Northeastern College of Engineering Bioengineering

Department of Bioengineering Newsletter

Note From the Chair:

It is an immense honor to become the Chair of the Bioengineering Department following Professor Lee Makowski. My term as Chair started on January 1, 2024. I came to Northeastern University from the University of Akron, where I was a professor of Polymer Science and Polymer Engineering.

Professor Makowski, the founding Chair of the department, along with other faculty members, created a vibrant and energetic department that in 10 short years has become a cornerstone of the University's Educational and Research Enterprise. We have grown quickly to be home to 75 faculty and staff, 115 PhD, 110 MS, and 650 BS students. True to Northeastern's experiential learning identity, our programs cut across disciplines and departments to prepare students for the opportunities of tomorrow.

The energy, passion and optimism of the faculty, students and staff are what drew me to Northeastern University. I see immense potential in the Bioengineering department. The research excellence, educational distinction, and human potential coupled with the entrepreneurial ecosystem of Boston will enable us to pave the way to significant educational and societal impact over the next decade. The Bioengineering department is well positioned for exponential growth, and we are putting in place programs that will leverage the expertise of individual faculty and students to collectively address significant challenges. Through these collaborative initiatives we will take on grand challenges that address societal needs and prepare students for leadership roles in the rapidly evolving research ecosystem.
I am very excited and thankful for the opportunity to lead this young department that has all the ingredients for significant impact in education and research and I am eager to guide the growth of the department to its full potential.

Abraham Joy, PhD, Chair of Department of Bioengineering

Department of Bioengineering Hosts 10 Year Anniversary Celebration

The College of Engineering's Department of Bioengineering celebrated its 10th anniversary Jan. 12 with a full day of events.

The celebration began in Raytheon Ampitheater, where most of the day's events took place. Lee Makowski, founding chair and professor of bioengineering, gave opening remarks about the history of the department, its accomplishments in the past 10 years and what it will strive to accomplish in the future. At the end of his remarks, Makowski was gifted a "chair's chair" with his name and title on it to thank him for his time with the department.

Makowski's remarks were followed by research presentations from Professor Ning Wang, Assistant Professor Mona Minkara and PhD Candidates Ana Vargas, Caroline McCormick, Joshua Pace and Noam Grunfeld.

After a lunch break at EXP, the afternoon commenced with the Vision of the Department and Bioengineering Field presentation, featuring remarks from Dean Gregory Abowd, Makowski and Abraham Joy, incoming chair and professor of bioengineering. During these remarks, Abowd, Makowski and Joy each gave insight into how Northeastern's vision of the bioengineering department would continue to evolve and be fulfilled through research and curricula developments.

A poster session with current bioengineering PhD students followed these remarks.

Alumni panelists Jessica Fitzgerald, PhD, Kritika Singh, BS, and David Walsh, PhD.

The founding department chair Lee Makowski receiving a personalized chair to commemorate his commitment to the department.

PhD students presenting at the poster session.

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Looking for an MS or PhD program?

Apply to our Graduate Studies Programs

Faculty and Staff Awards 2024

The College of Engineering recognized faculty and staff at the annual faculty and staff awards event and thanked everyone for their hard work and dedication in support of our students, college, and university during the 2023-2024 academic year.

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Check out all of the Bioengineering representation at the COE awards!

Gregory Abowd, *The Dean of the College of Engineering* & Esther Cohen, *Senior Business Manager of Bioengineering*

Gregory Abowd, *The Dean of the College of Engineering* & Chiara Bellini, *Associate Professor of Bioengineering*

Gregory Abowd, *The Dean of the College of Engineering* & Eno Ebong, *Associate Professor of Chemical Engineering and Bioengineering*

Gregory Abowd, *The Dean of the College of Engineering* & Caroline Pridmore, *Academic Operations Manager*

Gregory Abowd, *The Dean of the College of Engineering* & Jeffrey Ruberti, *Professor of Bioengineering*

Unlocking the Secrets of RNA

Every cell has the same DNA, but each cell exhibits a distinct role and function – How?

BioE Assistant Professor Sara Rouhanifard explores the impact of RNA modifications on cell function and explains how Northeastern has helped both her and her students unlock new ideas.

Join us on a fascinating journey into the world of RNA research in our latest video! Learn about Professor Rouhanifard's lab, which is dedicated to unraveling the mysteries of RNA modifications and how they are striving to understand the complexity of human cell differentiation at the RNA level. We explore the vital role of RNA in the human body, including its link to the SARS-CoV-2 vaccine. Watch now to learn about the potential therapeutic applications and the impact of curiosity-driven research.

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Slowing the Progression of Alzheimer's Disease

Alzheimer's and related forms of dementia are commonplace with the Centers for Disease Control and Prevention reporting that 5.8 million people in the United States live with these diseases. This number is expected to rise to 14 million by 2060. But what is the difference between Alzheimer's disease and dementia?

