Mission

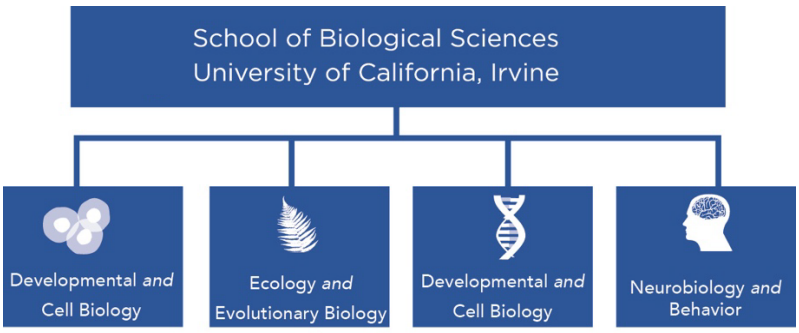
The mission of the School of Biological Sciences is to create new knowledge about biological processes and principles, to disseminate this information by educating students about factual knowledge and the experience of discovery, and to contribute to the public discussion about the nature and role of science in society. Research within the School encompasses all levels of biological organization, from molecular and biochemical to global biological processes. It encompasses both fundamental discovery and application in areas beneficial to society.

Vision

Our vision is to create new knowledge in the life sciences to solve some of the grand challenges facing our society. Our discoveries will lay the foundation for improving human health, protecting our environment, and developing innovative and alternative sources of bioenergy. Our scholarly activity will enhance the quality of life for countless people in the world and spark new economic development for California and the country.

Founded in 1965, the School was built on a pioneering principle: academic departments would be organized to represent levels of inquiry rather than classification schemes such as zoology, botany, and bacteriology, which was the then typical organization of biology at institutions of higher learning. The founding dean of biological sciences proposed and created modern departments to reflect levels of inquiry and analysis: molecular biology, organismal biology, and population and environmental biology. In addition, he developed the first academic department in the world devoted to the study of the brain.

The four academic departments of the school are all highly ranked nationally according to information from the National Research Council. Developmental and Cell Biology (DCB) explores the genetic control of cell growth and differentiation that gives rise to tissues and organs of animals. Ecology and Evolutionary Biology (EEB) studies the form and function of individual organisms, their interactions with each other and their environment, and how they adapt to changing environments. Molecular Biology and Biochemistry (MBB) investigates the chemical nature of living systems and the interactions among biochemical molecules that are the basis of all genetics and cellular activity. Neurobiology and Behavior (NBB) specializes in the study of nerve cells and brain function and their implications for the generation of adaptive behavior.



The School is comprised of four academic departments: Developmental and Cell Biology (DCB), Ecology and Evolutionary Biology (EEB), Molecular Biology and Biochemistry (MBB), and Neurobiology and Behavior (NBB).

The novel organizational structure of the School fostered collaborative opportunities among faculty in each department, and is the gold standard for how a modern university organizes the life sciences. As evidence of the collaborative benefits, several organized research units (ORUs) and school-based centers have emerged from the advances in research from the faculty in the School of Biological Sciences. These centers focus on a specific research theme, but notably complement the departmental structure and foster interdisciplinary research in a critical topic that cross disciplines across the university. The table below lists some of the more relevant research centers that have their roots in the School.

Center for Addiction Neuroscience	Cancer Research Institute
Center for Environmental Biology	Center for Complex Biological Systems
Center for Hearing Research	Center for the Neurobiology of Learning and Memory
Center for the Scientific Study of Creativity: Literature, Arts, and Science	Institute for Immunology
Center for Virus Research	Institute for Memory Impairments and Neurological Disorders
Developmental Biology Center	Network for Experimental Research on Evolution
Multiple Sclerosis Research Center	Sue and Bill Gross Stem Cell Research Center

Currently, the School has 119 filled senate faculty positions with 26 in DCB, 38 in EEB, 30 in MBB, and 25 in NBB. Twelve of these faculty lines belong to teaching professors (lecturers with security of employment or potential security of employment (Lecturers SOE, Lecturers PSOE)), which reflects our commitment to elevating instruction and pedagogical research. The School is currently in the process of recruiting for five additional faculty positions. The total number of faculty within the School includes faculty shared between departments or with other campus units, principally with the Schools of Medicine or Physical Sciences.

