



# BIOMEDICAL ENGINEERING

COLLEGE OF ENGINEERING AND APPLIED SCIENCES AND RENAISSANCE SCHOOL OF MEDICINE



## Spring 2025 Newsletter

### CHAIR'S MESSAGE



**YI-XIAN QIN**  
Professor and Chair

Dear Colleagues, Alumni, Students, and Friends,

As we conclude another dynamic year in the [Department of Biomedical Engineering \(BME\) at Stony Brook University](#), I would like to send warmest greetings to our community. I'm proud to reflect on the progress we've made and the bright future we continue to shape together for advanced research, dedicated education, and student success. From pioneering medical imaging technologies to advancing biomaterials and neural interfaces, our department continues to push the boundaries of integrated science and engineering to explore translation to clinical applications. Our department continues to fulfill its goals of outstanding research and education that transform human health. We celebrate numerous achievements in this newsletter, including new research grants (i.e., Dr. DeLorenzo's new NIH funding for her research in brain function and cognition), high-impact publications (i.e., PNAS and NBME), industry networking, and the remarkable success of our students in both academic and professional career development. Our faculty have received prestigious research awards, and our students have presented their work at national and international conferences and competitions, embodying the spirit of curiosity and dedication that defines our program. Our BME faculty's achievements are recognized nationally and internationally, and we continue to increase the number of Fellows in AIMBE and other societies. Our BME program ranking reached a new high in the US News and World Report.

Our dedicated staff, student, and faculty foster a collaborative and inclusive environment, ensuring students receive hands-on mentorship in classrooms, laboratories, and design settings. BME held a successful field trip to the Regeneron headquarters to enhance collaboration between industry and the university. The department is poised for even greater growth and innovation, with additional faculty joining our team, including an anticipated new member in 2025.

The BME Department at SBU continues to drive forward its mission of excellence, making meaningful impacts from the laboratory to the

clinic and beyond. Now, it is a challenging time in higher education, like many other universities, and the overall community. It is important that we work together and stand steadfast in our values on supporting the impact on human health and student success. We are enthusiastic about the bright future ahead for our community and look forward to building upon the strong foundation that we have established. We are committed to continuing our work at the cutting edge of biomedical engineering research innovation and translation, together with industry partnerships and interdisciplinary education. We will drive our mission to train the next generation of biomedical engineers to lead in academia, industry, and clinical practice.

We thank our alumni and partners for your continued support and involvement. Your mentorship, collaboration, and generosity play a vital role in our success. Together, we are advancing knowledge, improving lives, and shaping the future of medicine and healthcare.

Best wishes for a successful Summer and the coming Fall semester!



## RESEARCH NEWS

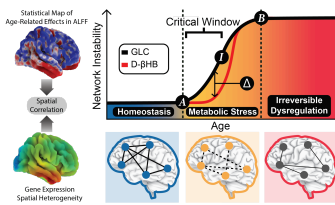


### Rubenstein paper describes integration of GenAI in BME Education

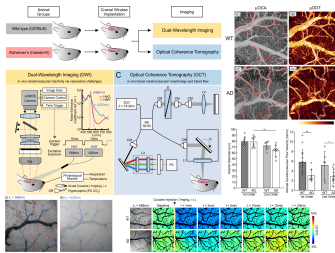
**DAVID RUBENSTEIN** co-authored a manuscript providing recommendations for integrating generative artificial intelligence (GenAI) into BME education and fostering continuous dialogue as the field evolves. The paper, co-authored by Reem Khojah, Alexandra Werth, Kelly W. Broadhead, Lawrence W. Dobrucki, and Chris Geiger, resulted from session conversations about best educational practices at The Fifth Biomedical Engineering Education Summit. [More>](#)

### Mujica-Parodi-led study identifies critical “midlife window” for preventing age-related brain decline

**LILIANNE R. MUJICA-PARODI** and a team of international scientists published a Proceedings of the National Academy of Science (PNAS) [paper](#) where they identified the driving mechanism behind the



degradation of brain signaling networks. Isolation of this mechanism reverses brain damage during, but not afterward, a critical midlife window. The paper, led by postdoc **BOTOND ANTAL**, was produced in collaboration with **HELMUT STREY**, Ken Dill (Laufer Center) and researchers from Massachusetts General Hospital, Mayo Clinic, University of Oxford, and Memorial Sloan Kettering. The study results offer insights into when interventions to prevent cognitive decline might be most effective. [More>](#)



