UCI School of Physical Sciences

Strategic Plan

Pioneering Research to Solve the Greatest Problems

ps.uci.edu

MISSION: The UCI School of Physical Sciences discovers scientific breakthroughs that will reshape basic and applied research for generations to come. The school achieves this by asking hard questions; setting inspiring, visionary goals; and driving interdisciplinary research to chart new territory. We discover cutting-edge solutions to the world's most pressing problems to produce modern scientists, equipped with a premier education, an inherent drive to unearth new knowledge, and superior skills to lead the technological revolutions of the future.

FLAGSHIP PROJECTS

1 Science Transforming Health

2 Understanding Our Universe

3 Designing Solutions for Global Environmental Change

Snapshot of the UCI School of Physical Sciences

The UCI School of Physical Sciences has produced transformational research that has advanced global society, health, and the vitality of our planet. Our track record includes many celebrated achievements by our students and faculty, including the innovative research that led to two Nobel Prizes – one in Physics for the discovery of the neutrino and one in Chemistry for the discovery of the catastrophic role that chlorofluorocarbons play in depleting the ozone layer.

Our current flagship projects directly address some of today's most fundamental and existential problems and strive for impactful solutions including improved detection and treatment of cancer, universal clean drinking water, viability of life on other planets, and other key scientific questions that profoundly impact humankind.

The UCI School of Physical Sciences is renowned for its innovative approach of bridging fields and forging interdisciplinary collaborations to pioneer new paradigms of study. This out-of-the-box thinking and teamwork nurtures a more comprehensive approach to problem solving, dramatically accelerates progress, prepares future generations of scientists to deeply embrace the potential of cross-disciplinary collaborations, and ultimately yields more innovative breakthroughs. By advancing both basic science and innovation towards products and services, we develop the backbone for exponential improvements to our quality of life and economic vitality for generations to come.

The UCI School of Physical Sciences first opened its doors in 1965 with 212 undergraduate students, 55 graduate students, and 25 faculty members across the Departments of Chemistry, Mathematics, and Physics & Astronomy. Only 50 years later, we have over 2,000 undergraduate students, 500 graduate students, and 150 faculty members. Earth System Science began as a graduate program in 1989, with the Department and its Ph.D. program formalized in 1994. All of our departments have National Research Council rankings above the 90th percentile, and students and faculty are regularly recognized for their outstanding contributions to the sciences. Since the School's founding, 14 faculty members have been elected to the National Academy of Sciences and 11 have been elected to the American Academy of Arts and Sciences.

Fundraising Goals

The UCI School of Physical Sciences seeks a historic philanthropic commitment – a school naming gift. Funding of this magnitude will empower the School of Physical Sciences to elevate its strong academics and research to elite levels of excellence. A naming gift would ensure that we are able to grow in critical areas, most prominently featured and explained further in our strategic goals, enabling us to hire the most dynamic and modern faculty to support our student and research growth; providing premier research facilities; attracting and supporting the best students, and delivering comprehensive innovation through intellectual property protection and commercialization.

A naming gift would honor the intrepid spirit and interdisciplinary innovation at the heart of our school. Additionally, the impact of a naming gift for Physical Sciences at UCI will have the ability to completely transform our School. Our 50 years of precedence has established a prestigious level of scientific tradition while allowing great flexibility in shaping future outcomes for our school.

VISION: Develop breakthrough solutions and transformative insights to the most existential challenges and exciting questions of our time, including health care, climate change and advancing humanity through a deeper understanding of the world around us.

Science Transforming Health

How do we predict cancer tumor growth with mathematics? Can we crack the code of the human immune system and program it to defeat HIV? Can someone easily and affordably test at home for kidney disorders using biosensor technology? How do we develop artificial antibodies to defeat disease?

Mathematics and the physical sciences are becoming invaluable 21st century biomedical tools. Since our earliest breakthroughs, the UCI School of Physical Sciences has discovered original science to understand the intricacies of disease in order to alleviate human suffering.

BIOMEDICAL BREAKTHROUGHS

The UCI School of Physical Sciences is trailblazing new pathways in biomedical research, producing complex and important breakthroughs central to the future of health care. We go beyond traditional science with innovative solutions including creating artificial antibodies with mechanical energy that can show how proteins might be chemically manipulated to treat human disease. We also developed a snake anti-venom that sidesteps current limited, dangerous and unsustainable practices by producing an entirely new biomaterial that surpasses conventional anti-venom.

