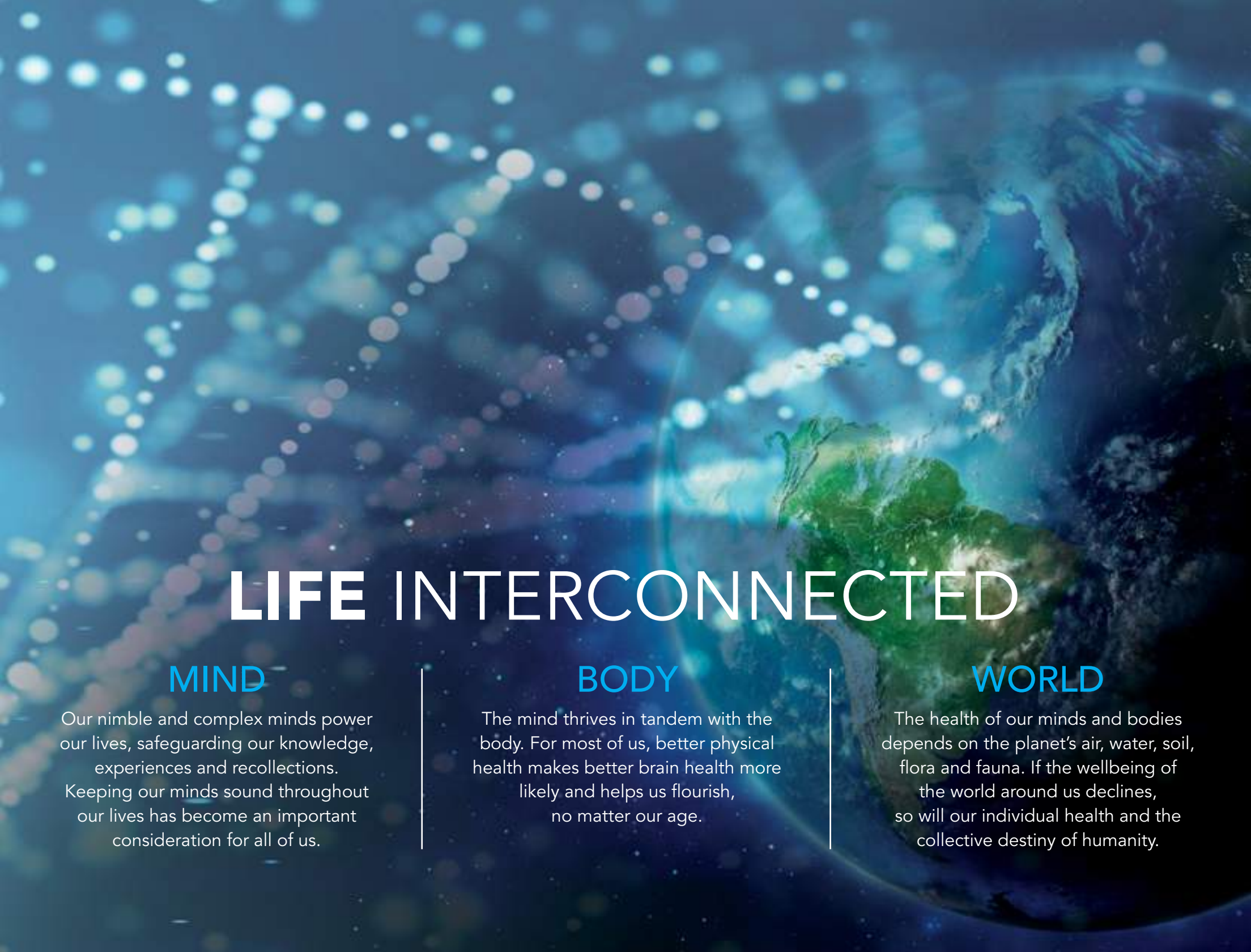
UCI School of Biological Sciences

# BIO SCI

## Discover the Living World

**2019** DEAN'S REPORT



# **LIFE** INTERCONNECTED

## MIND

Our nimble and complex minds power our lives, safeguarding our knowledge, experiences and recollections. Keeping our minds sound throughout our lives has become an important consideration for all of us.

## BODY

The mind thrives in tandem with the body. For most of us, better physical health makes better brain health more likely and helps us flourish, no matter our age.

## WORLD

The health of our minds and bodies depends on the planet's air, water, soil, flora and fauna. If the wellbeing of the world around us declines, so will our individual health and the collective destiny of humanity.

# MESSAGE FROM THE DEAN

# WORKING TOGETHER TO DISCOVER THE LIVING WORLD AND ENSURE ITS FUTURE

Dear Colleagues and Friends,

For many non-scientists, the word "biologist" conjures up a researcher alone at work over a set of test tubes. I hope this year's Dean's Report changes that perception. Biology is the science of life. Biologists seek to discover the living world in each of its vibrant dimensions and to solve the grand challenges facing the interconnected health of the mind, body and world. This work is crucial and fascinating. Most importantly, it is collaborative in nature.

When you walk through the labs and hallways of UCI BioSci, you see researchers making discoveries in teams; faculty and students sharing the excitement of learning; and experts sharing their knowledge with other scientists and the public, to name just a few activities here. This year's Dean's Report provides a snapshot of this enthusiastic collaboration. It is central to advancing innovative research that ensures a sustainable planet without disease as well as nourishing all who inhabit it.

We hope you enjoy this report and we would be delighted if it inspires you to become involved with UCI BioSci. Whether you attend a lecture, join our BioSci Ambassadors network or simply stop in to see us, we welcome you. Thank you and happy reading!

Frank M. LaFerla, Ph.D.
Dean, UCI School of Biological Sciences


# COMMENCEMENT 2018

# BIOSCI'S NEWEST BIOLOGISTS **MUST DEDICATE THEMSELVES** TO CHANGING THE FUTURE

**Passion, purpose and persistence.** These attributes will help the newest generation of biologists resolve the immense challenges facing mind, body and world health. This message came from 2018 Commencement speaker John D. Gerace as 707 students received bachelor's degrees and 39 obtained their master's on June 17. Twenty-two doctoral students were honored at the 2018 Graduate Hooding Ceremony the previous day.

Speaker Gerace is president of DiaSorin Molecular and co-founder of Calabri Biosciences. A BioSci alumnus, he received a Bachelor of Science in biological sciences and one in chemistry. Gerace, who earned an MBA from Pepperdine University, serves as a UC Irvine Foundation Trustee.

"Our current world problems require solutions that are mainly rooted in biological sciences," Gerace said, adding that population growth, clean water shortages, climate change and the aging demographic are among the greatest threats for the future. "You're all here to solve those problems."

The graduates' degrees lay the groundwork for that process, according to Gerace. Now, they must realize that innovation and true satisfaction come from defining a mission, deriving joy from it and being willing to pursue it despite obstacles. "If you love your work, you won't have a job. You'll have a calling."

*"Our current world problems require solutions that are mainly rooted in biological sciences."*

# BIO
# 199

# LEARNING

## "DISCOVERIES DON'T COME OUT OF NOWHERE."

**Each semester, hundreds of BioSci undergraduates fan out across 250 UCI labs and other locations to conduct laboratory, field and clinical research. They are participating in Biological Sciences 199, a program that introduces the students to the inner workings of scientific discovery. Besides learning firsthand how scientists perform their work, the undergrads bring valuable talent and energy to the School's research into mind, body and world health.**

To enroll in Bio199, as the program is known, students seek out a faculty sponsor at BioSci or the UCI School of Medicine through a process similar to an employment search. Once accepted, participants dedicate as much as 15 hours a week to their research duties and write quarterly reports on their experiences. During the fall semester, about 800 students take part in Bio199; the number often exceeds 1,000 in the spring.

Birpartap Singh Thind, a junior biological sciences major, has conducted novel reseach as part of Bio199, looking at skin cells to detect potential biomarkers for autism. Thind, who hopes to go to medical school, says the experience opened his eyes to the painstaking work behind scientific advancements. "Bio199 helps you realize that discoveries don't come out of nowhere," he said.

Fatima Yusuf, also a junior aspiring to become a physician, gained clinical experience from Bio199 by conducting surveys of trauma patients at UC Irvine Medical Center. Yusuf, a human biology major, says the program has provided an invaluable opportunity to interact with patients. "Working directly with them has helped further develop my communication skills and bedside manner, which is very important," said Fatima.

Bio199 students are vital in achieving BioSci's research mission, according to Ecology and Evolutionary Biology Professor Kailen Mooney. Participants in his lab have been helping investigate how insects in a given community change in response to drought. As part of the project's field experiments, the undergrads have been identifying and counting thousands of the creatures.

"We benefit tremendously from having the undergraduate researchers," Professor Mooney said. "We would not be able to conduct our research without their assistance."

**STUDENTS**

# THRILLING TO **THE SURPRISES** OF EXTREME BIOLOGY

**Every fall, 60 BioSci students scale the greatest heights, plumb the deepest watery depths and venture to the planet's hottest and coldest places. They do it all from their classroom in the Anteater Learning Pavilion. It's where Associate Teaching Professor in Ecology and Evolutionary Biology Nancy Aguilar-Roca uses the newest teaching techniques to lead the course, Physiology of Extreme Environments.**

"When we investigate nature's extremes and how animals and plants cope with them, it can help us better understand evolutionary possibilities," said Professor Aguilar-Roca. "Almost all vertebrates (fish, amphibians, reptiles, birds and mammals – including humans) have similar physiological systems, and studying responses to extremes can provide insights into human health and disease."

Kangaroo rats, for example, flourish in the desert heat without drinking water because their systems extract moisture from the seeds they eat. "By studying how their kidneys function, we learn a great deal about the human kidney," she said.

Mountain climbers relying on oxygen tanks to climb the Himalayas have been astonished to see geese winging their way over their heads. The bar-headed goose can thrive in low oxygen levels because "they have a completely different type of lung than we do, with a system of moving air through sacs" said Professor Aguilar-Roca. "Comparing their lungs with ours provides valuable information and perspective."


