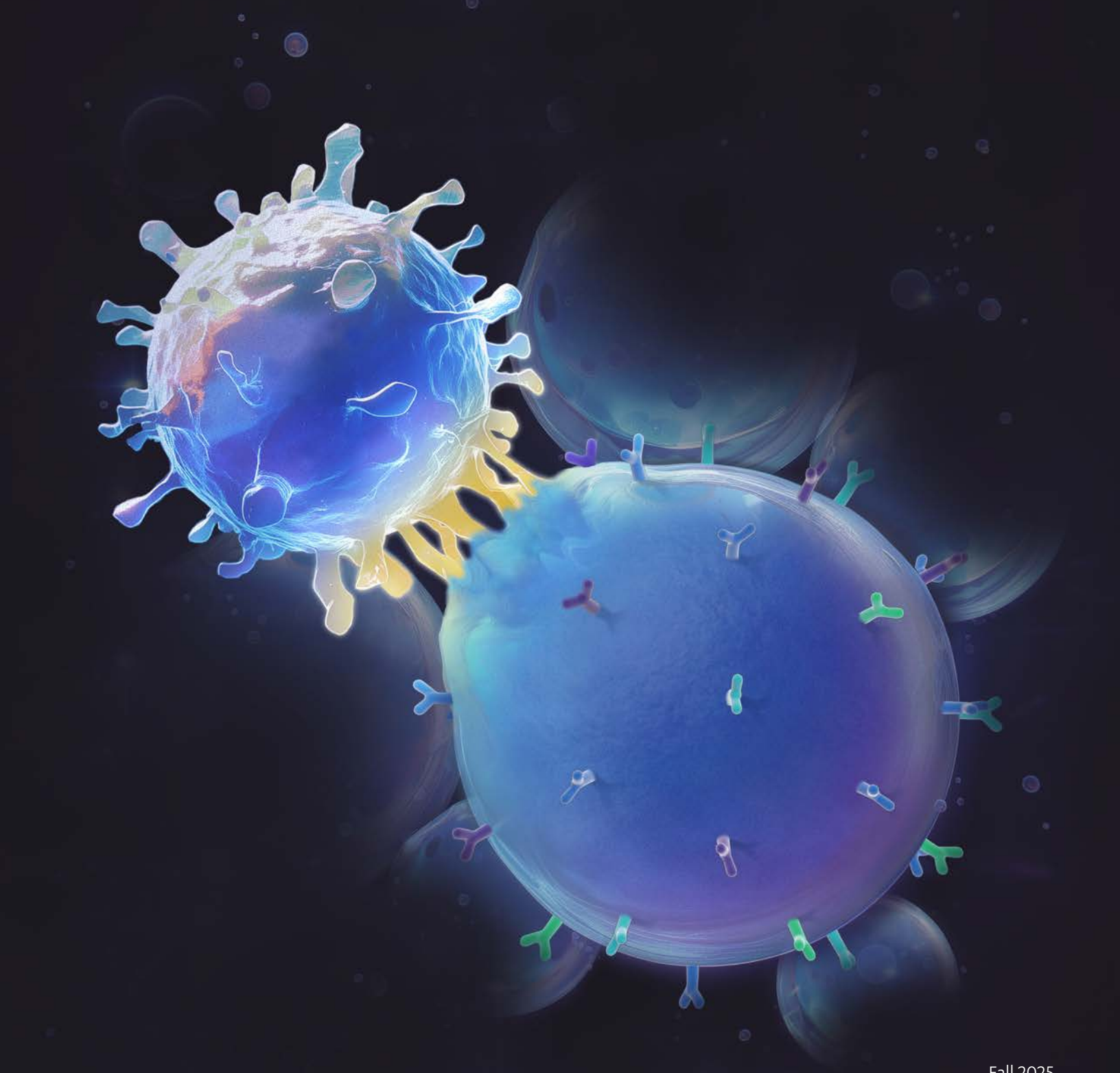
UCLA Samueli
School of Engineering

BIOENGINEERING



Fall 2025

Performing cutting-edge research that benefits society and training future leaders for a wide range of possible bioengineering careers.

Message from the Chair

Dear students, faculty, alumni, and partners,

The field of bioengineering is evolving at an extraordinary pace — from the rise of AI-driven protein design to breakthroughs in cell and immune engineering that promise to reshape medicine. Here at UCLA Bioengineering, we are growing in lockstep with these transformative shifts.

In 2025, we are thrilled to welcome four exceptional new faculty members — Jason Zhang, Mohamad Abedi, Yosuke Tanigawa, and Sean Yamada-Hunter — who bring cutting-edge expertise in immunoengineering, AI and machine learning, and protein engineering. Their research strengthens our position at the forefront of a rapidly expanding field, while perfectly complementing our existing strengths in molecular engineering, bioelectronics, biomaterials, biomedical optics, computational bioengineering, and diagnostics.

Our department's growth also aligns with major initiatives such as the newly established California Institute for Immunology and Immunotherapy, which aims to accelerate next-generation treatments through cross-disciplinary collaboration. We see an unprecedented opportunity to train students who are not only versed in core bioengineering principles but also equipped with industry-relevant skills in AI-guided drug discovery, cell therapy, and biologics design — areas of critical importance for our thriving Southern California biotech and pharmaceutical ecosystem, and worldwide accelerated growth.

At UCLA Bioengineering, our mission remains twofold:

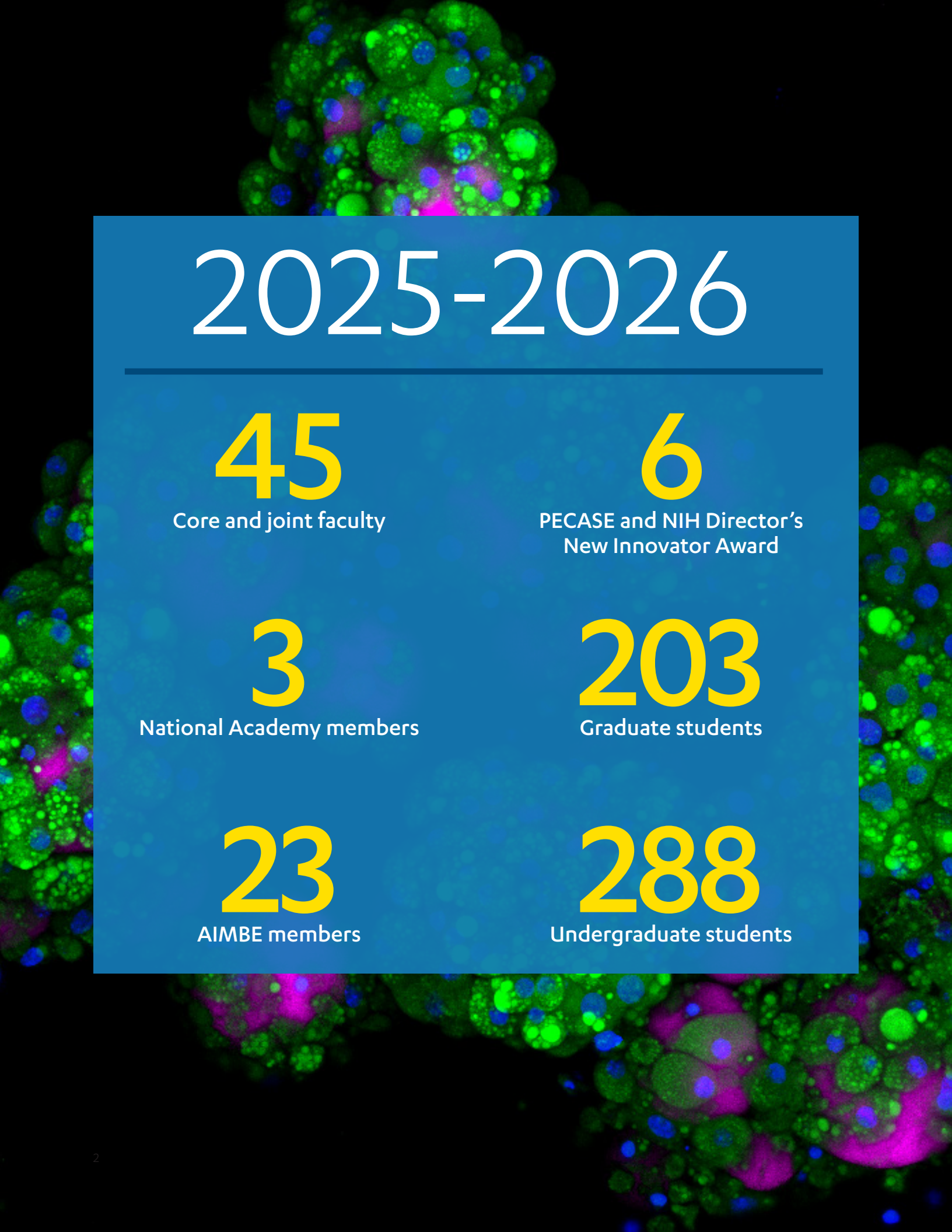
To push the boundaries of innovation, from fundamental science to translational technologies that improve human health.