The School is one of the largest academic units at UCI, and historically, the school has comprised about 20% of the undergraduate population. At the start of the 2015-16 academic year, the last year for which the total numbers are available, 3,249 undergraduates are enrolled in the School of Biological Sciences. For the 2016-17 academic year, 1280 freshmen and transfer undergraduate students are anticipated to be enrolled here, which represents an increase of 37% over the 2014 enrollment numbers. Over the past several years, the School has increased the number of majors available to students, with Exercise Sciences and Human Biology representing our newest majors. The School offers bachelor's degrees in the following areas:

- Biological Sciences
- Biochemistry
- Biology Education
- Developmental and Cell Biology
- Ecology and Evolutionary Biology
- Exercise Sciences
- Genetics
- Human Biology
- Microbiology and Immunology
- Neurobiology

At the graduate level, there are 288 students enrolled. The School offers master degrees in biotechnology and also in biotechnology management. The School will soon launch a new master's program in Conservation and Restoration Science. There are several doctoral programs that are offered including in cellular molecular biosciences, interdepartmental neuroscience program, mathematical and computational biology, ecology and evolutionary biology, and neurobiology and behavior.

Strategic Aspirations

Our strategic plan is in part driven by our aspirations. In alignment with campus' vision, the school strives to accelerate our ascendancy among globally prominent institutions. To achieve this ambition, we aspire to achieve the following goals:

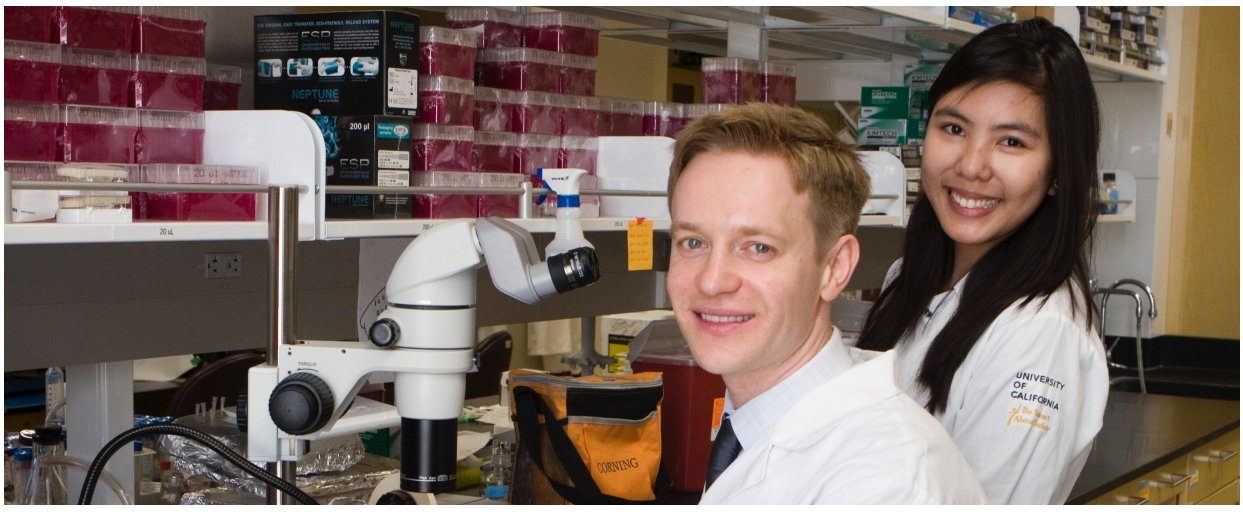
- become the most preeminent biology program in California and a top destination for faculty and student recruitments
- develop a strong pipeline of faculty leaders
- ensure that the highest proportion of our undergraduate students graduate with a degree in biology
- have the school's research have a major impact for our society and make progress towards solving some of society's grand challenges
- have our faculty and student body receive national and international accolades and distinctions
- achieve inclusive excellence in our faculty and student body
- have 100% of our faculty fully funded by extramural sources
- hire faculty that excel and receive accelerated merit/promotions
- develop strong partnership with the community and industry

New discoveries in the biological sciences will lead to innovative solutions for many of society's most daunting challenges, ranging from a flourishing and balanced environment to personalized health and wellness. Basic research, which is often underappreciated, is at the core of our mission to generate new knowledge, and frequently great discoveries and technological breakthroughs owe their origins to basic research. Despite this strong tradition, many faculty in the School focus their research programs on elucidating the biological mechanisms underlying some of society's greatest challenges ranging from mitigating the effects of cancer and Alzheimer's disease, to employing new technologies to develop mosquitos that are resistant to malaria and to other vector-borne diseases like Zika virus, to unleashing the potential of stem cells and regenerative biology, to studying alternative biological sources of energy, and to investigating the biological benefits of exercise.