**STUDENTS**

The high-tech Anteater Learning Pavilion is California's first active learning center. Teaching the course there allows her to break the class into 10 clusters of six, each gathering around a large screen monitor and laptop with wireless connectivity. This arrangement promotes teamwork, such as designing experiments together to test hypotheses. "It's a more engaging and interactive approach," said Professor Aguilar-Roca, who recently won UCI's campus-wide Excellence in Digital Learning Award.

Physiology of Extreme Environments is required for students majoring in physiology and exercise sciences, but it is popular throughout BioSci. Most recently, 300 students signed up in hopes of obtaining one of the 60 slots. "Regardless of their BioSci major, I hope by learning physiology this way, students will learn information that is valuable in many different contexts," she said.

*"When we investigate nature's extremes and how animals and plants cope with them, it can help us better understand evolutionary possibilities."*

# STUDENTS

# NEW MASTER'S DEGREE **PUTS STUDENTS ON PATH TO** ENVIRONMENTAL LEADERSHIP

**A group of BioSci students is hiking miles, literally, toward their degrees. As part of a project to help protect Crystal Cove State Park, one of Orange County's largest open space and natural seashore areas, they are walking all of the unauthorized trails on its 2,400 acres of woodlands.**

The hikers are enrolled in the Masters of Conservation and Restoration Science program, now in its second year. Known as MCRS, its mission is to train professionals who can guide government agencies, the private sector and the public in working for a greener future. The MCRS is offered through the Department of Ecology and Evolutionary Biology and the Center for Environmental Biology.

Along with ecology, conservation and restoration, the curriculum teaches key workplace skills such as technical writing, science communication and data analysis. Students learn the fundamentals of Geographic Information System mapping, or GIS, widely used for land management. Besides classroom learning, the program emphasizes hands-on experience with area environmental organizations.

One example is the Crystal Cove project, whose participants are figuring out how the park can overcome the significant challenges posed by unauthorized trails. Those pathways, which develop as hikers and bikers stray from official routes, can harm rare plants and cause erosion. As the MCRS students hike, they are gathering information to create a GIS map of all the unsanctioned paths. From there, they will devise a prioritized plan for removing them and restoring the damaged areas. The students will also develop public communications strategies to persuade park visitors to stay on the official trails.

"With widespread concern about climate change and other impacts of humans on the environment, there's growing demand for professionals to spearhead complex land management, preservation and restoration projects," said Ecology and Evolutionary Biology Assistant Teaching Professor Jessica Pratt, who created and leads the MCRS program.

The degree prepares graduates to pursue a wide range of career opportunities. Becoming an agency ecologist, working as a wildlife biologist for an environmental consulting firm, or managing invasive plant programs for a private nature conservancy are just a few examples of the possibilities. For more information on the program, visit **mcrs.bio.uci.edu/about/**.

# FACTS & STATISTICS

**#1**

*New York Times Upshot* created the *College Access Index* and ranked UCI as No. 1.

**#3**

*Money* magazine ranked UCI No. 3 on its 2018 list of the "best colleges in the U.S."

**#4**

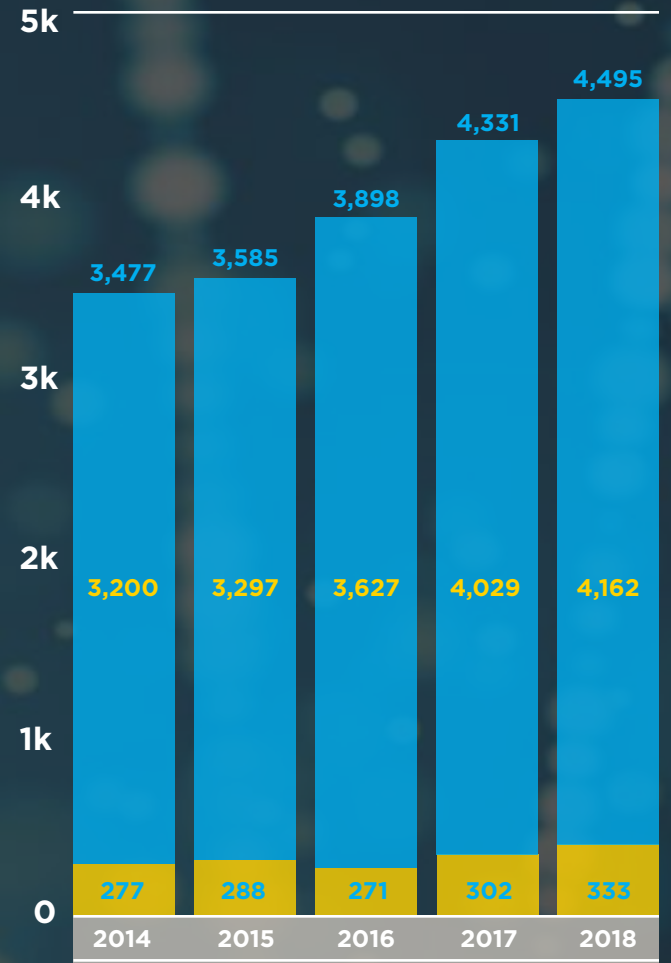
*Forbes* named UCI the No. 4 Best Value College in 2018, up from No.8 in 2017.

**7th**

UCI was ranked the 7th best Public University in the U.S. by *U.S. News & World Report*.

**1,104**
new students for Fall 2018
(combined incoming freshmen and transfer)

| 216 | 888 |
|---|---|
| new transfers | new freshmen |




Increasing Enrollment for the BioSci School

Undergraduates

Graduate students
(Masters and Doctoral combined)

**66%**

**Female** total undergraduates enrolled, Fall 2018

**35%**

**Low-Income** total undergraduates enrolled, Fall 2018

**29%**

**Underrepresented Minorities** total undergraduates enrolled, Fall 2018


Average GPA of 4.08

**$65 Million** in research grants awarded to BioSci faculty in FY 2017-2018

**$11.35 Million** The largest research grant awarded to BioSci faculty during FY 2017-2018

**67**

New research grants awarded to BioSci faculty during FY 2017-2018

The School offers a Doctoral Degree in Biological Sciences, three Master's Degrees and ten Bachelor of Science degrees.

- Biochemistry and Molecular Biology
- Biological Sciences
- Biological Sciences and Educational Media Design
- Biology / Education
- Biotechnology Management
- Developmental and Cell Biology
- Ecology and Evolutionary Biology
- Exercise Sciences
- Genetics
- Human Biology
- Microbiology and Immunology
- Neurobiology

# POWERFUL NEW MRI CENTER **REVEALS CLUES** TO VANQUISHING DISEASES

**Most of us are familiar with magnetic resonance imaging, or MRI, as a tool that assists physicians in diagnosing a range of health conditions. Lesser known is that the technology can help scientists penetrate life's inner workings as they search for ways to prevent and treat diseases. Now the School of Biological Sciences has teamed with others on campus to establish a specialized MRI facility furthering that quest.**

The Preclinical and Translational Imaging Center – PTIC for short – is a collaboration of BioSci, the Office of Research, the School of Medicine and the School of Social Ecology. It houses a new MRI machine with a wide opening and a powerful magnetic field of 9.4T, or Tesla, the unit by which such strength is measured. The technology, manufactured by Bruker, is designed to capture images of a range of preclinical species. It provides researchers a closer look at molecular and cellular processes essential for understanding disease physiology.

The PTIC is directed by Pediatrics Professor in Residence Andre Obenaus, who is highly experienced in setting up MRI technology with high-strength magnets. Professor Obenaus came aboard at UCI in 2017 to oversee installation of the MRI machine, which went into service in late 2018. Now Professor Obenaus, who previously managed an imaging center, is helping UCI scientists use the imager for their work.

Professor Obenaus is also continuing with his own research, centering on the brain. Along with BioSci Dean Frank LaFerla, Molecular Biology and Biochemistry Professor Andrea Tenner, and Neurobiology and Behavior Professor Michael Yassa, he is a co-investigator on a National Institutes of Health award. They are studying structural and functional brain connectivity in clinically relevant Alzheimer's mouse models, which were created by a research team under Dean LaFerla's direction.

Researchers interested in using the PTIC are invited to contact Professor Obenaus at obenausa@uci.edu or visit **imaging.uci.edu/** for more information.

**RESEARCH**


# MICE WITH TALES: INVALUABLE INSIGHTS INTO HUMAN BIOLOGICAL PROCESSES

**The name 'mouse' comes from the Sanskrit *'musuka'*, meaning thief. However, not all mice should be viewed as thieves. Laboratory mice are invaluable for studying the biological processes that underlie human health and disease. Mice are genetically and physiologically similar to humans. This genetic similarity has allowed researchers to modify genes to gain valuable new insight into the physiology of disease.**

Developmental and Cell Biology Professor Grant MacGregor has worked for years on the generation of unique, genetically engineered mice. He is the current scientific director of the UC Irvine Transgenic Mouse Facility (TMF), which provides support to our BioSci faculty by designing, making and preserving genetically-modified mice. Since taking over leadership of the TMF, thanks to the support of the Office of Research and the hard-working personnel within the TMF, Professor MacGregor has helped oversee the increased production of mice for faculty at UCI and nationwide.

Professor MacGregor's expertise has been leveraged in a partnership with a group of BioSci faculty led by Dean Frank LaFerla and Professor Andrea Tenner. Together, the team has embarked upon a long-term National Institute on Aging funded project to produce the next generation of mouse models to help identify causes of, and eventually treatments for, late-onset Alzheimer's disease. "The breadth and depth of expertise amongst the faculty in BioSci, plus their willingness to collaborate, makes this an exciting place to do cutting-edge science," says Professor MacGregor.

