John Bischof Named Director of IEM
Dr. John C. Bischof, Professor of Mechanical and Biomedical Engineering, has been appointed for a three-year term as director of the University of Minnesota Institute for Engineering in Medicine (IEM). He has served as interim director during the past year. As director of IEM, Dr. Bischof will report to both the University of Minnesota Dean of the Medical School and the Dean of the College of Science and Engineering and will be responsible for administering IEM programs including fellowships, educational programs, visitorships, and research programs. He will strengthen interdisciplinary academic programming across disciplines and enhance the research portfolio. Dr. Bischof will also work to grow relationships with business and industry as well as partner with colleges across the University to increase educational activities to students. As director, Dr. Bischof will also hold the Medtronic Bakken Chair, concurrent with the role of director. 

Research Co-Authored by David Redish and Mark Thomas Published in Journal Science and Featured in New York Times
IEM Members Dr. A. David Redish, and Dr. Mark J. Thomas, Professors in the Department of Neuroscience, co-authored research on how “sunk costs” influence decision-making, published by the journal Science and featured in the New York Times. The research found that mice and rats are similar to humans in that they fell victim to the “sunk cost fallacy,” a phenomenon in which decisions are made on how much has already been invested, rather than on future outcomes. Using translated parallel tasks, along with their colleague Angus MacDonald (Professor in the Department of Psychology), they found that mice, rats, and humans all showed a susceptibility to sunk costs, but only after committing to an investment. “Whatever is going on in the humans is also going on in the nonhuman animals,” says Dr. Redish. This work is part of a series of papers recently published by Drs. Redish and Thomas exploring the mechanisms of decision-making. 

Mice Don’t Know When to Let Go, Either > Journal Science: Sensitivity to “Sunk Costs” in Mice, Rats, and Humans >
Michael Kyba is Lead Author of Study Showing Effectiveness of Muscle Cells Derived from a Benign Tumor

IEM Member Dr. Michael Kyba, Professor of Pediatrics, is the lead author of a study published in the journal Cell Stem Cell in which muscle cells, that were derived from a benign tumor known as a teratoma, were refined, sorted and injected into the diseased tissue of mice with muscular dystrophy. This resulted in regenerating 80% of the muscle – far beyond the 5% to 10% that is possible with current forms of treatment. “The goal of this research was to seek in unexplored places a source of cells that, when transplanted, would rebuild skeletal muscle and demonstrate significant improvements in muscle strength and resilience,” says Dr. Kyba. In addition to showing the long-term promise as a treatment for diseased muscle tissue, the findings have shown the value of teratoma-derived muscle cells for further research. Video Abstract for Cell Stem Cell Article > | Skeletal Muscle Stem Cells from PSC-Derived Teratomas Have Functional Regenerative Capacity >

Jian-Ping Wang Will Lead Research Team Supported by $3.1 Million in DARPA Funding to Develop Next Generation Electronics

IEM Member Dr. Jian-Ping Wang, Distinguished McKnight Professor and Robert F Hartmann Chair of Electrical and Computer Engineering, will lead a team at the University of Minnesota, funded by a 4-year, $3.1 million grant from the Defense Advanced Research Projects Agency (DARPA), to develop novel electronics for the protection of the U.S. economy and its national security. The research team will investigate new approaches to advance nanostructured thin film devices known as Magnetic Tunnel Junctions (MTJs), that are used in a variety of electronics, including hard drives and sensors. “The University of Minnesota has been a leader for years in spintronics research. We have been persistent in pursuing MTJ based computation for more than 15 years. In fact, our team proposed the very early idea to use magnetic tunnel junctions for the computation in random access memory (CRAM),” says Dr. Wang. “This federal funding will bring us to the next level of innovation.” With an IEM seed project, Dr. Wang has also been applying MTJs for brain sensing and stimulation. University of Minnesota Team Receives $3.1 Million Federal Grant to Improve Electronics >