PERSONALIZED MEDICINE

The UCI School of Physical Sciences mathematicians use quantitative approaches, coupled with clinical and experimental data, to critical solutions to public health issues, both locally (in Orange County and California) and globally. While molecular and medical research continues to advance our understanding of diseases, the enormous complexity underlying chronic human diseases still poses many challenges, including the evolution of drug resistance – a major reason why most cancers cannot currently be treated successfully. We created methods to measure treatment of the most common adult leukemia with modern drugs that have recently become available. We developed key parameters that characterize treatment for individual patients, and used the information to make patient-specific predictions about how long the drug can be effective before observing relapse due to resistance. If applied in clinical settings, such methods can allow doctors to better tailor treatment approaches to patients' needs, and thus improve the long-term outcome of therapy.

IMAGING AND DIAGNOSTICS

Chemists, mathematicians and physicists are the vital trifecta in creating world-class imaging and diagnostic tools. History shows how lasers, through physics, transformed the ways we treat disease. Nanodevices are the future and our faculty are leading the way. Chemists are engaging in multi-disciplinary collaborations around campus to design and build the next generation of sensors, specifically the enzymes and receptors that recognize disease-associated molecules. Together with bio-engineers, they are developing implantable sensors that continuously monitor insulin levels to help type 1 diabetics better manage their disease. With colleagues from biomedical engineering, electrical engineering and computer science, they are inventing a new type of antibody, capable of being lit up through the skin when reaching cancer cells. The team of chemists also works on urine-based sensors for various cancers, which would be analogous to the home pregnancy test. With physicists, they are making exquisitely sensitive devices that listen in on a single enzyme at work.

BIG DATA FOR MEDICINE

The UCI School of Physical Sciences chemists and mathematicians inject quantitative analyses to biologial systems, working to understand disease at the core of its fundamental mechanisms. We use data generated by biologists to measure the course and progression of a disease, creating the legend to the proverbial map. By applying mathematical rules and algorithms to small and large-scale data, we have discovered new ways to interpret sequences and codes of disease. Our visionary evaluation and study of atoms and their bonds, along with the mathematics of elements, will have a significant impact on further understanding our genetic makeup.

PLANETARY HEALTH

New extremes in climate and changing ecosystems are allowing infectious disease to expand into new areas, increasing the vulnerability of people living California, our nation, and across the world. Mosquito and tick-borne diseases such as West Nile, Zika, and Lyme are increasing in the U.S., according to a recent report released by the Centers for Disease Control. Concurrently, expanding agriculture and urban development are modifying air and water quality, with important consequences for ecosystem services. Intensifying heat waves may trap atmospheric pollutants near the surface, amplifying health risks associated with physiological responses to extreme heat. There is a critical need to study interactions between these different drivers and to predict future changes in disease burden over the next few decades in order to improve health outcomes around the world and enable the design of more effective health care solutions.

CENTERS OF EXCELLENCE

Existing programs and institutes which currently support Science Transforming Health

Center for Complex Biological Systems
NSF-Simons Center for Multicell Fate
Center for Chemical and Structural Biology

2

Understanding Our Universe

Is there life on other planets, and if so, what is its physical and chemical make-up? How do we build a quantum computer? What secrets of the universe will the largest telescopes reveal? Where did we come from?

The founding dean of the UCI School of Physical Sciences, Frederick Reines, was awarded the Nobel Prize in Physics in 1995 for the discovery of a new elementary particle of nature called the neutrino. Prior to his work, this particle was said to be undetectable, a ghost. Reines set out to find it precisely because "everybody said you couldn't do it." His bold spirit of exploration and ingenuity still guides our school today as we strive to answer the most profound questions in cosmology, transform computing with new quantum materials, and discover habitable worlds throughout the Galaxy.

REVEALING THE UNSEEN UNIVERSE

Following Reines' work, we now know that neutrinos and the atoms of the periodic table make up only 15% of the matter in the universe. The rest is composed of some as-yet-unknown particles, provisionally called "dark matter." Dark matter makes neutrinos look like extroverts in the sense that it is even more elusive, but our students and faculty are working to unmask its identity with a wide variety of tools ranging from telescopes scanning the skies to atom-smashers probing the smallest structures of matter. Research in the UCI School of Physical Sciences is characterized by a high degree of *interdisciplinary* work, creating collaborations among astronomers and particle physicists to theorists and experimentalists, to gain new insights about what the universe is made of, its earliest origins, and its ultimate fate.