Professor MacGregor also uses genetically modified mice in his own research on Fibronectin type-III domain containing 3 (FNDC3) proteins, which when mutated, cause problems in many processes including bone and lung development. Recently, his lab discovered that mice deficient in a *FNDC3* gene have birth defects that mimic the defects seen in human infants with the same mutation. Continued work with these unique mice may help identify potential treatments for developmental conditions in humans.

# RESISTING THE **SIREN SONG** OF RELAPSE

"Getting sober remains my single greatest accomplishment…bigger than my husband, bigger than both of my children, and bigger than any work, success, failure. Anything." – Jamie Lee Curtis, 2018

Celebrities grappling with addiction are the most visible faces of a struggle confronting millions of people nationwide. For many, it's not only a matter of stopping drug use. They also must attempt to prevent relapse. As the co-director of the UC Irvine Center for Addiction Neuroscience and the chair of the Department of Neurobiology and Behavior, Professor Marcelo A. Wood leads a research team that examines the molecular and neurobiological basis of substance use disorders with a particular focus on relapse.

Drugs of abuse, such as cocaine, are known to affect the reward circuitry of the brain. Normally, the reward circuitry is engaged during pleasurable and rewarding experiences such as eating, which are important for our survival. However, drugs of abuse hijack the reward circuitry, changing its activity in dramatic and unnatural ways that result in long-lasting changes in brain function. Professor Wood's research is focused on discovering how drugs of abuse cause persistent changes in brain function that lead to compulsive drug seeking, relapse and other aspects associated with addiction.

**MIND**

In particular, Professor Wood and his colleagues have been focusing on epigenetics, which is a molecular mechanism by which genes are turned on and off. Epigenetics are powerful regulators of cell function. Drugs of abuse engage epigenetic mechanisms, which cause unusual and persistent changes in brain function that lead to long-lasting effects on behaviors associated with addiction.

Professor Wood's research examines how drugs of abuse engage epigenetic mechanisms, and also the flip side of the coin, how manipulating epigenetic mechanisms may be used to extinguish drug-associated memories and prevent relapse. The Wood lab is also developing novel ways to treat addiction, based on altering the activity of enzymes that modify the epigenome.

*An estimated 7.5 million people age 12 and over in the U.S. had an illicit drug use disorder and 14.5 million had an alcohol use disorder in 2017, according to the most recent National Survey on Drug Use and Health.*

# STIRRING THE SENSES **SHARPENS SKILLS** FOR KIDS WITH AUTISM

**Smelling novel odors, walking up and down stairs, clasping a mug of warm liquid, touching a sponge. Sensory activities like these made a positive impact on youngsters with autism spectrum disorder (ASD) who participated in an environmental enrichment program. The findings come from a first-of-its-kind research program conducted by Neurobiology and Behavior Professor Michael Leon.**

The core symptoms of ASD include social communication and repetitive/focused behavior, although each child also has an associated set of symptoms that range from anxiety to eating and sleeping problems. These behavioral issues vary from one person to another and can be more or less severe. The diversity of symptoms and the lack of a clear etiology has made it challenging to treat ASD.

However, animal models of ASD responded well to environmental enrichment involving increased sensorimotor stimulation, and Professor Leon was able to translate these findings into an effective treatment for children with autism. Clinical trials at UCI showed that 42% of children with classic autism who received environmental enrichment had major improvements in their symptoms, compared to 6% of controls in standard care. Enriched children had increases in their IQ (over 8 points) and communication (200% over baseline), and 21% were no longer considered to have classic autism after six months of enrichment.

Nevertheless, therapies tested under controlled conditions often do not work well when they are used under the complexities of the real world. At the same time, this environmental enrichment therapy has been commercialized and placed online to allow children everywhere to be treated. Once enrolled, parents receive all of the items to stimulate their child, and after filling out a detailed online assessment of the child's symptoms, a computer algorithm generates a personalized set of stimuli to provide to their child over the following two weeks.

Professor Leon followed the progress of over 1,000 children with the online approach and found significant gains for a wide range of symptoms in these children, including communication, social skills, learning, anxiety, attention span, sensory processing, self-awareness, and mood. The children of more compliant caregivers experienced a greater improvement in their symptoms, and the treatment was effective across a wide age range that included teens. There was equal progress reported for males and females, those who paid and those who were not asked to pay, and for individuals at all levels of initial symptom severity.

Environmental enrichment, delivered via an online system - **Mendability.com** - therefore appears to be an effective, low-cost means of treating the symptoms of ASD.

# "RIBBITING" INSIGHTS **COULD HELP** ROBOT DEVELOPMENT

**Many advances in technology have been modeled from nature. Researchers and engineers continue to look to nature for inspiration. And now frogs could help robot development leap ahead, thanks to research by Ecology and Evolutionary Biology Associate Professor Manny Azizi.**

In focusing his investigations on unlocking the inner workings of movement, Professor Azizi has examined why these amphibians can jump much farther than their leg muscles allow. The ability comes in part from their long Achilles tendons, which build up energy like a spring. Releasing it propels frogs forward in their signature spectacular move.

This process demonstrates how nature finds biological solutions to overcome factors that limit motion. Professor Azizi and colleagues Sarah Bergbreiter at the University of Maryland and S.N. Patek with Duke University have captured the concept through a new mathematical model. It describes how weight, material composition and other variables work with muscles to influence power in small organisms. As a result, they are able to jump, strike and react with impressive force and speed. Scientists can use the model to better predict theoretical limits of movement, which could help engineers reduce the size of robots while making them more powerful.

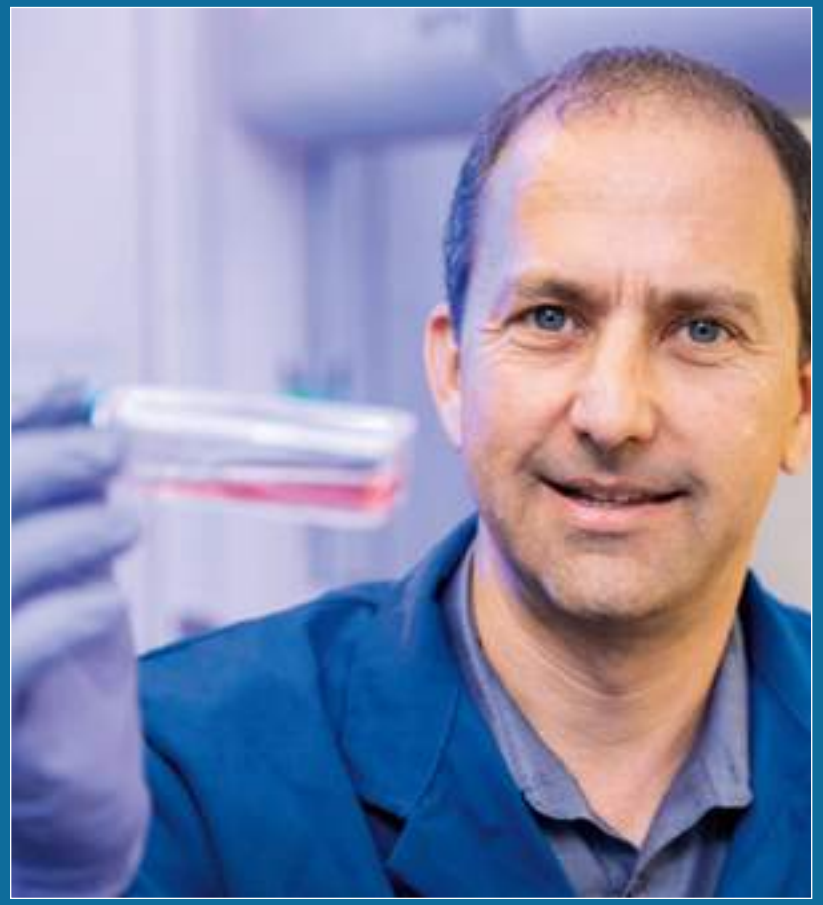
# OLDIE BUT GOODIE: PUTTING CLASSIC DRUGS **TO POWERFUL** NEW PURPOSE

Repurposing usually brings to mind saving the environment and money by using items in a new way. But for Molecular Biology and Biochemistry Professor David Fruman, repurposing means saving lives. He has been researching whether statins, normally prescribed to treat high cholesterol, can help fight cancer.

The journal *Science Translational Medicine* recently published findings by Professor Fruman and collaborators from the University of Miami and the Dana Farber Cancer Institute about statins' anti-cancer benefits. With the cost and time needed to develop new pharmaceuticals rising dramatically, researchers are helping lead a movement to vanquish disease by repurposing drugs already available.

Professor Fruman has focused his career on blood cells known as lymphocytes. His work led him to couple BH3-mimetics, an emerging class of drugs, with statins. He sought to find out if the combination could more effectively treat several types of blood cancer, including leukemia, which currently affect 1.3 million people in the U.S.

The studies by Professor Fruman and his collaborators reveal that combining statins with other drugs can more easily kill cancer cells. It can also make it possible to use smaller amounts of those other pharmaceuticals, potentially reducing difficult side effects. In addition, work by the researchers in partnership with the pharmaceutical company AbbVie showed statins improve the outcome for leukemia patients treated with the anti-cancer drug venetoclax. Their results provide evidence in support of the further investigation of the repurposing potential of statins to fight blood cancer.



*Repurposing means saving lives.*

**BODY**

# MATERNAL OBESITY'S **TROUBLING LINK** WITH BABY IMMUNITY

Obesity can complicate a pregnant woman's health in many ways, such as increasing the risk of gestational diabetes. Now Molecular Biology and Biochemistry Associate Professor Ilhem Messaoudi is making startling discoveries about how it can also affect the baby's wellbeing, possibly with lasting impact.

