



Department of Biomedical Engineering
Cullen College of Engineering

INNOVATION IN HEALTHCARE BIOMEDICAL ENGINEERING

UNIVERSITY OF HOUSTON AWARDED \$4 MILLION NIH GRANT TO STUDY AUTOIMMUNE DISEASE

Ten-year Study Aims to Uncover Earliest Biological Triggers of Lupus, Rheumatoid Arthritis and Related Auto Immune Diseases

With a \$4M grant from the National Institutes of Health, a University of Houston pioneer in autoimmune research, Chandra Mohan, is launching a 10-year study set to target the very heart of autoimmune disease — examining what causes the body to attack itself and identifying biological pathways that could become targets for new treatments.

Autoimmune Rheumatic Diseases (SARD) includes Rheumatoid Arthritis, Systemic Lupus Erythematosus, Sjogren's Syndrome and Systemic Sclerosis. All of them are chronic, without cure and impact more than 30 million people worldwide.

Inside the human body, the immune system is always on guard, hunting down and killing disease and viruses with mal intent. But often, it stumbles and attacks innocent, non-threatening tissues and organs, resulting in autoimmune disease.

Commonly, it attacks the same culprit: nuclear antigens, which exist within a cell nucleus. This leads to anti-nuclear antibodies initially, and to a wide array of SARDs, eventually.

“Loss of tolerance to nuclear antigens leads to the development of anti-nuclear autoantibodies and is an early phase of SARD, present in more than 50% of patients.

Collectively, these studies will help identify the genetic, environmental and cellular factors that are operative at the two steps of SARD development, namely the emergence of anti-nuclear autoantibodies and disease onset. More importantly, these studies will highlight functional molecular pathways and mechanisms that may be operative at each step.” — **Chandra Mohan**, Hugh Roy and Lillie Cranz Cullen Endowed Professor of Biomedical Engineering.

This study will be carried out in collaboration with Dr. Karen Costenbader at Harvard Medical School, Boston. ⚙️



KIRILL LARIN RECOGNIZED AS EXCELLING IN NIH FUNDING

Kirill Larin, the Cullen Endowed Chair and a professor of the Biomedical Engineering Department at the Cullen College of Engineering, is in the 93rd percentile of researchers when it comes to medical research, according to the Blue Ridge Institute for Medical Research.

Larin's reported funding is \$2.28 million for the federal fiscal year ending Sept. 30, 2025. This puts him well above the average researcher at \$862,293, and the median researcher at \$507,000.

"I am honored by this recognition, but it really reflects the work of an outstanding team," he said. "I am especially grateful to my research faculty, Dr. **Salavat Aglyamov** and Dr. **Manmohan Singh**, and most importantly to the students and postdoctoral fellows whose creativity, dedication and persistence have allowed us to build a strong multidisciplinary research program."

The Blue Ridge Institute for Medical Research was established in 2006. While it conducts research on

protein kinase inhibitors, it is most known nationally for its yearly examinations of National Institutes of Health funding.

In total, this year's report cataloged and tallied the funding for more than 42,000 researchers. The total funding tracked was \$36.8 billion.

At Cullen, Larin heads the Biomedical Optics Laboratory. He leads several multidisciplinary research projects ranging from developmental biology to tissue biomechanics. Larin's research activities are currently funded by five NIH R01 grants, and expenditures have surpassed \$2 million annually for the past several years.

Larin was recognized as the University's top research-producing faculty in 2022 and 2023, and he earned the 2025 SPIE Biophotonics Technology Innovator Award. He joined Cullen in 2004, and he became chairman of the Biomedical Engineering Department in 2024. ⚙️



Kirill Larin
Cullen Endowed Chair and professor
of Biomedical Engineering

SHEVKOPLYAS INDUCTED AS AIMBE FELLOW

The Department of Biomedical Engineering's Professor **Sergey Shevkoplyas** was inducted into the College of Fellows of the American Institute for Medical and Biological Engineering (AIMBE) this spring. This recognition is one of the most prestigious honors in the field, and underscores the department's emergence as a nationally competitive research powerhouse and a hub for translational biomedical innovation.

"It is a great honor to be inducted as an AIMBE Fellow, especially to have been nominated by Dr. Schultz, a founding Fellow and past President of AIMBE, and during the organization's 35th anniversary year," said Shevkoplyas, who was elected for "outstanding contributions to microfluidics for studying blood flow in capillary networks, low-cost point-of-care diagnostics and high-throughput cell separation."

This highly selective professional distinction honors individuals who have made outstanding contributions to engineering and medicine research, practice or

education. Fellows are nominated, reviewed and elected by their peers through a rigorous process. The College includes leaders from academia, industry, government and clinical practice, and counts among its members Nobel Prize laureates, Presidential Medal of Science and/or Technology awardees, and hundreds of members of the National Academies of Engineering, Medicine, and Sciences.

