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FRESNO STATE

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FRESNO STATE

UNDERGRAD RESEARCH

**COLLABORATION PROPELS
STUDENTS INTO CAREERS**

TOP DOG DISTINCTION

A VIEW OF THE STARS

GEOLOGY FIELD TRIPS

**ALUM RUNS
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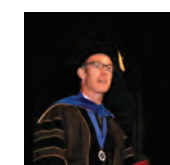
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ELEMENTS Magazine

Publisher and Editor
Andrew B. Lawson, Ph.D.

*Interim Dean,
College of Science and Mathematics*

Production Coordinators

Christine Thibodeaux
Office of the Dean

Sheri Osborn
Office of the Dean

Jill Wagner
Idea Emporium

Art Director
Catherine Curry McNally
C. Curry Design

Contributing Writers

Lanny Larson
Jill Wagner
Isaac Martinez
Vincent Treas

Photography
Cary Edmondson
Office of University Communications

Stock provided by Shutterstock

Featured on Cover
Robert Loyd
Student

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Family believes in you, even when you doubt yourself.
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Yesenia Thompson,
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 Interim Dean, College of Science and Mathematics

Chih-Chiun Chang
 Undergraduate Dean's Medalist

Welcome

ANDREW B LAWSON, PH.D.,
INTERIM DEAN,
COLLEGE OF SCIENCE
AND MATHEMATICS

Dean's Message
Elements Magazine
Summer 2015

I am proud to offer the third issue of ELEMENTS magazine from the College of Science and Mathematics. It has been an exciting year in the College filled with many wonderful accomplishments by our students, faculty and staff. I began as Interim Dean in December, filling in for Dean Elrod after she accepted a position as Interim Provost at Chico State. I am excited at this new opportunity and look forward to continuing the initiatives started under the leadership of Dean Elrod, including the publication of this magazine as a way for us to share the activities of the College with our alumni and community partners.

In this issue, we highlight undergraduate research in the College and the tremendous opportunity this brings for our students to work closely alongside our top-notch faculty and contribute to the discovery of knowledge. Through undergraduate research we provide students with a way to engage in science and with their discipline in a way that will ignite a passion and curiosity for life. We also highlight the activities of the Downing Planetarium and their extensive role in educating K-12 students and the community in astronomy and science. We share an exciting partnership between the Department of Chemistry and APPL Labs in Clovis that provides students with access to state-of-the-art analytical equipment and hands-on experience in a commercial lab setting. In Earth and Environmental Sciences, a long history of geology field trips is continuing and provides students opportunities to experience geologic formations first-hand, while forming memories that will last a lifetime. Finally, we catch up with Computer Science alumni who have applied the knowledge from their program to lead to successful careers in cutting edge technology companies from Silicon Valley to Fresno to Boulder, Colorado.

I would like to thank Valley Children's Hospital and California Health Sciences University for their continued sponsorship of the magazine. Their generous support provides us the ability to tell the story of the College of Science and Mathematics.



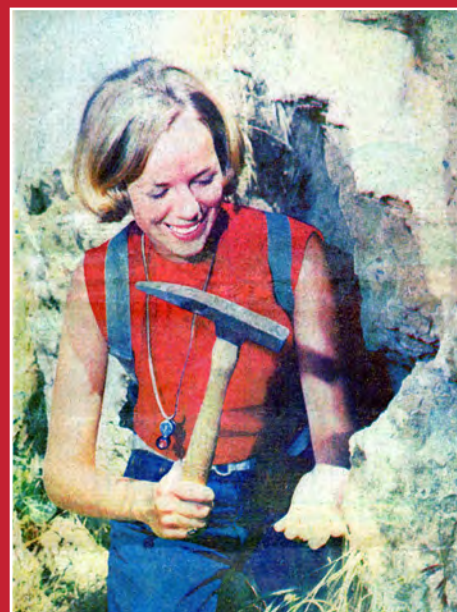
TAMSEN NICHOLS MUNGER **EARN** TOP DOG DISTINCTION

Tamsen Nichols Munger, part of a fourth generation of a family of Valley farmers and merchants, was honored as the 2014 Top Dog for the College of Science and Mathematics.