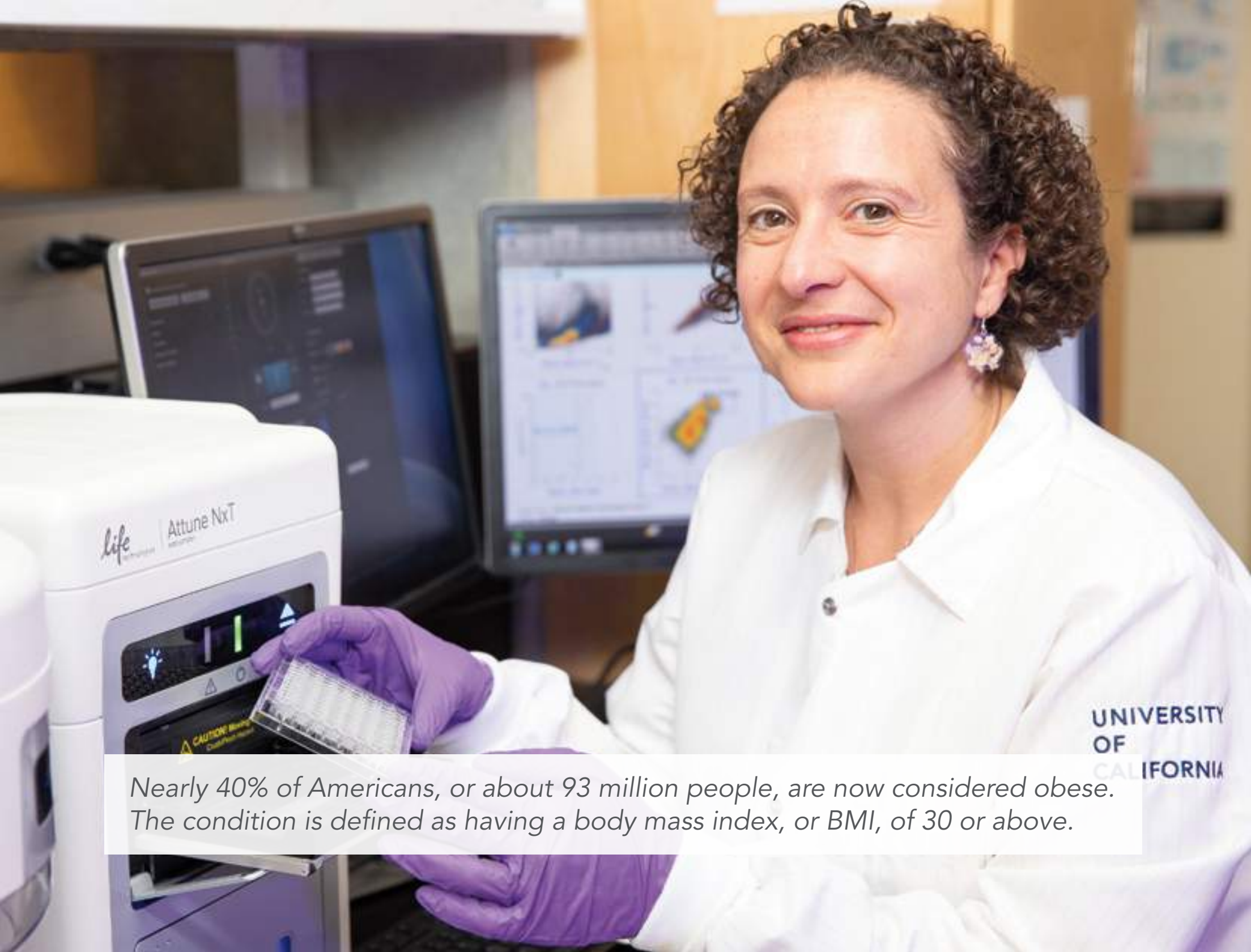
Professor Messaoudi and her collaborators have published work revealing that the immune systems of infants born to obese mothers develop differently than those whose mothers are in the normal weight range. To follow up, the team investigated what lay behind the discovery.

In studying infants of obese mothers, the researchers made a key finding in the area of blood cell epigenetics. The term refers to mechanisms that modify genes at the molecular level – ones that can control how immune cells respond to infections.

The team identified differences in a particular epigenetic process for turning genes on and off. It involves adding or removing molecules known as methyl groups to DNA, a phenomenon whose scientific term is DNA methylation status. This change in an infant's immune system could potentially persist into adulthood.

"If you are thinking of becoming pregnant, or you already are, talk to your ob-gyn about weight management, weight gain and healthy parameters for it," says Professor Messaoudi.

BODY




*Nearly 40% of Americans, or about 93 million people, are now considered obese. The condition is defined as having a body mass index, or BMI, of 30 or above.*

# "I'LL TAKE A SIDE SALAD": UCI BIOLOGISTS **IDENTIFY FIRST** OMNIVOROUS SHARK

Sharks conjure up the image of marauding meat-eaters for many. But not for doctoral candidate Samantha Leigh, who works with Ecology and Evolutionary Biology Associate Professor Donovan P. German. Ms. Leigh has helped discover a new behavior that may change how people perceive the marine creatures. Ms. Leigh studies the bonnethead shark, which is found along the U.S. coastline. She is the first author of new research identifying it as the only known omnivorous shark, one that obtains nutrients from both plants and animals.

Previous researchers had found large amounts of plant material in the bonnethead digestive systems. In fact, over 60% of the contents in their guts was seagrass. However, it had been assumed that sharks didn't receive nutritional value from it. Ms. Leigh, Professor German and their research colleagues decided to probe further. They investigated the digestive system of a group of bonnetheads to find out if contrary to traditional belief, they digested and obtained nutrients from vegetation.

The research team discovered the sharks' digestive systems did break down seagrass. The bonnetheads' enzyme levels for processing fiber and carbohydrates were high, compared to the low amounts carnivores typically have.

"The findings were surprising," said Ms. Leigh, who became fascinated with sharks when she worked on a marine biology project in the third grade. "They actually digested vegetation more efficiently than some better-known plant-eaters." The bonnetheads broke down about half of the vegetation they ate. Pandas, who mainly munch on bamboo, can only digest one-fifth of it.

Now the researchers want to explore how these omnivorous sharks affect local ecosystems. Their impact on seagrass ecosystem health could help generate models of carbon dioxide in the atmosphere and assist in coastal conservation efforts.

WORLD

BIOSCI IMPACT FEATURE

# EARLY OUTDOOR ADVENTURES **GAVE WINGS TO** RESEARCHER'S BUTTERFLY INTEREST

Nature captivated Ecology and Evolutionary Biology Professor Adriana Briscoe at an early age. Her parents took her on family trips exploring the outdoors in Baja California, Mexico and the southwestern United States. These adventures helped spark her early interest in biology and had a major influence on her career choice.

"I interacted with insects, plants and rocks on these trips, and it was wonderful," said Professor Briscoe. "The landscape was astonishing. Rock collecting as a little kid brought me great joy."

Her fascination with the outdoors led her to summer camp programs at the San Bernardino County Museum and the World Life Research Institute, a private science institute. After high school, she attended Stanford University and graduated with a Bachelor of Science degree in biological sciences, a Bachelor of Arts degree in philosophy, and a Master's in philosophy. She went on to Harvard University, where she earned a Ph.D. in biology. After completing her doctoral degree, she worked as a postdoctoral researcher at the University of Colorado and the University of Arizona before joining the UCI School of Biological Sciences faculty.

Professor Briscoe's research has focused on figuring out how natural selection can shape proteins and affect animal physiology and behavior. Focusing her work on butterflies, she has made groundbreaking discoveries regarding the ways color vision and body coloration have changed in animals. Her lab recently demonstrated that butterflies belonging to the genus *Heliconius* developed the ability to see ultraviolet colors around the same time their wings began displaying ultraviolet coloration. She is now exploring how alterations in eye development affect behavior.

***Focusing her work on butterflies, she has made groundbreaking discoveries regarding the ways color vision and body coloration have changed in animals.***

Professor Briscoe has received numerous honors and awards. Her most recent, the 2018 SACNAS Distinguished Scientist Award from the Society for Advancement of Chicanos/Hispanics and Native Americans in Science, has only been given to three other women since it was established in 1997. She has also recently been elected as a Fellow of three different science organizations: the American Association for the Advancement of Science, the California Academy of Sciences and the Royal Entomological Society. In the wake of these achievements, she hopes more young Latina women will gain confidence in their potential and pursue careers in the life sciences.

"I would really like Hispanic girls and women to realize the world of life science is open to them," said Professor Briscoe, whose Mexican-American mother worked as a bilingual elementary school teacher. Her father was an academic librarian. "It offers a tremendous range of opportunities and they have every reason to believe they will succeed."

# NEW FACULTY

## DAE SEOK EOM, PH.D.
Assistant Professor,
Developmental and Cell Biology

When communication between the cells in our bodies doesn't work properly, it can lead to cancer and other diseases. This is why one of the essential questions of biology is determining exactly how cells pass information among themselves. A particular challenge has been to identify ways they communicate over long distances.

In delving into this mystery, Professor Eom has discovered they can initiate this process by extending long, thin projections that deliver signaling molecules to target cells that are far away. Now he seeks to determine how important the projections are in overall cell communication. He is also interested in determining what the projections are made of and how they are regulated.

## GYORGY LUR, PH.D.
Assistant Professor,
Neurobiology and Behavior

Throughout our daily activities, we gather sensory clues (through our vision, hearing and touch) and put them in a personalized context, informed by our motivations and previous experiences. The brain's ability to merge these information streams is critical for cognitive functions, like learning or decision making, and is often damaged by neuropsychiatric conditions. Yet, we have little understanding of how sensory and contextual neuronal circuits cooperate, impeding our progress in both basic and clinical research.

Professor Lur utilizes advanced optical methods to unveil fundamental principles of signal integration in the brain. Cognitive processes and psychiatric diseases are complex phenomena that transcend organizational levels, involving single neurons as well as brain-wide networks. To acknowledge this complexity, the Lur lab combines reductionist experimental techniques to study cellular mechanisms, with the wholistic approach of systems neuroscience to observe neurons in their context. By bridging organizational levels, the lab aims to causally link cellular scale events to brain-wide effects. This is not only crucial for understanding complex neuronal phenomena but also fuels the translation of basic research into treatments of human ailments.

