SAN DIEGO STATE UNIVERSITY

2017-2018 RESEARCH HIGHLIGHTS

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Leadership Starts Here

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Last year was an exciting year for San Diego State University. We welcomed President Adela de la Torre, SDSU's ninth president and the first woman to serve in the position permanently.

A UC Berkeley trained economist, President de la Torre joined us from UC Davis where she secured more than $19 million in external funds to support educational outreach, recruitment, health education and training programs. This includes a $4.8 million grant from the U.S. Department of Agriculture's National Institute of Food and Agriculture to study ways to combat obesity in children of Mexican heritage.

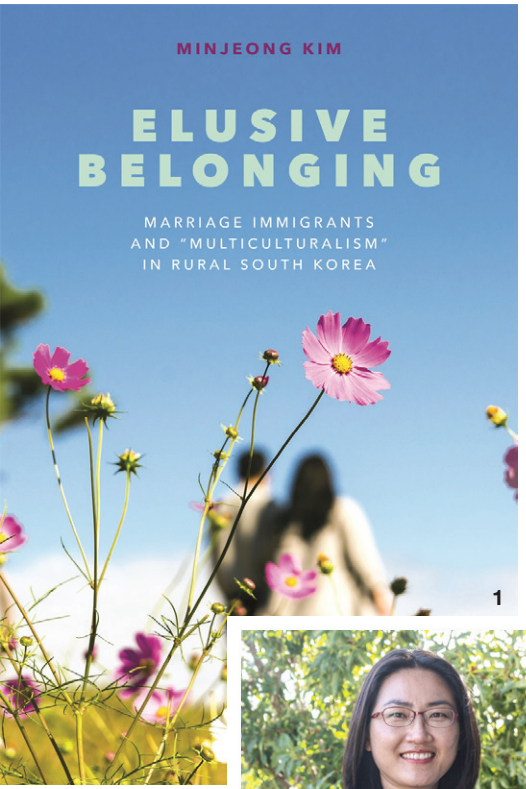
President de la Torre is a strong advocate for research, educational opportunities for all students and community engagement. Her vision is that working together SDSU will be recognized for graduating the global citizens, compassionate leaders, and ethical innovators who will impact the community and help solve the world's greatest challenges.

The research of our faculty highlighted in this brochure takes place in South Africa, Mexico, the Imperial Valley and throughout California. We profile faculty who are tackling significant issues including cancer, cyber threats, restorative justice, HIV, immigrant communities, sustainable agriculture, and autism. Their research provides laboratory and field experiences for undergraduate and graduate students while their novel discoveries and approaches help to understand and resolve regional, national and international problems.

Last year, SDSU faculty received 756 awards and $135 million to support their research. A complete listing of 2017-18 grants is available here: https://www.foundation.sdsu.edu/pdf/about_2017_18_awards_listing.pdf.

Stephen C. Welter
Vice President for Research and Dean of Graduate Affairs
San Diego State University

Cover: A *milpa* field in Ixpantepec Nieves, an SDSU field study site in Oaxaca, Mexico. See page 10/11. Photo by Changqi Liu



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Korean Immigrant Communities on the U.S.- Mexico Border

MINJEONG KIM

Sociology

The international expansion of multi-national corporations and the bi-national economic operation on the U.S.-Mexico border has facilitated the growth of immigrants who are from neither border country but have trans-border lives.

Ethnographer Minjeong Kim investigates the conditions of migration, settlement, and incorporation of immigrants who moved to a bi-national border region from a third country. Her case study of Korean immigrant border communities evaluates how co-ethnic ties, ethnic identity, and political context affect their integration process. This population at the U.S.- Mexico border includes employees of Korean multinational corporations and the retailers who cater to Mexican border-crossing consumers.

Dr. Kim's work is supported by the National Science Foundation and will help us understand the impact of contemporary economic trade and transnational investment on international migration.

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1 Dr. Minjeong Kim is the author of *Elusive Belonging: Marriage Immigrants and "Multiculturalism" in Rural South Korea* (2018). Photo by Sungwoo Ahn

2 Dr. Kim and sociology graduate students. Photo by Kyong Rang Lee

Putting the Precision in Precision Medicine

JEFFREY GUSTAFSON

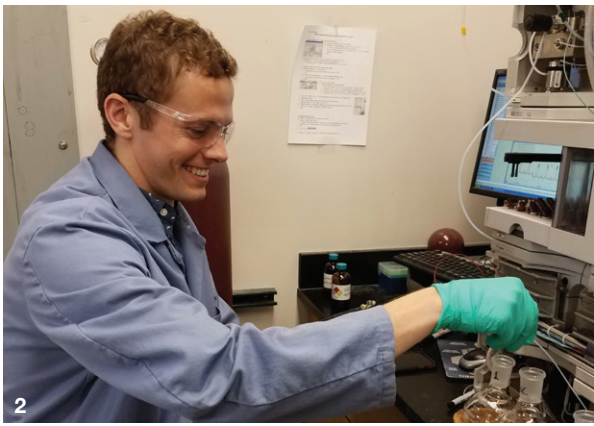
Chemistry & Biochemistry

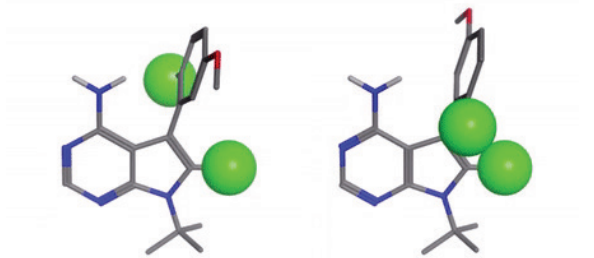
Many essential cellular processes are regulated by signaling proteins called kinases. Overactive kinase enzyme activity leads to uncontrolled cell growth and is involved in the onset of numerous cancers. Kinase inhibitors are at the center of both the precision and personalized medicine revolution in oncology. The drawback to most kinase inhibitors is a lack of selectivity among other kinases, leading to off-target side-effects that often lead to discontinuation of treatment.

Dr. Jeffrey Gustafson and his research team are developing new strategies to increase the selectivity of kinase inhibitors. They leverage an innate, but latent, molecular handedness that is present in most drug-like molecules to obtain potent and selective kinase inhibitors.

