News

**IEM Director Named Recipient of the Prestigious IEEE Biomedical Engineering Award**
Dr. Bin He, Director of the Institute for Engineering in Medicine, Distinguished McKnight University Professor of Biomedical Engineering and Medtronic-Bakken Endowed Chair for Engineering in Medicine, has been named the recipient of 2017 IEEE Biomedical Engineering Award for outstanding contributions to biomedical engineering, according to IEEE President Barry L. Shoop. IEEE is one of the largest professional organizations in the world with 400,000+ members. This Award is given annually to an individual, a team or multiple recipients up to three in number, for exceptional achievements and outstanding contributions, which have made impacts on the profession of biomedical engineering and society. Dr. He is cited for his significant contributions to neuroengineering and neuroimaging. This is the highest IEEE award on biomedical engineering given to a member(s) or non-member(s).

**Stephen Haines Featured on KSTP for Treatment of Young Patient with Brain Condition**
IEM Member Dr. Stephen J. Haines, Professor and Department Head of Neurosurgery, was featured in a KSTP story for his treatment of a patient with Hydrocephalus, referred to as “water on the brain,” an incurable condition that affects more than one million Americans. “If for some reason you make more spinal fluid than you absorb back into your blood stream, the fluid will build up and cause increased pressure in the head,” says Dr. Haines. His patient, an eight-year-old boy, developed the potentially life-threatening condition following a premature birth. Dr. Haines can treat Hydrocephalus by either popping the membrane that holds the fluid or by installing shunts, and for this patient, he installed two shunts that will connect together and drain the fluid to the child’s belly. The patient and his family established a foundation and organized a golf tournament to support Hydrocephalus research and increase awareness of the condition.

**Hydrocephalus Treatment; Water-on-the-Brain Awareness Golf**

**Walter Low & Dan Garry Discuss with BBC & CNN Use of Chimeras for Transplant**
IEM Members Dr. Walter C. Low, Professor of Neurosurgery, and Dr. Daniel Garry, Professor of Medicine and Director of the Lillehei Heart Institute, discussed with the BBC and CNN research on the growing of human organs in pigs to be used for transplant, and the issues associated with it. Dr. Low says that the technique could potentially be used to create a number of different types of organs and cells, including pancreas, heart, liver, kidney, lung, cornea, and immune cells; and that “the organs and cells would be exact genetic copies, but much younger and healthier versions, and you would not need to take immunosuppressive drugs which carry side-effects.” Dr. Garry states that these personalized humanized organs in gene-edited animals would provide new pre-clinical research models that would be invaluable to study the impact of emerging therapies and disease progression.

However, the NIH has banned funding this research due to concerns of the resulting chimeras developing human cognitive states. Dr. Garry objects to the ban due to its inhibition of medical progress and the creation of a stigma associated with the research. And Dr. Low says that this risk can be avoided. "We can address this issue by examining the brains from each type of chimera that is generated to produce a specific type of organ. For example, if in generating liver chimeras we observe that the pre-term brains also exhibit substantial off-target contribution to areas such as frontal cortex then these fetuses would not be allowed to be born.”

**CNN: Human Organs Grown in Pigs May Help Transplant Patients**
**BBC: U.S. Bid to Grow Human Organs for Transplant Inside Pigs**
Jakub Tolar Featured in Ottawa Sun for Treatment of Child Suffering from Severe Skin Disease

Dr. Jakub Tolar, Professor of Pediatrics, Director of the Stem Cell Institute and IEM Member, will treat a child from Canada who suffers from Epidermolysis Bullosa (EB), a rare and potentially-fatal skin disease. As reported by the Ottawa Sun, the child, who’s nicknamed “Butterfly Boy,” will travel to the University of Minnesota to have a blood and bone marrow transplant as part of a clinical trial being led by Dr. Tolar. “The advantage of bone marrow transplant is that you don’t just treat a single patch of skin: This is a whole body approach,” says Dr. Tolar. While he warns that the treatment doesn’t work for all patients, it can have a very positive impact when it does work. “You can go from a kid who is in constant pain, who is wheelchair bound, who has bandages changed for several hours, to someone who goes to school, to the beach, plays in the orchestra, and goes on with his life,” says Dr. Tolar.