Preeminence in Biology

Our goal is to become the most preeminent school of biological sciences in California and the nation. Achieving this goal requires that we are strategic in our faculty hires and navigate the evolution of the school towards areas that resonate with our students and that can have a meaningful impact on some of society's grand challenges. Yet, despite the tremendous growth that has occurred in the field of biological sciences due to the revolutionary discoveries first in molecular biology and then in genomics, the school has had the same four academic departments since its founding. To remain relevant and at the forefront, the School should consider realigning its academic departments and consider developing new departments like Exercise and Sports Science and also Systems Biology. Clearly, developing new departments will require resources, including building new infrastructure to house the growth of our faculty. but departments like Exercise and Sports Science represent a burgeoning area of investigation and one in which the school has already established a new major.

To grow the faculty, the School will capitalize on campus programs like the mid-career hire, high impact hire program, and efforts to recruit in partnership with key campus centers.



Inclusive Excellence

Inclusive excellence is a high priority for the School. We recognize that our plans for faculty growth must include practices that not only promote excellence, but also foster equity and diversity. UCI currently leads fellow UC Schools UCLA, UCSB and UC Berkley in the ratio of female faculty within the Biological Sciences to total female faculty at the university.

The number of female faculty in the School has risen steadily over the past decade (from 23.4% in 2005 to 30.2% at the end of 2015). Over the past year, female faculty have accounted for over 50% of the new faculty hires in the School. This gain symbolizes our commitment to inclusive excellence and it is critical to note that the number of female faculty in the School is above the national average of 28.5% (2015) for AAU institutions. We will continue to actively recruit high caliber female faculty and are pursuing alternative ways to attract top notch women and URMs.

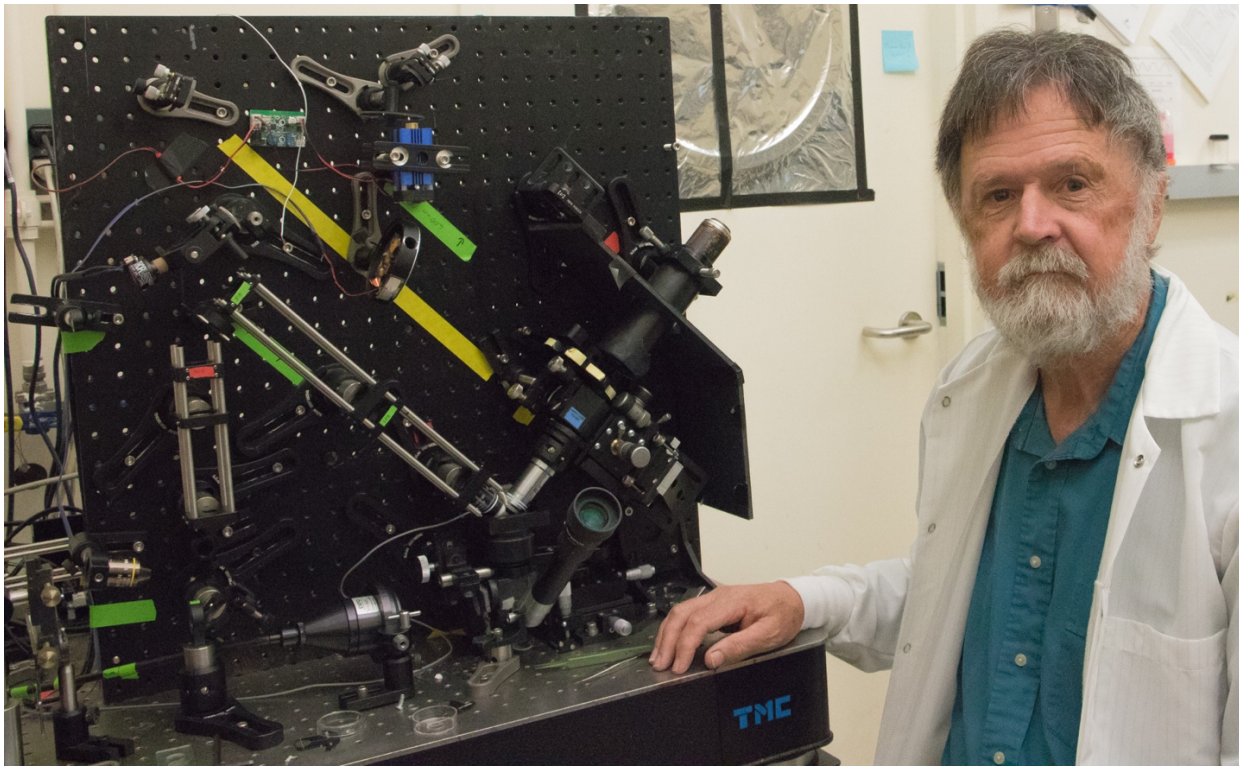
The current percentage of minority faculty within the School is 22.4% (including Asian Americans). The non-Asian American minority is 9.5%. The School has capitalized on programs that enhance diversity, such as hiring faculty as part of the UCOP Presidential Fellows program; in the near future, we anticipate recruiting additional faculty via this mechanism.