This work has led to several new kinase inhibitors with unprecedented potency and selectivity towards oncogenic kinases with relevance in breast, lung and thyroid cancer.

The National Institutes of Health supports Dr. Gustafson's research, which may lead to the next generation of kinase-inhibiting cancer therapeutics with fewer side-effects.





1 SDSU alumnus and professor Jeffrey Gustafson. Photo by Kellie Woodhouse

2 Doctoral student Sean Toenjes synthesizing selective kinase Inhibitors. Photo by Mariel Cardenas

3 Many drug-like molecules, like this one, really exist as two different compounds. The Gustafson group exploits this to make more selective therapeutics. Credit Gustafson Lab

4 Gustafson Research Group. Photo by Hanne Henricksen

Digitizing our History

SETH MALLIOS

Anthropology

Anthropology professor and university history curator Seth Mallios directs SDSU's South Coastal Information Center, the primary repository for archaeological site records and reports for San Diego and Imperial Counties.

The Center houses approximately 40,000 records documenting archaeological sites and approximately 15,000 investigation reports. Dr. Mallios works with community partners to digitize historic resources and surveys, and provides tools to manage these cultural resources. He actively promotes and ensures preservation of historic resources in San Diego County through archival maintenance, education, and archaeological research; his projects provide student internships and public outreach programs.

This work is supported by the U.S. Department of Defense, California Office of Historic Preservation, San Diego County Water Authority, San Diego Geographic Information Source, and the Pechanga Indian Reservation.

1 Dr. Mallios (right) and SDSU graduate student Saz Benchekroun inventory freshly unearthed artifacts from the Nathan Harrison site on Palomar Mountain. Photo by Robb Hirsch

2 Moments after discovery, an SDSU student holds two late 19th century harness buckles that tie directly to Nathan Harrison's ranching activities. Photo by Seth Mallios

3 Dr. Mallios leads archaeological fieldwork by 25 SDSU students at the Nathan Harrison site. Photo by Jaime Lennox

Combatting Cyber Security Threats

BONGSIK SHIN

Management Information Systems

As the information technology horizon expands, especially with the spread of mobile and Internet of Things (IoT) technologies, the cyber-attack surface widens. Threats come from every angle with various motives and consequences. They propagate faster than information about those threats, underscoring the need to strengthen security measures to protect systems, networks, and assets.

Dr. Bongsik Shin and colleagues Dr. Aaron Elkins and Dr. Lance Larson are designing a system called Threat Intelligence Modeling Environment (TIME) that offers better protection against security breaches. While traditional approaches in defense strategy have been primarily passive and reactive, TIME promotes proactive and anticipatory defense.

Powered by an advanced artificial intelligence engine to process threat intelligence, the solution is expected to improve timely detection of threats and mitigation of vulnerabilities. Its application extends beyond the military to other public and private sectors.

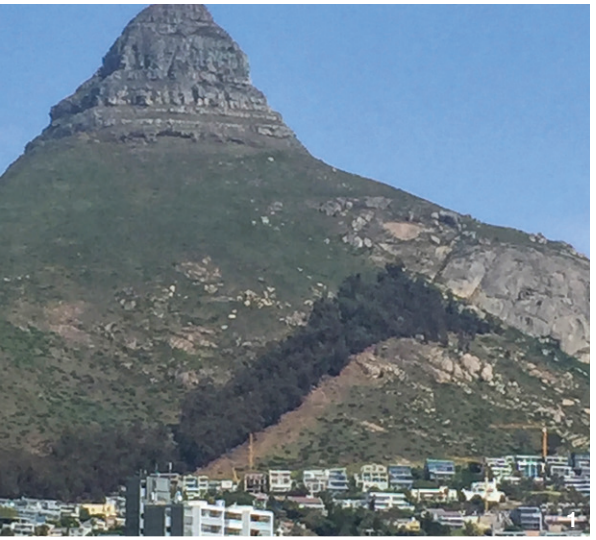
The U.S. Navy supports this research.

According to Ponemon, the average cost of a single cyberattack is $5 million (including system downtime, IT costs and end user productivity loss).

1 Bongsik Shin and Pepper the humanoid robot participate in an online research meeting at the MIS Artificial Intelligence Lab. Photo by Joi Coles

2 This project will develop a threat intelligence system for such environments as the Navy ship. Photo by U.S. Navy

3 Threat intelligence researchers participate in the Navy's annual Maritime Advanced Systems & Technology event at Port Hueneme (from left: Marc Perez, Bongsik Shin, Aaron Elkins, Eric Monette, Alexander Nestler, Lance Cameron, and Lance Larson)



HIV and Hearing Loss

PETER TORRE III

Speech, Language and Hearing Sciences

Hearing scientist Peter Torre studies the association between hearing loss and human immunodeficiency virus (HIV), in U.S. children and adults.

Dr. Torre is currently also evaluating the hearing abilities of children living in Cape Town, South Africa who are either perinatally HIV infected (PHIV+), perinatally HIV-exposed, uninfected (PHEU) or HIV-unexposed, uninfected (HUU). These hearing data are being analyzed along with MRI scans of auditory cortical structures and will provide a better understanding of how HIV infection or exposure affects various components of the auditory system.

This comprehensive evaluation of the auditory system in PHIV+ and PHEU, will help to contribute to a better understanding of how HIV infection and treatment, as well as HIV exposure affects hearing in children.

The National Institute on Deafness and Other Communication Disorders supports Dr. Torre's work in South Africa.

1 Lion's Head, Cape Town, South Africa. Photo by Peter Torre

2 Dr. Torre conducts an auditory brainstem response measure. Photo by Haley Elliott

3 Audiologist Haley Elliott performs a hearing test. Photo by Peter Torre

Does Climate Change Disrupt Plant Reproduction?

LLUVIA FLORES-RENTERIA/ MICHAEL SIMPSON

Biology

Once each April, the wolf's cholla cactus, normally thorny and green, blossoms with bright yellow and red flowers. Last spring, it did not. Evolutionary plant ecologist Dr. Lluvia Flores-Renteria is investigating if this shift in reproduction is due to climate change. One way to evaluate this is by looking into historical specimens residing in herbaria and correlating their blooming time with temperature or precipitation patterns.

Drs. Simpson and Flores-Renteria, along with their students, are digitizing images and recording the flowering/ fruiting data for 20,000 specimens in the SDSU Herbarium as part of a state-wide team examining shifting flowering times in California plants. Results will be merged with those of other California herbaria and used as a research tool for biodiversity and climate-change studies.