Shevkoplyas's research sits at the intersection of device design and humanitarian impact, with a focus on making life-saving care accessible to pediatric and vulnerable patients worldwide. He developed one of the earliest low-cost, paper-based point-of-care diagnostic tests for sickle-cell disease and pioneered high-throughput blood cell separation technologies with broad clinical applications including pediatric leukapheresis and cellular therapy manufacturing. ⚙️



Sergey Shevkoplyas
Professor, Biomedical Engineering

EIGHT LEADERS FROM CULLEN HONORED WITH UH AWARDS

Venkat “Selva” Selvamanickam, M.D. Anderson Chair Professor of Mechanical & Aerospace Engineering, is this year’s recipient of the Esther Farfel Award, the highest honor given by the University of Houston to its faculty members.

Selva also earned the Excellence in Innovation Award, a new category of recognition this year. It has been an incredible year for Selva, who was also named to the National Academy of Engineering in February.

“Please join me in congratulating this year’s award recipients,” said **Diane Z. Chase**, Senior Vice President for Academic Affairs and Provost. “They are examples of the outstanding faculty who are making an impact through service, teaching, and research.”

The other winners from the Cullen College of Engineering are:

Excellence in Research: Assistant Professor:

Pieremanuele Canepa, Electrical & Computer Engineering

Excellence in Research: Assistant Professor:

Abdul Latif Khan, Engineering Technology

Excellence in Research: Associate Professor:

Venkatesh Balan, Engineering Technology

Excellence in Research: Professor:

Yashashree Kulkarni, Mechanical & Aerospace Engineering

Moores Professorship:

Sergey Shevkoplyas, Biomedical Engineering

Outstanding Graduate Teaching Assistant Award:

Zahra Rouzitalab, Civil & Environmental Engineering

Rising Innovator Award:

Marzia Cescon, Assistant Professor, Mechanical and Aerospace Engineering

Undergraduate Research Mentor Award:

Chandra Mohan, Professor, Biomedical Engineering

A ceremony for the award recipients is being planned for Fall 2026. ⚙️



Venkat “Selva” Selvamanickam
*M.D. Anderson Chair Professor of Mechanical &
Aerospace Engineering*

CULLEN NAMES OUTSTANDING STUDENTS FOR 2025–26 ACADEMIC YEAR

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The Cullen College of Engineering is proud to announce that the following students have been named Outstanding Juniors and Seniors for their respective departments for the 2025-26 academic year.

Students are nominated by professors from their department, based on a combination of GPA, courseload and extracurricular activities. In addition, an Outstanding Junior and Senior for the whole college is picked. This year, those students were junior **Reagan Kimberly** and senior **Urvi Bhatia**.

The outstanding students by department are:

Biomedical Engineering:

Esraa Al Dhamin (junior) and **Sue Ngoc Nguyen** (senior).

Chemical Engineering:

Kathryn Kalchik (junior) and **Hammad Muhammad Shaikh** (senior).

Civil Engineering:

Isaiah Mejia (junior) and **Lizbeth Armenta** (senior).

Construction Engineering:

Caden Paul Ward (junior) and **Christian Cruz** (senior).

Electrical Engineering:

Zoey Ballard (junior) and **Aidan Knight** (senior).

Industrial Engineering:

Reagan Kimberly (junior) and **Trinh Nguyen** (senior).

Mechanical and Aerospace Engineering:

Mia Rodriguez (junior) and **Urvi Bhatia** (senior).

Petroleum Engineering:

Fernanda Pereira De Azevedo (junior) and **Christina Castillo** (senior).

Systems Engineering:

Ian Wahl (junior) and **Alexia Robert** (senior).



STUDENT SUCCESS

MOHANLAB SUMMER INTERNSHIP PROGRAM CONCLUDES A SUCCESSFUL 2026

This summer, 10 high school students gained hands-on experience in biomedical research through the Mohanlab Summer Internship Program for High School Students (MLSI). Under the guidance of **Chandra Mohan** and graduate student mentors, participants spent eight weeks contributing to real-world projects, and data analytics before presenting their findings at the program's conclusion.

“The students who participate in the program get a unique opportunity to participate in actual ongoing biomedical research,” said **Sofia Cantu**, Core Scientist with the Mohan Lab. “Many of the projects that the students have worked on in the past are being written up as or have had manuscripts published about the work completed over the course of the internship. Our program is also unique since we are the largest single-lab summer internship that is available for high schoolers across the country! Our students get the opportunity to be hands-on in a lab, which is not an opportunity afforded to many students their age.” ⚙️



CULLEN

The University of Houston Cullen College of Engineering

The University of Houston Cullen College of Engineering addresses key challenges in energy, healthcare, infrastructure, and the environment by conducting cutting-edge research and graduating hundreds of world class engineers each year. With research expenditures topping \$40 million and increasing each year, we continue to follow our tradition of excellence in spearheading research that has a real, direct impact in the Houston region and beyond.





Cullen College of Engineering

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