News

Will Durfee and Art Erdman Receive Entrepreneurship Faculty of the Year Award
IEM Executive Committee Members Dr. William K. Durfee, Professor of Mechanical Engineering and Director of the IEM-affiliated 3D Printing Core, and Dr. Arthur G. Erdman, Professor of Mechanical Engineering and Director of the IEM-Affiliated Medical Devices Center, received the Entrepreneurship Faculty of the Year Award at the 2017 Founder's Day event for the Holmes Center for Entrepreneurship, Carlson School of Management. The award honors Drs. Durfee and Erdman's leadership in the New Product Design and Business Development Course, a collaboration between the Carlson School of Management and the College of Science and Engineering. In this course, teams of business and engineering students work through the process of developing a working prototype and associated business plan for a product to be launched by a sponsoring company. Since its inception in 1993, the course has enrolled more than 600 students who have worked on more than 120 projects. Two Medical School faculty members also teach the course.

Perry Hackett Receives Impact Award from the Office for Technology Commercialization
IEM Member Dr. Perry B. Hackett, Professor of Generics, Cell Biology and Development, has received the Impact Award from the Office for Technology Commercialization (OTC) for the very positive results of his Sleeping Beauty Transposon System, a genome engineering platform that can re-direct a person’s immune system to identify and attack cancer cells. The system has been very effective at treating lymphoma patients, with up to 80% experiencing clinical remission or absence of disease. As reported by Twin Cities Business, the system has led to a $100+ million licensing agreement ($32 million of which will go to the University of Minnesota) for a resulting leukemia drug and a nearly $1 billion investment by Merck for a resulting blood cancer immune-oncology platform called CAR-T. In addition, the Sleeping Beauty Transposon System has led to the launch of a number of genome engineering companies in various fields and is used globally by thousands of scientists. The OTC Impact Award recognizes a researcher whose innovation has most positively and most broadly impacted global society and improved quality of life.

Who Are the U. of M.’s Most Entrepreneurial Researchers?

Allison Hubel Receives ISBER Award for Outstanding Achievement in Biobanking
IEM Executive Committee Member Dr. Allison Hubel, Professor of Mechanical Engineering and Director of the IEM-affiliated Biopreservation Core Resource (BioCoR), received the Outstanding Achievement in Biobanking Award from the International Society for Biological and Environmental Repositories (ISBER). The award is designed to recognize individuals who have made outstanding contributions to the field of biobanking. It can be given for a single outstanding achievement or for a life-time body of outstanding work in the field. In its announcement of the award, the ISBER recognized Dr. Hubel for her research that developed fit-for-purpose protocols for preservation, developed technology to improve the preservation and processing of cells, and for having developed the understanding of molecular mechanisms of damage during preservation. The announcement concluded that Dr. Hubel’s “leadership in the cryopreservation field makes her a very deserving recipient of one of ISBER’s most prestigious awards.”

2017 ISBER Award Winners

Jerrold Vitek Discusses Abbott’s New DBS Lead with Star Tribune
IEM Member Dr. Jerrold L. Vitek, Professor and Chair of the Department of Neurology, discussed with the Star Tribune, the advantages of a new, segmented lead for Deep Brain Stimulation (DBS) to treat movement disorders, such as Parkinson’s disease, dystonia, and essential tremor. The Infinity DBS Lead, manufactured by Abbott (formerly, St. Jude Medical), is unique from other leads, which distribute electric current spherically, in that it has the capability to deliver the current to specific areas of the brain where it is most needed and to avoid areas where the current could lead to unwanted side-effects. Dr. Vitek, who
Onset of these symptoms, the damage and resulting symptoms can be reversed. Understanding speech) and Time to Call 911! Dr. Grande says that if patients get the care they need within 3 to 6 hours of the stroke, "Still too many HIV-infected people enter care late and Cryptococcal Meningitis is an unfortunate excellent metric of HIV treatment program failure. In 2017, no person with HIV should develop fungal meningitis, yet in a failed cascade of HIV care, too often Cryptococcus is a final death sentence."

Despite Availability of Life-Saving Medication Annual Deaths Due to Fungal Meningitis Are Still Over 180,000

Global Burden of Disease of HIV-Associated Cryptococcal Meningitis: An Updated Analysis

Paul Iaizzo Leads Study Showing that Delta-Opioid Agonists can Minimize Cardiac Injury Following Heart Procedures

Dr. Paul A. Iaizzo, Professor of Surgery, IEM Associate Director for Education and Outreach, and Principal Investigator of the IEM-Affiliated Visible Heart Laboratory (VHL), led a study published in Experimental Biology and Medicine (the Featured Article) that demonstrated the effectiveness of a post-conditioning therapy for minimizing damage to a heart following cardiac procedures and during reperfusion (when blood flow is restored). Dr. Iaizzo's team tested a delta opioid receptor agonist as a supplement to an existing reperfusion buffer for reanimated isolated swine hearts and found that it improved the microvascular functionality of the heart compared to control subjects. These results suggest that this may be a promising treatment for many people who undergo cardiac procedures involving reperfusion. "The opportunity to utilize post-conditioning pharmacological agents to improve cardiac function will have significant applications in both cardiac surgery and transplantation," says Dr. Iaizzo.