## VIVEK SWARUP, PH.D.
Assistant Professor,
Neurobiology and Behavior

Alzheimer's disease (AD) is the most common type of dementia, characterized by neuronal loss, affecting millions of Americans with no known cure. While much is known about the genetics of Alzheimer's, scientists are searching to understand what triggers its onset. This mystery is a major reason it has been so difficult to develop effective methods for fighting the disease.

Professor Swarup is working to solve this challenge through big data analysis of genetics. This approach studies sets of information that are too complex for traditional data-processing software to handle. Key to his research is the use of genomic signatures, or special DNA patterns, which can be linked to the development of Alzheimer's. He also works with genetically engineered rodent models and neural cells derived from stem cells to understand how genomic variations affect Alzheimer's. The hope is that the information he uncovers can help speed the development of drugs that combat the disease.

## ROBERTO TINOCO, PH.D.
Assistant Professor,
Molecular Biology and Biochemistry

While strides have been made in tackling chronic diseases such as HIV, hepatitis B and cancers that thwart the immune system, they continue to compromise the health of millions of people worldwide and cost lives. A better understanding of the mechanisms of T cells, white blood cells that have a key role in immunity, is essential for fighting these diseases.

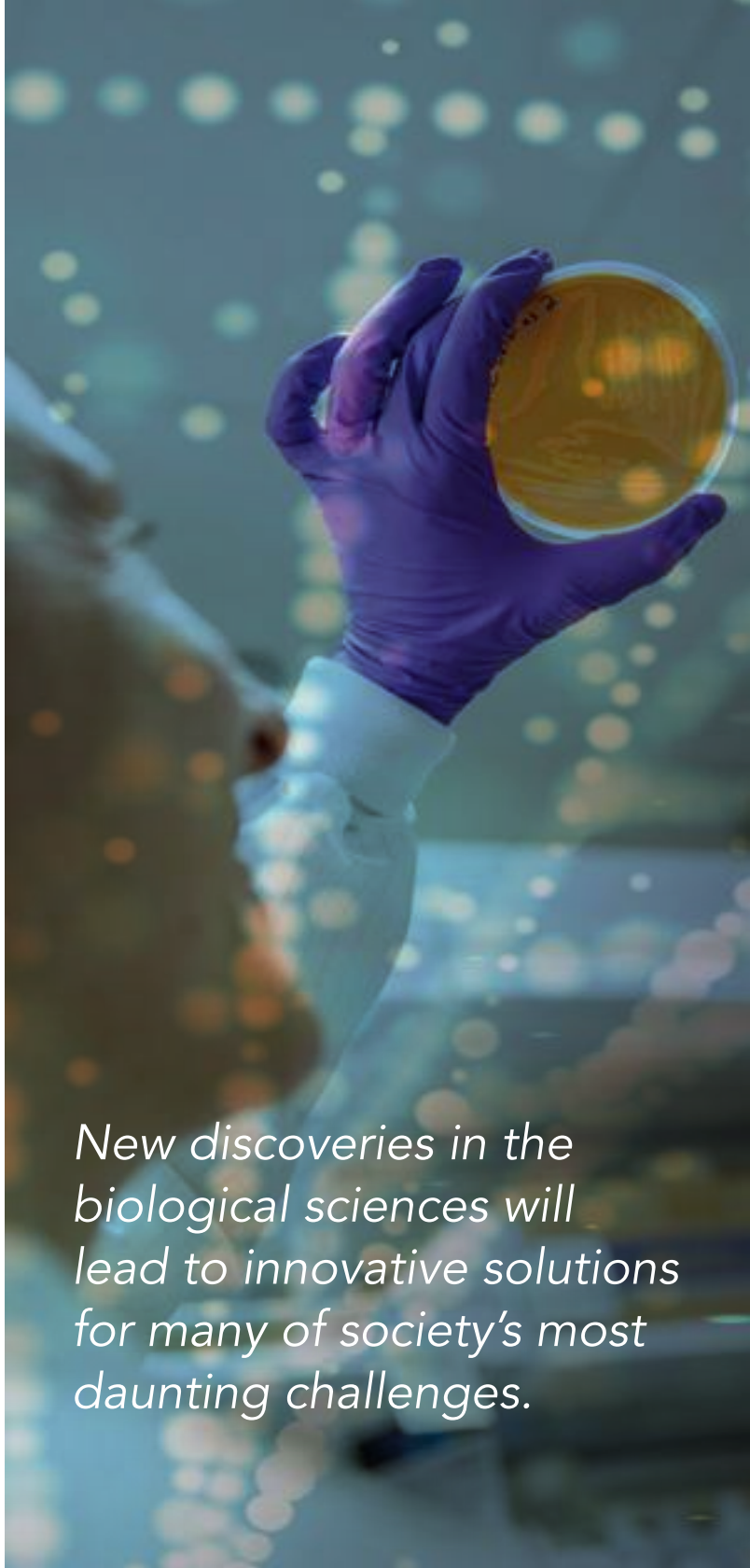
One of the ways the body regulates T cells is by inhibiting them, or turning them off, after they've fought an infection so they don't go on to damage healthy cells. However, some cancers can also switch off T cells, enabling the cancer to grow and spread. It's now standard practice to treat those cancers by blocking the mechanisms that shut down T cells, but these treatments don't work for every patient.

Professor Tinoco is researching the fundamental cellular and molecular mechanisms that turn on and switch off T cells. The hope is that once these processes are fully understood, researchers can develop new ways to invigorate the immune system and help more patients.

## JOLEAH LAMB, PH.D.
Assistant Professor,
Ecology and Evolutionary Biology

Ocean disease outbreaks are increasing in number and severity worldwide. These events have led to the widespread degradation of ecosystem services and natural capital provided to us through coastal protection, tourism income, food production and cultural significance. With an estimated 1 billion people projected to populate coastal zones by 2060, reducing outbreak risks in the oceans will be vital for improving public and ecosystem health worldwide.

Professor Lamb uses a variety of tools to understand, forecast and manage disease outbreaks in the ocean – including underwater surveys, satellite remote sensing, and next-generation DNA sequencing. Currently, she is working to understand how plastic waste can transport human and marine pathogens around the ocean, which can lead to disease outbreaks. She is also assessing the function of coastal ecosystems – such as seagrass meadows, mangrove forests, oyster reefs and wetlands – as natural urban infrastructure to effectively remove pathogens from terrestrial pollutants. Her goal is to value the economic benefits of these services in order to balance coastal development with the maintenance of biodiversity.



## TIMOTHY BRADLEY, PH.D.
### Ecology and Evolutionary Biology

As a comparative physiologist, Professor Bradley has examined ion transport, energy transduction at membranes, and osmoregulation in mollusks, fish, amphibians and mammals. His principal contributions, however, have been in the study of these processes in what is the most diverse and speciose clade of animals, the insects. Professor Bradley served as chair of two departments within the School, as chair of the Academic Senate, and as director of the UCI Salton Sea Initiative, investigating the complex environmental problems affecting California's largest inland body of water and the region around it.

## ROBIN BUSH, PH.D.
### Ecology and Evolutionary Biology

More is known about the influenza virus because of Professor Robin Bush's research into the evolution of infectious disease. In conducting her investigations, she developed and used computational techniques to study how proteins that are pathogenic, or cause disease, change in response to the immune defenses of their hosts. Besides running her own laboratory, Professor Bush worked with researchers at local and federal health agencies to boost disease surveillance and prediction as well as develop vaccines.

## HARTMUT LUECKE, PH.D.
### Molecular Biology and Biochemistry

Through his research into proteins that are integral to cell membranes, Professor Luecke made a substantial impact on the field of structural biology, which studies how biological molecules are built. He discovered the structures of several important proteins over the years, including a membrane protein from the human pathogen *Helicobacter pylori*, which is a type of bacteria that can cause stomach ulcers. His research has advanced the fight against disease by identifying certain proteins as promising targets for anti-bacterial and anti-cancer drugs.

# RETIRING FACULTY

STEPHEN WELLER, PH.D.
Ecology and Evolutionary Biology

Much of Professor Stephen Weller's work has focused on the evolution of plant reproductive systems. Along with Ecology and Evolutionary Biology Professor Ann K. Sakai, his long-time collaborator, he contributed greatly to knowledge about dioecy, the presence of male and female flowers on different plants. Using a multi-disciplinary approach, he investigated the impact of ecological factors, such as the kinds of pollinators a plant attracts, on the breeding systems of *Schiedea*, a plant genus found in Hawaii. Among his key findings is that shifts to new habitats lead to modifications of reproductive systems.