To prepare the next generation of leaders who will shape the future of biotechnology, medicine, and entrepreneurship.

With the momentum of new talent, strategic partnerships, and a vibrant community of faculty and students, we are poised to continue our legacy of inventing technologies that transform lives.

Thank you for being part of this exciting journey.

Dino Di Carlo, Ph.D.
Professor and Chair



2025-2026

45
Core and joint faculty

6
PECASE and NIH Director's New Innovator Award

3
National Academy members

203
Graduate students

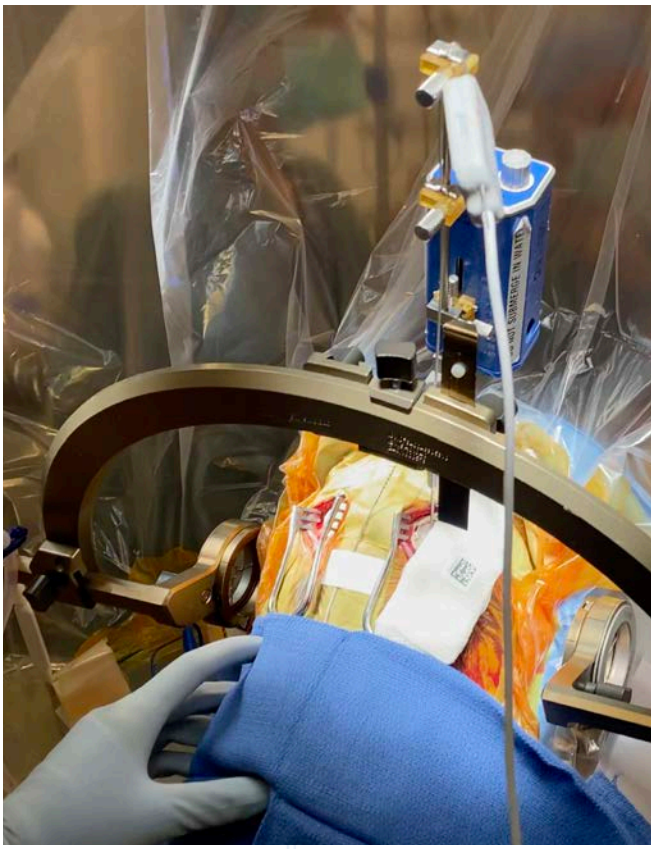
23
AIMBE members

288
Undergraduate students

THE MISSION OF THE BIOENGINEERING DEPARTMENT

at the UCLA Samueli School of Engineering is to perform cutting-edge research that benefits society and to train future leaders for a wide range of possible bioengineering careers by producing graduates who are well-grounded in the fundamental sciences, adept at addressing open-ended problems and highly proficient in rigorous analytical engineering tools necessary for lifelong success.

Bioengineering student conducting cell culture



Surgeon's view of deep brain stimulation implant surgery

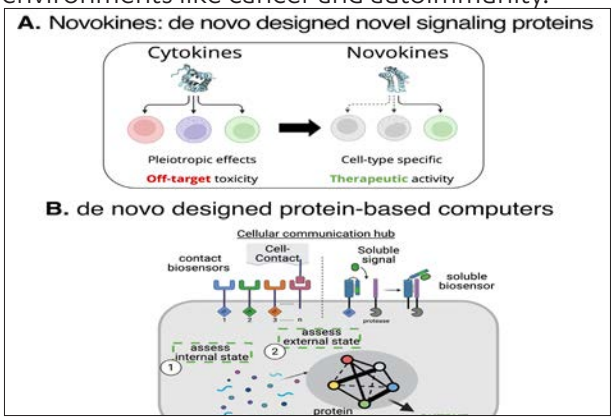
Over the past few years, our Bioengineering Department has established a vibrant undergraduate degree program and recruited excellent faculty with diverse backgrounds who are directing innovative research programs. Our bioengineering faculty bring an extensive range of expertise to the department, with specialties including bioengineering, chemistry, materials science, chemical engineering, physics, electrical engineering and medicine. This broad range of experience has proved to be extremely valuable in preparing and teaching our undergraduate curriculum. Our faculty and students have been recognized by many awards at national and international levels.

OUR CORE FACULTY

Mohamad Abedi

Assistant Professor

The Abedi Lab develops technologies at the intersection of molecular engineering, synthetic biology, and machine learning to understand and reprogram cellular communication. Instead of modifying natural proteins, the lab designs novel components from the ground up using AI-driven protein design and high-throughput automation. A core focus is to reconstruct signaling networks to understand how cells interact and how these pathways can be reprogrammed for therapy. The lab is currently developing two synthetic signaling mechanisms, Novokines, de novo cytokines that bridge receptors without natural ligands to elicit new cellular behaviors, and logikines, conditional cytokines that use protein computing to function only in defined cellular contexts, such as tumors. These systems aim to enable therapies with enhanced specificity, reduced toxicities, and improved control over cell differentiation and function in disease environments like cancer and autoimmunity.

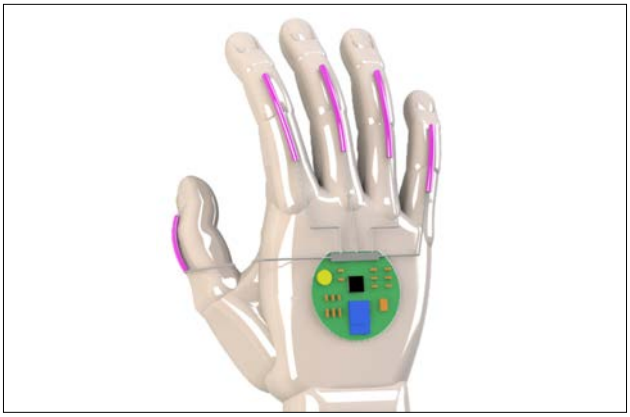


RESEARCH AREA/SPECIALTY:
Synthetic Biology, Computational protein design, Immunotherapy, Cell engineering

Jun Chen

Associate Professor

Jun Chen is currently a tenured associate professor in the UCLA Bioengineering Department. His research focuses on soft matter innovation for novel bioelectronics and personalized healthcare. With a h-index of 114, he has published two books and 330 journal articles, with 230 of them being corresponding authors in Chemical Reviews (2), Chemical Society Reviews (2), Nature Review Bioengineering (1), Nature Materials (2), Nature Electronics (8), Nature Biomedical Engineering (1), Nature Communications (8), Science Advances (3), Advanced Materials (15), among others. Beyond research, he is an associate editor of Biosensors & Bioelectronics, Med-X, FlexMat, Soft Science, Textiles, and VIEW Medicine, Advisory/Editorial Board Members of Matter, Materials Today, Materials Today Energy, Cell Reports Physical Science, Nano-Micro Letters, Nano Trends, among others.

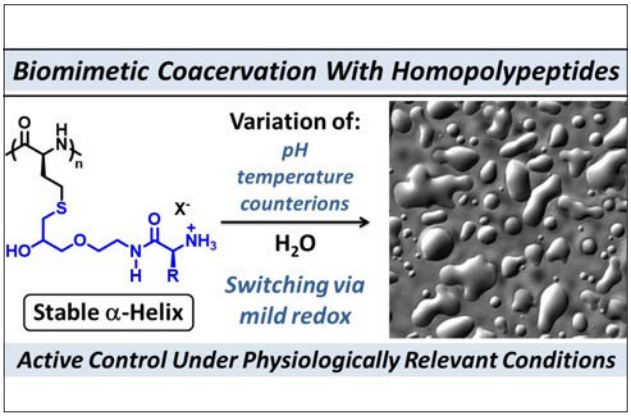


RESEARCH AREA/SPECIALTY:
Biosensors and bioelectronics

Timothy Deming

Distinguished Professor

Research in the Deming Lab is focused on synthesis, processing, characterization and evaluation of biological and biomimetic materials based on polypeptides. These materials are studied since they can be prepared from renewable resources or be biocompatible, biodegradable and possess unique self-assembling properties. We utilize innovative chemistry techniques to synthesize materials with properties that rival the complexity found in biological systems. The polymers are then processed into ordered assemblies, which are characterized for both nanoscale structure as well as biological function. Current efforts are focused on commercialization of polypeptide hydrogels for treatment and prevention of infection and for cosmetic applications.