The National Science Foundation supports this work.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1 Masters student Kyle Gunther prepares *C. wolfii* herbarium specimens for digitization. Photo by Debbie Brighton

2 Dr. Flores-Renteria explains to undergraduates Hao Duong, Kiley Silva and Mikayla Krzmarzick the biology of *Cylindropuntia wolfii*

3 Male and female flowers of *Cylindropuntia wolfii*. Male flowers produce pollen (yellow powder)

4 *Cylindropuntia wolfii* herbarium specimens

5 Ovules of *Cylindropuntia wolfii*. Aborted ovule of male flower (left). Mature and viable ovule of female flower with developed embryonic sac (center). Photos 2-5 by Flores-Rentería lab

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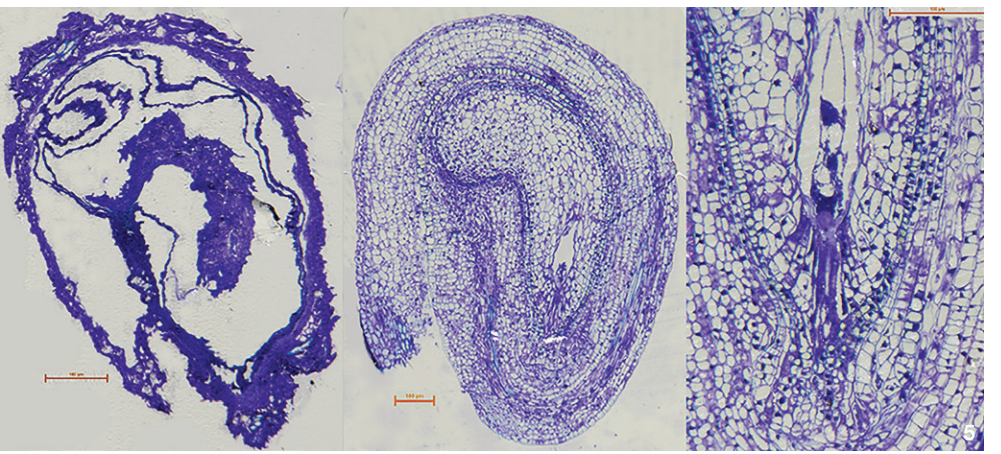

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More Than Just a Phase: Brain Profiles of Irritable Youths

JILLIAN LEE WIGGINS

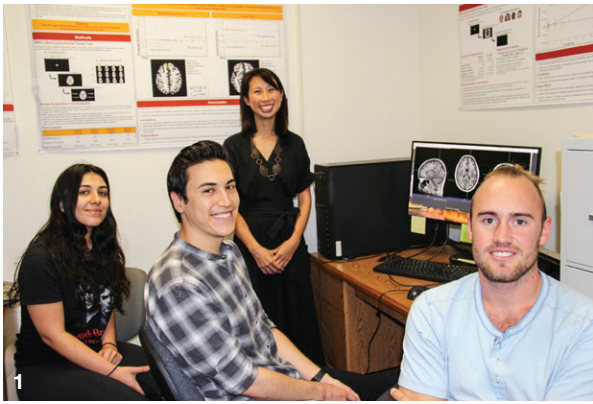
Psychology

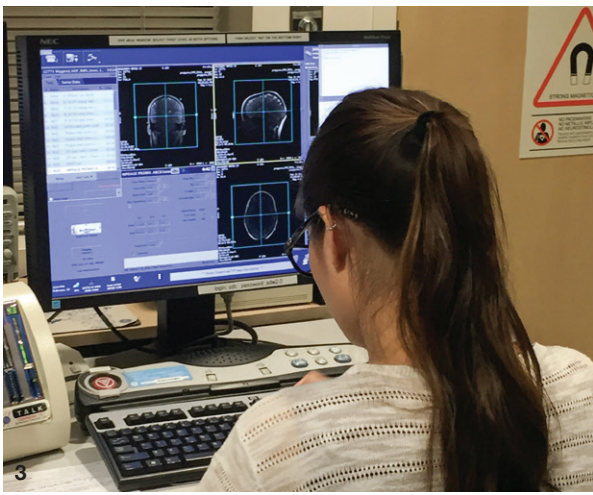
Irritability is the most common reason parents seek psychiatric treatment for their children and is linked to psychiatric illness, financial troubles, and suicide in adulthood. Currently, it is not possible to know, in advance, which teens at high risk will develop irritability and, therefore, need a doctor's help.

Psychologist Jillian Lee Wiggins directs SDSU's Translational Emotion Neuroscience and Development Laboratory where she and her team are addressing this pressing problem. Dr. Wiggins is using functional MRI scans to identify which brain profiles predict irritability in at-risk youths.

This research can help identify which youths need a doctor's care to prevent irritability. In the future, a brain scan could tell the doctor whether they should prescribe treatment for an at-risk child. This research will also help refine treatments based on an improved neural understanding of how irritability develops.

The Brain & Behavior Research Foundation supports this work.

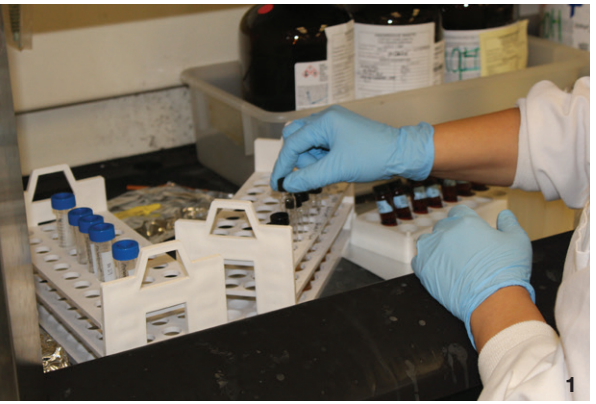




1 Dr. Wiggins (standing in back) with TEND Lab members (left to right) Dede Alsaigh, Michael Liuzzi, and Isaac Christian. Photo by Debbie Brighton

2 Dr. Jillian Wiggins. Photo courtesy of TEND Lab

3 TEND Lab graduate student Cindy Kiefer collecting brain scan data at the MRI center. Photo courtesy of TEND Lab



"In addition to polluting the environment, cigarette filters encourage smoking and discourage cessation by providing a more pleasant smoking experience and a falsely perceived 'safer' tobacco product."