# 2018 Faculty Accolades

**2018 Earth Month Hero**
The Wyland Foundation
Assistant Professor Celia Faiola, Ph.D.
Ecology and Evolutionary Biology

**2018 UCI Excellence in Undergraduate Teaching Award**
Dr. De Gallow Professor of the Year
Professor Grant MacGregor, Ph.D.
Developmental and Cell Biology

**2018 UCI Excellence in Undergraduate Teaching Award**
Dean's Honoree
Professor Lee Bardwell, Ph.D.
Developmental and Cell Biology

**2018 Elected Fellow**
California Academy of Sciences,
Royal Entomological Society
Professor Adriana Briscoe, Ph.D.
Ecology and Evolutionary Biology

**2018 Elected Fellow**
California Academy of Sciences
Distinguished Professor John C. Avise, Ph.D.
Ecology and Evolutionary Biology

**2018 Golden Apple Award**
UCI School of Biological Sciences
Assistant Teaching Professor
Maria Julia Massimelli, Ph.D.
Molecular Biology and Biochemistry

**2018 Highly Cited Researcher**
ISI Web of Science
Professor Steven D. Allison, Ph.D.
Ecology and Evolutionary Biology

**2018 Highly Cited Researcher**
ISI Web of Science
Professor Kathleen K. Treseder, Ph.D.
Ecology and Evolutionary Biology

**2018 New Investigator Award in Alzheimer's Disease**
American Federation for Aging Research
Assistant Professor Vivek Swarup, Ph.D.
Neurobiology and Behavior

**2018-19 Hellman Fellowship Award**
The Hellman Fellows Fund
Assistant Professor Stephen Mahler, Ph.D.
Neurobiology and Behavior

**2018-2019 Distinguished Faculty Award for Teaching**
UCI School of Biological Sciences
Professor Georg F. Striedter, Ph.D.
Neurobiology and Behavior

**2018 Dolph O. Adams Award**
Society of Leukocyte Biology
Associate Professor Melissa B. Lodoen, Ph.D.
Molecular Biology and Biochemistry

STEVE CARLYLE
UCI School of Biological Sciences

During his decade as BioSci's computing director, Steve Carlyle oversaw modernization of the School's technology and built strong ties with the other academic computer units across campus. His UCI career began in 1981 and he served in several technical roles before assuming his post at BioSci. Steve, who retired from UCI in 2015, is remembered for his outstanding work and as a wonderful friend.

***> Modernized BioSci's Technology***

GALE "MORRIE" GRANGER, PH.D.
Molecular Biology and Biochemistry

An expert immunologist, Professor Granger helped pioneer immunotherapeutics. That field, which treats disease by turning on or suppressing the immune system, is transforming cancer care today. He developed a new way to analyze tissue damage caused by white blood cells, discovering they release toxic molecules he called lymphotoxins, later renamed tumor necrosis factors. Through his work on Lymphotoxin-alpha, he found and characterized one of the first cytokines, substances immune cells secrete. His studies were instrumental in changing assumptions about how those cells communicate. Professor Granger arrived at UCI as a postdoctoral researcher in 1965, the year UCI held its first classes. In 1967, he was promoted to assistant professor and quickly moved up the ranks to full professor in 1973.

***> Revolutionized Cancer Treatment***

AUDREY SCHNEIDERMAN

A decades-long supporter of BioSci, Mrs. Schneiderman was the wife of the former BioSci Dean Howard A. Schneiderman. A dedicated philanthropist, she made an impact on many areas of BioSci and the University as a whole. As a staunch supporter of education, Mrs. Schneiderman was the benefactor of endowed scholarships at UCI and at Wheaton College in Massachusetts, which was her alma mater.

***> Dedicated to BioSci and the University***

# IN REMEMBRANCE

*Our faculty and staff are part of a community. Together, we promote a positive culture that values individual contributions and celebrates the successes of our colleagues.*

## YEAR IN REVIEW

**Michael Aguiar '88**
*Former President and CEO*
Innoviva, Inc.

**Brian Atwood '74**
*Former CEO, Co-Founder*
Cell Design Labs

**Mitchell Brin, M.D., FAAN**
*Sr. Vice President, Global Drug Development and Chief Scientific Officer*
Botox®, Allergan, Inc.

**Ed Chang '84**
*Vice President of Marketing*
Avenu Medical

**Charles L. M. Dunlop**
*Founder*
Ambry Genetics

**William Loudon, M.D., Ph.D.**
*Section Chief for Pediatric Neurosurgery*
Children's Hospital of Orange County

**Mohannad S. Malas**
*CEO*
IRA Capital, LLC

**James McGaugh, Ph.D.**
*Distinguished Professor Emeritus Dept. of Neurobiology and Behavior Center for the Neurobiology of Learning and Memory*
University of California, Irvine

**Maria Minon, M.D., '72,'76**
*Vice President of Medical Affairs and Chief Medical Officer*
Children's Hospital of Orange County

**Michael O'Connell**
*Executive Director*
Irvine Ranch Conservancy

# DEAN'S LEADERSHIP COUNCIL

**The School's Dean's Leadership Council (DLC) is composed of successful alumni, business executives and community leaders who provide counsel to the dean and help ensure that our strategic mission is properly aligned with the needs of society and business.**

**Jacqueline Dupont, Ph.D.**
*CEO*
Dupont Residential Care, Inc.

**Aaron Elliott, Ph.D.**
*CEO*
Ambry Genetics

**Diana Hendel, PharmD., '85**
*Senior Partner*
Partnership Advantage

**Nikki Iravani, O.D., '86**
*Founder & CEO*
EyeXam

**Nikan Khatibi, D.O., '04**
*CEO and Medical Director*
Ahura Healthcare Corporation

**David J. Perry, Esq.**
*Retired, Former Partner*
K&L Gates

**Devansu Tewari, M.D., '93, '97, '14**
*Director, Gynecologic Oncology Division*
*Southern California Permanente Medical Group*
Kaiser Permanente Orange County

**Nita Tewari, Ph.D., '92**
*Consultant*
Nita Tewari, Ph.D.
Consulting Services

**They provide valuable financial support to advance the mission of the School's priorities of teaching, research and public service. Council members embody the spirit of philanthropy and function as our "eyes and ears" outside the university walls. They offer significant insights to the dean, including industry trends that impact our graduates and our faculty's research. Our DLC members function as ambassadors and advocates, introducing us to key decision makers and industry leaders who support our strategic goals and special initiatives.**

**David M. Gardiner, Ph.D.**
*Associate Dean of Academic Affairs*

**Brandon S. Gaut, Ph.D.**
*Associate Dean of Research and Innovation*

**Raju Metherate, Ph.D.**
*Associate Dean of Undergraduate Education*

**R. Michael Mulligan, Ph.D.**
*Associate Dean of Graduate Education*

**Aimee L. Edinger, Ph.D.**
*Equity Advisor*

**Benedicte Shipley**
*Assistant Dean*

**Andrew DiNuzzo**
*Senior Director of Development*

**Robyn Martinelli**
*Senior Director of Development*

**Shannon Ingram**
*Director of Marketing and Communications*

**Randy Bautista, Ph.D.**
*Institutional Research Analyst*

# DEAN'S LEADERSHIP CABINET

**Hung Y. Fan, Ph.D.**
*Awards and Honors Advisor*

**Rahasson R. Ager, Ph.D.**
*Communications Associate*

*Educating future STEM leaders and innovators takes a collaborative effort. Our faculty and staff work together to stimulate student curiosity and provide academic support.*

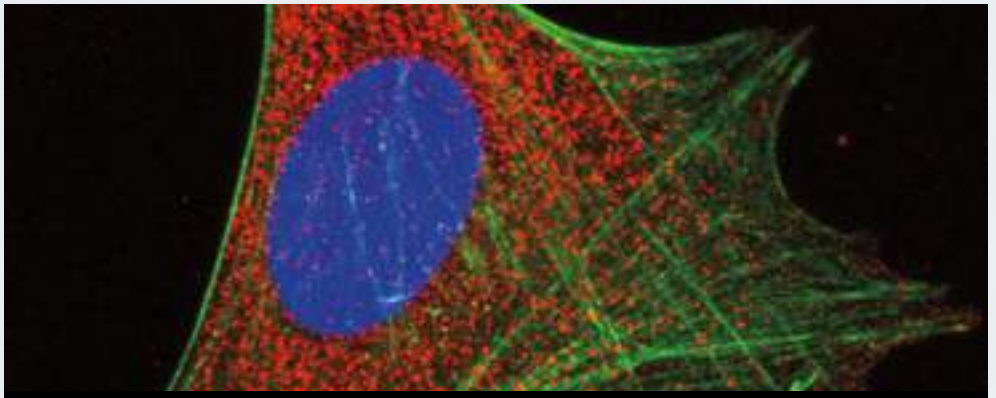
# UCI BIOSCI DEPARTMENTS

Four academic departments are addressing the grand challenges facing the MIND-BODY-WORLD, pushing the boundaries of exploration through their research and preparing students to become passionate biologists who will help provide a healthier and more prosperous future.

## NEUROBIOLOGY AND BEHAVIOR (NBB)

**Marcelo A. Wood, Ph.D.,** *Chair*
**Kim Green, Ph.D.,** *Vice-Chair*
**Sally Dabiri,** *Department Administrator*

From boosting brain health to fighting Alzheimer's disease and addiction, NBB researchers explore the mysteries and power of the MIND. UCI BioSci was the first institution worldwide to establish a department dedicated to neuroscience, launching it in 1964, five years before the Society for Neuroscience's formation. NBB continues to innovate, using techniques such as advanced imaging to probe the mind's extraordinary capacities. The faculty guides students in learning how the brain brings recollections, thoughts, emotions and consciousness into being.



## DEVELOPMENTAL AND CELL BIOLOGY (DCB)

**Thomas F. Schilling, Ph.D.,** *Chair*
**Kavita Arora, Ph.D.,** *Vice-Chair*
**Andrea Wiley,** *Department Administrator*

DCB examines compelling biological questions central to the BODY, such as ways cells repair themselves and regrow, how cancer originates and develops, what causes developmental disorders and more. As our researchers make discoveries to transform human health, they educate students on everything from the basic biology of stem cells to central nervous system injury and stroke, diabetes and use of stem cell-based screening to identify new drugs.

## MOLECULAR BIOLOGY AND BIOCHEMISTRY (MBB)



**Christopher C.W. Hughes, Ph.D.,** *Chair*
**Celia W. Goulding, Ph.D.,** *Vice-Chair*
**Bessy Varela,** *Department Administrator*

MBB delves into the secrets of the BODY at the molecular level, researching mechanisms underlying all fundamental biological processes. Just a few examples are the structure and synthesis of proteins and nucleic acids, cell signaling, and the organization and regulation of genes. MBB students learn from experts in such varied fields as immunology, virology and biochemistry. As our researchers continue to advance knowledge about the body, they are making vital findings related to autoimmune diseases, drug design, vascular biology and more.