## Du, Zhu, and Pan show evidence of vascular impairments in early Alzheimer's disease

**HYOMIN JEONG**, a third-year PhD student, co-authored a manuscript highlighting the use of advanced in vivo optical imaging modalities to detect morphological and functional vascular dysfunction in an early-stage Alzheimer's disease rodent brain. The Journal of Cerebral Blood Flow & Metabolism paper, co-authored by **CONGWU DU**, **YINGTIAN PAN**, **DONGHUI ZHU**, and National Institute on Drug Abuse (NIDA) Director Nora D. Volkow, captured subtle changes in brain blood vessels using dual-wavelength imaging and optical coherence tomography, highlighting their translational potential for early Alzheimer's disease diagnosis. [More>](#)

## FACULTY NEWS



### Balázs named as 2025 AIMBE Fellow

**GÁBOR BALÁZSI** was inducted into the American Institute for Medical and Biological Engineering (AIMBE) College of Fellows for his "pioneering contributions to apply engineering principles to design, protein-level tuning synthetic gene circuits, and to identify mechanisms for their evolution." Balázs joins nearly 3,000 individuals who represent the top 2% of medical and biological engineers in academia, industry, education, clinical practice and government. Balázs is one of seven SBU BME faculty to hold this honor. [More>](#)



### DeLorenzo awarded NIH R01 to explore role of mGluR5 in cognitive behavioral therapy

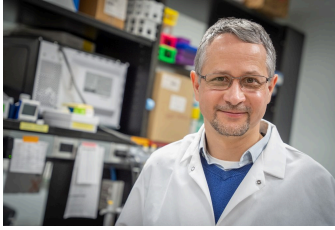
**CHRISTINE DELORENZO**, Ramin Parsey (SBU Psychiatry), and Lee M Ritterband (University of Virginia Medicine) received a National Institute of Mental Health (NIMH) R01 award entitled "Mechanistic clinical trial evaluating the role of the metabotropic glutamate receptor subtype 5 (mGluR5) in the antidepressant mechanism of Cognitive Behavior Therapy for Insomnia (CBT-I)". This five-year, \$3.86 million grant will provide first evidence for the role of mGluR5 in the antidepressant mechanism of CBT-I. [More>](#)



### Josephs awarded AI Innovation Institute seed grant

**ERIC JOSEPHS** received a Stony Brook University [AI Seed Grant Program](#) award entitled "Learning Design Rules to Personalize Precision CRISPR Gene Therapies with Interpretable AI". This one year, \$25,000 grant provides faculty with primary expertise outside the computational sciences access to an AI consultant and budget to generate large data sets needed to train AI models. This will allow Josephs' group to identify modifications to biotechnologies used for gene therapies to make them safer and more effective. [More>](#)





## Balázs receives SUNY Chancellor's Award of Excellence in Scholarship and Creative Activities

**GÁBOR BALÁZSI** received the SUNY Chancellor's Award of Excellence in Scholarship and Creative Activities from the State University of New York (SUNY) Chancellor John B. King, Jr. The award supports the pursuits foundational to sustaining the intellectual growth of SUNY institutions by recognizing consistently outstanding scholarly and creative productivity, conducted in addition to teaching, by SUNY's instructional and teaching faculty. Balázs was recognized for his leadership in synthetic biology, with applications in cancer therapy and drug resistance. [More>](#)



## Mujica-Parodi and Balázs champion federal biomedical research support at AIMBE'S Capitol Hill Day

**LILIANNE R. MUJICA-PARODI** and **GÁBOR BALÁZSI** joined colleagues from across the country to meet with congressional offices during AIMBE's Capitol Hill Day. The event enables researchers to directly engage with national policymakers and advocate for legislation supporting biomedical advancements. Mujica-Parodi and Balázs met with New York congressional staff, focusing on the need for continued federal research support and highlighted Stony Brook's research efforts in pushing the boundaries of what is possible in medicine. [More>](#)



## BME faculty awarded by College of Engineering and Applied Sciences for teaching and research success

BME faculty were among honorees at the inaugural SBU College of Engineering and Applied Sciences (CEAS) Award Ceremony. Faculty were recognized for their research successes via the Millionaires Club for receiving a new grant exceeding \$1 million within the year, and Millionaires Elite Club recognizing externally sponsored research exceeding \$1 million that year. Inductees into the Millionaires Club included **LILIANNE R. MUJICA-PARODI** and **ULAS SUNAR** in the 2022-2023 class, and **DONGHUI ZHU** and **JUN WANG** in the 2023-2024 class. Inductees into the Millionaires Elite Club included **DANNY BLUESTEIN**, **CHRISTINE DELORENZO**, **CLINT RUBIN**, and **DONGHUI ZHU** in the 2022-2023 class, with DeLorenzo, Rubin, and Zhu reprising their status in the 2023-2024 class. **MEI LIN (ETE) CHAN**, **CHRISTINE DELORENZO**, **MOLLY FRAME**, and **WEI YIN** were honored with the Teachers Rated Excellent Educators by their Students (TREES) Awards. Chan snagged a 2024 Excellence in Faculty Service Award, and Zhu received additional accolades for Excellence in Mentoring and Dean's Excellence Professorship for Research. [More>](#)



