News

Record Attendance at Minnesota Neuromodulation Symposium
The 4th Minnesota Neuromodulation Symposium attracted 483 registrants to its two-day event, which was organized by IEM and held at the Commons Hotel on April 14th and 15th. The globally-recognized event featured plenary, invited and highlight talks, and panel discussions by the leaders of the neuromodulation field, from academia, government, and industry. In addition, there were close to 100 poster presentations representing 37 different institutions, 18 non-profit organizations, 10 corporations and 12 countries.

The groundbreaking research of two of the Symposium presenters has made national news in April. Plenary speaker Dr. Alvaro Pascual-Leone of Harvard University was featured on NPR’s Fresh Air on April 21st for his work in utilizing transcranial magnetic stimulation (TMS) for treating patients with autism. Among the highlight talks and posters presented was “Implanted Brain Computer Interface for Real-Time Cortical Control of Hand Movements in a Human with Quadriplegia,” research that was featured in the New York Times during the same week and published in the April 13th online edition of the journal Nature.

“The quality of presentations at the symposium represents one of the finest conferences in the world. The success of the symposium reflects the emerging nature of the neuromodulation field and the leading positions of the University of Minnesota and Minnesota neuromodulation industry,” said Dr. Bin He, Symposium Chair and Director of the Institute for Engineering in Medicine.

Minnesota Neuromodulation Symposium
2016 Poster and Travel Award Winners
MNS 2016 Photos

Design of Medical Devices Conference Celebrates its 15th Anniversary
The 15th Anniversary Design of Medical Devices Conference (DMD) was held from April 11th to 14th at the Commons Hotel, McNamara Alumni Center and TCF Bank Stadium. As reported by KARE 11, the theme of this year’s event was 3D and biological printing, and the conference also included numerous sessions on a variety of other topics, including wearable technologies for home healthcare applications and a live-stream of a surgery performed in Pennsylvania. DMD Conference Chair Dr. Arthur G. Erdman, Director of the IEM-affiliated Medical Devices Center, says that DMD is held in the optimal location: “What better place than Minnesota, where we have the highest density of medical device companies in the world.”

Design of Medical Devices Conference
U. of M. Hosts Medical Device Conference

IEM Hosts Shanghai Jiao Tong University Delegation
The Institute for Engineering in Medicine (IEM) hosted a faculty delegation in medical engineering from the Med-X Institute of Shanghai Jiao Tong University (SJTU), China, that visited IEM-affiliated centers and labs on March 28th and 29th. IEM also co-hosted and co-organized with University of Minnesota’s China Center a welcome banquet for the delegation. that included University of Minnesota Executive Vice President and Provost Dr. Karen Hanson, SJTU Vice President Lisa Xu, and 41 faculty members and deans from both universities. IEM has cultivated key relationships and helped develop research collaborations with SJTU’s Med-X Institute, the School of Biomedical Engineering, as well as biomedical and engineering faculty at the University of Minnesota for many years. The workshop focused upon expanding
future research collaborations at the nexus of engineering with medicine, and was co-moderated by Dr. Bin He, IEM Director and Professor of Biomedical Engineering. Another important aspect of SJTU’s visit focused upon student exchanges and a new, dual-degree program in sports management between the two universities.

SJTU Delegation Visits UMN

3-D Modeling Plays a Vital Role in TAVR Success; Shows Promise for Wide Range of Medical Procedures
The Laboratory of Dr. Paul A. Iaizzo, Professor of Surgery and IEM Associate Director for Education and Outreach, collaborated with cardiologist Dr. Gregory A. Helmer to generate a 3-D model of a patient’s heart to find the optimal size for replacement of her aortic valve. Having the right sized valve was particularly critical to the success of this transcatheter aortic valve replacement (TAVR) procedure performed at the University of Minnesota Medical Center. Such modeling performed by Dr. Iaizzo’s team at the IEM-affiliated Visible Heart Lab continues to show the promise for such technologies to improve patient outcomes in a variety of procedures. “We hope that for clinical teams to have such a resource like this at the University will be something that will ultimately improve care delivery,” says Dr. Iaizzo.

To Repair Karlie’s Weakened Heart Surgeons Turn to 3d Printer

Mind-Controlled Drone Race Utilizes Technology First Demonstrated by IEM Director
The University of Florida hosted last weekend what was billed as the first-ever race between mind-controlled drones, utilizing a technology that was first demonstrated at the University of Minnesota in 2013 by Dr. Bin He, Director of IEM and Center for Neuroengineering and Professor of Biomedical Engineering. As reported by the Associated Press, The race, which was held in an indoor basketball court, involved 16 “pilots” who strove to fly a drone through a 10-yard course. Dr. He’s group demonstrated in 2013 mind-controlled drone flying in a gym on the campus of the University of Minnesota, which stimulated a number of world-wide efforts on non-medical application of brain-computer interface (BCI). Organizers of the race are seeking to make BCI more mainstream, by having it used for everyday tasks, beyond laboratory settings and medical applications, a future that is becoming more viable as BCI equipment becomes more affordable. “The progress of the BCI field has been faster than I had thought ten years ago. We are getting closer and closer to broad application,” says Dr. He.