IEM Members Host Successful Neural Interfaces Conference

The 43rd Neural Interfaces Conference (NIC2018) was successfully held from June 25-27, 2018 in Minneapolis. The event brought together over 500 scientists, engineers, clinicians, regulatory experts, industry leaders, and representatives from the NIH, NSF, DARPA, and FDA. Attendees came from four continents and 160 different institutions. The conference included two poster sessions in which 210 posters were presented, including 22 posters from an outstanding group of students at the University of Minnesota. The conference was kindly supported by 20 sponsors, including the IEM and MnDRIVE Brain Conditions. “The 2018 Neural Interfaces Conference provided a wonderful opportunity to showcase the University of Minnesota and its outstanding neuroengineering research programs,” says IEM Member and Conference Chair, Dr. Matthew D. Johnson, Associate Professor of Biomedical Engineering. Several other IEM faculty Members were selected to host the conference, including Dr. Theoden I. Netoff, Associate Professor of Biomedical Engineering, Dr. Hubert H. Lim, Associate Professor of Biomedical Engineering, Dr. Jerrold L. Vitek, Professor and Chair of the Department of Neurology and Dr. Gregory F. Molnar, Associate Professor of Neurology.

Save the Date: IEM Annual Conference & Retreat, Monday, September 24, 2018

This year’s Institute for Engineering in Medicine (IEM) Annual Conference and Retreat will take place on Monday, September 24, 2018, 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 centers and collaboration opportunities relating to our thematic strengths. 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 2018 IEM Industrial Fellows will be inducted during the morning plenary session. More information about the 2018 conference coming soon. IEM Events Page >

Save the Date: IEM Organized Mayo UMN Biosensing and Nanotechnology Symposium, October 11-12, 2018 at the DoubleTree by Hilton Hotel, Rochester, Minnesota
The University of Minnesota, Institute for Engineering in Medicine and the Mayo Clinic are pleased to present the Mayo UMN Biosensing and Nanotechnology Symposium October 11 – 12, 2018 at the DoubleTree by Hilton Hotel in Rochester, Minnesota. This symposium will focus on biosensors and nanomedicine for disease monitoring and diagnosis with emphasis placed on convergence and integration of biosensing and clinical communities. The scientific program will be organized around diseases/biological systems: cancer, neuroscience, diabetes. It will also include poster presentations, a commercialization panel and breakout sessions placing engineers, scientists, and clinicians into smaller groups based on interests. The symposium will create a forum for faculty, clinicians, members of industry, and trainees to exchange ideas in this exciting and developing field. IEM Events Page >

Save the Date: Earl E. Bakken Surgical Device Symposium 2018; Technological Advances in Organ Transplantation, at Graduate Minneapolis, Friday, October 12, 2018
The Symposium will be held on Friday, October 12th. Information will soon be posted at Bakken Symposium.

Save the Date: Innovations in Cardiovascular Interventions - ICI Meeting, 2-4 December, 2018 | Tel-Aviv, Israel
The ICI Meeting is preceded by the ICI Academy of Innovation Day – a full-day pre-conference educational workshop satellite, coordinated by IEM Associate Director Dr. Paul A. Iaizzo, Professor of Surgery, and IEM Executive Committee Member Dr. William K. Durfee, Professor of Mechanical Engineering. The workshop trains participants in the entire medical innovation process. For more information - Click Here

Open Positions

**Neuromodulation Research Center** seeks postdoctoral associates for clinical and preclinical positions

**Clinical:** Neuromodulation Research Center seeks postdoctoral associates for clinical neurophysiology studies on pathophysiology of movement disorders such as Parkinson’s disease (PD), dystonia, and essential tremor. This research utilizes microelectrode recordings and deep brain stimulation (DBS) to study how movement disorders and therapeutic interventions impact neuronal activity. Strong candidates have experience with: human neurophysiology/electrophysiology; analyzing single unit/local field potential signals; analyzing neural datasets; with Matlab, R, Labview, etc.; experience with PD and DBS. Click here, or https://humanresources.umn.edu/jobs and search for position #325012. Questions to Dr. Josh Aman, aman0038@umn.edu.

**Preclinical:** Neuromodulation Research Center seeks applications for postdoctoral associates. We seek outstanding scientists interested in working with NIH-funded research program studying motor systems neurophysiology, the pathophysiology of Parkinson’s disease (PD), and mechanisms of DBS in preclinical models of PD. The applicant will work on studies using a NHP model of PD. Strong candidates have experience with: neurophysiology experiments; analysis of single unit/local field potential signals; analyzing neural datasets. To apply, please click here or visit https://humanresources.umn.edu/jobs and search for position #317926. Questions to Dr. Luke Johnson, at joh03032@umn.edu.