SCANNING SKIES & SMASHING ATOMS

In our quest to decipher the mysteries of the universe, our scientists make use of the world's most powerful laboratories and observatories. UCI's physicists and astronomers play leading roles in charting the scientific direction of facilities including the Large Hadron Collider in Switzerland, the Super-Kamiokande Neutrino Observatory in Japan, the Hubble Space Telescope orbiting the Earth, and many more. Our membership in the University of California Observatories puts UCI astronomers in the driver's seat at the twin ten-meter telescopes of the Keck Observatory in Hawaii, currently the most powerful optical telescopes on Earth. We are actively involved in developing the next-generation Thirty Meter Telescope and shaping the science mission of NASA's next flagship observatory, the James Webb Space Telescope.

HARNESSING THE QUANTUM WORLD

The same intrepidness that led to our groundbreaking research connecting the cosmos to the quantum realm inspires us to create new materials that will redefine the modern world. Condensed matter physics gave us transistors, solid-state lasers, fiber optic communications, digital imaging, and massive data storage that enabled the information technology revolution. Condensed matter physicists and solid state materials chemists are working on the next revolution that will bring about quantum computers and molecular scale electronics. Our goal is to harness the strange laws of quantum mechanics to redefine "normal" technology, thus transforming everyday life. We are discovering new materials, in which normally fragile quantum states are unusually robust. These materials may be the backbone of future quantum computers, millions of times faster than the fastest modern supercomputer. Quantum computers will not only solve many outstanding problems in science and technology, but will also enrich human perception of reality by expanding it into the quantum realm.

CENTERS OF EXCELLENCE

Existing programs and institutes which currently support Understanding Our Universe

Center For Cosmology
CaSTL Center: Chemistry at the Space-Time Limit
Irvine Materials Research Institute (IMRI)

3

Designing Solutions for Global Environmental Change

How will our coastal communities adapt to the imminent rise in sea level? Can big data and statistics be used to understand social behaviors surrounding adoption of renewable energy technologies? How do we develop algorithms to track pollutants and chemical techniques to identify new pollutants to ensure a clean environment for us and for future generations? How do we provide solutions to the global challenge of shortages in clean water?

The 20th century saw immense widespread technological and mechanical advances, but the benefits of these inventions are diminished by negative consequences affecting human health and our environment. The UCI School of Physical Sciences is home to the renowned Department of Earth System Science (ESS), the nation's first department on a college campus established to study climate change. The visionary thinking and planning that led to this unique and highly successful department permeates studies within the UCI School of Physical Sciences to quantify changes to our environment and discover ways we can adapt. Notably, the Department of Chemistry has more atmospheric chemists than any other university department in the nation. The ESS and Chemistry faculty regularly influence global policy through important contributions to the IPCC, National Academy of Sciences, and other agencies. They also work directly with local communities to develop research-directed solutions based on community needs.

AIR QUALITY

The UCI School of Physical Sciences is home to atmospheric research, which started with Sherry Rowland's Nobel Prize-winning discovery that chlorofluorocarbons (CFCs) are implicated in depletion of the ozone layer. Today, our faculty continue to lead international research efforts to better understand processes leading to air pollution. A particular emphasis is the role of aerosol particles on human health, climate, and the environment. Our researchers are not only working on measuring air quality in our local communities, they also work with federal and corporate partners to develop policies to protect our communities from the changing environment.

CLEAN ENERGY

Scientists in the UCI School of Physical Sciences study and develop cutting-edge technologies to produce energy that is clean, renewable, and affordable. Chemists are finding new ways to harvest sunlight with cheaper and more efficient solar panels made from abundant elements like iron and copper. Others are taking part in a nationwide U.S. Department of Energy-funded program to generate fuel by mimicking natural photosynthesis using the most ubiquitous and inexpensive elements on the planet. Instead of building plant tissue like its natural counterpart, technologies that mimic plants could drive analogous chemistries to generate fuel for our society without releasing chemicals that harm our planet. Researchers in physics and chemistry are developing membrane materials that may one day enable more efficient technologies to convert clean fuel into electricity and at efficiencies that surpass internal combustion engines. This can occur through use of battery electric and hydrogen fuel cell vehicles. The largest and most advanced private fusion company in the world, TAE Technologies, was founded on ideas developed in the Physics & Astronomy Department and it continues to benefit from research done at UCI. Together we are working to provide a revolutionary source of clean energy to solve one of the world's biggest challenges.