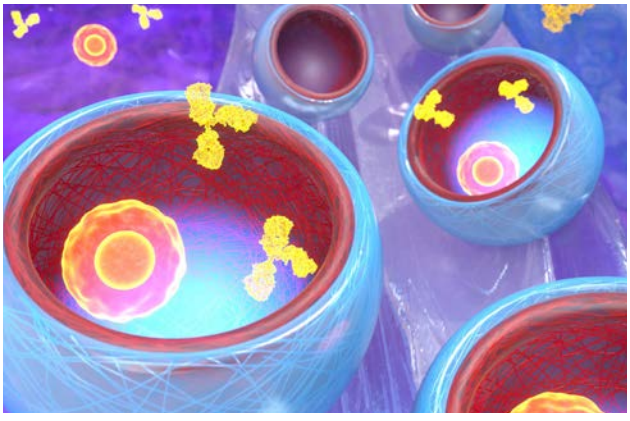


RESEARCH AREA/SPECIALTY:
Bioinspired materials, polymers, functional polypeptides

Dino Di Carlo

Department Chair & Armond and Elena Hairapetian Chair in Engineering and Medicine

The Di Carlo Lab works at the intersection of micro-, nano- and information technology and biology — spanning fundamental investigations in fluid flow and single-cell behavior to clinical and industrial applications. Di Carlo has been a pioneer in the field of inertial microfluidics. The group has used inertial fluid dynamic effects to manipulate particles, cells and fluids in precise ways, enabling the isolation and preparation of samples of blood and other fluids and performing single-cell analysis. These innovations have led to the first FDA-cleared diagnostic test that measures the mechanical properties of cells to detect sepsis early. His lab continues to innovate, most recently with advancements in the "lab on a particle" field, enabling the democratization of functional single-cell analysis using standard life science instruments.

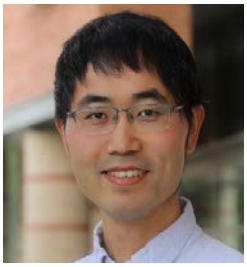


RESEARCH AREA/SPECIALTY:
Lab on a particle, smart biomaterials, microfluidics

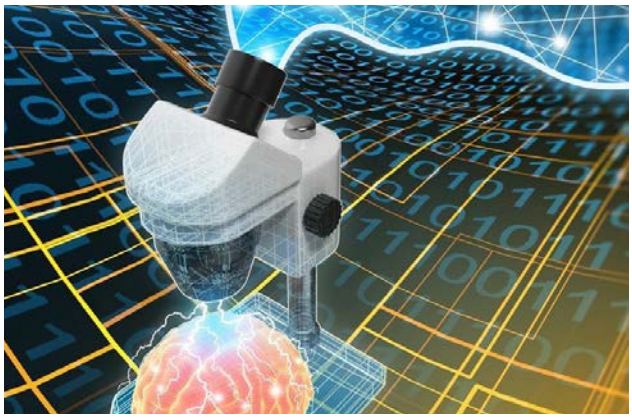
OUR CORE FACULTY

Liang Gao

Associate Professor



Gao's research group specializes in advancing optical imaging technologies to deepen our understanding of cell and tissue biology and transform disease diagnosis. Their work has resulted in more than 70 peer-reviewed publications in renowned journals such as Nature, Nature Communications, Science Advances, PNAS, Physics Report and the Annual Review of Biomedical Engineering, along with 10 patents. Currently, the team focuses on multidimensional optical bioimaging, building systems that capture multiple photon characteristics simultaneously, maximizing information acquisition from a single measurement. Notably, Gao and his researchers developed the world's fastest 2D and 3D cameras, enabling imaging of transient biological events at microscopic scales, and the world's first full-throughput snapshot hyperspectral imaging system, recognized with the R&D 100 Award and creating a significant impact across scientific communities.



RESEARCH AREA/SPECIALTY:
Biophotonics, biomedical imaging instrumentation, computational optical imaging

Mireille Kamariza

Assistant Professor

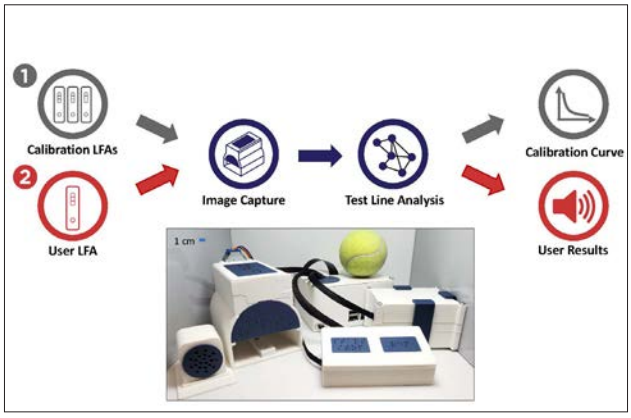
The Kamariza Lab integrates carbohydrate chemistry, nucleic acid structural biology, and molecular engineering to create novel platforms for probing, detecting, and manipulating complex biological systems. Our central mission is to design predictable, versatile, and high-performance molecular tools that expand our understanding of biomolecular interactions, microbial physiology, and RNA biology. Our research bridges chemical biology, synthetic biology, and molecular engineering, with the overarching goal of developing innovative strategies to visualize, quantify, and control biological processes. By focusing on fundamental molecular mechanisms, we aim to deliver technologies that are both rigorous in design and broadly applicable across scientific disciplines.

RESEARCH AREA/SPECIALTY:
Imaging, diagnostics, CRISPR, fluorescent dyes, infectious diseases

Daniel Kamei

Professor

The COVID-19 pandemic showed the world the importance of paper-based point-of-care (POC) diagnostics. The Kamei Laboratory has been developing next-generation POC diagnostics to further improve their capabilities. To improve sensitivity, the Kamei research group was the first to combine the concentration of biomolecules via aqueous two-phase systems with their detection via the lateral-flow immunoassay. His team also discovered the novel phenomenon of macroscopic phase separation on paper that allowed the simultaneous concentration and detection of target molecules on paper. Additionally, the Kamei Laboratory became the first to automate biomarker concentration, capture and signal enhancement on a paper-based device. To go beyond simple binary yes/no readouts, his group developed quantitative POC devices through use of colors associated with gold nanorod etching, barcode lateral-flow immunoassays and hydrogel beads of specific compositions.

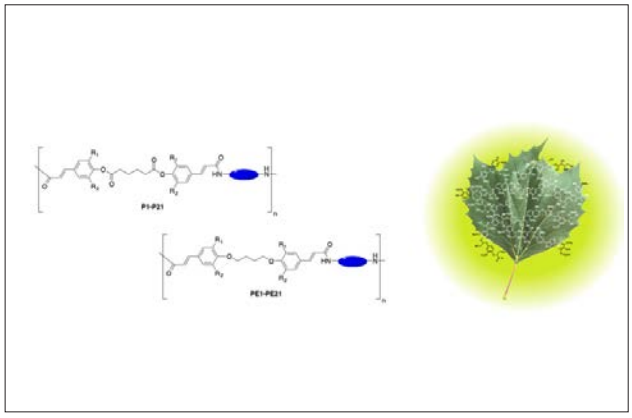


RESEARCH AREA/SPECIALTY:
Point-of-care diagnostics, automation, molecular thermodynamics, transport and kinetic phenomena

Andrea Kasko

Professor

Kasko leads a multi-disciplinary research program at the UCLA Department of Bioengineering focused on the synthesis and characterization of novel polymeric materials, specifically dynamically controllable biomaterials and biomimetic and bio-derived materials. Her group synthesizes a variety of small molecule, oligomeric and polymeric compounds. Research in the Kasko Lab can be grouped into five areas: (1) photodegradable biomaterials; (2) glycomimetic materials; (3) drug-releasing wound dressings; (4) cationic biomaterials for interrogating innate immunity and non-viral gene delivery; and (5) polymeric materials derived from biomass.