GROWING UP, TAMSEN EXCELLED IN SCIENCE AND MATH.

After graduating from Roosevelt High School in 1964, she enrolled at Fresno State majoring in zoology. She took Professor Bruce Blackerby's geology class and enjoyed it so much that she changed her major to geology, although at the time, some geology professors didn't welcome women in their classes.



In 1968, Tamsen Nichols was the first woman to earn a degree in geology at Fresno State. Following graduate studies at the University of Colorado, Tamsen worked as a ranger naturalist in Kings Canyon and Zion National Parks.



TOP DOG DISTINCTION

PHOTO FROM THE 2014 TOP DOG ALUMNI AWARDS GALA



Tamsen Nichols Munger with Fraka Harmsen and Robert Dundas



Photos by Cary Edmondson

HER HUSBAND, EDWARD MUNGER

In 1970, she returned to Fresno and married Edward Munger, who served in the 185th Infantry Regiment of the California Army National Guard under Tamsen's father, Carl Nichols. Both her father and her husband retired with the rank of Brigadier General.

The Munger family moved to Washington, D.C. in 1979, where Tamsen volunteered at the White House during the Reagan administration and for Junior League.

TAMSEN MUNGER GALLERY

Upon returning to Fresno in 1985, Tamsen worked alongside her father in his custom framing business. Tamsen's Frame Shop eventually became Tamsen Munger Gallery, specializing in World War II aviation art. In 2008, the gallery was awarded the Fresno Bee's People's Choice Award for Best Gallery.

After Ed passed away in 2008, Tamsen retired from the gallery to become general partner of Ed's business, Munger Properties.

Tamsen sits on Fresno State's Geo METRO board and in 2012, she established the Tamsen Nichols Munger Scholarship for the College of Science and Mathematics and is an inaugural member of the college's advisory board. She is active in the Daughters of the American Revolution, serving as the registrar of the Fresno-Yosemite Chapter. Tamsen has two children, a son Edward and a daughter Beth.



Edward & Beth

UNDERGRAD RESEARCH: DISCOVERY & CAREERS

By Lanny Larson



Dr. Ulrike Muller, associate professor of Biology at Fresno State, believes research opens windows of opportunity for students and she's certainly not alone among Fresno State faculty dedicated to preparing the next generation of scientists, technology innovators, engineers and mathematicians.

There's ample evidence that by making meaningful lab work available almost as soon as students set foot on campus and then providing support toward careers, the University makes itself increasingly attractive in the competitive marketplace for innovation and discovery.

"You learn how 'real scientists' work," Muller says of Fresno State undergraduate scientific research. "And apprenticeship of that type is valuable because you learn your job on the job and you learn that any job is not just a single task but the ability to bring together a whole suite of skills."

Psychology Professor Martin Shapiro adds, "I believe there are more opportunities for students to get experience conducting original research directly supervised by a faculty member than at larger universities more focused on Ph.D. and post-doc students."

"Most faculty have ambitious research programs that make important contributions in their respective fields," says Dr. Alam Hasson, a Chemistry professor. "The difference at Fresno State is that the work is done primarily by undergraduates, and without them our work would grind to a halt."

*Image: Shutterstock
macro - leaf of Sundew
(Drosera madagascariensis) - carnivorous plant*

Success Stories

The program produces success stories, such as Songita Choudhury, an Electrical Engineering major who joined one of Muller's multidisciplinary research teams. After five years' research experience and two degrees, she was ready to study at the University of Nebraska Medical Center's physician-scientist program.

"I felt like I had a good understanding of what research meant from writing grants and designing experiments to redesigning experiments, collecting data and even writing a manuscript. Students were involved in every level of the process," Choudhury says.

Muller, Hasson and Shapiro attribute student success in post-graduate and careers directly to the undergraduate research opportunities at Fresno State.

Muller, who joined the faculty in 2007, investigates biomechanics of small organisms, "Right now I study how fish larvae swim, and how small carnivorous plants catch their prey," Muller says.