WATER SHORTAGES AND SURPLUS

Global shortages in clean water will be a growing concern in decades to come and the UCI School of Physical Sciences is spearheading groundbreaking research in desalination. Chemists invented a new solar cell that uses water as a semiconductor and are leveraging it to develop plastic tubes where sunlight directly desalinates salty water. This research uses numerical models that couple semiconductor device physics and chemical kinetics to advance the understanding and limitations of this new solar energy conversion process. Physicists are pursuing technologies to desalinate water using advanced nanopore technology. These concepts could deliver potable water for the nearly one billion people worldwide who need it most. Our planet also has imminent challenges with excess water as Antarctic glaciers slide ever more quickly into a warming sea. Our glaciologists are renowned for measuring the rate at which ice sheets are melting globally and how this will affect sea levels. Coastal communities all over the world will be damaged by rising sea levels, and our experts are working on a warning system.

CENTERS OF EXCELLENCE

Existing programs and institutes which currently support Designing Solutions for Global Environmental Change

AIRUCI
Center for Solar Energy
UCI Oceans
Water UCI
Center for Geospatial Data Solutions

Strategic Goals

1. REVOLUTIONIZING THE STUDENT EXPERIENCE.

In the next several years, the Departments of Chemistry, Mathematics, Physics & Astronomy, and Earth System Science are revamping both the undergraduate and graduate curriculum in order to better incorporate student participation into faculty research, and provide superior education that will equip graduates to succeed in modern science.

Changing the way we teach our students would benefit from an injection of capital though endowed scholarships and fellowships in each department to further energize our student base in addition to hiring more faculty to teach our classes. For departments particularly targeting professional master's degrees programs, providing for recruitment fellowships would allow student enrollment to immediately expand and give a foundation for the program to be sustainable.

a. Expanded degree offering in Mathematics. Our department of Mathematics is addressing the need for rapidly expanding collegiate mathematics by vertically integrating an undergraduate and graduate degree in a new 4+1 program which offers a bachelor's and master's combined degree in five years. This offers students a competitive edge among their peers should they choose to pursue a doctoral degree or should they choose to directly enter the professional world. The 4+1 program addresses a current gap in our traditional degree offerings which will provide a higher level of education with a broader research experience.

Academic and industrial employers are seeking researchers with a broad base of technical prowess and ideas. It would clearly be advantageous for a mathematician to have a firm grasp on algorithmic, statistical and artificial intelligence methods and be ready to deploy them in specific application domains. Thus, a new mathematics major with a concentration in data science launched in Fall 2018. This new concentration is unique as it combines the rigorous mathematical training with exposure to data-oriented areas and applications of statistics and computer science. Next in the pipeline is starting up an innovative master's program in data science, which would be a cross-disciplinary program between Mathematics, Computer Science and Statistics departments, possibly with Economics and/or Business. Further down the road, a joint Ph.D. program in data science will start, which would be cross schools. As a propelling step, an interdisciplinary Center in Algorithms, Combinatorics and Optimization is set to launch in academic year 2018-2019, which will support synergy efforts of the faculty in Mathematics, Computer Science and Business School.

b. Expanded degree offerings in Earth System Science (ESS). Starting in Fall 2018, the department of will offer a new cross-disciplinary undergraduate degree in Environmental Science and Policy. This new major integrates scientific understanding of environmental problems with an understanding of the socio-economic causes of the problems, and the ways environmental planning and policy may successfully intervene. Like the department of Mathematics, ESS will also develop a Master's degree to bolster applicant quality for its growing doctoral program.

c. The Physics & Astronomy Department has recently introduced a new major in Applied Physics that allows students the flexibility to create an interdisciplinary experience across any STEM field built around a core curriculum in physics.

d. The Department of Chemistry has introduced a number of changes to the program to make it more attractive and help improve retention of chemistry majors. The most important change within the chemistry major (Environmental Chemistry, Medicinal Chemistry, Synthetic Chemistry, Nuclear and Radiochemistry, Chemical Biology, Theoretical and Computational Chemistry) that are well aligned with the current research in the Chemistry Department. In addition, new exciting courses have been created for our students, including lower division courses on Majors General Chemistry, upper division courses on Environmental Chemistry, Writing for Chemists, Senior Thesis in Chemistry, Computational Chemistry, and Computational Chemistry Laboratory, and several new graduate-level courses . In the future, we will further expand our course offerings and expand the number of available tracks to better represent other research thrusts in the department. For our graduate students, will we focus on the improvement of the graduate student pro-fessional training to help them better prepare for a broad array of 21st century careers.

SUGGESTED INVESTMENT WOULD BE ENDOWED STUDENT SUPPORT FOR $5M AND FACULTY SUPPORT FOR $5M. $10M TOTAL.