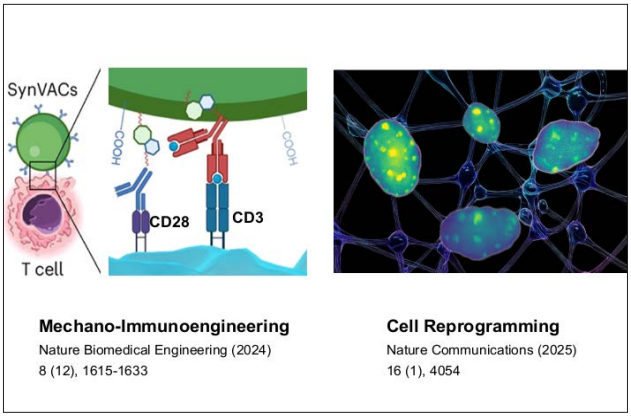


RESEARCH AREA/SPECIALTY:
Polymeric biomaterials and bio-derived materials

Song Li

Chancellor's Professor

The Li Lab is focused on cell engineering, mechanobiology, biomaterials and tissue engineering. Stem cells and reprogrammed cells have broad applications in regenerative medicine, disease modeling and drug screening. The Li Lab integrates bioengineering technologies and molecular analysis to study how biophysical factors, such as mechanical cues and the micro/nano structure of biomaterials, regulate cell fate determination and epigenetic changes, with the goal of translating fundamental findings into cell engineering technologies. At tissue level, the regeneration process requires the coordination of immune cells, stem cells and resident cells in the microenvironment. The Li Lab investigates the mechanisms of tissue remodeling, and develops multidisciplinary approaches to engineer cells, biomaterials, drug delivery systems and biophysical factors to promote the regeneration of functional tissues.



Mechano-Immunoengineering
Nature Biomedical Engineering (2024)
8 (12), 1615-1633

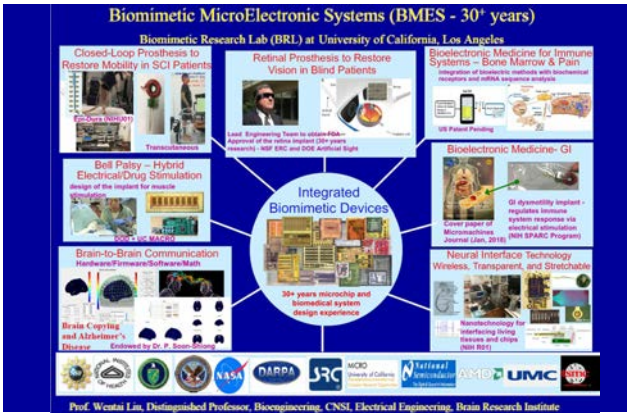
Cell Reprogramming
Nature Communications (2025)
16 (1), 4054

RESEARCH AREA/SPECIALTY:
Cell engineering, mechanobiology, biomaterials, immunoengineering, tissue engineering

Wentai Liu

Distinguished Professor

The Biomimetic Research Laboratory (BRL) engages in interdisciplinary research of bionic engineering and neural prosthesis. The integration of science, engineering and technology supports the aims of: (1) regaining eyesight for the blind; (2) restoring motor function for the paralyzed; (3) replenishing the cognition impaired; (4) reanimating automatic nerves and (5) brain-to-brain communication. Since the early stages of retinal prosthesis in 1988, BRL has led the engineering efforts for vision restoration in blind patients. Notably, BRL has the unique credential of retinal prosthesis development from conception to the final implant. These efforts led to successful commercial implants (code name Argus-II by Second Sight) for blind patients, receiving both CE Mark in 2011 and US FDA approval in 2013.

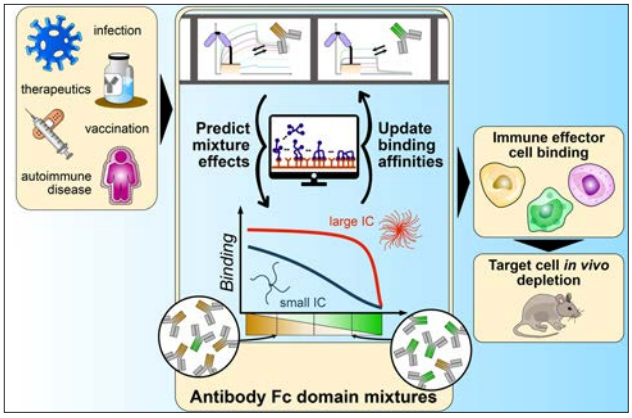


RESEARCH AREA/SPECIALTY:
Neuroengineering, neural prosthesis

Aaron Meyer

Graduate Vice Chair & Associate Professor

The Meyer Lab develops experimental and computational strategies to measure, model, and therapeutically manipulate cell-to-cell communication. These techniques are applied to understand the basis of immune dysfunction and develop better immunotherapies against autoimmune disorders and cancer. Specifically, they have contributed to designing engineered cytokines under clinical evaluation for treating autoimmune disorders and uncovered new mechanisms by which cancer evades the immune system by disrupting cytokine communication and antibody-mediated immunity. The lab's computational strategies center around the idea that cell responses are multidimensional — for example, they vary across time, cell types, environmental cues and tissue context. To explore data that systematically measure several dimensions, the lab develops and implements tensor factorization methods to explore these data and advocates for others to use them.

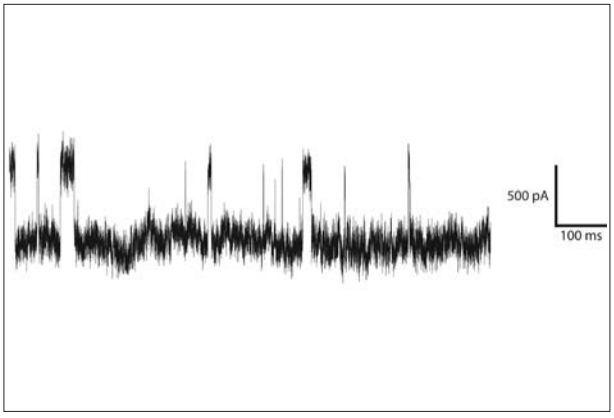


RESEARCH AREA/SPECIALTY:
Immune engineering, systems biology, machine learning

Jacob Schmidt

Undergraduate Vice Chair & Professor

The Schmidt Lab has a device-centered focus, primarily covering sensor and instrumentation development. The group has studied the use of protein and inorganic nanopores for single specifically sensing of nucleic acids and proteins. In these measurements, changes in the electrical conductance of an electrolyte-filled nanopore are monitored to detect individual molecules and other small objects entering or occluding the pore. The size, shape and identity of these molecules can be inferred from analysis of the measured conductance signals. Detecting single molecules enables use of very small analyte volumes — a long term goal is single cell protein characterization.

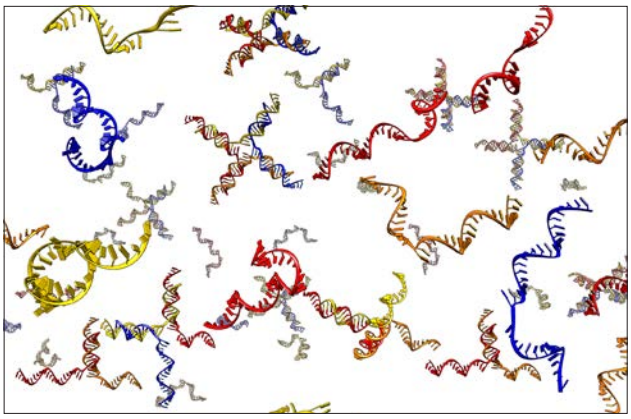


RESEARCH AREA/SPECIALTY:
Sensor and instrumentation development

Jaimie Stewart

Assistant Professor

The Stewart Lab harnesses the structural and functional programmability of RNA for the design, synthesis and characterization of RNA materials. RNA is a promising molecule with a wide ange of applications due to its inherent biological functionality. However, there are significant challenges in developing RNA-based diagnostics and therapeutics, such as rapid degradation, intracellular delivery and unwanted immunogenicity. The Stewart Lab applies concepts from biology, chemistry, nanotechnology and engineering to understand fundamental RNA self-assembly principles and build nano- and microstructures capable of interfacing with biological systems. The Stewart Lab uses computational models and experimental approaches for the design and synthesis of RNA materials that are robust, stimuli-responsive and capable of controlling cell fate to advance applications in molecular sensing and regenerative medicine.