Undergraduate students from the College of Science and Mathematics and others work with her in the lab, learning research techniques and teamwork to apply in real-world settings. *continued on next page...*

Student: Robert Loyd



Photo by Cary Edmondson

SONGITA Choudhury

Songita Choudhury of Clovis, a Smittcamp Family Honors College President's Scholar, came to Fresno State to study Electrical Engineering and quickly became involved in biomechanics research under the guidance of Biology Professor Ulrike Muller.

"I was searching for projects that combined engineering and the basic sciences. Dr. Muller involved a multidisciplinary team in her research and was willing and eager to have engineering students in her lab.

"Working with a large multidisciplinary team was often challenging -- every member had vastly different backgrounds and areas of expertise. We had to work hard to keep everyone on the same page, which improved my communication skills and made me appreciate the benefits of a diverse team."

Choudhury was awarded a President's Medal at Commencement 2011 for academic achievement, research that led to a wireless heart monitor, community service and participation in campus organizations. After earning her master's at Fresno State, Choudhury enrolled in the University of Nebraska Medical Center's MD/Ph.D. program.

"During the interview process," Choudhury remembers, "I was able to communicate confidently about what I had learned and accomplished as a student researcher. I felt that most schools were interested in my level of involvement in the research process as well as whether I had a firm grasp of what a career in research meant for my future."



"The University of Nebraska Medical Center (UNMC) was particularly impressed with my research accomplishments and the uniqueness of an engineer pursuing a medical career."

Choudhury is in her second year of medical school and will join a UNMC lab focused on cardiac physiology and cardiovascular imaging. "That will put my engineering knowledge to work," she says, researching ways to apply ultrasound contrast agents to treat stroke, catheter-related blood clots and acute coronary syndromes.

"Following graduate school, I will return to medical school to complete the last two clinical years," Choudhury says. "My hope is to graduate in 2020, continue on to residency, and then pursue a career in academic medicine as a physician scientist." □



UNDERGRAD RESEARCH



Photo by Cary Edmondson

Student Loyd investigating a tiny carnivorous aquatic plant called the bladderwort.



Photo by Cary Edmondson

Dr. Ulrike Muller and lecturer Dr. Otto Berg

MULLER SAYS

“From a teaching perspective, research helps students to learn the subject matter, and acquire important transferable skills, such as team work, critical thinking, problem solving, written and oral communication”



Photo by Cary Edmondson

Hands-On Problem Solving

“If you do real research (chase after answers that we don’t know yet), this activity is authentic and real,” Muller explains. “You know that what you do is new and not cookbook, and that is very motivating.”

Hasson adds, “At many other universities, undergraduates, if they are lucky enough to get into a research group, end up doing menial work like cleaning glassware to support the PhDs that do the real research. At Fresno State, the undergrads are the real researchers.”

Shapiro feels the same way. Hands-on research, he says, “is extremely important for undergraduates interested in experimental psychology.

Part of the University’s commitment is making research project funds available. Muller says she credits Fresno State’s Division of Undergraduate Studies, and the College of Science and Mathematics’ faculty-sponsored student research awards.

“They make undergraduate projects more affordable to faculty, who want to support such research but don’t have the funds to buy the supplies that students need,” says Muller. She also appreciates that Fresno State recognizes the importance of research by counting as instruction time the hours faculty members mentor students.

“From a teaching perspective, research helps students to learn the subject matter, and acquire important transferable skills, such as team work, critical thinking, problem solving, written and oral communication,” says Muller.

“Research helps students to develop into professionals to take ownership of their work, present and sell themselves and their work to others, learn how to communicate what they do and why it matters — all basic job skills for any graduate.”

There are other benefits for students, too, says Dr. Robert Dundas, Interim Associate Dean of the College of Science and Mathematics. “Undergraduate research experiences have been shown to increase student success in many ways, including improved retention rates for underrepresented minorities.”

And besides helping “students clarify career choice and develop important skills in research design, data collection and analysis, information literacy, teamwork and communication,” says Dundas, “students report an increase in self-confidence and their ability to critically think as well as receive a sense of accomplishment from their research activities.”