2. STRENGTHENING OUR INFRASTRUCTURE

As the Physical Sciences lead the march into future scientific inquiry, we acknowledge that we need to re-design our spaces to be as functional, interactive, and interdisciplinary as possible. We also need to equip our School with space to manage its growing needs. A new Mathematics and Computations Building would alleviate overcrowding in certain buildings, but would also would allow for new interactive spaces for our students and faculty to come together. Making current spaces more efficient and user friendly is also high on our list of priorities, some of which we are already undertaking in recent renovation projects.

Augmenting current space and expanding out of our current physical capacity is necessary for the continued growth and enhanced educational experience of our students and researchers. With the expected opening of the new Interdisciplinary Science Building in Spring 2020, the UCI School of Physical Sciences will have the opportunity to assign spaces to faculty that presently or prospectively collaborate with the Schools of Engineering and Computer Science. While this speaks directly to Physical Sciences' mission and vision, we require more than just a percentage of this allotted space.

a. Transformative Mathematics Building – With our rapidly expanding fields of study, it makes sense to add a new building to the Physical Sciences' quad. A new Transformative Mathematics Building would allow us to achieve many objectives: The exponential increase in demand for mathematics education campus wide and the infusion of data science and computational methods across many of UCI's majors, a central hub for the teaching and research of academia's most integrated subject matter is necessary.

b. Renovations – In addition to new space, augmenting current spaces to outfit them for the 21st century will also allow us to recruit and retain premier students and faculty. Our founding school building, Rowland Hall, has many areas that could be improved including new conference spaces, lab overhauls, communal spaces for faculty and students to converge. Current renovations in the basement of Rowland Hall have already begun and the continuation of improvements throughout the physical sciences buildings will be key in assuring collaborative environments for research and teaching.

SUGGESTED INVESTMENT FOR A NEW BUILDING WOULD BE APPROXIMATELY $50M AND SUGGESTED INVESTMENT FOR RENOVATING EXISTING SPACES WOULD BE $ 5M - $10M. $55M-60M TOTAL.

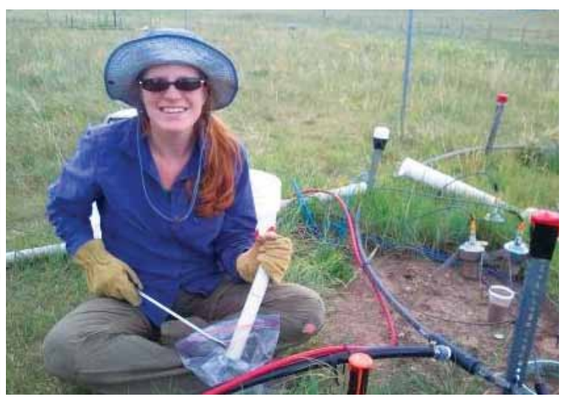
3. SCIENCE ADVOCACY AND PARTNERSHIPS WITH OUR LOCAL, NATIONAL, AND GLOBAL COMMUNITY

Developing partnerships with a variety of key organizations would add immediate and lasting value to our students and faculty. Partnerships would likely exist in two different paradigms – one geared toward better preparing our students to enter the marketplace by building direct paths to industry through internships; and the other would be geared toward serving community needs through research and science (and math) advocacy, and supporting the expansion internship opportunities, solutions-driven centers, and public events and programs.

a. Accessing Industry Through Internships –
In order to prepare graduates to enter into a variety of different fields, departmental and school leadership across the school recognize the need to facilitate direct relationships with employers. This is seen through increasing participation in department-hosted industry networking events which invite external organizations onto campus to meet our undergraduate and graduate students. The Department of Physics & Astronomy is going one step further and looking to integrate elements of industry into the curriculum. Current conversations involve creating company tracks within the major that will prepare our under-graduates to enter different sectors that seek physics majors as employees. Examples of these tracks include applied physics for aerospace, applied physics for entrepreneurship, applied physics for fusion, etc. The Physical Sciences Undergraduate Mentor Program connects current undergraduate students with business and science professionals. The goal is to expose students to career and networking opportunities. Mentors coach students in career and academic decisions. We hope to recruit more mentors for this program and build on the partnerships with their employers for internship opportunities.

b. Translating Our Communities' Needs into Research

i. Spearheaded by the Ralph J. and Carol M. Cicerone Chair in Earth System Science, Professor Jim Randerson is creating a center for engaging the citizens of Southern California in efforts to build a sustainable future. The Geospatial Data Solutions Center's goal is to create concreate and actionable information for regional stakeholders to improve climate change, environment and health outcomes in Southern California. Initial themes include methane mapping, land and ocean remote sensing, sea level rise, and climate adaptation for cities, agriculture, and water infrastructure.