## Arbab-led team wins Spring 2025 Stony Brook Venture Challenge award

**HASSAN ARBAB**, along with students **ZACHERY HARRIS** and **ARASH KARIMI**, received a \$5,000 award in the Spring 2025 Stony Brook Venture (SBV) Challenge hosted by the Long Island High Technology Incubator (LIHTI) for their TeraHertz PHASER venture. TeraHertz PHASER was one of two winners in the Health track and is developing their scanner for diagnosis of skin burns, corneal imaging, and other applications. The award will be used towards commercialization activities and continued guidance from LIHTI. [More>](#)





## SBU BME holds inaugural department convocation during Commencement Week

The Department of Biomedical Engineering held its inaugural departmental convocation at the Charles B. Wang Center. The event honored 11 doctoral, 9 masters, and 41 baccalaureate candidates. Guest Speaker **LAUREN MALONEY** (Emergency Medicine, B.E. '12, M.D. '16) and Student Selected Speaker **CIARA WOELLHOF** (B.E. '25) noted the collective journey of SBU BME graduates and encouraged members of the graduating class to "pay it forward."



## SBU BME visits Regeneron

BME students and faculty participated in the first departmental field trip, visiting the Regeneron Pharmaceuticals, Inc. headquarters. Nearly 40 BME members traveled to the Tarrytown, NY site. The visit was co-hosted by Belinda Tang, an SBU BME alum who is a Process Development Engineer at Regeneron.



## Abasolo represents SBU at the 2025 NAGS Three Minute Thesis Regional Competition

**SAI ABASOLO**, a PhD candidate, won SBU's Three Minute Thesis (3MT) competition with her presentation "Growing Bones: Body Not Included." She represented SBU at the Northeastern Association of Graduate Schools (NAGS) Regional Competition, hosted by Concordia University, where she placed 2nd. Abasolo and the winner of the NAGS 3MT event, Cristina Hirschbiegel of University of Massachusetts Amherst, will continue on to compete in the Council of Graduate Schools national competition. Abasolo is mentored by Donghui Zhu.

[More>](#)



## Kulkarni receives Chancellor's Award for Student Excellence

**ANUSHRI KULKARNI** (B.E. '25) received a Chancellor's Award for Student Excellence from the State University of New York (SUNY) Chancellor John B. King, Jr. The award is the highest honor awarded to SUNY students who have best demonstrated academic excellence and leadership. Kulkarni conducted her honors thesis research in microfluidics under Eric Brouzes, and serves as president of Society of Women Engineers' SBU chapter, volunteer EMT, resident assistant, and clinical research associate at Stony Brook Hospital. [More>](#)



## Woellhof and Burfeind honored with Provost's Award for Academic Excellence

**CIARA WOELLHOF** and **THOMAS BURFEIND** received the Provost's Award for Academic Excellence. The award is given to select graduating seniors who have excelled in their academics, research and creative activities, and building academic communities. Burfeind was also honored with Stony Brook Athletics' Senior Scholar Athlete Award. Woellhof and Burfeind were mentored by Danny Bluestein and graduate student Kyle Baylous. [More>](#)

## Ashdown, Maloney, and Brouzes win 2025 National Academy of Inventors Awards



**CHRISTOPHER ASHDOWN** (Ph.D. '25) and **LAUREN MALONEY** (B.E. '12, M.D. '16) received the Young Academic Inventor's Award from the Stony Brook chapter of the National Academy of Inventors (NAI). Ashdown, mentored by Clint Rubin, was honored for his non-invasive, in vivo enhancement of immune function and immunotherapy using low intensity vibration. Maloney was recognized for her motion-adaptive training system designed to improve pre-hospital admission ultrasound training for paramedics. In addition, **ERIC BROUZES** was inducted into the NAI and recognized for high-efficiency encapsulation of single cells using microfluidics. [More>](#)



