PITT | SWANSON ENGINEERING

BIOENGINEERING

MESSAGE FROM THE CHAIR

SANJEEV G. SHROFF, PHD

This past academic year (AY18) was another success for the Department of Bioengineering with outstanding student, faculty, and staff achievements and contributions; I am honored to work with so many talented and accomplished individuals. In this Fall-2018 eNewsletter, I will review AY18 accomplishments and highlight some of our successes since our last newsletter (Spring-2018).

The featured story for this installment is on Warren Ruder, who joined our department in January 2017 as an assistant professor. He was recently awarded the prestigious NIH Director's New Innovator Award (NIH-DP2). Warren works in the general area of synthetic biology. The goal of his NIH-DP2 award is to develop DNA-encoded, intracellular machinery that will allow cells to respond to an external magnetic field. This DNA-encoded machinery could potentially be delivered into any (nucleated) mammalian cells to allow for magnetic tuning of different engineered cell or tissue therapies. In the proposed work, he will use this tool in an arteriole-on-a-chip model of pulmonary hypertension (PH) to activate pathways implicated in PH progression. He is the **first** Pitt bioengineer to win this award and the **seventh** overall at the University. We are very proud of Warren's impressive accomplishment.

Our academic programs continue to thrive with Fall-2018 undergraduate and graduate enrollment at 271 (sophomores + juniors + seniors) and 176 (136 PhD and 40 MS in Medical Product Engineering), respectively. We graduated 71 undergraduate and 54 graduate (30 PhD + 24 MS) students in AY18 – this PhD production is an all-time high. Our students received 45 national or university-wide awards, including an impressive seven students recognized by the 2018 National Science Foundation Graduate Research Fellowship (six winners – two undergraduate and four graduate students – and one honorable mention- graduate student), an AMGEN Scholar, a Boren Scholarship, a Gilman International Scholarship, two Beckman Scholars, a Breckenridge Research Fellowship, and a George Washington Prize winner. In addition, our students authored 76 peer-reviewed journal publications (3 undergraduate + 73 graduate) and 394 abstracts/meeting presentations/conference proceedings (100 undergraduate + 294 graduate). It is wonderful to note that 57 undergraduate students will be making 59 research presentations at the 2018 Biomedical Engineering Society Annual Meeting in Atlanta – an all-time high for us. One of the departmental goals is to have >25% of our PhD students receive independent external fellowships. Currently, 26.3% of our PhD students have external fellowships.

The Coulter Translational Partnership II (TPII) Program and the Center for Medical Innovation (CMI) continue to be the two key pieces in our biomedical translational research and commercialization efforts. Since 2012, these two programs have worked synergistically to elevate engineer-clinician collaborations to unprecedented heights (>272 engineer-clinician partnerships seeking Coulter or CMI funding!) and to draw faculty members from other Swanson School of Engineering departments into these collaborative projects. During AY18, the Center for Medical Innovation awarded **$220K to ten early-stage biomedical projects** and the Coulter-TPII program awarded **$679K to six late-stage biomedical projects**. Since 2012, these biomedical translation research and commercialization efforts have resulted in **13 start-up companies launched and 4 additional licenses executed**.

It has been a fruitful year for research funding in Bioengineering, with **$20.46M in new grants awarded in AY18**. Bioengineering faculty (primary + secondary) published 268 peer-reviewed journal articles during AY18. I am delighted to report that Lance Davidson, Richard Debski, and Jonathan Vande Geest were inducted into the American Institute of Medical and Biological Engineering (AIMBE) College of Fellows in 2018. David Vorp was elected as a Fellow of the American Heart Association and Savio L-Y Woo was inducted into the inaugural class of Orthopaedic Research Society Fellows. I am proud of the accomplishments made by both our new and seasoned faculty.

In this newsletter, we highlight some of the recent research achievements from our faculty: (1) Takashi Kozai received a grant to develop in vivo imaging technology to investigate the role of oligodendrocytes and oligodendrocyte progenitor cells on chronic brain implants. (2) Gelsy Torres-Oviedo and her research team were featured on NSF Science Nation for their work with stroke survivors on "locomotor learning" for lasting rehabilitation. (3) Kurt Beschorner and a team of researchers developed a new computational model that that may help in the design of safer shoes. (4) Rakié Cham received funding to create assessment tools to evaluate how central vision loss affects patients' quality of life. (5) Richard Debski received funding from the Pittsburgh Innovation Challenge (PinCh) to develop a new technology that predicts tendon overuse and prevents injury.

The Department of Bioengineering has had a great year, and I look forward to continuing our pursuit of academic excellence. I invite you to read more about these stories, and I encourage all faculty, staff, students, and alumni to share any newsworthy updates with us so that we can include your achievements in future publications.

Sincerely,

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