ii. When the news broke in late 2015 about the ruptured Aliso Canyon natural gas reservoir, Professor Don Blake sprung to action. The leak was declared the largest methane leak in U.S history and the invisible plumes filled homes in the Porter Ranch area with fumes, leading residents to report symptoms such as head-aches and nausea. Blake and his colleagues collected air samplings in canisters on the ground and in flight. The canisters were then brought back to the UCI lab for analysis. The team calculated that over the 112-day event, the well released about 97,100 tons of methane, as well as 7,300 tons of ethane. Those amounts are equal to 24% of the methane and 56% of the ethane released in the entire Los Angeles Basin over a full year. Blake and his colleagues are called upon regularly when natural disasters occur (2010 Deepwater Horizon, 2012 Elgin Rig blowout in North Sea, etc).

iii. In 2014, two of the leading scientists in cancer research – Larry Overman from UCI and David Horne from City of Hope, partnered with a biotech entrepreneur and physician to create Novonco Therapeutics. The company has since secured sponsored research and patent licensing agreements to develop three highly-targeted platforms based on novel small molecules. These first-in-class therapies demonstrate potent anti-cancer properties.

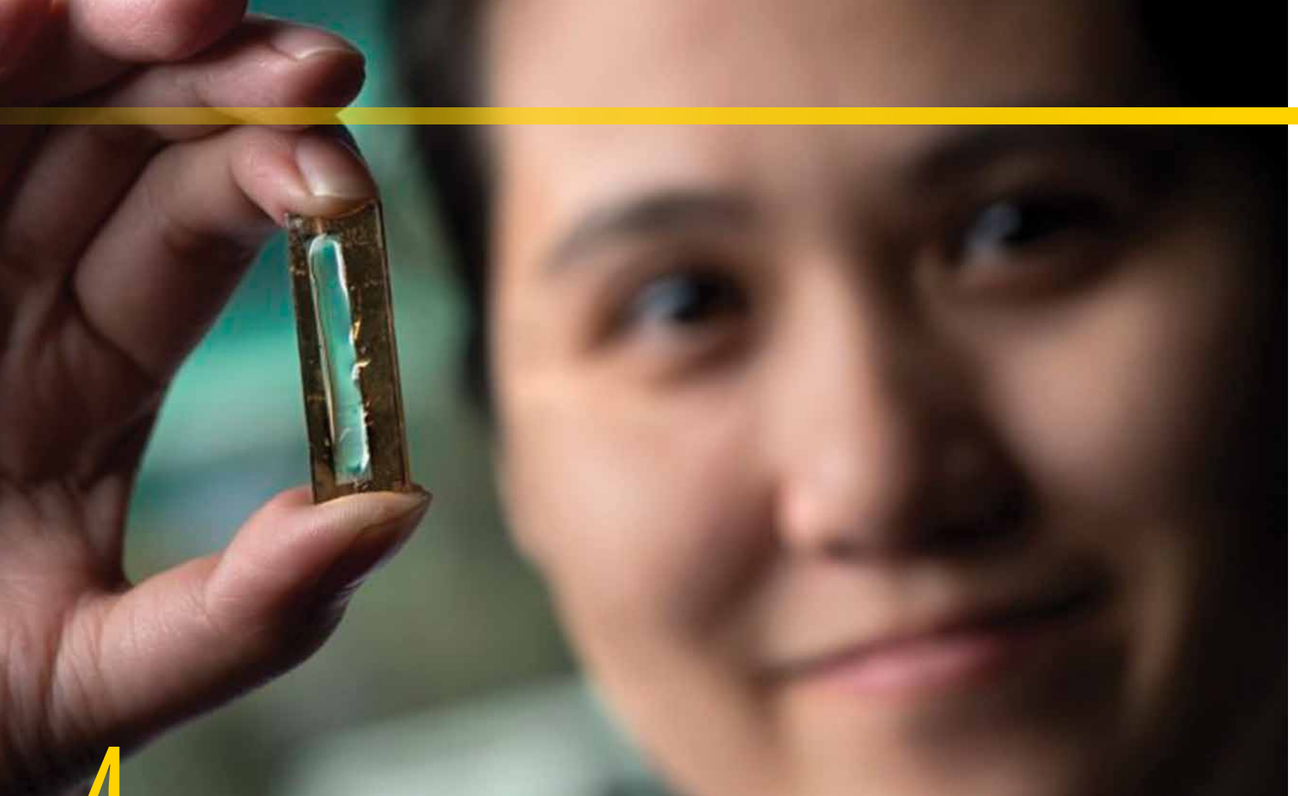
We would like to form more partnerships with the community as well as health centers and hospitals to better understand their needs and assist in providing personalized care and solutions to problems that arise.