Mind-controlled Drone Race
Mind Over Mechanics

Douglas Yee Working to Efficiently Evaluate Breast Cancer Drugs
IEM Member Dr. Douglas Yee, Professor of Medicine and Director of the Masonic Cancer Center, serves on the Executive Committee and is Co-Chair of the Agent Committee of the I-SPY2 clinical trial, which has successfully evaluated several breast cancer drugs simultaneously, with three of those now progressing to the next phase of testing. This approach is unique from that of most clinical trials, in which drugs are tested one at a time, and it saves a lot of time in a process that typically lasts for five or more years for each drug. “To me, it demonstrates that we can identify active agents that are effective in the treatment of breast cancer in a much shorter timeline,” says Dr. Yee. The multi-center trial has tested 15 chemotherapy drugs since it began in 2010, and focuses on both the effectiveness of the various drugs as part of a chemotherapy regimen prior to surgery and matched to the molecular profile of a patient’s tumor so that the most effective of the drugs can be used for each patient. An arm of the trial is being developed to switch the drug for patients who don’t respond sufficiently to their initially matched treatment.

Research Efficiency

Roni Evans Discusses Challenge of Studying Chronic Pain’s Impact on Young Adults in Story Picked Up by Associated Press
IEM Member Dr. Roni L. Evans, Associate Professor, Center for Spirituality and Healing, recently discussed the challenges of researching chronic pain in young adults with the Minnesota Daily, a story that was reported by the Associated Press and also ran in the Star Tribune and MPR. Chronic pain is reported by approximately one-quarter of people 18 to 29 years of age, and can significantly affect their lives by limiting them from activities they enjoy and isolating them socially. But studying pain in young adults can be challenging due to the subjective nature of measuring it. Dr. Evans says that “You can’t see that someone has pain. It’s not like a broken leg or a broken arm; it is something that someone experiences, so you really have to rely on what they’re telling you…and that makes it hard to study.”

Young and Aching: U. of M. Students Suffer from Chronic Pain

Bruce KenKnight Receives Outstanding Achievement Award
IEM Industrial Fellow Dr. Bruce H. KenKnight received the Outstanding Achievement Award, the University of Minnesota’s highest recognition for alumni. The award is conferred “on graduates or former students of the University who have attained unusual distinction in their chosen fields or professions or in public service, and who have demonstrated outstanding achievement and leadership on a community, state, national, or international level.” Dr. KenKnight has had a medical technology career spanning 30 years and holds more than 250 patents worldwide. He has made substantial
contributions to the University of Minnesota by serving in several advisory roles and has been Adjunct Professor of Biomedical Engineering since 2001.

Outstanding Achievement Award

Jeffrey McCullough Discusses Zika Virus in New York Times
Dr. J. Jeffrey McCullough, Professor of Laboratory Medicine and Pathology, American Red Cross Professor of Transfusion Medicine, and IEM Member discussed with the New York Times the logistical challenges of keeping the Zika virus from contaminating blood supplies in affected areas. The FDA approved a new test to screen donated blood, which is needed to avoid the contamination of blood supplies as the virus spreads into the U.S. Without such screening, blood banks in areas most likely to be hit with outbreaks, such as the Gulf Coast states, would have had to import supplies from northern states not yet effected by the virus. "It is logistically difficult, but it can be done," said Dr. McCullough. But the new screening test, which will be initially implemented in Puerto Rico, will help to newly-effected areas to avoid that situation.

Zika Virus Blood Test Puerto Rico

Announcements

NIH SPARC Grant Opportunities Presented by Dr. Grace C.Y. Peng at 2016 Minnesota Neuromodulation Symposium
Funding Opportunity 1: Comprehensive Functional Mapping of Neuroanatomy and Neurobiology of Organs (OT1 and OT2)
• OT1 Applications accepted on due dates every other month - Next date is May 16, 2016.
• Detailed, predictive functional and anatomical neural circuit map for neural control of medically relevant functions of a specific organ and its functionally-associated structures
• RFA-RM-15-003 and RFA-RM-15-018

Funding Opportunity 2: Foundational Functional Mapping of Neuroanatomy and Neurobiology of Organs (OT2)
• Limited Competition - No Receipt Date available
• Foundational functional neuroanatomy and neurobiology data for major organs, potentially leading to a subsequent large Comprehensive Functional Mapping project.
• RFA-RM-15-020

Funding Opportunity 3: Technologies to Understand the Control of Organ Function by the Peripheral Nervous System (OT1 and OT2)
• Two Receipt Dates - Last date is May 16, 2016
• Tools and technologies to elucidate the neurobiology and neurophysiology underlying autonomic control of organs in health or disease.
• RFA-RM-16-002 and RFA-RM-16-003
• Funding Opportunity 4: Pre-clinical Development of Existing Market-approved Devices to Support New Market Indications (U18)
• Receipt Date is May 2, 2016
• RFA-RM-16-002

Stimulating Peripheral Activity to Relieve Conditions (SPARC) Program