-Dr. Eyal Oren

Unfiltered: The Truth About Cigarette Filters

EYAL OREN

Public Health

Many smokers believe that filtered cigarettes are safer than those that are non-filtered, but the opposite may be true.

According to The World Health Organization, tobacco-related diseases kill more than seven million people each year. The incidence of lung cancer and heart disease has increased over time, suggesting the adoption of filtered cigarettes, originally intended to "protect" smokers, has increased the risks of smoking.

An innovative study led by epidemiologist and respiratory health specialist Dr. Eyal Oren examines the acceptability among committed smokers of switching to unfiltered cigarettes. Dr. Oren will explore changes in puffing behavior, carcinogen exposure, nicotine exposure and attitudes toward smoking unfiltered cigarettes.

Ventilation holes in these filters may contribute to the observed increase in adenocarcinomas (now the most common type of lung cancer) because they allow smokers to inhale more smoke more deeply, with a "smoother" taste. In addition, the smaller particles in filtered cigarettes move past the bronchial tubes into the smaller bronchioles, irritating the tissue in the periphery of the lung where adenocarcinomas are found.

The California Tobacco-Related Disease Research Program supports Dr. Oren's work, which could better inform both consumers and regulatory policy regarding banning the sale of filtered cigarettes.

1 Preparing specimens for analysis. Photo by Joi Coles

Innovative Solutions to Food Security

CHANGQI LIU

Exercise and Nutritional Sciences

The unprecedented global food challenge of the 21st Century - feeding ten billion people within 40 years - requires productivity increase and improvements to global ecosystems.

Dr. Changqi Liu and colleagues David Larom, John Love, and Ramona Perez are developing an urban agriculture system that incorporates modern industrial techniques and indigenous features. While modern agriculture has already been enhanced through the adoption of crop rotation techniques and is already a hybrid of traditional and modern methods, creating a system as productive as industrial agriculture and as ecological as indigenous agriculture will result in higher biodiversity and less pesticide toxicity, soil degradation and eutrophication of waterways.

For example, using an indigenous Mesoamerican Milpa planting technique in which corn, beans and squash grow synergistically when planted together, farmers can reduce soil erosion that results when corn is grown on its own. By blending tradition indigenous methods with modern urban agriculture, Dr. Liu and his team are not only increasing productivity, reducing environmental damage and improving food security, but providing students with food production skills, both indigenous and modern, and increasing Hispanic student interest in and preparation for agriculture careers.

The U.S. Department of Agriculture supports this program.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1 Soil analysis
2 Cooking with the indigenous ingredient, *huaje*
3 Corn, bean, and squash plants
4 Changqi Liu. Photo by Michael Huang
5 Watering *milpa* beds
6 Building raised boxes for *milpa* planting
7 Students driving *yunta* and planting seeds in Oaxaca, Mexico. Photos by Changqi Liu

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Improving Mathematics Teaching and Learning for English Learners

WILLIAM ZAHNER

Mathematics and Statistics/ Center for Research in Mathematics and Science Education

English learners make up 9.3% of all students in U.S. public schools. In California, nearly one in four students is classified as an English learner. Educators are charged with helping English learners develop their bilingual competency while simultaneously teaching core content such as mathematics.

Dr. William Zahner is researching how educators can design learning environments in high school mathematics classrooms where English learners develop a robust understanding of critical math concepts. His research is producing both generalizable design principles and practical resources for secondary mathematics teachers. All of these products have the overarching goal of improving mathematics outcomes for English learners.

Dr. Zahner's work is supported by two grants from the National Science Foundation including a prestigious CAREER award.

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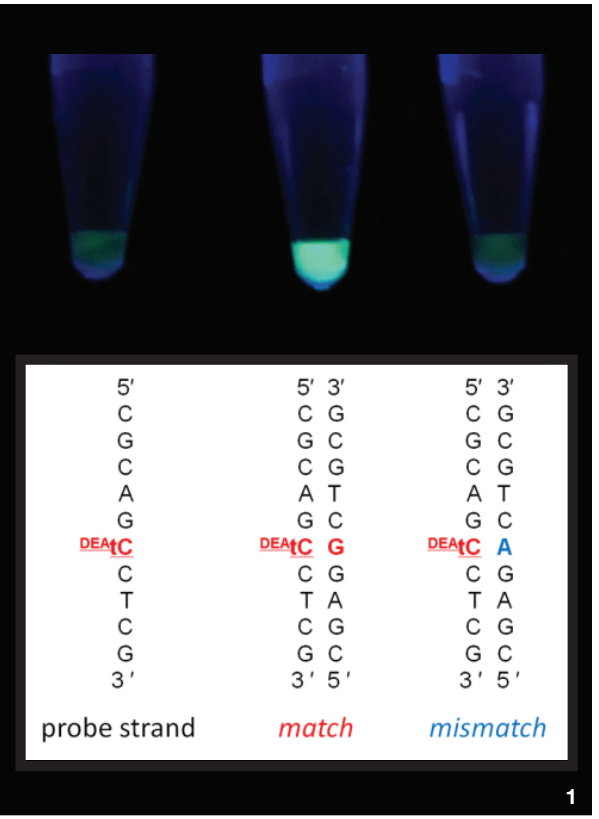
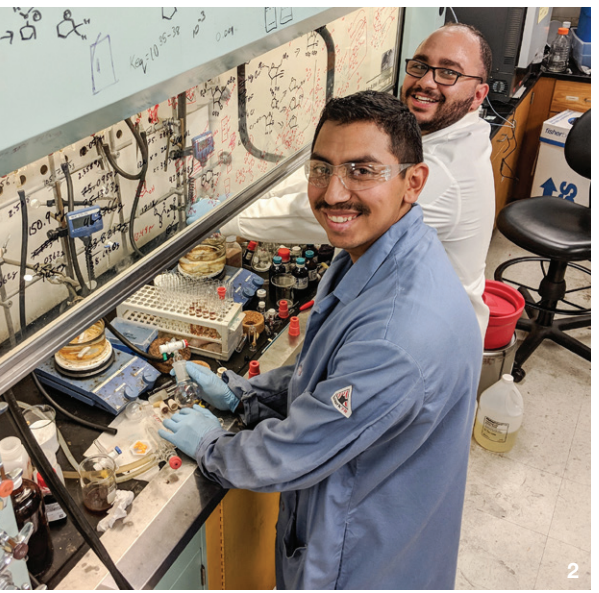
1 Ninth graders working on an activity developed by Dr. Zahner's research team. Photo by Lynda Wynn

