed in the U.S. “It used to be all done through an open incision, which was about an 8 centimeter incision going from the belly button down to the pubic bone,” says Dr. Weight. “Now it’s usually five or six small incisions about 8 millimeters, which is a little bit smaller than the tip of my finger.”

**Dayton Set for Prostate Surgery**

**Marc Tompkins Co-Authors a Study Published in the Journal Pediatrics on Increase of ACL Tears Among 6 to 18 Year-Olds**

IEM Member Dr. Marc Tompkins, Assistant Professor of Orthopedic Surgery, co-authored a study in the journal *Pediatrics* that showed an increase in ACL tears among children 6 to 18 years of age, over the 20-year period of 1994 to 2013. The increase of 2%, annually, during that period has been especially pronounced for girls. While the reason for the increase was unclear, Dr. Tompkins says that it could be due to increased specialization in a particular sport, greater intensity and force of play, and a general increase in sports participation among girls during those 20 years. However, he notes, it could also be due to better diagnostics. “We are getting better as a medical community at diagnosing ACL injury,” says Dr. Tompkins. The first author of the study was Dr. Nicholas A. Beck, a Medical Resident in Orthopaedic Surgery.

**Incidence of ACL Tears May be Increasing, Especially Among High School-Age Girls**

**ACL Tears in School-Aged Children and Adolescents Over 20 Years**

**Emil Lou Discusses Increase of Colon & Colorectal Cancers Among Millennials & Generation Xers**

Dr. Emil Lou, Assistant Professor of Medicine, and IEM Member, discussed with the University’s *Health Talk* a recent study showing an increase of colon and colorectal cancers among Millennials and Generation Xers. Compared to Americans born in 1950, those born in 1990 are twice as likely to be diagnosed with colon cancer and four times as likely to be diagnosed with rectal cancer. Dr. Lou says that “the findings of this study are extremely alarming,” and that “they indicate a strong need to increase awareness among medical professionals that young adults can actually get colorectal cancer.” Possible causes of the increase could include lifestyle factors of people 20 to 30 years of age, such as a poor diet, sedentary lifestyle, excess weight and a low consumption of fiber, all of which have also contributed to an epidemic of obesity.

**Colon and Colorectal Cancers on the Rise in U.S. Millennials**

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**Announcements**

**The Otto Schmitt Distinguished Lecture Series**

“In Vitro Vascularized Models for Metastatic Cancer”

*Dr. Roger D. Kamm*

*Cecil and Ida Green Distinguished Professor of Biological and Mechanical Engineering*

*Massachusetts Institute of Technology*

*Tuesday, April 25, 2017*

*Networking lunch starting at 11:30AM, Presentation 12:00PM – 1:15PM*

*3rd floor Coffman Memorial Union, Mississippi Room*

*Minneapolis, MN*

The Institute for Engineering in Medicine is pleased to announce the next Otto Schmitt Distinguished Lecture by Dr. Roger D. Kamm. This series is open to the University of Minnesota community to build collaborative projects between the disciplines of engineering and medicine, as well as provide an opportunity to hear presentations from national opinion leaders in research,
industry, and government. Additional information on Dr. Kamm’s presentation, as well as the Otto Schmitt Distinguished Lecture Series can be found through the following link:

Otto Schmitt Distinguished Lecture Series

OTC Free Startup Seminar: Bench to Business - How Great Innovators Cross the Chasm to Commercial Success
University of Minnesota Office for Technology Commercialization
Wednesday, April 12, 2017 from 5:00 PM to 7:30 PM (CDT)
Minneapolis, MN

This program will explore several principles, tools and practices to supplement your technical expertise and help you anticipate and navigate the challenges along the path from discovery and IP to commercial success. We'll explore the “three C's” of innovation: the broader context (the innovation ecosystem), the capability required for a commercially viable solution (the business model), and the collaboration practices necessary to execute the business model successfully. If you have ever thought about setting up or getting involved in a new company but haven’t yet had much commercial experience, the information at this session will be valuable.

OTC Free Startup Seminar Tickets

NIH SPARC Funding Opportunities

New SPARC Funding Announcements: RFA-RM-16-008 and RFA-RM-17-009
The NIH Stimulating Peripheral Activity to Relieve Conditions (SPARC) program seeks to advance understanding of the neural control of organ function, laying a mechanistic foundation for the next generation of therapeutic closed-loop neuromodulation devices. The SPARC team has released two new funding announcements, soliciting applications to develop new tools and data science to support this mission.

1) RFA-RM-16-008, Data Coordination, Map Synthesis, and Simulation Cores for the SPARC Program: Letters of Intent (LOI) are required and are due by April 7, 2017. A subset of LOI applicants will be invited to submit a full application, which is due by June 2, 2017. Questions should be addressed to SPARC_Data@mail.nih.gov.
2) RFA-RM-17-009, Technologies to Understand the Control of Organ Function by the Peripheral Nervous System: Pre-applications will be accepted quarterly beginning May 1, 2017. Only tool and technology categories listed on the SPARC FOA Priorities page for the current receipt date are responsive to this funding opportunity.