PITT | SWANSON ENGINEERING

BIOENGINEERING

MESSAGE FROM THE CHAIR | SANJEEV G. SHROFF, PHD

On behalf of our faculty, staff, and students, I am happy to present you with the Department of Bioengineering's Spring 2019 eNewsletter.

The fields of tissue engineering and regenerative medicine are very strong at Pitt, and the Department of Bioengineering continues to play an important role in this effort. The strong connection between engineers, biomedical scientists, and clinicians is what makes it thrive. In this newsletter, we will focus on our research in this area, starting with a conversation with William Wagner, Director of the McGowan Institute for Regenerative Medicine.

I would like to congratulate Stephen Badylak for his recent election as a Fellow of the National Academy of Inventors and William Wagner for being named as the 2018 Inventor of the Year by the Pittsburgh Intellectual Property Law Association. Both of these faculty members have made major contributions to the field of tissue engineering and regenerative medicine and have successfully translated their laboratory-based research findings into products that will have positive impact on patients' lives.

An example of a recent University spinout company in the tissue engineering and regenerative medicine area comes from Bryan Brown. His startup, Renerva, received $2.4 million from the Department of Defense to help take their peripheral nerve matrix technology to a clinical setting. Another example comes from William Federspiel, who co-founded ALung Technologies from his artificial lung research. He was recently recognized by the Carnegie Science Awards (Life Sciences category) for this innovation and its potential to impact the lives of thousands of patients suffering from lung disease.

Our department's translational biomedical research programs, the Center for Medical Innovation and the Coulter Translational Research Partners II Program (Coulter-TPII), have aided some of these innovations. In the most recent round of funding, CMI and the Coulter-TPII awarded $60,000 and $575,000, respectively, to novel translational biomedical projects. The Coulter-TPII also recently welcomed Scott Morley as Program Director.

We are passionate about sharing the wonders of tissue engineering and regenerative medicine with young students and lay public. For the past 11 years, our department has hosted CampBioE, a tissue engineering summer camp for middle and high school students. The camp, led by Steven Abramowitch, is designed to not only expose students to science, but to show them that STEM can be fun, exciting and something that they could pursue as a career. Last summer, in addition to the four weeks of camp hosted at the University of Pittsburgh, the CampBioE team went to the Crossroads Foundation in Homewood to provide a free 4-day camp experience to 19 rising sophomore student participants. In July 2014, Bryan Brown developed and launched the McGowan Institute of Regenerative Medicine Summer School. The goal of this program is to provide undergraduate students with a week-long didactic and hands-on learning experiences addressing the science and engineering of regenerative medicine, followed by a 8-week, laboratory-based internship opportunity to selected students. The Carnegie Science Awards (Postsecondary Education category) recognized Bryan for this work and his mentorship of bioengineering graduate students, including Alexis Nolfi who was also recognized by the organization (College/University Student category).

Outside of tissue engineering and regenerative medicine, our faculty have had a number of accomplishments during the past semester: (1) Moni K. Datta and Prashant Kumta received an award to design biochemical marker technology that makes diagnostics quicker, simpler, and more reliable; (2) Gelsy Torres-Oviedo received the Early Career Award from the Society for the Neural Control of Movement; (3) Bistra Iordanova received a $25K award to bridge the gender gap in Alzheimer's disease research studies; (4) Takashi Kozai published two papers on the subject of neural implant technology (article 1) (article 2); (5) April Chambers published a scoping review article examining the comprehensive benefits of sit-stand desks.

We have had many graduate student achievements during the past semester as well: (1) A recent graduate alumna, Sossena Wood, was featured on NBC Learn for her research with MRI technology in Tamer Ibrahim's laboratory; (2) Christopher Hughes, a graduate student and ARCS Scholar in Robert Gaunt's laboratory, was featured by the ARCS Foundation for his brain-computer interface research; (3) Utkars Jain and Adam Butchy will attend the Rice Business Plan Competition for Heart I/O, their digital diagnostics startup; (4) Shi Tong Liu and his research advisor Srivatsun Sadagopan explore how the auditory system achieves accurate speech recognition in a Nature Communications paper; (5) Piyusha Gade, Gerald Ferrer, and Aneesh Ramaswamy swept all three awards at the Swanson School Three Minute Thesis Competition; Piyusha and Gerald advanced to the university-wide event where she won first place, and he clinched a runner-up prize and the People's Choice award.

I am also very impressed with what our undergraduate population has achieved in the past few months: (1) the Pitt iGEM team won a silver medal for their "Molecular Movie Camera;" (2) a multidisciplinary group of students in the Art of Making course created a device that would help hearing-impaired children learn to experience music and express themselves through dance; (3) Kaylene Stocking, a senior undergraduate student in Takashi Kozai's laboratory, was a member of the winning hackathon team, published a first author paper, and was awarded the University's top student award for scholarship; (4) Sneha Jeevan and Shivani Tuli demonstrated their handheld, point-of-care device for complete blood count (CBC) at the Rice 360° Global Health Design Competition.

Ioannis Zervantonakis, who is currently a post-doctoral fellow in Cell Biology at the Harvard Medical School, will join us as an Assistant Professor in May 2019. His research employs quantitative approaches, integrating microfluidics, systems biology modeling, and in vivo experiments, to investigate the role of tumor microenvironment on breast and ovarian cancer growth, metastasis, and drug resistance. We continue to grow as a department and are currently recruiting for two tenured/tenure-stream faculty positions in the areas of 1) synthetic or systems biology and 2) translational bioengineering.

On behalf of the Department of Bioengineering, I thank you for your continued interest and support.

Sincerely,

Sanjeev G. Shroff, PhD
Distinguished Professor of and McGinnis Chair in Bioengineering