Delta Opioid Agonists Can Attenuate Cardiac Injury

Pharmacological Postconditioning with Delta Opioid Attenuates Myocardial Reperfusion Injury in Isolated Porcine Hearts

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Pharmacological Postconditioning with Delta Opioid Attenuates Myocardial Reperfusion Injury in Isolated Porcine Hearts

Rita Perlengheiro and Colleagues Identify Endoglin as a Potential Target for Treatment of Acute Leukemias

IEM Member Dr. Rita Perlengheiro, Professor of Medicine/Cardiology, and her colleagues were published in the journal Blood for their research showing that the receptor endoglin is a potential target for the treatment of acute myeloid leukemia (AML) and B-cell acute lymphoblastic leukemia (B-cell ALL), as it is expressed in the majority of the cancerous cells. In addition, the research showed that a drug, TRC 105, manufactured by Tracon Pharmaceuticals, inhibited the progression of these leukemias. The findings are especially significant, as the National Cancer Institute estimates that AML will be diagnosed in approximately 21,380 Americans in 2017 and that 10,590 will die from the disease, while the equivalent numbers for B-cell ALL are 5,970 and 1440, respectively. In 2016, Dr. Perlengheiro and her IEM member colleagues demonstrated the role endoglin plays in the embryonic development of blood and cardiac cells.

Endoglin: A Novel Target for Therapeutic Intervention in Acute Leukemias Revealed in Xenographic Mouse Models

Michael McAlpine Discusses Bionic 3-D Printing Applications with NBC News

IEM member Dr. Michael C. McAlpine, Benjamin Mayhugh Associate Professor of Mechanical Engineering, discussed with NBC News the potential of printing 3-D devices on a human body. In research recently published in the journal Advanced Materials, Dr. McAlpine demonstrated how 3-D printing can be used to fabricate stretchable, electronic tactile sensors onto curved surfaces, including human skin, as the materials can be printed and cured at room temperature. Dr. McAlpine says that this capability could eventually make it possible for a variety of electronic devices to be printed onto a human body and for this to be done in mobile environments from a portable 3-D printer that could be carried around in a backpack. "Using only raw materials, you can make basically any type of device — that's a complete paradigm shift that hasn't been implemented before," says Dr. McAlpine.

NBC News: 3-D Printing Technology Brings Bionic Abilities Within Our Grasp

Andrew Grande Discusses Stroke Awareness with WCCO

As part of Stroke Awareness Month, IEM Member Dr. Andrew W. Grande, Assistant Professor of Neurosurgery, discussed with WCCO the types of strokes, their symptoms and the resulting actions that patients and bystanders should take, to generate more awareness of stroke among the general public — knowledge that could help people to minimize the long-term damage of stroke and, in some cases, save lives. A simple rule of thumb for recognizing and acting upon the more-common ischemic stroke is to remember the acronym F.A.S.T., which stands for: Face Drooping, Arm Weakness, Speech Difficulty (both speaking and understanding speech) and Time to Call 911! Dr. Grande says that if patients get the care they need within 3 to 6 hours of the onset of these symptoms, the damage and resulting symptoms can be reversed.

News and Views with Susie Jones
Timothy O’Brien Discusses Advance in Production of Cerebral Cell Structures with Duluth News Tribune

IEM member Dr. Timothy D. O’Brien, Professor, Department of Veterinary Population Medicine, discussed with the Duluth News Tribune the significance of his research that was recently published in Stem Cells Translational Medicine to produce brain organoids from human induced pluripotent stem cells using a cell matrix technology being commercialized by a company in Two Harbors, Minnesota, that allows scientists to grow cerebral tissue in more natural, three-dimensional structures. “This is potentially really important because they could be used for development of drugs for neurological problems — to check for beneficial or toxic effects of drugs,” says Dr. O’Brien, who adds that the end result is “much more like a real brain than what people have had access to before.” Another valuable aspect of the technology is its versatility. “One of the interesting twists from this is since the stem cells can be derived from anybody, they can be derived from patients with Parkinson’s disease or Alzheimer’s ... to use as a disease-in-a-dish sort of model,” says Dr. O’Brien.

Better Brains: BRTI Life Sciences Grows Biotech Success in Two Harbors

Announcements

Save the Date: DMD China, November 28-29, 2017

The Inaugural Design of Medical Devices (DMD) Conference, China 2017, will be held in Beijing on November 28th and 29th, 2017. Additional Information will soon be available at the Medical Devices Center (MDC) Website.