News Stories

Company Launched to Commercial Bob Tranquillo’s Biologically Engineered Tissue Technology
A startup named Vascudyne has been launched to commercialize biologically engineered tissue developed by IEM Member Dr. Robert T. Tranquillo, Department Head and Professor of Biomedical Engineering and also Professor of Chemical Engineering & Materials Science. The tissue, which is the result of years of research by Dr. Tranquillo and his lab, is similar to a patient’s own tissue in that it has the capacity to regenerate and grow as the patient grows, capabilities that are not possible with currently available treatments that use synthetic and native tissue. The initial applications for the tissue will be small-diameter vascular conduits and a valve for right heart applications that would be delivered by a catheter. In the long-term, the company will seek to apply its technology to a broader variety of medical device applications. “We are excited about the prospects of this material grown from skin cells becoming a clinical reality with its commercialization by Vascudyne,” says Dr. Tranquillo, “given its success in our preclinical studies and its potential as a platform technology for many applications.”

Minnesota Startup Vascudyne to Commercialize Biologic Engineered Tissue >

Kamil Ugurbil Selected to Receive 2019 IEEE Medal for Innovations in Healthcare Technology
IEM Member Dr. Kamil Ugurbil, Professor of Radiology-CMRR, has been selected to receive the 2019 IEEE Medal for Innovations in Healthcare Technology,” For pioneering the development and leading the advancement of ultra-high-field MRI technology for biomedical and brain research.” As reported by SCIENMAG, the Medals and Recognitions of IEEE are its highest awards and given on behalf of the organization’s Board of Directors. Dr. Ugurbil will be among 26 recipients will receive these awards at the 2019 IEEE Vision, Innovation and Challenges Summit & Honors Ceremony on May 17th in San Diego. “I am extremely pleased to be the recipient of this award; it is a recognition of our team’s pioneering initiatives, often considered to be high risk at the beginning, that ultimately lead to important achievements setting the direction and pace of development in MRI as well as the study of the human brain,” says Dr. Ugurbil.

UMN Faculty Member to Receive 2019 IEEE Medal for Innovations in Healthcare Technology >
Esther Krook-Magnuson’s Epilepsy Research Featured in Nature

Research by IEM Member Dr. Esther Krook-Magnuson, Assistant Professor of Neuroscience, has been featured in an article in the journal Nature about gene therapy-based treatments for epilepsy, a condition for which one-third of patients are resistant to currently-available medications to prevent seizures. Dr. Krook-Magnuson’s research has focused on using light-activated membrane proteins called opsins to prevent seizures from occurring, a method she has demonstrated in mice. Her system uses an algorithm that, when an imminent seizure is detected, lights-up opsins implanted in the epileptic foci of the rats’ brains. Electrodes are used to deliver the signal of an oncoming seizure and fiber optics are used as the light source. Dr. Krook-Magnuson says that, in humans, this approach would be less invasive than the more extreme option of surgery to remove part of a patient’s brain.

Visible Heart Lab’s Research Featured in National Geographic Story on the Application of Ancient Remedies to Modern Medicine

A National Geographic’s recent article on the application of traditional Chinese treatments to modern medicine features research performed within the IEM-affiliated Visible Heart Lab (VHL) which is led by Prof. Paul A. Iaizzo, IEM Associate Director for Professional Education and Outreach. Their group has demonstrated improved functioning in a pig heart that had been reanimated after being treated with molecules circulating in their blood: e.g., the bile in bears, has been a remedy used in Chinese medicine, as early as the eighth century. The bile in bears, Dr. Iaizzo explained, helps to sustain their hearts while they hibernate at mild hypothermic temperatures and with greatly reduced blood flows and activity levels; such would likely cause damage in humans. The research team with the VHL has studied various components circulating in plasma that are likely protecting a bear’s heart and other organs during hibernation; they hope that these components could potentially be used to treat isolated human hearts or other organs so to lengthen the times they could be preserved between the harvest from their donors and transplant into their recipients. “If we could preserve a heart for 24 hours, we could get it anywhere in the world,” says Prof. Iaizzo. “And that could vastly increase the number of available organs. That would be a game changer.”