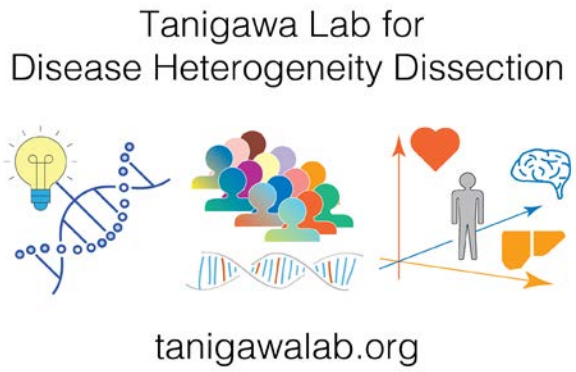


RESEARCH AREA/SPECIALTY:
RNA nanotechnology, nucleic acids, self-assembly, functional biomaterials

Yosuke Tanigawa

Assistant Professor

The Tanigawa Lab addresses disease heterogeneity from computational and statistical perspectives. Complex diseases often show substantial interindividual differences in onset, progression, and treatment response. However, current clinical definitions tend to treat them as monolithic entities.
The lab aims to redefine how we understand, predict, and treat disease for each individual by integrating large-scale genetic, multiomic, and clinical data using machine learning, statistics, and AI. Current research directions include: (1) mapping biologically meaningful variation in disease; (2) predicting disease-associated traits across diverse populations; and (3) nominating and validating therapeutic targets using genetic evidence. The research has been recognized by awards, including the ASHG Trainee Excellence Award, AJHG Trainee Publication Award, and MIT Technology Review's Innovators Under 35 Japan, highlighting its substantial impact.

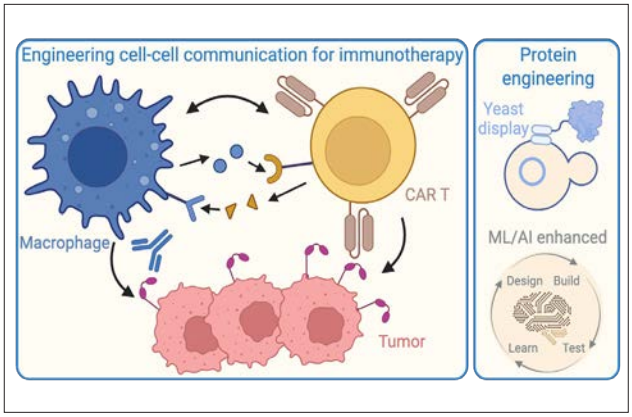


RESEARCH AREA/SPECIALTY: Biomedical Data Science, Statistical Genetics, Computational Biology

Sean Yamada-Hunter

Assistant Professor

The Yamada-Hunter Lab will open its doors on November 1st, 2025! The Lab will use protein engineering and synthetic biology to develop next-generation therapeutics tackling diseases ranging from cancer to autoimmunity and beyond, with a focus on cellular therapies. Research in the Yamada-Hunter Lab will sit at the intersection of immunology, bioengineering, and cancer biology, performing translational research to create a suite of engineered immunotherapies, focusing on engineering cell-cell communication and motivated by clinical translation. Initial research areas will include: (1) developing a mechanistic understanding of adoptive T cell and macrophage-activating combination therapies in the treatment of solid tumors, (2) using protein engineering to design custom proteins tailored for next-generation T cell combination therapies, and (3) establishing platforms for integrating protein engineering strategies directly into cellular therapy products.

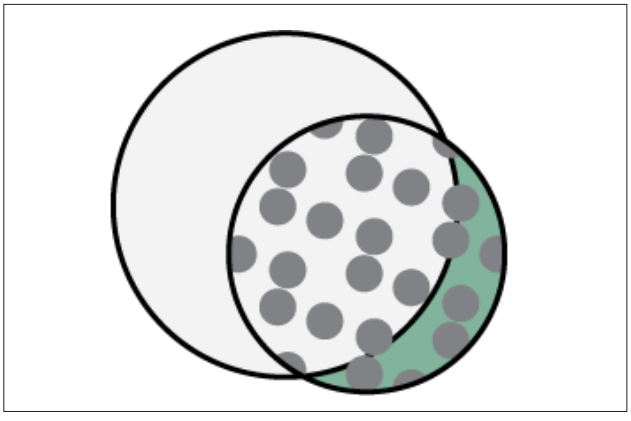


RESEARCH AREA/SPECIALTY:
Immunotherapy, protein engineering, cell engineering, CAR T therapy, protein therapeutics

Jennifer Wilson

Assistant Professor

The Lab for the Understanding of Network Effects (LUNE) studies how proteins downstream of drug targets affect drug-induced phenotypes — the ability to mitigate disease or cause side effects. Drugs are traditionally developed to alter the function of proteins within cells — usually proteins that are malfunctioning and have causal relationships to disease. However, proteins in the cell exist in large, complex networks — they interact with each other and rarely exist in isolation. Even well-designed drugs that alter the function of a target protein have ripple effects through protein networks. It's widely appreciated that drug effects propagate through protein networks, but the downstream effects are not routinely considered during target protein selection. LUNE aims to design models that anticipate downstream drug effects during initial therapeutic design.

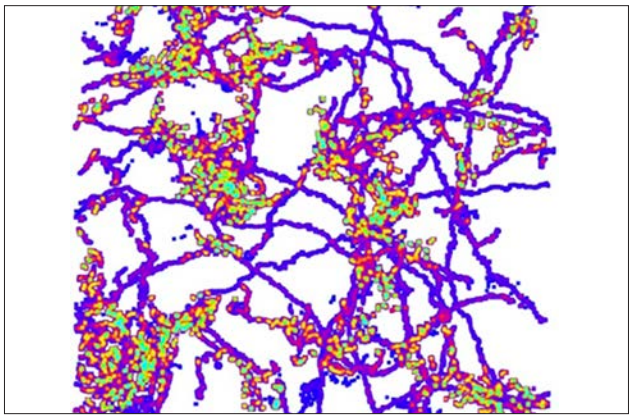


RESEARCH AREA/SPECIALTY:
Data Science, networks, graph theory, drug models

Gerard Wong

Professor

The Wong Lab uses multi-disciplinary approaches to solve problems in infectious diseases, auto-immune disorders and inflammation, with implications for respiratory diseases, cardiovascular disease and cancer. Wong's honors include: the Beckman Young Investigator Award, Alfred P. Sloan Fellowship, Sackler Distinguished Speaker and Goll Lectureship. He is a fellow of the American Physical Society, a fellow of the American Academy of Microbiology, and a fellow of the American Institute for Medical and Biological Engineering. His group has produced 13 professors since 2006. The lab's current research directions include bacterial biofilm communities, innate immunity, autoimmune diseases, antibiotic design, machine learning, neurodegenerative diseases, viral replication, programmed cell death and COVID-19.

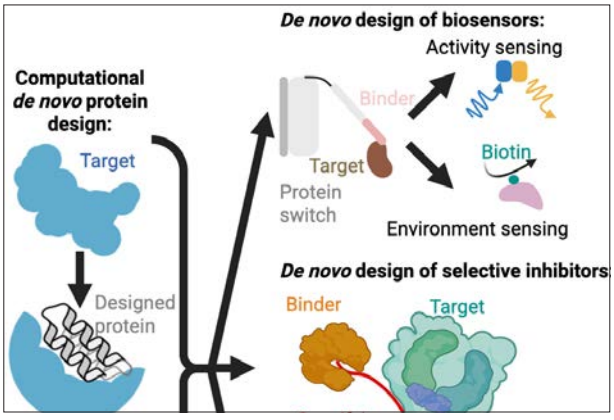


RESEARCH AREA/SPECIALTY:
Immunity and antimicrobial, biofilms, fundamental science

Jason Zhang

Assistant Professor

How do cells orchestrate complex biochemical events to adapt to our ever-changing environments—and what happens when this exquisite coordination is disrupted in diseases like cancer? To tackle these fundamental questions, Jason Zhang and his team harness the power of generative AI to design molecular tools such as sensors, activators, and inhibitors with unprecedented precision. This cutting-edge approach to molecular engineering is revolutionizing biology, enabling the creation of entirely new proteins—ones that nature itself has never evolved. With these AI-generated proteins, Jason's team is not only expanding the molecular toolkit for probing cell biology but also tackling urgent clinical challenges, from unraveling the mechanisms of cancer drug resistance to engineering the next generation of precision therapeutics. The possibilities are expanding faster than ever before—and the future of medicine is being written one designed molecule at a time.