2 Dr. Zahner with, from left, Josue Gonzalez, Kevin Pelaez, Ernesto Calleros, Lynda Wynn, and Brenda Melendrez at the Center for Research in Mathematics and Science Education. Photo by Debbie Brighton





New Tools to Understand Biology and Treat Disease

BYRON W. PURSE

Chemistry & Biochemistry

Nucleosides are the building blocks of DNA and RNA, the molecules that store the genetic code. They are also used as the energy currency of cells and as chemical transporters. By modifying the structure of nucleosides, organic chemist Byron Purse is creating a fluorescent version of DNA and developing new compounds with promising photophysical properties which could be used as new molecular probes for studying normal metabolism and disease.

Many important medicines are synthetic derivatives of nucleosides that "trick" infected or malignant cells into using the "unnatural" nucleoside by mistake during replication. The Purse lab aims to combine the chemistry of medicinal and fluorescent nucleosides to better understand possible pathways for disease intervention.

Dr. Purse's work is supported by the National Science Foundation.

1 The Purse Lab's DEAtC compound, when incorporated into a synthetic sequence of DNA, turns on its fluorescence in response to binding to a matched complementary strand, but not a mismatch

2 Jesus Ceja and George Samaan work in the Purse lab on creating new fluorescent modifications of DNA for applications in biophysics. Image and photo courtesy of Byron Purse

Deciphering the Mechanics of Non-traditional Materials

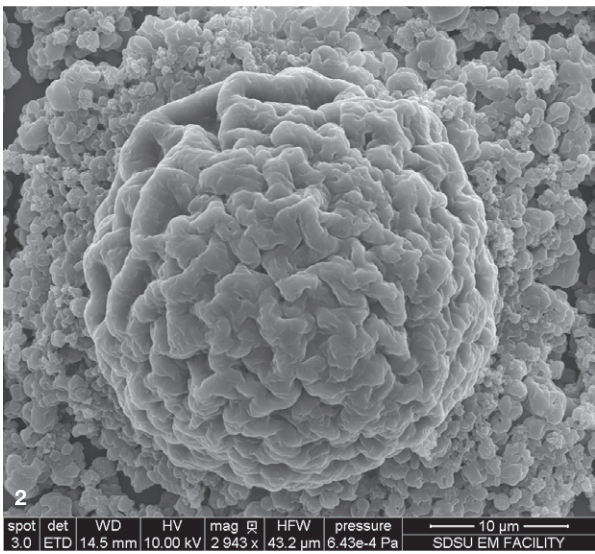
GEORGE YOUSSEF

Mechanical Engineering

SDSU's Experimental Mechanics Laboratory (EML) utilizes state-of-the-art equipment to uncover the fundamental deformation mechanisms of light weight and multifunctional materials including polymers, composites and smart materials.

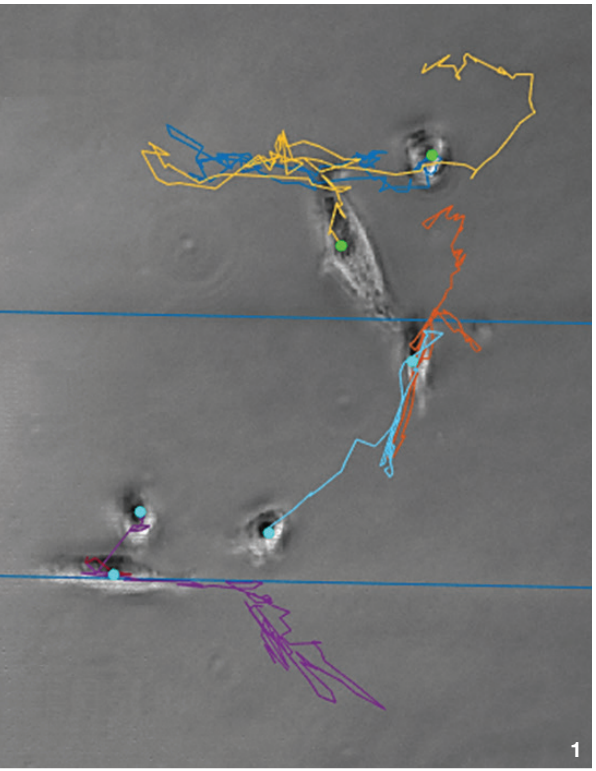
Dr. George Youssef and his team of talented students are developing a novel characterization technique that will enable researchers, for the first time, to observe the behavior of polymers while being concurrently subjected to different loading and environmental conditions. They are coupling terahertz time domain spectroscopy with temperature-controlled mechanical loading mechanisms. Uncovering the intrinsic deformation mechanisms in impact mitigating polymers will enable scientists and engineers to design superior armors that are capable of better protecting our nation's soldiers.

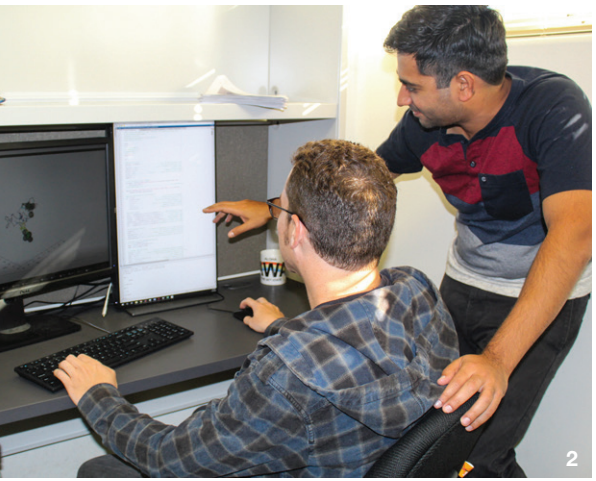
Dr. Youssef's work is funded by NASA, Armorcast Products Company and the U.S. Department of Defense.