The School has also made great strides in diversifying our student body. Over the past five years, the number of entering female graduate students has increased, with female students accounting for 53% of the graduate student body. Modest gains have also been seen in the number of incoming URM graduate students. The largest gains have been in our Cellular and Molecular Biosciences graduate program (greater than 25% of incoming graduate students are URM) and the Ecology and Evolutionary Biology graduate program (56% of incoming graduate students are now URMs). In addition, three of our departments have received Graduate Assistance in Areas of National Need (GAANN) awards, which provide fellowships to economically-disadvantaged graduate students and have helped contribute to the increase in URM students. Our gains in graduate student recruitment mirror our continued success with URM undergraduate recruitment and retention. With programs like the NIH-funded Minority Sciences Program grant, our School is nationally recognized as a leader in the development of programs to increase the participation of URMs in the life sciences.

Faculty Distinction

The faculty of the School are highly productive and internationally recognized for their research distinction. Our illustrious faculty include two fellows of the Royal Society, one National Medal and Presidential Award winner, six members of the National Academy of Sciences, seven members of the American Academy of Arts and Sciences, several Thomson Reuters "Highly Cited Researchers" and over 44 fellows of the American Association for the Advancement of Science. The School also has one University Professor, three Donald Bren Professors, five Distinguished Professors, three Chancellor's Professors, and two Chancellor's Fellows.

While faculty at the School have received tremendous recognition over the years, we believe that their efforts and successes have been under recognized. The School knows that nominating our faculty for prestigious national and international awards is an important mechanism for accelerating our ascendancy among globally preeminent universities and for retaining faculty. Traditionally, the process for nominating faculty in the School has been sporadic and burdensome. Hence, the School appointed its first Awards and Honors Czar to lead these efforts.



Empowering Discoveries

In 2016, extramural funding to faculty within the School has increased by 20% over the previous year. Our goal is to ensure that 100% of our faculty secure adequate research funding. Hence, the dean's office is actively working to create a strong Research Development enterprise within the School, which aligns with the university's goal of markedly increasing extramural grant support. Toward this end, the School is implementing several new strategies. The first is the establishment a peer review process for grants prior to submission. This program will be overseen by the Associate Dean for Research and Academic Personnel, and provides the investigator with critical feedback to enhance their chances of funding success. In addition, the School will launch a 'boot-camp' for new faculty recruits to help mentor them through the grant development and submission process. The school is also exploring various incentive options for faculty to undertake the task of writing training grants, program projects, shared instrumentation grants, and center grants.

Faculty Recruitment

For our longer term goals, the School seeks to build upon our strengths in several major areas including neuroscience, stem cell biology, evolutionary genetics, global climate and ecological biology, structural biology, and immunology and host-pathogen interactions. We will emphasize several new hires moving forward to maintain and amplify our traditional strengths and to further develop areas like neuroimaging and experimental genetics that provide active faculty recruitment opportunities for Distinguished Professor hires.