## ECOLOGY AND EVOLUTIONARY BIOLOGY (EEB)



**James W. Hicks, Ph.D.,** *Chair*
**Catherine Loudon, Ph.D.,** *Vice-Chair*
**Marissa Reyes,** *Department Administrator*

EEB seeks to heal our WORLD through discoveries that will sustain the planet for our collective future. Our researchers' interests span evolution's molecular aspects, the science of environmental change, comparative genomics to probe the genetics of varied organisms, behavioral ecology, muscle and nutritional physiology and much more. EEB faculty, researchers and students travel the world to work with top scientists from distinguished institutions that, like UCI BioSci, are at the forefront of biological findings to solve the challenges facing the world we inhabit.

# Discover the Living World with BioSci

**You're invited to learn about discoveries shaping the future of mind, body and world health by coming to educational events held on campus throughout the year. BioSci faculty and special guests offer insights in a manner that's enjoyable and thought-provoking for non-scientists and scientists alike.**

**LECTURE SERIES**

## The Dean's Distinguished Lecture Series

**The Dean's Distinguished Lecture Series** was created in 2014 by Dean LaFerla with the goal of sharing with the public the important research being conducted at UCI BioSci. Held quarterly, these events have become one of the best examples of UCI's public outreach. Last year's lectures included:

**Charles "Charlie" Dunlop**
*"Scientific Entrepreneur Charlie Dunlop: Insight, Courage and Inspiration."*
March, 2018

**Marcelo A. Wood, Ph.D.**
*"Beyond Your Genes: Biology of Addiction."*
October, 2018

**Jennifer B.H. Martiny, Ph.D.**
*"Microbiomes: Invisible Arbiters of Human and Environmental Health."*
June, 2018

## The Allergan Foundation Lecture Series

**The Allergan Lecture Series** features distinguished scientists from UCI and other national and international institutions. Created with support from the Allergan Foundation, these lectures address current biological and medical topics relevant to the broader community.

**Kyriacos A. Athanasiou, Ph.D.**
*"Rebuilding Our Joints: Translating Discoveries in Biology and Engineering."*
May, 2018

For more information on upcoming topics, dates, times and locations, please visit **bio.uci.edu/events**

# CONNECTIONS TO THE FUTURE

**Achieving our mission at UCI BioSci depends on attracting talented undergraduates into the life sciences, nurturing them as they progress through academia, and helping prepare them for not only surviving, but thriving in their careers after graduation. We created the BioSci Mentor Program to help our students do just that.**

The program fosters connections between students and BioSci alumni with similar interests and fields of focus. Mentors help students expand professional connections, provide academic and career guidance, and offer them insights into the working world. Through connections that build relationships, students improve their abilities and skills through observation, assessment, and modeling. Mentors render support and advice to BioSci students, and share information about their own career paths. Student mentees gain knowledge and skills and insights that help guide their plans for the future.

Last year, student April Taniguchi and mentor Dr. Joseph Chen were matched in the program. April tells of how supportive her mentor has been. "Dr. Chen gives me great advice and is willing to help in any way." She continued, "I trust him. I continue to shadow him where he sees patients and in the operating room, and he put me in contact with other doctors so I shadow them occasionally as well." Dr. Chen, an alumnus of UCI BioSci and UCI School of Medicine, says he enjoys teaching and mentoring. "I had a great mentor at UCI who worked hard to guide me in the right direction. I have experience, resources and contacts and I make them available to my mentees. And through mock interviews and discussions, I help them organize their thoughts and clarify their goals. Being able to pass that and more along to future generations is very meaningful to me."

Some mentoring connections are completed in a year of the program. Some last more than a year. Others last a lifetime. All participants bring various competencies, backgrounds, needs, and teaching and learning styles. Through these professionally oriented relationships established through the BioSci Mentor Program, BioSci students have a strong foundation upon which to build to reach their dreams of the future.

To learn more about the BioSci mentor program, visit
**bio.uci.edu/mentor-program**

**MENTOR PROGRAM**

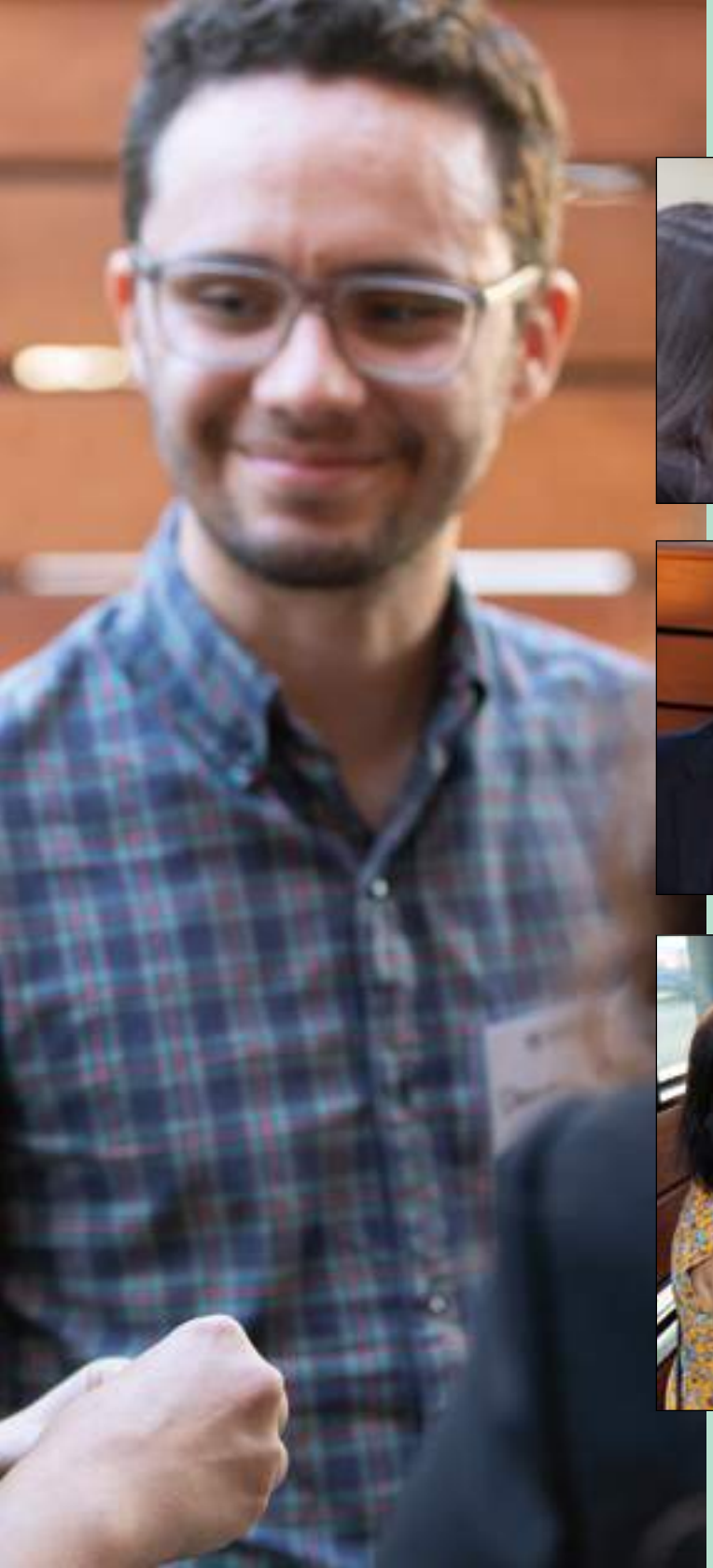
# JOIN THE **UCI BIOSCI AMBASSADORS** NETWORK

**BIOSCI AMBASSADORS**

**As members of a diverse and interconnected world, we share the responsibility of protecting and promoting the vitality of our minds, our bodies and our world. One way you can make a difference is by supporting the School's research and education mission as a BioSci Ambassador. The BioSci Ambassadors network brings together people who sustain and improve the School's elite standing through their dedication and generosity. They set a new standard of philanthropy through significant gifts to the Dean's Excellence Fund, while providing insights for school leadership and enjoying unique access to important activities.**

The BioSci Ambassadors are a mix of people working in or teaching the life sciences, including alumni, faculty and staff, and those who may not be trained in this field but are passionate about our mission, such as parents and friends. Everyone in this convivial group shares the commitment to advancing audacious discovery, world-changing research and the highest quality of education for the next generation of biologists.

As advocates for the School, BioSci Ambassadors are invited to participate in exclusive programming, lectures and networking events. Members can reconnect with old classmates, make new friends with like-minded people and learn about groundbreaking research in the life sciences.