1 The Youssef team in SDSU's Experimental Mechanics Lab. From left: Jordan Smilo (MS student), Sterlen Barnes (MS student), Lorenzo Bustos (undergraduate student), Nha Uyen Huynh (PhD student), Scott Newacheck (PhD student), Richard Lee (MS student), Geovana Pessoa (PhD student), Dr. George Youssef, (principal Investigator), Aryan Blourchian (volunteer researcher), Sophia Do (MS student), and Brian Wang (MS student)

2 Self-assembled highly-crossed linked polyurea microspheres for reinforcing the lab's novel polyurea-polyurea composite material. Photo by Sophia Do





Understanding the Mechanics of Cancer

PARAG KATIRA

Mechanical Engineering

Cancer originates in the DNA mutations of normal healthy cells. These mutations vary significantly within different tumors, making it hard to understand their biological implications on cell behavior. Despite this biological heterogeneity across tumors and different cancers, most cancers physically manifest in a similar manner – a growing mass of cells (the tumor) that pushes against the healthy tissue environment, and the breaking/dissemination of a few cells from this parent tumor to colonize other regions of the body (metastasis).

Using biophysical and mechanistic computational models, Dr. Katira is exploring how cancer cells generate the forces required to drive tumor growth in different tissue environments, and what drives the migration of metastatic tumor cells away from the primary tumor. Understanding how cancer cells interact with their environment to generate the forces required for cancer progression will help identify common mechanisms that can be targeted to prevent or hinder the growth of tumors and the progression of disease.

This work is supported by the National Science Foundation and the Department of Defense Army Research Office.

1 Tracking cancer cells migrating across stiffness barriers. Image credit: Benjamin Yeoman, JDP Student, Katira Lab

2 Graduate student Tyler Collins and Dr. Katira analyze the migration patterns of cancer cells. Photo by Joi Coles

Restoring Citizens

ALAN MOBLEY

Public Affairs

The formerly incarcerated face many obstacles upon release including social stigma, personal shame, exclusion from jobs and housing and a scarcity of meaningful rehabilitation programs.

Criminologist Alan Mobley is advancing the public good by reducing the disadvantages and advancing opportunities for those in the justice system. His work revolves around the concept of "restorative justice" which provides productive alternatives to punishment and retribution and includes acknowledging responsibility for past harms, and healing for all those harmed.

Dr. Mobley directs SDSU's Project Rebound program, which helps formerly incarcerated students navigate college life. This California State University initiative has been implemented across the state and is heralded for its track record of keeping ex-felons in school, out of trouble, and into contributing careers.

Project Rebound is supported by the California State University at San Francisco and the Opportunity Institute.

PR
Project Rebound

1 Council Circle, 2018 Gratitude Luncheon, SDSU Project Rebound. Photo by Raquel Funches

2 Echo Facility, RJ Donovan State Prison. Photo by Marc Bossi

3 Starlight Peace Project, Echo Facility, RJ Donovan State Prison. Photo by Officer Freeman

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Improving School Services for Students with Autism

JESSICA SUHRHEINRICH

Special Education

More people than ever before are being diagnosed with autism spectrum disorder (ASD), which occurs in all racial, ethnic and socioeconomic groups. According to the Centers for Disease Control, 1 in 59 children has been identified with ASD. This leads to an urgent demand for high-quality school-based services for children with ASD.

While evidence-based practices (EBPs) for educating children with ASD exist, current methods for selecting, implementing and sustaining these practices in school settings are not effective. With support from the National Institute of Mental Health (and a prestigious K award), and the federal Department of Education, Dr. Jessica Suhrheinrich is identifying factors that support successful integration of EBPs into school programs including implementation leadership and climate within a school or district.

This work will improve the quality and effectiveness of school-based services for students with ASD.

1 Dr. Suhrheinrich and team participate in the San Diego County CAPTAIN (California Autism Professional Training and Information Network) conference

2 Dr. Jessica Suhrheinrich.
Photos by Suhrheinrich Group

Fingerprinting our Water

HILARY MCMILLAN

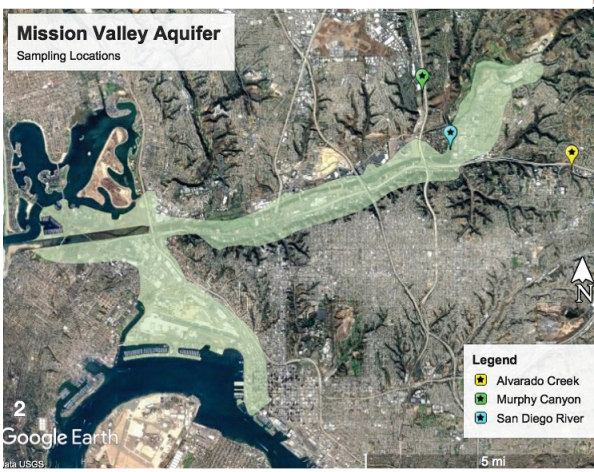
Geography

The groundwater balance of San Diego's Mission Valley aquifer is determined by drainage from rainfall and irrigation on adjacent hillsides and seepage from river channels. Understanding how and where different waters flow into and through the San Diego River watershed will help the City of San Diego make long-term plans to manage and use groundwater resources.

Using stable isotopes of water, including oxygen and deuterium, hydrologist Hilary McMillan is working with geographer Trent Biggs and biologist Chun Ta Lai to identify sources of drainage in this groundwater system. The researchers are using isotope "fingerprints" of rainwater, river low flow and river flow during floods, to determine the proportions of rainfall, irrigation water and river water contributing to groundwater.

Sampling the three main streams that drain in to Mission Valley-Murphy Canyon, San Diego River and Alvarado Creek-will help determine how flow paths vary in different city canyons.

This work is supported by the City of San Diego.



1 Field Manager Pablo Bryant and graduate student Sierra Wallace install an automatic water sampler in San Diego's Alvarado Creek. This equipment will take hourly water samples during flood events, enabling water sampling even during the night or during flood conditions. Photo by Hilary McMillan

2 A map showing three field sites in streams feeding Mission Valley, and the location of the Mission Valley aquifer. Map prepared by Sierra Wallace

3 Dr. Hilary McMillan collects a water sample after rainfall in San Diego's Murphy Canyon. Photo courtesy of Hilary McMillan

Restoration of Alvarado Creek

THOMAS ZINK

Biology/Civil, Construction and Environmental Engineering

Alvarado Creek is an urban, channelized stream within the San Diego River watershed. Its substantial non-native vegetation contributes to frequent, highly damaging flooding.