Lastly, the School will encounter a major challenge surrounding its faculty within the next several years, as over 27% of our faculty are close to retirement transition. Therefore, we will focus a percentage of new hires on individuals who are late-stage assistant professors/early-stage associate professors. Traditionally, the School has successfully hired junior faculty, but their maturation into leaders in their field requires substantial time (10-12 years), delaying our ascendancy to preeminence among global institutions during the next 3-5 years.

Graduate Vision

Graduate students are the engine that drives research. Graduate enrollment has been declining steadily, perhaps due to the marked decline in federal extramural research funding. The School will adapt an aggressive strategy to boast enrollment numbers including an aggressive marketing strategy to ensure that we expose students to the campus as early as possible during the recruitment phase. In addition, the dean will commit to using his endowment to help defray the costs of tuition and fees for 2-5th years students that are supported on research grants as a pilot program.

Postbaccalaureate Premedical Program

The School has developed a Postbaccalaureate Premedical Program in partnership with the School of Physical Sciences and University Extension. The goal of the program is to prepare students for a career in the health professions after majoring in an unrelated discipline. This program is critical to helping prepare students for medical school, as the Association of American Medical Colleges estimates that the country will face a shortage of about 150,000 physicians by the end of this decade.

Conservation and Restoration Science Master's Program

In addition to the Premedical Program, we have also developed a self-supporting professional graduate degree program titled "Master's Degree in Conservation and Restoration Science." The program will integrate academic scholarship in ecology and evolutionary biology, training in natural resource management and stewardship, professional development and community engagement. The target population for this program is working adults and recent university graduates who wish to further their education and gain skills essential for leadership/management careers in the fields related to environmental conservation, restoration and sustainability.

The School is committed to expanding the number of Masters graduate programs available. We have plans to develop and mount new programs that respond to a need in the market place for expertise in areas like stem cell biology/regenerative medicine and genomics and bioinformatics.

Current and Prospective Undergraduate Programs

The School has made small upgrades to the undergraduate curriculum over the years, but a total assessment and revamping had not been completed in decades. Recently, a committee of faculty representing all 4 departments did an extensive review of the curriculum and made several critical recommendations for moving forward:

- Develop a freshman seminar course to promote faculty student interactions.
- Develop and foster more critical thinking classes.
- Reorganize core classes to better align with courses in the physical sciences.
- Work with faculty in the School of Physical Sciences to develop math and organic chemistry courses for biology students.
- Develop an honors section for all core courses.
- Develop a freshman laboratory course.

The School is launching a new Human Biology major. We anticipate that based on other universities that offer a similar course of study, this major will prove to be exceedingly popular, particularly since the overwhelming majority of our students are interested in pursuing a career in health professions. We are in the process of recruiting a Teaching Professor (PSOE Lecturer) to be located in NBB, whose primary responsibility will be to oversee this new major.

To ensure that our students are as successful as possible and that the highest proportion of them graduate with a degree in biological sciences, the School has started a special program that is designed to increase retention in the major. This program is called Enhanced Academic Success Experience (EASE), and as part of the program, 1st year students will have dedicated instructors and counselors to provide added support and guidance. The feedback of the program has been extremely positive and we look forward to expanding it in the future.

Public Engagement

The School has markedly broadened its outreach to the community, providing a forum for individuals to learn about timely topics in the life sciences that impacts their lives. These include the Dean's Distinguished Lecture series, the Barclay Lecture on Brain, Learning and Memory, and the Allergan Lecture series. In addition, the School's communication team spends considerable efforts to produce a sleek Annual Dean's Report, which is circulated to key stakeholders in the field, donors, alumni, and community members. Public engagement is critical to produce a more scientifically informed community, and to help identify potential supporters of the School.

Philanthropy

Lack of investment at both the state and federal levels represents one of the greatest risks to our national security. In addition, it has severely impacted the advancement of scientific research and our pipeline for future scientists. This systematic devaluation of research, regardless of merit or strength, has hindered our ability to address biological problems. It threatens our economic viability and global competitiveness, and dis-incentivizes the best and brightest our country has to offer from pursuing a career in biological sciences, be it one in academia or industry. More than ever, philanthropic support will be essential to fund innovation and support tomorrow's scientific leaders while enabling us to develop solutions to these challenges at an accelerated pace.