Photo by Cary Edmondson

Fulfilling His Dream

After five years selling insurance in his native Selma, and two years working for a company that abruptly closed its doors, Robert Loyd knew he needed to go to Fresno State to fulfill his dream of running an engineering company.

Two years later, he was working on a project with Muller, along with students from other majors, investigating a tiny carnivorous aquatic plant he’d never heard of — the bladderwort.

Muller says bladderworts (*Utricularia gibba*) capture zooplankton in attacks that take less than 1 millisecond – the fastest predator in capture time. Ninety percent of bladderwort attacks succeed – better than four times more efficient than larval fish with a similar-sized mouth.

Loyd is fascinated that what he was taught about flow, force, viscosity and other engineering principles could help study suction feeding by bladderworts that theoretically should work much better in bigger species. “I never thought I’d be learning about aquatic mechanics, but that’s what happened,” says Loyd, who jokes about working well inland on coastal science projects.

He won a Council on Ocean Affairs, Science and Technology (COAST) award to help cover some of the project’s costs. COAST is funded from the California State University Chancellor’s Office and each CSU campus to support faculty and students in collaborative

JUNIOR ROBERT LOYD TICKS MANY OF THE BOXES ON AN UNDERGRAD RESEARCH CHECKLIST.

research, resource sharing, student educational and development opportunities, and dissemination of data.

Loyd plans to graduate in 2016 with a Mechanical Engineering degree and minors in Physics and Peace and Conflict Resolution. The three work together, he says, because he applies physics to engineering problem solving and is committed to doing no harm in whatever he creates.

He applauds the multidisciplinary approach, saying, “I enjoy being able to solve their problems, but I can’t do that before I know what they want, so I ask a lot of questions.”

Chemistry Professor Hasson typically works with 10-15 undergraduate students. He says, “We often have other majors (Biology, Physics, Geology, Geography, Computer Science, Agricultural Science, Health Science, Engineering), and they all bring something unique and valuable to our projects.”

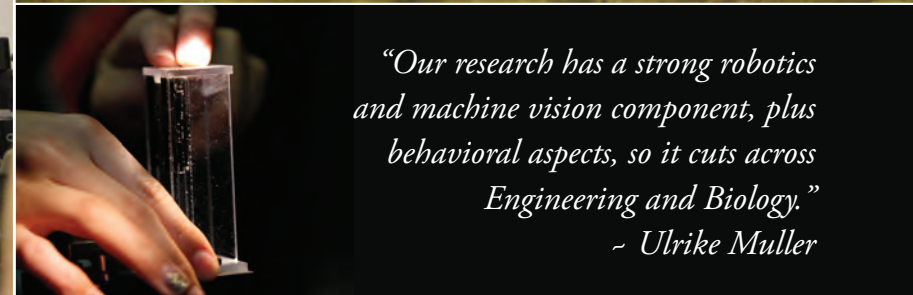
“Most research is very cross-disciplinary,” Muller says, “and students should experience this from the start. It is important to learn there are all kinds of experts out there, from whose expertise you can benefit through collaboration.”

It’s a challenge, Muller adds, “because we all get stuck in the silo of our discipline and struggle to communicate and work effectively with people that come at the project with a different expertise.”

UNDERGRAD RESEARCH

BLADDERWORTS

(*UTRICULARIA GIBBA*) CAPTURE ZOOPLANKTON IN ATTACKS THAT TAKE LESS THAN 1 MILLISECOND – THE FASTEST PREDATOR IN CAPTURE TIME.



“Our research has a strong robotics and machine vision component, plus behavioral aspects, so it cuts across Engineering and Biology.”
~ Ulrike Muller

“I had Chemistry, Biology, Psychology, Computer Science and Engineering majors in my lab, and Dr. David Lent has a similarly mixed bunch,” says Muller. “Our research has a strong robotics and machine vision component, plus behavioral aspects, so it cuts across Engineering and Biology.”