Biologist and engineer Tom Zink is removing invasive non-native vegetation such as palm trees, giant reed and eucalyptus trees from the Alvarado creek, restoring the channel to a natural state and minimizing flooding potential. He and his team are simultaneously monitoring water quality and hydrologic parameters.

Results from this project will allow us to better understand how native habitat restoration aids in maintaining the diversity and integrity of urban streams and in reducing impacts resulting from climate change.

This work is supported by the San Diego River Conservancy.

1 Graduate student Lauren Matthews conducting LIDAR (Light Detection and Ranging) survey of Alvarado Creek to create a 3-D laser scanned digital representation of the area to be restored

2 Graduate student Jose Calderon collecting water samples from Alvarado Creek to determine baseline water quality data before native habitat restoration is initiated

3 Establishing topographical cross-sections of Alvarado Creek to measure sedimentation activity before, during and after rainfall events. Photos by Julie Lambert

Ensuring Well-Prepared Principals Lead our Schools

DOUGLAS FISHER

Educational Leadership

Principals play a critical role in effective schools and student achievement. Successful principals are engaging leaders, collaborators and motivators. They establish high expectations for and focus on improved performance for all students. They magnify the quality learning experiences across classrooms.

Dr. Douglas Fisher is an expert on preparing principals to be successful. His highly effective programs produce equity-driven leaders whose schools, students, teachers and administrators thrive. His work is promoting higher-quality training in California and is helping to shape state policies on program accreditation and principal licensure. Every school deserves a great leader, not by chance, but by design. Dr. Fisher is leading the way in ensuring great leaders are prepared for their roles.

The Stuart Foundation and The Wallace Foundation support Dr. Fisher's research.

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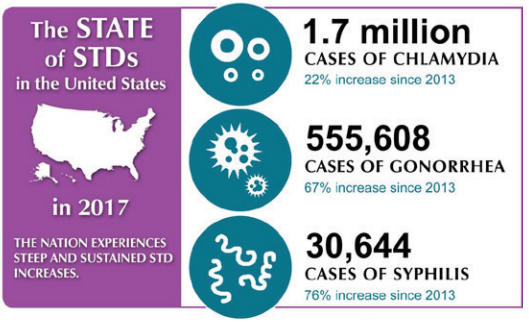
"My first year of principalship brought many challenges and frustrations. However, the excellent administrative and leadership training I received prepared me to manage all that I encountered."

-Dr. Cynthia Larkin, High school principal

1 Dr. Fisher talks with high school students about their school experience. Photo by Alex Gonzalez



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Improving Sexual and Reproductive Health

ERIC WALSH-BUHI

Public Health

Located on the U.S.-Mexico border, San Diego's South Bay is an underserved urban community with rates of sexually transmitted diseases (STDs) and HIV/AIDS exceeding state and national figures.

Dr. Eric Walsh-Buhi is directing STD/HIV testing and prevention intervention efforts among Latinx teens living in this region. This population has limited knowledge about and access to testing and sexual/reproductive health services; they are also adversely affected by social determinants of health. Using a community-based participatory research (CBPR) approach, Dr. Walsh-Buhi and colleagues at San Ysidro Health are working with youth to promote improved STD testing and care services and greater access to and utilization of these services.

This work is supported by the Centers for Disease Control and Prevention.

1 Centers for Disease Control and Prevention data

2 Dr. Walsh-Buhi (right) and SDSU professor Mari Zuniga (left) offer a training for members of the project's youth advisory board on social determinants of health and STDs

3 The team co-presenting at the CDC-sponsored 2018 STD Prevention Conference (from left: Tara Beeston, SDSU alumna and member of the project's community advisory board; Jose Tinoco, San Ysidro Health and Emily Greenstadt, SDSU project manager). Photos courtesy of Eric Walsh-Buhi

Transformational Conversations for Imperial County Educators

GREGORIO A. PONCE

SDSU Imperial Valley

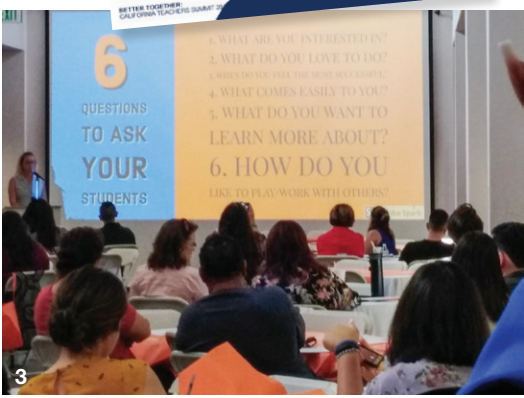
The Better Together Teachers Summit is a partnership of the Association of Independent California Colleges and Universities (AICCU), California State University (CSU) and New Teacher Center (NTC) and offers an annual, statewide day of learning for K-12 teachers, school administrators, psychologists and librarians. Last year, a Summit was hosted by Dean Gregorio A. Ponce in the Imperial Valley to make this experience available to local K-12 teachers and administrators.

Using a TED-style format, EdTalks are presented by teacher leaders. Teachers are able to personalize their own learning and share strategies that consider different learning styles in their classrooms. The Summit allows teachers to explore innovative ways to tailor lessons to meet the needs of students at different levels, considering how they learn best, their interests and what motivates them.

This program helps increase collaboration within Imperial County and across California, and supports the professional growth of teachers, enhancing student engagement and improving outcomes for California students in general, and Imperial County students in particular.