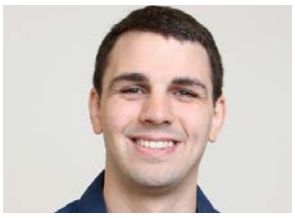


RESEARCH AREA/SPECIALTY:
AI, molecular engineering, synthetic biology, cell biology, molecular biology, cancer, signal transduction

OUR JOINT FACULTY

Corey Arnold
Professor, Radiological Sciences

Pei-Yu "Eric" Chiou
Professor and Vice Chair, Mechanical and Aerospace Engineering



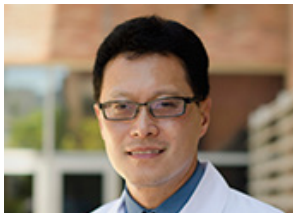
Tyler Clites
Assistant Professor, Mechanical and Aerospace Engineering

Linda Demer
Distinguished Professor and Vice Chair, Medicine

Benjamin Ellingson
Professor, Radiology

Elisa Franco
Professor, Mechanical and Aerospace Engineering

Weizhe Hong
Professor, Biological Chemistry, Neurobiology



Tzung Hsiai
Professor-in-Residence, Medicine and Maud Cady Guthman Endowed Chair in Cardiology

William Hsu
Professor, Radiological Sciences

Shantanu H. Joshi
Associate Professor-in-Residence, Neurology

Pirouz Kavehpour
Professor, Mechanical and Aerospace Engineering

Chang-Jin "CJ" Kim
Distinguished Professor, Mechanical and Aerospace Engineering and Volgenau Endowed Chair in Engineering

Debiao Li
Professor-in-Residence, Medicine

Neil Lin
Associate Professor, Mechanical and Aerospace Engineering

Arash Naeim
Professor-in-Residence, Medicine and Yomtoubian Endowed Chair in Cancer and Risk Science

OUR JOINT FACULTY

Aydogan Ozcan
Professor, Electrical and Computer Engineering and Volgenau Chair for Engineering Innovation

Jacob Rosen
Professor, Mechanical and Aerospace Engineering

Dan Ruan
Professor-in-Residence, Radiation Oncology

Sophia Sangiorgio
Adjunct Professor, Orthopaedic Surgery

Vivek Shetty
Distinguished Professor, Dentistry

Kalyanam Shivkumar
Professor-in-Residence, Medicine

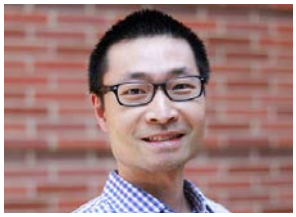
Yi Tang
Professor, Chemical and Biomolecular Engineering and Ralph M. Parsons Foundation Chair in Chemical Engineering

Michael Teitell
Professor, Pathology and Laboratory Medicine

Cun-Yu Wang
Chair and No-Hee Park-Endowed Professor, Division of Oral and Systemic Health Sciences

Paul Weiss
UC Presidential Chair, Distinguished Professor,

Chemistry and Biochemistry



Holden Wu
Professor, Radiology

Yang Yang
Professor and Chair, Materials Science and Engineering and Carol and Lawrence E. Tannas, Jr. Endowed Chair in Engineering

BIOENGINEERING RESEARCH AREAS:

Molecular, Cellular and Tissue Engineering

This field of emphasis covers novel therapeutic development across all biological length scales from molecules to cells to tissues. The emphasis of research is on the fundamental basis for diagnosis, disease treatment and redesign of molecular, cellular and tissue functions. In addition to quantitative experiments required to obtain spatial and temporal information, quantitative and integrative modeling approaches at the molecular, cellular and tissue levels are also included within this field. Although some of the research will remain exclusively at one length scale, research that bridges any two or all three length scales are also an integral part of this field. Graduates of this program will be targeted principally for employment in academia, government research laboratories and the biotechnology, pharmaceutical and biomedical industries.

Biomedical Devices and Instrumentation

This field of emphasis is designed to train bioengineers interested in the applications and development of instrumentation used in medicine and biotechnology. Examples include the use of lasers in surgery and diagnostics, new micro electrical machines for surgery, sensors for detecting and monitoring of disease, microfluidic systems for cell-based diagnostics, new tool development for basic and applied life science research and controlled drug delivery devices. The principles underlying each instrument and specific clinical or biological needs will be emphasized. Graduates of this program will be targeted principally for employment in academia, government research laboratories, and the biotechnology, medical devices and biomedical industries.

Biomedical Imaging

This field consists of the following two subfields: Biomedical Imaging Hardware Development (BIHD), Biomedical Signal and Image Processing (BSIP).

BI Subfield 1: Biomedical Imaging Hardware Development (BIHD)

The BIHD graduate program prepares the students for a career in developing imaging hardware for medical diagnosis and intervention applications. Students will learn the physical basis of biomedical imaging modalities, such as optical imaging, CT and MRI. Through the structured curriculum and lab activities, the students will experience the excitement of cutting-edge hardware research, hone skills in analytical thinking and communications and gain knowledge of imaging techniques that are used in the biomedical field.

BI Subfield 2: Biomedical Signal and Image Processing (BSIP)

The BSIP field prepares students for a career in the acquisition, reconstruction, processing, and analysis of biomedical signals and images for diagnostic and therapeutic purposes. Students in the BSIP program have the opportunity to focus their work on a broad range of modalities, including electrophysiology, optical imaging, MRI, CT, PET, and other tomographic imaging devices. In addition, students will apply quantitative methods to extract information regarding anatomy, physiology, and function for both clinical and research applications. Students will be exposed to new methodologies in data science and artificial intelligence. The career opportunities for BSIP trainees include biomedical imaging research, development, and/or application in industry, academia, and major medical centers.

Biomedical Data Sciences

The Biomedical Data Sciences (BDS) trains students to be experts in the use of computational, statistical and machine learning tools for solving biomedical problems. BDS is intended for science and engineering students interested in how data science tools can operate alongside other areas of bioengineering to solve problems in areas including pattern recognition, prediction, control, measurement and visualization. Students will be trained in the algorithmic and statistical fundamentals of the field. In total, this area fosters the development of students who go on to become data scientists with the unique ability to actively interface with practitioners in other areas of bioengineering and medicine.

NeuroEngineering

The NeuroEngineering (NE) field empowers biology-focused students to execute projects utilizing state-of-the-art technology such as microelectromechanical systems (MEMS), signal processing and photonics. Simultaneously, engineering-oriented students address neuroscience-based problems, spanning from neurological disorder treatment to sensory information processing. NE students pursue a specialized curriculum that seamlessly integrates neuroscience and engineering, fostering efficient interdisciplinary collaborations.

OUR STAFF

Lili Bulhoes
Graduate Student Affairs Officer

Oversees the Bioengineering M.S. and Ph.D. program, graduate student support, and graduate admissions. Provides prospective and current graduate student advising

Sayra Chavarria
Payroll and Financial Analyst

Manages the payroll and human resources actions of non-senate faculty, research staff personnel, and academic apprentice personnel.

Daphne-Jane Dizon
Management Services Officer

Manages all aspects of the department, including faculty and staff personnel and payroll actions, staff supervision, and department and student budget/ fund management.

Janet Lin
Senior Fund Manager

Oversees both Materials Sciences and Engineering and Bioengineering departments' pre- and post- award administration for faculty, coordinates effort reporting and close out of awards.

Sarah Matautia
Fund Manager

Manages pre- and post- award administration for department faculty, coordinates effort reporting and close out of awards.

Crystal Ramirez
Purchasing Coordinator

Manages purchasing and travel and non-travel reimbursements. Manages operations such as equipment inventory, facilities and material services requests, parking permits, and building key and BruinCard access.

Emilia Rodriguez-Vera
Administrative Specialist

Manages the BE 299 seminar series, department events, website and social media. Coordinates travel and entertainment for department guests, speakers, etc. Serves as the front desk coordinator and provides assistance on all administrative matters.

Left to right: Crystal Ramirez, Sayra Chavarria, Emilia Rodriguez-Vera, Lili Bulhoes, Daphne-Jane Dizon, Janet Lin and Sarah Matautia

Staff and students representing UCLA Bioengineering at the BMES National Conference in 2024

UCLA Bioengineering Alumni Advisory Board (AAB)

The UCLA Bioengineering Alumni Advisory Board's mission is to promote the communication, growth and shared activities of the UCLA bioengineering alumni, faculty and students. The board aids the department and student groups in their activities, either directly or by promoting them to the broader bioengineering alumni community.

The AAB members represent a diverse cross-section of the department's alumni and the major areas of the bioengineering field, including medicine, medical devices, and therapeutics. Many members have experience as entrepreneurs and early employees of startup companies. They provide valuable input to the department, helping to understand the needs of industry, academia, and the medical profession. This includes insights into research trends and future bioengineering needs, along with suggestions for keeping the curriculum and degree programs up-to-date.

