Artificial Blood Vessel Developed by Bob Tranquillo Advancing Toward Clinical Application

IEM Member Dr. Robert T. Tranquillo, Professor and Head of the Department of Biomedical Engineering, has demonstrated in a pre-clinical study the effectiveness of a decellularized cell-grown tissue tube that can potentially be used as an alternative to a synthetic tube for hemodialysis patients. In research that was published in *Science Translational Medicine*, “off-the-shelf” decellularized grafts were implanted into baboons, then recellularized over a 6 month period with the host’s cells, after which the biologically-engineered grafts were still strong despite repeated puncture with a dialysis needle and did not show signs of immune rejection. “So what makes our material different is the ability for it to become cellularized from the patient’s own cells and become a living tissue so it can heal,” says Dr. Tranquillo. This healing ability makes the grafts superior to synthetic grafts, which have a greater risk of clotting, infection and immune rejection. “We have enough evidence that this can work in a patient without posing an adverse risk. That is a big milestone for us to get into a clinic,” says Dr. Tranquillo

**Lab-Grown Blood Vessels Closer to Human Trials**

**New Tissue-Engineered Blood Vessel Replacements One Step Closer to Human Trials**

Keshab Parhi & David Odde Elected AAAS Fellows

Dr. Keshab K. Parhi, Professor in the Department of Electrical and Computer Engineering, and Dr. David J. Odde, IEM Associate Director for Development, have been elected as American Association for the Advancement of Science (AAAS) Fellows, by the Association’s Council for their “efforts on behalf of the advancement of science or its applications are scientifically or socially distinguished.” In his election, Dr. Parhi was recognized “for his contributions to architectures and methodologies for VLSI design of digital signal processing systems and physical layer communication systems that form the backbone of the Internet.” Dr. Odde was recognized “for his contributions to the understanding of the self assembly and force generation of microtubules, F-actin, and associated proteins.” Drs. Parhi and Odde will be inducted during a ceremony on February 17th at the AAAS Annual Meeting in Austin, Texas.

**AAAS and University of Minnesota Announce 2017 Fellows**

James Cloyd Selected to Receive American Epilepsy Society J. Kiffin Penry Award for Excellence in Epilepsy Care

IEM Member Dr. James Cloyd, Professor of Experimental and Clinical Pharmacology in the College of Pharmacy and Director of the Center for Orphan Drug Research, has been selected to receive the American Epilepsy Society (AES) 2017 J. Kiffin Penry Award for Excellence in Epilepsy Care. The award, which was established in 1997 with funding from Abbott Laboratories, “honors Dr. Penny’s lifelong focus on and genuine concern for the patient with epilepsy. It recognizes individuals whose work has had a major impact on patient care and improved the quality of life for persons with epilepsy as well as recognizing excellence in the care of persons with epilepsy.” Dr. Cloyd says that “the award is particularly meaningful to me as I worked closely with Dr. Penny during the early years of my career. He set a standard for excellence in patient care, education, and research that I’ve tried to emulate.” Dr. Cloyd will receive the award at a ceremony on December 4th in Washington, D.C. at the AES Annual Meeting.

**James Cloyd Receives J. Kiffin Penry Award for Excellence in Epilepsy Care**

Kalpna Gupta Discusses the Targeting of Pain at Sickle Cell Disease Conference Organized by the American Physiological Society

IEM Executive Committee Member Dr. Kalpna Gupta, Professor of Medicine and Co-Chair of the IEM Molecular and Cellular Bioengineering Theme, delivered a speech entitled “Targeting Pain at its Source in Sickle Cell Disease” at the Physiological and Pathophysiological Consequences of Sickle Cell Disease conference in Washington, D.C, in early November, at which the leading experts in sickle cell disease (SCD) research convened. The causes of and treatment for pain associated with SCD, in which a mutation causes red blood cells to form into a sickle shape, was among the focus areas of science presented at the conference.
SCD affects over 100,000 Americans, and millions globally. Pain is one of the major comorbidities of SCD without satisfactory treatment.

**Sickle Cell Conference Focuses on Causes and Pathways to a Cure**

**Earl E. Bakken Medical Devices Center Innovation Fellow Alum, Brian Krohn, Profiled in Star Tribune**

Dr. Brian Krohn, a graduate of the Earl E. Bakken Medical Devices Center (MDC) Innovation Fellows Program, was profiled in a *Star Tribune* article for his innovativeness. During his MDC fellowship, Dr. Krohn worked with colleagues on the development of a tool that helps brain surgeons differentiate between healthy and cancerous brain tissue during their removal of tumors. More recently, Dr. Krohn has invented an app, with NSF and NIH funding, to help people who suffer from snoring with a game that strengthens users’ upper airway muscles. “He’s just one of those people who are naturally innovative,” says Davis Fay, Core Manager of the IEM 3D Printing Core. Steven Thomalla, a Lab Supervisor at the MDC, says that Dr. Krohn “follows unmet needs. Brian is not biased in what he might work on. His next project might be in space development.”

**St. Paul Inventor Brian Krohn Combats Snoring; Creates Wizard Tools**

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**Announcements**

**Advanced Cardiac Physiology and Anatomy (PHSL 5510) January 8-12, 2018, 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. For more details and to register:

[Registration for PHSL 5510 Cardiac Short Course](#)

**Registration Still Open for Earl E. Bakken Surgical Device Symposium on December 7th**

Please [join us](#) for the tenth symposium that provides a comprehensive look at the development of new cardiac devices—from concept to clinical trial. We will offer presentations on the pre-clinical innovation process, industry collaboration for the development of cardiac devices and current new technologies.

**KEYNOTE ADDRESSES:**

William Durfee, PhD  
Director of Design Education, Mechanical Engineering, University of Minnesota

O.H. “Bud” Frazier, MD  
Director of Cardiovascular Research, Texas Heart Institute, Houston, TX

Waleed Hassanein, MD  
TransMedics Founder, President & CEO, Andover, MA

**COURSE DIRECTORS:**

Rosemary Kelly, MD and Paul Iaizzo, PhD

**TARGET AUDIENCE:**

This course is ideal for Cardiologists, Cardiothoracic Surgeons, Surgical Residents and Fellows, Physician Assistants, other health professionals, as well as medical device developers, interested in increasing their knowledge of cardiac devices and the innovation process from theory to approved clinical device.

[Agenda](#)  
[Registration](#)