c. Science and Math Advocacy

Public Events: Our school regularly offers free lectures for the public to learn about important research happening in the UCI School of Physical Sciences including the annual Breakfast Lecture Series, Adventures in Physics, Reines Lecture Series, and others. Through these events, we inform our community about relevant topics such as climate change, sea level rise, drug design, astronomy and more. We hope to increase the number of public lectures and add interactive components such as lab tours and hands-on experiments to expose our community to more of the research happening at the school.

K-12 Mathematics Education: Our math department leads various programs to improve mathematics education among K-12 students including Math Circle and Math CEO. Math CEO is a free enrich-ment program that hosts weekly math enrichment sessions and STEM focused field trips for middle-school students on the UCI campus, as well as bilingual workshops with UCI admissions staff for their parents to learn about college opportunities. We hope to create more opportunities for under-served K-12 students to have access to STEM education.

SUGGESTED INVESTMENT $1M-$5M+ POSSIBLE FUNDING: PAID SCHOOL INTERNSHIPS OR STIPENDS, ENDOWED FUNDING TO PERMANENTLY INSTITUTIONALIZE OUTREACH PROGRAMS AND EVENTS.



4. SCIENCE FUELING TECHNOLOGY: ENTREPRENEURSHIP, COMMERCIALIZATION, AND INTELLECTUAL PROPERTY TRANSFER

In the past five years, the UCI School of Physical Sciences has made great strides to move faculty research out of the lab and into the marketplace. Alongside, and in addition to, basic science and mathematics studies, Physical Sciences produces applied science and mathematics advances which fuel new company formation and large industry projects. Our faculty and students have formed numerous new companies over the last 20 years and many of our graduates are employed in a range of entrepreneurial activities. Well over half of our alumni work in industry with careers applying their science and math education to current cutting-edge problems.

Through the thoughtful investment of the Beall Family Foundation, Physical Sciences has benefited from proof-of-concept funding program and through this funding, individual faculty have found excellent industry collaborations. To foster continued growth in this area, Physical Sciences would like to offer different incentives to our faculty to assist them with taking their research from lab to market.

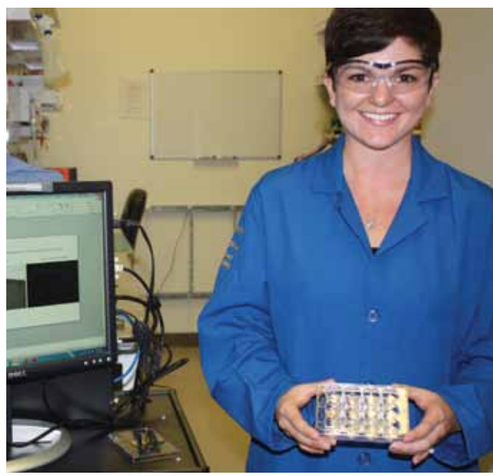
SUGGESTED INVESTMENT WOULD BE ENDOWED INNOVATION FUNDS WHERE FACULTY WOULD APPLY FOR PROJECT FUNDING. $5M. FUNDING LEVELS CAN EXIST AT PROOF-OF-CONCEPT THROUGH PROOF-OF-PRODUCT.