The AAB meets quarterly online and annually in person. It is available to provide support for several department and student group activities, including the annual Discover UCLA Engineering Day, Bioengineering Research Day, ongoing student mentorship, and the ABET accreditation process every six years. It also organizes events with guest speakers on topics of special interest, such as new technologies and entrepreneurship.

UCLA Bioengineering alumni reunited at our first Founders Day event in May 2025 to celebrate two decades of innovation, with over 20 startups launched by members of our department

Industrial Advisory Board

The Bioengineering Department is actively supported by an Industrial Advisory Board (IAB), which includes a diverse group of professionals from across the biomedical landscape.

This board features representatives from leading companies in biotechnology (such as Amgen and Genentech), medical technology (including Medtronic, Abbott, and Edwards Lifesciences), as well as entrepreneurs, patent attorneys, and other key stakeholders. Many of the board members are proud UC alumni, bringing valuable insights and connections back to the department.

The IAB plays a vital role in strengthening the bridge between academia and industry. Its mission is to foster meaningful interactions among students, faculty, and industry leaders. This includes participating in departmental events, advising on curriculum development, mentoring students, and—critically—facilitating access to internships, co-op programs, and other hands-on industrial experiences. These opportunities are designed to prepare students for real-world challenges and help them build strong professional networks. The board also supports collaborative research initiatives between faculty and industry partners, further enriching the educational and innovation ecosystem.

Members of BGA and BMES organized a Edwards Life Sciences HQ Tour with the support of IAB members who also work at the company

Abbott · AMGEN · ACatechol · Edwards · Genentech A Member of the Roche Group

KINAMED INCORPORATED · Knobbe Martens · Medtronic · SIEMENS Healthineers · xencor

Bioengineering Graduate Association (BGA)

The Bioengineering Graduate Association (BGA) at UCLA was established to facilitate communication between graduate students and department faculty, encourage the involvement of students in the graduate community and establish platforms for the academic and professional development of its members.

BGA collaborates closely with the department to offer various outreach resources for graduate students. This includes organizing lunch sessions with guest faculty who present at our department's weekly seminar series, coordinating the department's annual recruiting event and research showcase known as BE Research Day, and provide other opportunities for student involvement with undergraduates and peers. BGA strives to enhance the graduate student experience and foster strong relationships within the department.

In addition to its focus on academic success, BGA also provides opportunities for networking with industry professionals through special seminars and alumni panel events. These quarterly gatherings enable BE graduate students to gain insights into career paths in the industry and establish connections with professionals from diverse companies.

Looking ahead to the 2025–2026 academic year, BGA is thrilled to welcome a new cohort of graduate students to our department. We remain committed to facilitating connections between our students and academic as well as career opportunities and we are enthusiastic about the prospects that lie ahead.

BGA leadership team at Bioengineering Research Day in November 2024

Biomedical Engineering Society (BMES)

The Biomedical Engineering Society (BMES) at UCLA connects students interested in the bioengineering field and promotes close ties with graduate students, faculty, and industry professionals. We help develop well-rounded individuals via social events, community outreach, technical projects, academic guidance, and professional development opportunities.

As an organization promoting academic excellence, we offer a variety of events sharing academic opportunities throughout the year. The most notable resources include class planning workshops, lab tours, and graduate/medical school information panels.

Our professional development events and opportunities also prepare students for a career in the biotechnology industry. We connect students with alumni and other leaders in the medical device and biotechnology space. Throughout the year, we host company information sessions and career development workshops. Our annual biotechnology-focused career fair facilitates student networking for finding internship positions and job opportunities.

BMES engages in community outreach efforts through our Reaching and Inspiring Students in Engineering (RISE) program. RISE connects volunteers with elementary, middle, and high school students from Title I schools to introduce them to engineering concepts such as circuits, Arduino, coding, and Computer Aided Design (CAD). RISE also organizes Science Days where elementary and middle school students are brought to UCLA to participate in STEM-based activities and campus tours.

Each year, over 100 students choose to expand their technical knowledge by joining one of our project teams. These student-led teams focus on a variety of skills, from learning introductory wet lab techniques to applying their knowledge towards a specific medical or engineering problem. Previous projects have included creating an origami-inspired soft pneumatic inchworm for robotic colonoscopy, a smart sleep mask for personalized sleep therapy, a machine-learning-based health monitoring app, an injectable hydrogel for improving healing in dental implants, and genetically modified bacteria for degrading microplastics. We also offer a workshop series to provide accessible, low-commitment opportunities for technical development.

BMES General Board 2025-2026

In addition to promoting professional and academic success, BMES fosters a sense of community and bonding through its mentorship system and social events. These include events pairing mentees to upperclassmen mentors as well as a unique family system based on the four DNA bases, where members are paired into one of the four thematic families to form closer, tighter-knit communities. BMES also hosts quarterly club-wide events such as Fall BBQ, Holiday Party, and BMES Banquet. Finally, our EDI branch focuses on integrating equity, diversity, and inclusion in all our club's activities, highlighting ways to better support all our members.

As BMES looks toward the 2025-2026 academic year, our organization hopes to achieve several goals. We plan to expand collaborations with other organizations at UCLA to provide more opportunities for members, increase community-building events for broader member engagement, increase opportunities for members to share their technical projects at conferences and competitions, and continue to strengthen connections to industry leaders.

CENTER AND TRAINING GRANTS :

UCLA Samueli to lead $4 million cell research project funded by Chan Zuckerberg Initiative

The UCLA Samueli School of Engineering is leading a groundbreaking $4 million research project funded by the Chan Zuckerberg Initiative, aiming to revolutionize our understanding of how cells communicate and organize into complex tissues. Over the next three years, UCLA will collaborate with USC and Caltech to develop advanced tools that can decode and engineer the spatial behavior of cells—an essential step toward breakthroughs in tissue regeneration and cell-based therapies.

The project is spearheaded by bioengineering professor Dino Di Carlo and supported by UCLA's Broad Stem Cell Research Center and the California NanoSystems Institute. At its core, the research focuses on "synthetic morphogenesis," a cutting-edge approach to guiding how cells assemble into tissues with intricate structures, such as the transition zones between bone, tendon, and muscle. This vision is brought to life with the use of "nanovials"—tiny, hydrogel-based lab-on-a-particle tools that enable scientists to measure how individual cells interact, using standard laboratory equipment.

By combining innovative bioengineering with scalable, accessible technologies, the team hopes to unlock new possibilities in regenerative medicine, including applications for cancer, autoimmune diseases, and muscular dystrophy. The initiative also aims to establish Los Angeles as a leading hub for biotechnology, with long-term plans to expand training and infrastructure through institutions like the new UCLA Research Park and the California Institute for Immunology and Immunotherapy.

GRANTS AT WORK:

Study Seeks Rapid, Paper-Based Test to Detect Cancer Cells in Cerebrospinal Fluid

At the intersection of engineering innovation and clinical urgency, researchers at UCLA are developing a groundbreaking paper-based test designed to rapidly detect cancer cells in cerebrospinal fluid—a critical advancement for diagnosing leptomeningeal disease, a severe complication of metastatic cancer. Led by Bioengineering Professor Daniel Kamei in collaboration with Dr. Won Kim from UCLA Neurosurgery, this interdisciplinary project exemplifies the university's commitment to translating cutting-edge research into real-world clinical solutions.

Current diagnostic methods for this condition can take weeks and often require multiple procedures. In contrast, the proposed test aims to provide both detection and quantification of cancer cells during a single clinical visit, offering a transformative tool for timely treatment decisions. The research draws on principles similar to familiar rapid diagnostics, like COVID and pregnancy tests, and adapts them for high-stakes neurological applications.

This work is supported by a two-year, $375,000 grant from the National Institutes of Health, funding the development and preliminary validation of two diagnostic platforms. The team is currently testing with commercial cancer cell lines, with plans to move toward patient-derived samples and larger clinical trials in the coming years. For students and faculty alike, this initiative highlights the rich opportunities at UCLA for hands-on, interdisciplinary research with direct clinical impact—where engineering, medicine, and innovation converge to solve some of healthcare's most pressing challenges.

Speaking without vocal cords, thanks to a new AI-assisted wearable device

At the forefront of wearable biotechnology, UCLA's Department of Bioengineering unveils a groundbreaking AI-assisted patch that enables speech even without vocal cords. This ultrathin, flexible device—slightly over one square inch in size and weighing just around seven grams—adheres seamlessly to the skin over the throat. It harnesses a novel, self-powered magnetoelastic sensing mechanism that captures subtle laryngeal muscle movements and, through machine learning algorithms, translates them into audible speech with nearly 95% accuracy .