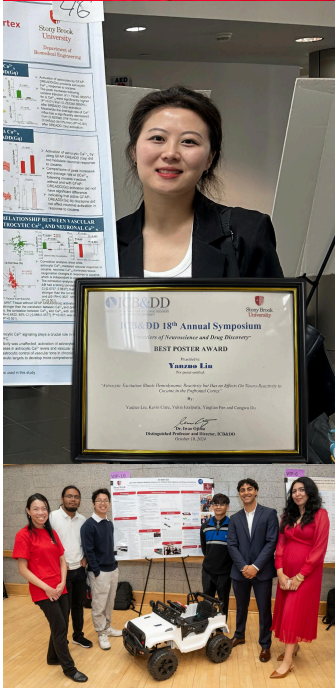
### **BME student projects highlighted at Inaugural Engineering Design Showcase**

Several BME Senior Design projects were highlighted at SBU's first annual Engineering Design Showcase. The event, a collaboration between five departments within the College of Engineering and Applied Sciences, featured 73 posters, including 9 from BME, and 285 students, shining a light on SBU's brightest problem solvers preparing to enter the workforce. [More>](#)



### **Burfeind named URECA Researcher of the Month for May 2025**

**THOMAS BURFEIND**, a student in SBU BME's Accelerated Master's Program, was honored as May 2025 Researcher of the Month by the Undergraduate Research and Creative Activities (URECA) program. Burfeind was recognized for his research on the optimization of transcatheter aortic valves replacement (TAVR) and intraocular surgical devices, and his innovation work with Tools for Surgery, LLC. Burfeind was mentored by Danny Bluestein, graduate student Kyle Baylous (Ph.D., '25), Dr. Farzan Gorgani, D.O. (SB Medicine), and Dr. Arnold Leiboff, M.D. (President, Tools for Surgery). [More>](#)



### **Liu receives Best Poster Award at 18th Annual SBU ICB&DD Symposium**

**YANZUO LIU**, a Ph.D. student, received a Best Poster Award at the 18th Annual Symposium hosted by Stony Brook's Institute of Chemical Biology & Drug Discovery (ICB&DD). The theme of the symposium was "Frontiers of Neuroscience and Drug Discovery", and Liu was awarded for her poster titled "Astrocytic Excitation Blunts Hemodynamic Reactivity but Has no Effects on Neuro-Reactivity to Cocaine in the Prefrontal Cortex." Liu is mentored by Congwu Du. [More>](#)

### **BME undergraduate research featured at URECA Celebration and VIP Symposium**

BME undergraduate research projects were well-represented among the 222 posters and 24 Vertically Integrated Projects (VIP) at the annual Undergraduate Research and Creative Activities (URECA) Celebration and VIP Symposium. The multidisciplinary Celebration showcases undergraduate research and the VIP Symposium highlights long-term, term-based multidisciplinary projects resulting in real-world solutions and transformative student experiences. [More>](#)

### **STEM+ART Exhibit Debuts at Health Sciences Library**





The fourth iteration of “STEM + Art = STEAM” was launched by **MEI LIN (ETE) CHAN** and Nobuho Nagasawa (Art) at the Health Sciences Center (HSC) Library. The event was the first to bridge the main SBU and HSC campuses and is designed to showcase the intersection of art and science at Stony Brook. The exhibit also featured a collaboration between students from BME and Occupational Therapy (OT). [More>](#)



### Kinetic Origami Garden brings STEM+ART to life

The Vertically Integrated Projects Bioengineering Education, Application and Research (VIP BEAR) team, Biomedical Engineering Society, and Origami Club launched an innovative and interactive origami exhibit in the Javits Center. The year-long collaboration was initiated by **MEI LIN (ETE) CHAN** and VIP BEAR students as an effort to increase youth outreach in STEM through creative means and integrating art. The installation is part of Stony Brook’s ongoing campus beautification initiative. [More>](#)



### About Stony Brook BME

The Department of Biomedical Engineering was founded in December 2000, jointly established by the College of Engineering and Applied Sciences (CEAS) and the Renaissance School of Medicine (RSOM) at Stony Brook University. The BME department currently has 26 core and approximately 50 program faculty members. The mission of the Department is to fully integrate the cutting edge of engineering and physical sciences with the state-of-the-art biology to advance human health. The ABET-accredited undergraduate program serves approximately 500 BME majors. The Graduate Program in BME has approximately 100 MS and doctoral students. The BME Department enjoys close collaboration with the facilities and faculty at the newly established Institute for Engineering-Driven



Medicine (IEDM), Center for Biotechnology, Brookhaven National Laboratory (BNL), and Cold Spring Harbor Labs (CSHL).

### **More about Stony Brook BME:**

[BME Core Faculty](#)

[Program Faculty](#)

[Research Areas](#)

[Undergraduate Program](#)

[Ph.D. & M.S. Programs](#)

[Affiliated Labs and Facilities](#)

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