## PLEASE JOIN US IN WELCOMING OUR 2018-2019 CHARTER MEMBERS:

Michael W. Aguiar '88 and Lisa M. Avallone '88
Linh J. Austin '93 and Beth E. Austin '93
Jack M. Fancher '72 and Donna K. Fancher
Tamara M. Fogarty '84 and Daniel H. Lamont
David M. Gardiner and Susan V. Bryant
Joanna Gerry-Paul '95 and David A. Paul
Barbara Hamkalo
Anthony A. James '73, '79 and Cynthia K. French '79, '93
Sinan Kanatsiz
Denis Kitayama '76 and Barbara Kitayama
Christopher L. Kitting '74
Kevin Liang '01 and Kathelyn Liang '00
Yvonne C. Liu and William Liu
William Loudon and Ruth Loudon
Lauren Billings Luhrs '03 and Keith Luhrs '02
Maria E. Minon '72, '76
Kathie L. Olsen '79
John E. O'Toole, Jr. '94 and Kristin Walter
Martin J. Porcelli '72 and Maria Porcelli
Rojon Sangani
Anna Schlotzhauer '93 and James Bergman '95, '04
Roderick N. Seamster '82 and Pamela C. Seamster
Greg D. Vacca '71 and Sheryl J. Vacca

*This list reflects gifts made to BioSci Ambassadors from June 1, 2018 - April 9, 2019.*

We invite you to learn more about becoming a BioSci Ambassador by visiting **bsa.bio.uci.edu**

**BioSci**
AMBASSADORS
**University of California, Irvine**

# PROFESSOR'S ZEST FOR **KNOWLEDGE** **INSPIRES** NEW FUND

**In 2018, we lost one of our most beloved and long-standing faculty members, Professor Gale "Morrie" Granger. Professor Granger arrived in 1965, the first year of classes at UCI, as a post-doctoral student in the lab of Professor John Holland. He was recruited to the Department of Molecular and Cell Biology as an assistant professor two years later, and he quickly moved up the ranks to full professor in 1973. As a faculty member, Professor Granger taught immunology at UCI for over 30 years, as well as a service course, the "Biology of Cancer" to non-majors, which was extremely popular. He was consistently rated as among the best instructors on campus, and won UCI's Outstanding Professor award on several occasions.**

In addition to his groundbreaking discoveries that shaped modern therapeutic modalities in arthritis, immunology and cancer, he displayed an unparalleled commitment to raising the next generation of scientists. His kindness, generosity, integrity and care were always apparent, and it is safe to say that he transformed the lives of many, many people. Morrie will be greatly missed.

The family of Professor Granger is also deeply affiliated with the UCI scientific community. His wife, Barbara Granger, received her bachelor's degree from UCI in 1968 and worked as a staff research associate for 33 years in the parasitology lab of Stuart Krassner. Both of Professor Granger's sons, Doug Granger and Steve Granger, earned their bachelor's and doctoral degrees from UCI in the 80s and 90s. Doug Granger was recruited back to the campus in 2016 via the UCI High Impact Hiring Program and is currently chancellor's professor and director of the Institute for Interdisciplinary Salivary Bioscience Research. His grandson, also named Steve Granger, is a graduate student in the Ph.D. program in the Department of Neurobiology and Behavior, studying in the laboratory of Professor Michael Yassa.

Barbara, Doug, and Steve, along with several former BioSci colleagues have, established the Gale "Morrie" Granger Endowed Fund to honor his legacy as a scientist, educator, mentor and friend. The award will benefit graduate students whose pursuits in the field of immunology mirror the enthusiasm, dedication, and thirst for knowledge that Professor Granger displayed throughout his life.

To make a contribution in Morrie's honor, you can do so by visiting **giving.uci.edu/Granger**.

## AWARDS IN THE MAKING


# A STUDENT'S **AWARD-WINNING** **FASCINATION** WITH THE BRAIN

**Keshav Balaji Suresh is the 2018 winner of the prestigious Carol and James McGaugh Award. Keshav was selected by a joint committee of faculty from the Center for the Neurobiology of Learning and Memory as well as the Department of Neurobiology and Behavior in the UCI School of Biological Sciences.**

A young man who says he really enjoys the research side of biology, Keshav is a neurobiology major with extensive lab experience. "I chose to come to UCI because I had a strong interest in biology and knew there were many opportunities to get involved in research," he says. "I decided to study neuroscience, because there is still so much we do not understand about the brain. And we know even less about various brain disorders." It was his fascination with the brain that led him to reach out to Professor Tallie Z. Baram. "Since joining her lab, I have worked closely with Professor Baram and Dr. Jessica Bolton of the Department of Pediatrics at the UCI School of Medicine, studying how stress affects brain development."

Dr. Bolton offers praise for Keshav's great initiative. "I've had the pleasure of mentoring Keshav since April 2017, and he has impressed us with his quick grasp of technical papers and his great follow-up questions that probe the theoretical underpinnings of the research," she says. Keshav's primary research project has been to analyze astrocyte activation in response to early-life stress. "He's made good progress working with little assistance on the project for over a year," adds Dr. Bolton. "He's very personable and easygoing, and he knows he wants to pursue scientific research in order to make a positive impact on the world."

**Keshav will be graduating in Spring 2019. He plans to pursue a Ph.D. in neuroscience.**

In memory of Carol McGaugh and to honor Professor Emeritus James McGaugh, this award was established in 2018 by daughter Janice McGaugh Morrow and son-in-law William Morrow. "We are extremely honored to establish this award in the Department of Neurobiology and Behavior in honor of my parents," says Janice. "Bill and I feel strongly about supporting students with a strong moral character, integrity and the desire to further their education. We have dedicated this award to my parents because of their own incredible dedication, mentoring and genuine love for UCI and the students since the day UCI opened its doors. We are a proud anteater family and are honored to establish this gift to the University in their name."

# RAPID **RESPONSE** TO THE UNEXPECTED

Agility is a hallmark of innovation and it is what the Dean's Excellence Fund is all about. Perhaps a research discovery requires quick funding to go further or an unforeseen situation is affecting a student's ability to pursue his or her studies. When you contribute to the Dean's Excellence Fund, you provide the dean the capacity to respond rapidly to unexpected situations, overcoming financial concerns that could be roadblocks to the School's mission. Please consider giving today to continue our rich history of advancing science and educating students who are at the forefront of making the world better.

For more information, visit **bio.uci.edu/give**

## DEAN'S EXCELLENCE FUND

# CONNECT WITH BIOSCI!

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UCI School of Biological Sciences is grateful to all our donors. Your gifts truly make a difference in the pursuit of our mission. The honor roll below is reflective of gifts and pledges made between January 1, 2018 - December 31, 2018. Thank you!

We make every effort to list all donors accurately. If, however, you find an error, please contact us at bio-development@uci.edu.

To view our longtime donor alumni and friends list, please visit bio.uci.edu/giving

# 2018 DONOR HONOR ROLL

## $1,000,000 +

American Cancer Society, Inc.
Kathleen Burke*

## $100,000 – $999,999

Alzheimer's Disease Research Foundation
BrightFocus Foundation
Fondation Leducq
Judy L. and James T. Goodrich '74
Melanoma Research Alliance
William D. and Janice McGaugh Morrow
Spencer Segura
Whitehall Foundation, Inc.

## $25,000 – $99,999

The Allergan Foundation
American Federation for Aging Research
Asterias Biotherapeutics
Justin P. and Suzanna M. Fong
Stephen Z. and Susan Gervin
Ionis Pharmaceuticals, Inc.
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Marisla Foundation
Vani and Lester Ng '94
Igal and Diane B. Silber
Ann Doyle Stephens '70

## $5,000 – $24,999

Anonymous
Mitchell and Deborah D. Brin
Barbara Granger '68
Kimberly D. and Douglas Alan Granger '84, '87, '90
Barbara Hamkalo
Diana Hendel '85
Thomas Nielsen
The Pew Charitable Trusts
PhRMA Foundation
Elizabeth Thomas '94 and Steven Granger '88, '98
Judith Wagner
Jane Woods

## $1,000 – $4,999

Richard and Michele Africano '78
Michael W. Aguiar '88 and Lisa M. Avallone '88, '88
Sameer Awsare '85, '89
Diane and Dennis J. Baker '79
D'Arcy Bolton
Salomeh Dabiri
Hung Y. Fan and Michael Feldman
Donna K. and Jack M. Fancher '72
Fine Science Tools (USA), Inc.
Daniel W. Gil and Deborah Sassoon
Lawrence H. and Sharlene E. Goodman
Arthur Green
Sudhir and Abha S. Gupta

## $1,000 – $4,999

Mona Hanouni '03 and John Joseph Tierney '01, '06
Alvin R. and Sandra Haveson Anthony
A. James '73, '79 and Cynthia K. French '79, '93
Barbara J. and Denis A. Kitayama '76
William and Yvonne C. Liu
William G. and Ruth Loudon
Lisbon McCarty '89
Maria E. Minon '72, '72, '76
Richard D. and Leigh S. Nelson
Blake Lee '75 and Carolyn Louise Neubauer '76
Kevin Vu Nguyen '01
Kathie Olsen '79
Ronald E. and Irene D. Perez
Maria and Martin Jay Porcelli '72
Thomas L. Poulos and Andrea J. Tenner
James A. and Patricia K. Roberts
Pamela C. and Roderick N. Seamster '82
Thomas C. and Marilyn P. Sutton
Marsha Swartz
Charles H. and Suzanne C. Turner
Craig M. and Angela L. Walsh
Kristin Walter and John Eugene O'Toole, Jr. '94
Kim S.'74 and Carl F. Ware '74, '79
Tamara Weinberger '84
Manuella O. and Michael A. Yassa '10

## $100 – $999

Desai Aashish
Lesley Abcede '00
Audrey Aghakuaui
Michael Alanes '00
Sindy J. and Mark David Alson '86
Narbeh and Nancy Toross Avedissian '95, '95
Quinton Crisp and Barry Michael Barnhill '89
Michael A. '95 and Arunya A. Bernardo '95
Victoria Bevacqua-Hewitt and Michael S. Hewitt '93
Mary M. and Mark K. Blake '77
Michael J. and Nancy A. Buchmeier
Brian Bui '10
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Yvonne Angela Campos '95 and Shawn H. Phillips '97
Aleta Cannon and Melvin B. Harwell
Virginia Carson
Ziad Chaudhry '05
Mary Chiakulas and Thomas Leland Gough '80, '80
Yoon H. Choe and Gyoung J. Park
Gloria Christensen '97
Jenny Chung
Sarah Coffey
Frank A. and Patricia A. Conner
Cheryl Conrad '86, '86
Nadeane Cooper
Timothy M. and Sandra Y. K. Cotter '83
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Leo Cummins
Michael Cumsky
James A. Cushing and Joyce Weatherford

## $100 – $999

Sharon Dana ’84
Kevin J. and Olga M. Davy
Lisa D. ’84 and
Mark W. Deseran ’84, ’84
Matthew O. Dolich and
Bel Barker
Jason Duko
Michael and
Susan Koriner Eckhardt ’83
Ramez Eskander
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