"Dementia is a global term that just refers generally to loss of memory or cognition impairments that people observe," said Becky Briesacher, associate professor in the Department of Pharmacy and Health Systems Sciences at Northeastern University.

"Alzheimer's disease is a specific disease. (Dementia) is more sort of a syndrome, meaning it's large. It encompasses a bunch of different features," Briesacher added.

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Spark Fund Award Research to Address Atherosclerosis

A Novel Approach to Fighting Atherosclerosis — with Spark Fund Awardee Professor Eno Ebong

ChE/BioE Associate Professor Eno Ebong is using the Spark Fund award she received from the Center for Research Innovation at Northeastern to develop a novel therapeutic that targets the glycocalyx to prevent atherosclerosis, a cardiovascular disease that can lead to secondary cardiovascular events such as strokes or heart attacks.

Atherosclerosis, or plaque formation in the arteries, is a cardiovascular disease that can lead to secondary cardiovascular events, such as strokes or heart attacks. Cardiovascular events are the leading causes of death worldwide, and cardiovascular disease affects 121 million American adults. Therefore, many researchers are dedicated to developing innovative therapeutic approaches to counteract this devastating disease. One such researcher is Northeastern Professor Eno Ebong, Ph.D.

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Creating an Engineering Club from an Idea

The future of prosthetics is 3D-printed. This student has a hand in it.

All universities work hard to attract students. But it's difficult to imagine a more compelling sell than the one Northeastern University gave Isabela Castillo.

In the spring of 2021, Castillo had been accepted to Northeastern, but she was still deciding on a U.S. college when she and her parents visited campus from their home in Mexico City. "It was a last-minute decision to come, and we couldn't get a tour," Castillo remembers. "We were standing in ISEC alone, looking up at the building. And suddenly Joseph Aoun was there."

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Isabela Castillo, E'25, bioengineering, came to Northeastern University with an idea to create prosthetic hands and led to her starting Give a Hand, a club developing low-cost, 3D-printed prosthetic hands.

Check out Give a Hand

New Research Questions How Connective Tissues Are Formed

BioE Professor Jeffrey Ruberti's new research suggests that connective tissues in the human body are more likely formed by cells pulling apart than coming together.

Our ligaments and bones don't grow the way we thought, new Northeastern research finds

New research by Northeastern scientists questions the long-held belief that the connective tissues that give us mechanical strength, such as tendons, ligaments, bones and skin, form in the human body by cells coming together.

Instead, our tissues are more likely formed by cells pulling apart, according to the research published in Matter today.

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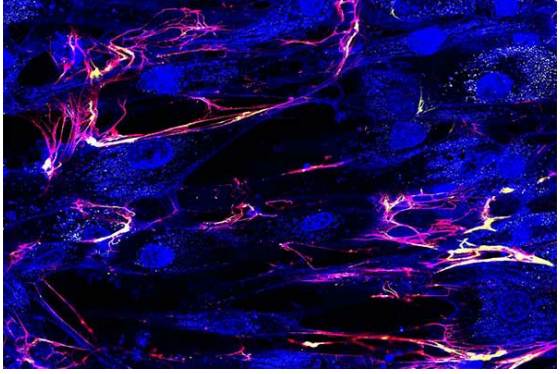

Bioengineering Undergraduate student Jason Olszewski (Left) and Professor Jeffrey Ruberti (Right).

Detecting Prostate Cancer Faster with AI

BioE Assistant Research Professor Saeed Amal has developed a new AI-powered web-based tool that will be able to detect prostate cancer faster.

New AI tool can help health care providers detect prostate cancer faster, Northeastern researcher says

A new web-based tool utilizing AI can help pathologists detect prostate cancer faster, say Northeastern University researchers who developed the technology.

"This work will provide a more accurate and timelier diagnosis and grading than the manual existing process in prostate cancer diagnosis."

Saeed Amal, Assistant Research Professor of Bioengineering

Prostate cancer is the most common non-skin cancer among men in the United States and is the second-leading cause of cancer death among men in the country. But if it's caught early enough, the disease is much more easily treatable, and in many cases patients can be cured.

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BioE PhD Student Receives 2024 AHA Predoctoral Fellowship

BioE PhD candidate Ana Vargas, who works in the labs of both MIE Associate Professor Rouzbeh Amini and BioE Associate Professor Chiara Bellini, was selected by the American Heart Association to receive a Predoctoral Fellowship for her project “Pregnancy Induced Mechanobiological Remodeling in Maternal Vasculature in Health and Disease.”

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Mona Minkara Advocates for Accessibility in Science

BioE Assistant Professor Mona Minkara was featured in the Chemical and Engineering News article “Mona Minkara advocates for accessibility in science.”

“At age 7, Mona Minkara was diagnosed with macular degeneration and cone-rod dystrophy, which eventually led to blindness. A doctor “point-blank told my mom that it wasn’t worth spending a penny on my education,” she recalled years later as she delivered a speech at her commencement from Wellesley College…”

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Learn more about our degree programs and application process

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