Scientific discovery does not happen in a simple flash of brilliance. It requires commitment and investment. Commitment of the university and its scientists to strive for excellence and to question everything in an effort to find solutions. Investment, both public and private, with the knowledge and understanding that every step taken in the pursuit of that solution is done ethically, strategically, and purposefully. Such investments provide an opportunity to create a partnership focused on creating a brighter path for generations to follow.

The School has been the beneficiary of such commitments and investments. These have led to significant advancements in many areas of life sciences including medical treatments, drug delivery, environmental stewardship, and food production. Our faculty too has benefited from those investments, allowing them the freedom to serve on nationally recognized scientific advisory boards, increase their research load, and also develop effective treatments and services for the benefit of our citizenry.

There is more to be accomplished and more than ever it is critical to generate philanthropic support for the School. Excellence requires support from individuals that understand that an investment in biological sciences is an investment in the future.

Anteaters Against Alzheimer's

Anteaters Against Alzheimer's (AAA) is a UCI Alumni group dedicated to leading the fight against this debilitating brain disorder. AAA seeks to mobilize the Anteater community under a common banner to significantly impact the fight against Alzheimer's disease and related dementias.

Someone in the US develops Alzheimer's disease every 67 seconds, which has resulted in 5.4 million Americans currently living with this insidious disease. By 2025, it is estimated that 7.1 million people over the age of 65 will be afflicted if no successful treatments are discovered. There are no cures or preventative measure available for Alzheimer's disease, but with the help of dedicated groups like AAA, researchers can be empowered to make the breakthroughs needed to make everyone's memories last a lifetime and until the point that Alzheimer's disease itself becomes a memory.

UCI is a global leader in clinical and basic research on Alzheimer's disease and home to one of the 29 national Alzheimer's Disease Research Centers. This gives AAA a unique opportunity to help in the fight against this common form of dementia. AAA members will be able to interact with some of the world's top researchers in a way that no other organization could provide. UCI knows that people want to make a difference with their time, treasure and talents, and AAA can offer them an opportunity to make a significant contribution to our society for generations to come.

AAA seeks a world without dementia and proposes to accomplish this mission by supporting innovative Alzheimer's research at UCI and promote educational events to improve the quality of life for those that are affected; creating a community for Anteaters directly affected by Alzheimer's disease to offer support and provide an active network; actively recruit new-members and additional entities to join in the fight.

ANTEATERS AGAINST ALZHEIMER'S

World Class Research Environment

The School currently has adequate space needs, particularly since several faculty members have retired over the past year. The School has undertaken an initial review of space. The review committee reported that certain faculty are assigned to 'wet-lab' space that only require 'dry-lab' space. One potential solution has arisen due to the relocation of the campus' accounting department, which is currently housed on the first floor of Biological Sciences III. After the relocation the School will have the opportunity to relocate some faculty currently occupying 'wet-lab' space that only need 'dry lab' space, thereby freeing up some 'wet-lab' space for new recruits. In addition, some space in Biological Sciences III will be set aside for the Exercise Medicine and Sports Science Initiative and allow for sleep research studies. A second major component of the vacant accounting space will be converted into Active Learning Classrooms. The School has an urgent need to develop smaller classrooms that can accommodate about 30-50 students per class. Active Learning Classrooms provide students with a unique learning atmosphere by promoting faculty-student interactions, and technology-rich learning environments.

A second space assessment committee is currently be established to make additional recommendations for the optimal utilization of existing space. Along these lines, the School is exploring the possibility of renovating existing facilities like McGaugh Hall. These buildings were built with traditional laboratory space that was assigned to a single faculty member. Our plan moving forward will be to convert single faculty member enclosed labs to shared open research space comparable to what is found in some of the newer buildings on campus such as Biological Sciences III and Gross Hall. This type of renovation will be costly, but not nearly as costly as building new facilities. The School will work closely with Administrative and Business Services to explore the feasibility of this approach.

Lastly, the School is working closely with the School of Medicine to try and raise philanthropy funds to underwrite the costs of a new biomedical facility. Initial plans are centered around developing a building focused broadly on brain health, which could capitalize on the strong Alzheimer's disease research and outreach efforts that are engaged on the campus and allow for the integration of some clinical enterprise as well.