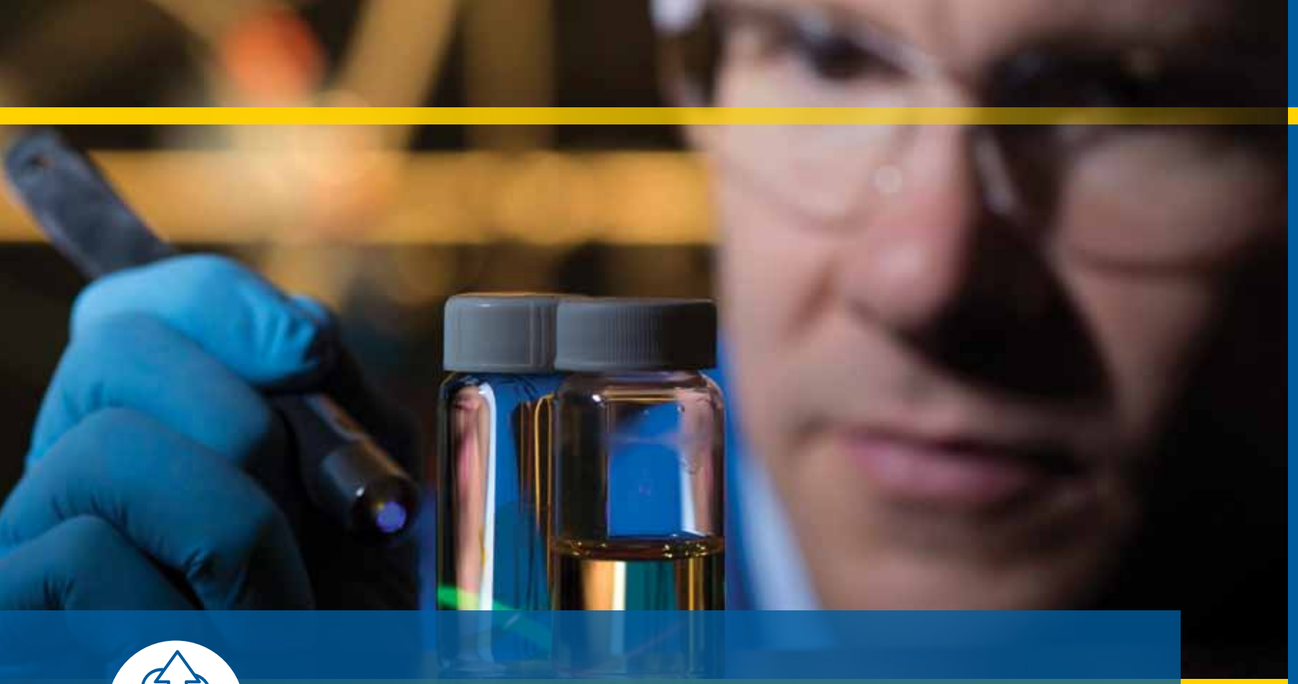
5. INSTITUTIONALIZING OUR FLAGSHIPS

Promoting faculty collaboration through institutionalizing our flagship projects. The work done through our flagship projects was a natural convergence of work through inter-disciplinary dialogue among faculty. We want to take this approach and elevate it even further by incentivizing our faculty to continue to work together. Through the creation of discretionary endowed funds in each flagship project, Physical Sciences will be able to invest in faculty research in an entirely new way. Faculty whose work fall into the flagship projects can seek additional funding for research projects from the project's respective endowed fund. In addition, there is an opportunity to create endowed chairs in areas of convergence and/or under each flagship's larger project.

Incentivizing our faculty to work together more often with endowed discretionary support within the flagships projects. Offering an endowed discretionary fund in each flagship would offer new funding streams to faculty, which would be renewable on an annual basis. Directing funding within the framework of our flagship projects would also open possibilities for inter-disciplinary endowed chairs and graduate student fellowships – of which there are very few on our campus. For example, an endowed chair in "Transformative Science and Health" could be used to recruit new faculty that would add significant value to one of our flagships but would not be limited to a singular academic discipline.

SUGGESTED INVESTMENT FOR FLAGSHIP ENDOWED FUNDS IS $5M FOR EACH OF THE THREE FLAGSHIP PROJECTS. ENDOWED CHAIRS WOULD BE A $2M MINIMUM.





Fundraising Summary

With your support and generosity, funding would support our strategic goals and benefit the future of UCI for generations to come.

Reinventing the Student Experience: Suggested investment would be endowed student support for $5M and faculty support for $5M. $10M total.

Expanding Our Footprint: Suggested investment for a new building would be approximately $50M and suggested investment for renovating existing spaces would be $ 5M - $10M. $55M-60M total.

Partnering With Our Local, National, and Global Community: Suggested investment $1M-$5M+.

Science Fueling Technology: Suggested investment would be endowed innovation funds where faculty would apply for project funding. $5M.

Institutionalizing Our Flagships: Suggested investment for flagship endowed funds is $5M for each of the three flagship projects. Endowed chairs would be a $2M minimum.

Flagship endowed funds: Suggested investment $5M for each of the three flagship projects: Science Transforming Health, Understanding Our Universe and Designing Solutions for Global Environmental Change.

Endowed chairs: Suggested investment $2M minimum.

Endowed flagship funds: Suggested investment $15M minimum for the endowed flagship funds.

Endowed chair in each flagship project: $6M minimum.

School naming gift total: $85-100M

UCI School of Physical Sciences

UCI School of Physical Sciences

180 Rowland Hall
University of California, Irvine
Irvine, CA 92697-4675
(949) 824-0218

ps.uci.edu/research