1

2



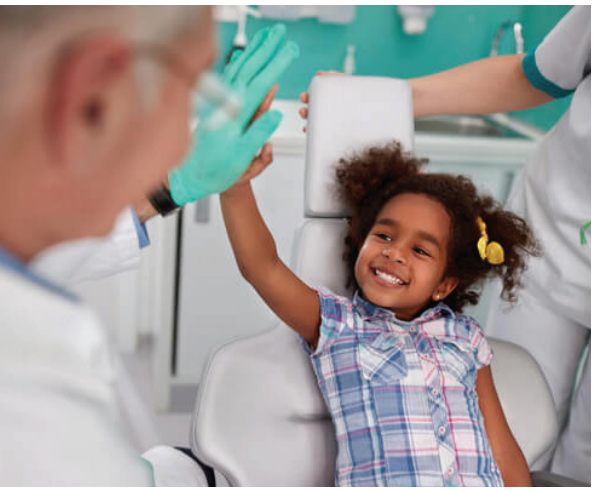
3

1 Participants and presenter discuss student engagement

2 Dean Gregorio A. Ponce

3 Participants exploring effective uses of technology in their classrooms. Photos 1 and 3 by Jenny Pacheco

"Tooth decay is the most common chronic condition among U.S. children...and dental care is one of the nation's greatest unmet children's health needs...."
-Pew Charitable Trusts



Improving Oral Health Among Children

BRANDY LIPTON

Public Health

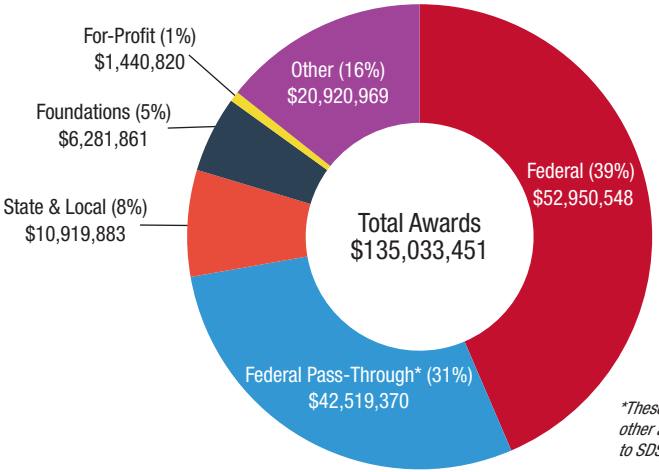
Practicing good oral hygiene is critical for maintaining a healthy mouth, teeth and gums, but preventive dental care may also have effects that extend beyond health. For example, research suggests that poor oral health may affect a child's school attendance and academic performance. However, just 29% of Medicaid-eligible children receive regular preventive dental care despite the fact that all state Medicaid programs cover dental services for children.

Previous research by health economist Brandy Lipton has shown that Medicaid dental coverage increases the likelihood of dental visits among low-income adults. Her current study finds these benefits also increase six-month dental visits among children of adult Medicaid enrollees. These findings suggest that more generous parental Medicaid benefits may increase the likelihood that children receive recommended health care services.

Dr. Lipton's work is supported by the William T. Grant Foundation.

1 Brandy Lipton. Photo by Nikhil Naika

Awards by Sponsor Type Fiscal Year 2017-2018



**These federal funds "pass-through" other agencies before being awarded to SDSU Research Foundation.*

SDSU Doctoral Programs

SDSU is proud to offer these joint and independent doctoral programs:

Audiology (Au.D.)	UC San Diego
Biology	UC San Diego
Chemistry	UC San Diego
Clinical Psychology	UC San Diego
Computational Science	UC Irvine
Ecology	UC Davis
Education	Claremont Graduate University
Education Leadership: Pre K-12 School Leadership	Independent
Education Leadership: Community College/Post-Secondary Leadership	Independent
Engineering Sciences: Bioengineering	UC San Diego
Engineering Sciences: Electrical & Computer Engineering	UC San Diego
Engineering Sciences: Mechanical & Aerospace Engineering	UC San Diego
Engineering Sciences: Structural Engineering	UC San Diego
Evolutionary Biology	UC Riverside
Geography	UC Santa Barbara
Geophysics	Scripps Institution of Oceanography/UCSD
Interdisciplinary Research on Substance Use	UC San Diego
Language & Communicative Disorders	UC San Diego
Math & Science Education	UC San Diego
Physical Therapy (DPT)	Independent
Public Health: Epidemiology	UC San Diego
Public Health: Global Health	UC San Diego
Public Health: Health Behavioral Sciences	UC San Diego

Other Distinctions

- SDSU faculty and staff received $135 million to support their research programs.
- The National Institutes of Health awarded $25.8 million to SDSU researchers.
- The National Science Foundation awarded $8 million to SDSU researchers.
- The Carnegie Foundation classifies SDSU as an R2 Doctoral University with Higher Research Activity.
- Approximately 500 undergraduate, graduate and doctoral students across 50 disciplines showcased their faculty-mentored research in last year's Student Research Symposium.
- SDSU rose in U.S. News & World Report rankings of the nation's best colleges to #60 from last year's #68 among public universities and to #127 from #140 among national universities overall.
- The College of Education ranked #54 nationally and #40 among public university graduate programs. The School of Social Work ranked #59 and the School of Nursing was #78 (U.S. News & World Report 2018).
- SDSU ranked #1 nationally on U.S. News & World Report's new "graduation rate performance" measure.
- CampusPride.org ranks SDSU among the top 25 LGBT-friendly campuses in the nation.
- SDSU Entrepreneurship Centers received the 2018 Nasdaq Center of Entrepreneurial Excellence award by the Global Consortium of Entrepreneurial Centers. FORTUNE Small Business selected SDSU as one of America's Best Colleges for Entrepreneurs..
- SDSU opened a new Engineering and Interdisciplinary Science Complex, where researchers are developing collaborative projects to turn discoveries into real-world applications. The university's first magnetic resonance imaging (MRI) machine is located in the EIS Complex.
- SDSU ranks #8 nationally for the number of students studying abroad in the latest Institute for International Education's Open Doors report. More than 3,000 students have international experiences each year, choosing from nearly 400 programs in 65 countries.
- The Research Society on Alcoholism awarded Sarah Mattson the 2018 Henry I. Rossett Award for lifetime contributions to fetal alcohol spectrum disorders research.
- SDSU's Center for International Business Education and Research received $1.26 million from the U.S. Department of Education to continue enhancing international business education.
- Virologist Dwayne Roach was appointed the Conrad Prebys Chair in Virology.
- Communications professor Wayne Beach directs SDSU's new Center for Communication, Health & the Public Good, which will create university-community collaborations to help improve health outcomes.
- Professor Bey-Ling Sha received a lifetime achievement award from the Institute for Public Relations.
- Professors Piotr Jankowski and Huma Ahmed-Ghoush were the recipients of Fulbright awards for research in Poland and India.
- Jennifer Thomas is the most recent professor to receive a prestigious NIH MERIT Award for her research on how choline affects development in the alcohol-exposed brain. SDSU has four active MERIT Awards.

SAN DIEGO STATE UNIVERSITY

Leadership Starts Here

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