Peter Bruggeman Part of Research Team Using Cold Plasma for Food Decontamination

IEM Member Dr. Peter J. Bruggeman, Professor of Mechanical Engineering, and Dr. Sagar M. Goyal, Professor of Veterinary Population Medicine, are leading a team that is investigating the use of cold plasma to decontaminate food and food processing surfaces. As reported by the animal agriculture publication Feedstuffs, plasma, consisting of photons, ions, free radicals, molecules and atoms, is very reactive, making it ideal for a number of applications. And in its cold form, at close to room temperature, it can be easily applied to food products, allowing heat-sensitive foods, such as leafy greens and berries, to be decontaminated without them having to be boiled or cooked. The technology has succeeded in lab settings and the team’s next step is to make it safe and cost-effective to be used by food processors and restaurants. The U.S. Department of Agriculture is funding the research.
Paul Iaizzo & Will Durfee Continue a Long Tradition of Leading Sessions at an Innovation Workshop at a Cardiology Conference in Israel

IEM Associate Director for Professional Education and Outreach, Dr. Paul A. Iaizzo and IEM 3D Printing Core Director, Dr. William K. Durfee, Professor of Mechanical Engineering, led sessions at the Academy of Innovation Day earlier this month at the ICI meeting in Tel Aviv, Israel, described as a premier conference for innovation in cardiovascular systems. It was their 11th year of teaching at the workshop. Dr. Iaizzo says that their involvement began when he “was recommended by a Medtronic employee in Switzerland, to be the best person to help them organize such a workshop, and then, of course, the best person I could enlist to help me do so was Will.” The theme of this year’s workshop was the development of new cardiovascular therapies, which included an overview of the new product development process, brainstorming, the essentials of creativity, the testing of medical devices, and protection of patents. [ICI Academy of Innovation Day Agenda >]

Close to 500 Attendees Participate at the 2nd DMD China Conference in Beijing

The second DMD China Conference, held from December 10th to 12th in Beijing, was a significant success, with close to 500 participants representing the medical technology industry, including their Chinese-based business units, and scientists from the U.S. and China. Topics presented included two live surgeries, global harmonization of regulatory pathways, medical device innovation, virtual and augmented reality, 3-D printing, including biologics, computer modeling and simulation. Keynotes were delivered by senior persons at Medtronic, 3M, Abbott, Boston Scientific, J&J, the China FDA and Tsinghua University, and the speakers included IEM Member Dr. Gwenyth Fischer, Assistant Professor of Pediatrics, IEM Industrial Fellow Dr. David M. Knapp, V.P. of R&D at Boston Scientific, and Randy Schiestl, IEM Industrial Advisory Board Member and Vice President of R&D and Global Technology at Boston Scientific. “Attendance, content and messaging were very strong for our international audience of 450+ participants,” says Mr. Schiestl. “We are proud to play a role in partnering with the University of Minnesota on all global DMD conferences.” The conference was established by its Chair, Dr. Arthur G. Erdman, IEM Executive Committee Member and Director of the Earl E. Bakken Medical Devices Center, as an extension of the Design of Medical Devices Conference, held annually at the University of Minnesota in April. [DMD China Agenda >]

Announcements

Advanced Cardiac Physiology and Anatomy (PHSL 5510) January 7-11, 2019, Mayo Auditorium, Minneapolis East Bank Campus

This course is an intense one-week lecture and laboratory experience designed for industry biomedical engineers, postdoctoral trainees, and graduate students. Unique features of the course include 1) lectures on basic cardiac anatomy, physiology, and associated clinical topics; 2) gross anatomy laboratory experiences during which small groups of students are guided through detailed dissections of the human chest wall, thoracic cavity, and heart using human cadavers; 3) live demonstrations (e.g., 12-lead EKG, echocardiography); and 4) keynote lecture. [Click here] for more details and to register.

Notice of SPARC Funding Opportunities Due in Early February

Stimulating Peripheral Activity to Relieve Conditions (SPARC): Anatomical and Functional Mapping of Pain-Related Visceral Organ Neural Circuitry [https://grants.nih.gov/grants/guide/rfa-files/rfa-rm-19-001.html]. This is for U01 projects up to 3 years in duration, to be both part of SPARC and part of the HEAL initiative. Forward-looking data sharing will be very important. Single receipt date in early February 2019. Additional HEAL funding opportunities may be found here: [https://www.nih.gov/research-training/medical-research-initiatives/heal-initiative/funding-opportunities]