Butterfly Boy off to U.S. for Therapy

David Largaespada Co-Founds Gene Editing Company

IEM Member Dr. David A. Largaespada, Professor of Genetics, Cell Biology, and Development has co-founded B-MoGen Biotechnologies Inc., a gene editing company. As reported in Inquiry, the company is developing a molecular “processor” to enable more complex genome engineering, which will make it possible for scientists to identify rare edited cells, speeding up the process of gene editing. In addition, the company is pioneering new non-viral gene delivery systems. “We anticipate these technologies could help researchers develop better cell-based therapies,” says Dr. Largaespada. “For example, it could make it easier to take immune cells from patients and insert genes that make them into efficient cancer killers.” The company also utilizes the Sleeping Beauty (SB) transposon system to deliver genes to targeted cells for research, a technology developed by IEM Member Dr. Perry Hackett.

Startup Contributes to Growing Statewide Gene Editing Industry

Brenda Ogle Receives the 2016 Mullen-Spector-Truax Women’s Leadership Award

Dr. Brenda A. Ogle, Associate Professor of Biomedical Engineering and IEM Member, has received the 2016 Mullen-Spector-Truax Women’s Leadership Award for her significant impact on women’s leadership development at the University and the potential for long-term sustainability of the programs and initiatives she has led, including the Women’s Faculty Cabinet in the Provost’s office, for which she serves as co-Chair. The Mullen/Spector/Truax Endowment was established in 1997 to provide funds for the Mullen/Spector/Truax Women’s Leadership Award given annually to a faculty or staff woman at the University who has made outstanding contributions to women’s leadership development. Dr. Ogle’s research program investigates the mechanisms of stem cell differentiation with a goal of generating new technologies that advance stem cell biology and promote translation of stem cell research into clinical practice.

Announcements

Save the Date! IEM Annual Conference and Retreat, Monday, September 26, 2016 at McNamara Alumni Center; Cost: Free

This year's Institute for Engineering in Medicine (IEM) Annual Conference and Retreat will take place on September 26, 2015, from 8:30 AM - 6:00 PM at the McNamara Alumni Center on the University of Minnesota’s Twin Cities Campus. The event will open with plenary keynote talks by nationally recognized leaders, followed by lunch. In the afternoon, there will be breakout sessions for IEM faculty members (as well as for other interested parties including industrial colleagues) to discuss research collaboration opportunities relating to Cardiovascular Engineering, Neuroengineering, Cellular and Molecular Bioengineering, Medical and Biological Imaging, and Medical Devices. From mid-afternoon, a poster/networking session will be held that will highlight IEM faculty member research and their groups included in the program. The retreat and conference will offer rich opportunities to develop collaborations and how to responsively apply for IEM seed grants. In addition, the 2016 IEM Industrial Fellows will be inducted during the morning plenary session.

Registration is now open!

The confirmed keynote speakers for the IEM Annual Conference and Retreat include:

Dr. Emery N. Brown, NAS, NAE, NAM
Warren M. Zapol Professor of Anesthesia, Harvard Medical School, Department of Anesthesia and Critical Care, Massachusetts General Hospital
Edward Hood Taplin Professor of Medical Engineering Institute for Medical Engineering and Science Professor of Computational Neuroscience, Department of Brain and Cognitive Sciences, MIT
Professor of Health Sciences and Technology, Harvard/MIT Division of Health Sciences and Technology, MIT
Dr. Kenneth R. Lutchen, *FAIMBE, FBMES*
Professor of Biomedical Engineering
Dean, College of Engineering
Boston University
Past President, American Institute of Medical and Biological Engineering

Dr. Pep Pamies
Chief Editor
Nature Biomedical Engineering

Dr. Xiaochuan Pan, *FAAPM, FAIMBE, FIAME, FIEEE, FOAS, FSPIE*
Professor of Radiology, Radiation and Cellular Oncology
The University of Chicago