The wearable design incorporates ingenious engineering: biocompatible silicone (PDMS) layers

paired with copper induction coils and embedded micromagnets. These materials detect changes in the magnetic field caused by muscle motion, while the computational system processes these signals and converts them into voice output. The result is a soft, stretchable patch capable of delivering fluid, intelligible speech—even underwater or amid perspiration—making it both resilient and adaptable.

This innovation addresses a pressing clinical challenge. Voice disorders affect roughly 30% of people during their lifetime, and conventional remedies—like surgery or electro-larynx devices—can be invasive, costly, or cumbersome. UCLA's new wearable offers an elegant, non-invasive alternative that empowers communication during treatment phases or recovery periods, with performance validated in tests using healthy volunteers and a high accuracy rate of 94.68%.

The development of this device reflects not only technological ingenuity, but also the depth of interdisciplinary collaboration and support it has attracted. The research received funding from multiple prestigious sources, including the National Institutes of Health, the U.S. Office of Naval Research, the American Heart Association, the Brain & Behavior Research Foundation, the UCLA Clinical and Translational Science Institute, and the UCLA Samueli School of Engineering.

Under the leadership of Assistant Professor Jun Chen—whose lab previously developed a real-time sign-to-speech wearable glove—this project exemplifies UCLA's culture of integrating bioengineering, machine learning, materials science, and clinical insight to empower individuals with disabilities. The breadth of funding reflects institutional confidence in the project's translational potential and its promise to impact healthcare profoundly.

3D-Printed Magnetoelastic Smart Pen May Help Diagnose Parkinson's

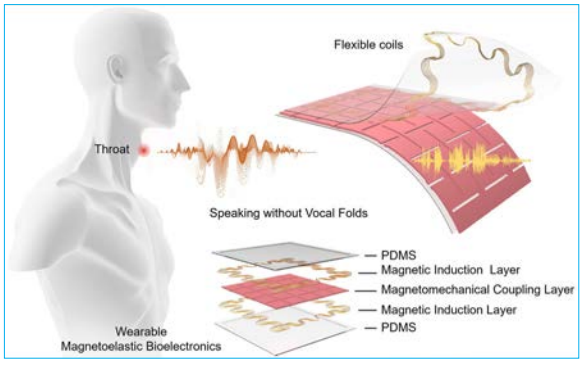
At UCLA, innovation is redefining early diagnosis of neurodegenerative disease through elegant simplicity. Led by Associate Professor Jun Chen in the Samueli School of Engineering, researchers have developed a self-powered, magnetoelastic "smart pen" that can reveal early signs of Parkinson's disease simply by analyzing handwriting.

This remarkable tool features a soft silicone tip embedded with magnetic particles and ferrofluid ink that, when moved on paper—or even through the air—generates precise electrical signals captured by a conductive yarn coil wrapped around its barrel. By harnessing subtle motor patterns undetectable by the naked eye, the pen transforms common handwriting motions into rich data streams.

In a pilot study involving sixteen participants, including three individuals with Parkinson's, a neural network trained on the pen's data achieved an average accuracy of 96.22% in distinguishing affected individuals from those without the disease. Such sensitivity could make early detection as simple as a brief handwriting test during a routine visit—bypassing the need for costly scans or specialist-led assessments, especially in resource-limited settings.

Underpinning this breakthrough is robust, multidisciplinary support. The project received funding from several prestigious sources—including the U.S. Office of Naval Research, the National Institutes of Health, the National Science Foundation, the American Heart Association, UCLA's Science Hub for Humanity and Artificial Intelligence, UCLA Samueli, and a collaborative NIH grant shared with Caltech—showcasing widespread confidence in its potential to make diagnosis both affordable and accessible.

This smart pen embodies the spirit of UCLA's engineering vision: applying interdisciplinary expertise—spanning materials science, bioelectronics, and AI—to create transformative, real-world healthcare tools.



The two components — and five layers — of the device allow it to turn muscle movement into electrical signals which, with the help of machine learning, are ultimtately converted into speech signals and audible vocal expression.

AWARDS AND RECOGNITION (2024-2025)

2024

- Elected to the Board of Directors, American Institute for Medical and Biological Engineering (2024): Song Li
- American Chemical Society Herman Mark Senior Scholar Award from the Division of Polymer Chemistry (2024): Heather Maynard
- SPIE Fellow, Optica Fellow (2024): Liang Gao
- Global Grand Challenges Award (2024): Mireille Kamariza
- UCLA Innovations Fellows, AHA Innovative Project Award, AHA Transformational Project Award, AHAs Second Century Early Faculty Independence Award (2024): Jun Chen
- American Physical Society Fellow (2024): Pirouz Kavehpour
- Biomedical Engineering Society Rising Star Award (2024): Neil Lin
- National Cancer Institute Grant for AI Models (2024): Kyung Sung
- Allen Distinguished Investigator Award (2024-27): Amy Rowat
- BMES Outstanding Chapter Award (2024): UCLA BMES
- Dean's Prize for Excellence in Research Award (2024): Farid Manshaii, Priscilla Yang, and Kathryn Saxton (students)
- AHA Predoctoral Fellowship (2024): Guorui Chen (student)
- NSF-GRFP Fellowship (2024): Corrine Smith (student)
- UCLA GradSlam, 2nd Place Winner (2024)- Soulaïmane Bentaleb (student)

2024 Commencement Awards

- Harry M. Showman Prize: Xun Zhao
- Chancellor's Service Award + Engineering Achievement Award in Student Welfare: Farid Manshaii
- Departmental Awards and Honors (Outstanding Ph.D.): Brian Thomas Orcutt-Jahns
- Departmental Awards and Honors (Outstanding M.S.): Junyi Yin
- Departmental Awards and Honors (Outstanding B.S.) + Engineering Achievement Award in Student Welfare: Katerina Katsouleas
- Engineering Achievement Award in Student Welfare: Kimberly Ann Stahovich, Dominic Joi Gully, Neha V Kulkarni, Kathryn Lily Saxton, Kelly Tamura
- OASA Special Recognition: Anna-Marie Guenther

2025

- LA BioStar Award (2025) : Dino Di Carlo
- Hisako Teresaki Young Innovator Award, MRS Outstanding Early-Career Investigator Award, ACS Nano Lectureship Award(2025): Jun Chen
- SPIE Harold E. Edgerton Award in High-Speed Optics (2025): Liang Gao
- UCLA Society of Hellam Fellows (2025): Jaimie Stewart
- Keith Terasaki Innovation Award (2025): Aydogan Ozcan
- Sigma Xi William Procter Award in Scientific Achievement, Fellow of the European Academy of Sciences (Non-EU) (2025): Paul Weiss
- Herman F Mark Polymer Chemistry Award, Election to the National Academy of Sciences (2025): Heather Maynard
- UCLA Gold Shield Faculty Award (2025): Amy Rowat
- Jihye Ryu NIH K01 award (2025): Ausaf Bari
- BMES Outstanding Societal Impact Award (2025): UCLA BMES (student organization)
- Dean's Prize for Excellence in Research (Undergraduate Research Week) (2025)- Saskia Vaillancourt, Murtadha Al Msari (students)
- Society for MR Angiography Potchen–Passariello Award (2025): Xinguo Fang (student)

2025 Commencement Awards

- Chancellor's Service Award + Engineering Achievement Award in Student Welfare: Mahan Pourfahkr
- Departmental Awards and Honors (Outstanding Ph.D.): Yifan Wu
- Departmental Awards and Honors (Outstanding M.S.): Kamryn Scott
- Departmental Awards and Honors (Outstanding B.S: Natalie Tsubamoto
- Departamental Awards and Honors (Departmental Scholar): Yuwei Xue (B.S.)
- Engineering Achievement Award in Student Welfare: Clara Kang, Audrey Sogata, Alexandra Jensen, Nikolas Idrogo (all B.S.), Katherine Stone, Sujit Armstrong Suthahar (all M.S.)
- OASA Special Recognition: Kelsey Fu

Producing graduates who are well-grounded in the fundamental sciences, adept at addressing open-ended problems, and highly proficient in rigorous analytical engineering tools necessary for lifelong success.

UCLA Samueli School of Engineering

Department of Bioengineering
420 Westwood Plaza
5121 Engineering V
University of California
Los Angeles, CA 90095-1600

www.bioeng.ucla.edu