Shapiro, a Psychology professor, is comfortable working with different perspectives and adds that hands-on research is “extremely important for undergraduates interested in experimental psychology. There are more opportunities for students to get experience conducting original research directly supervised by a faculty member than at larger universities more focused on Ph.D. and post-doc students,” adds Shapiro

Another enticement for high school students considering Fresno State, says Shapiro, is “state-of-the-art equipment for psychophysiology and electroencephalography research.”

Shapiro says there also are “very active labs investigating cognition, decision making, perception, psychophysiology, development and social psychology.” Psychology faculty, he adds, are “enthusiastic about working with undergraduates at all levels, from simply getting experience to taking on their own project.”

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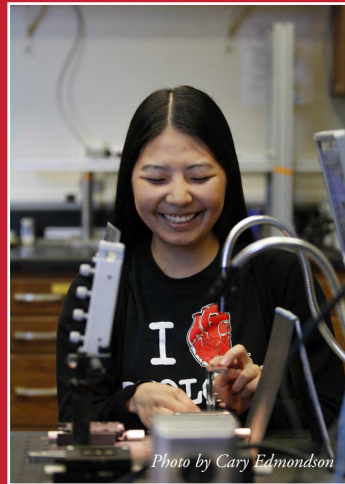


Photo by Cary Edmondson

Student Nicole Shinkawa



Photo by Cary Edmondson

Dr. Ulrike Muller
with Shinkawa

Shinkawa wants “to one day become a dentist and to give back to the underserved community of Fresno by providing resources and dental care.”

“In 14 years I cannot recall a single student from my lab who failed to gain admission to a Ph.D./medical school or pharmacy school program if that was their goal.” says Hasson.

Bright Futures for Undergrads

Muller says research experience also cultivates students’ mentorship skills: “Undergraduates often work with a graduate student as their immediate day-to-day mentor, sometimes in teams of several undergrads, sometimes just one-to-one with a grad student.”

One mentor student researcher was Prasong “Jerry” Mekdara, who wanted to do advanced research at a top-rated university. He was a psychology major when he worked with Muller to study the possible causes of ALS (Amyotrophic Lateral Sclerosis), a neurodegenerative disease, in collaboration with Dr. Joy Goto in Chemistry.

He graduated with a bachelor’s in Psychology and Biology. In fall 2014, after receiving his master’s in Biology, Mekdara began doctoral studies in soft-body robotics at Tufts University in Massachusetts, already a leader in this new field.

Guiding research students such as Mekdara and Choudhury for several years is a benefit for instructors. She and Lent enjoy that benefit with Nicole Shinkawa, a junior from Fresno who works in their lab investigating insect walking.

Shinkawa began doing research right out of Clovis West High School. “She started in the lab before she started her course work,” says Muller, and since then she has presented at a conference of the CSU Program for Education and Research in Biotechnology.

Research students don’t spend all their time in the lab. Shinkawa is a Jan and Bud Richter Center for Community Engagement and Service-Learning ambassador, a volunteer at the Fresno Rescue Mission and Bulldog Pantry, co-founder of the pre-dental fraternity Delta Epsilon Omicron and a member of Circle K and Tri Beta Biological Honor Society.

Shinkawa wants “to one day become a dentist and to give back to the underserved community of Fresno by providing resources and dental care.”

The future is bright for those who have conducted research as undergrads, Muller says,

whether the objective is a master’s at Fresno State, accepting new academic and research challenges elsewhere or launching careers after graduation.

Student Loyd says, “Research has gotten me out of the theories I learn in class. I get to play with reality and apply what I’ve learned as I go. I’ve learned that there may be multiple right answers to a problem, but I’ve got to pick the best one.”

His advice to future Fresno State students interested in research: “You don’t know everything that’s available unless you ask around once you get to campus. And then you have to think about what you want to do and try to do it. But you’ve also got to be open-minded because you never know what opportunities there might be and that you never thought of.”

Muller, Hasson and Shapiro know Fresno State’s investment in student research pays off. After just “a couple of years in a research lab,” says Hasson, “our students are ready to compete with the best students in the country.”

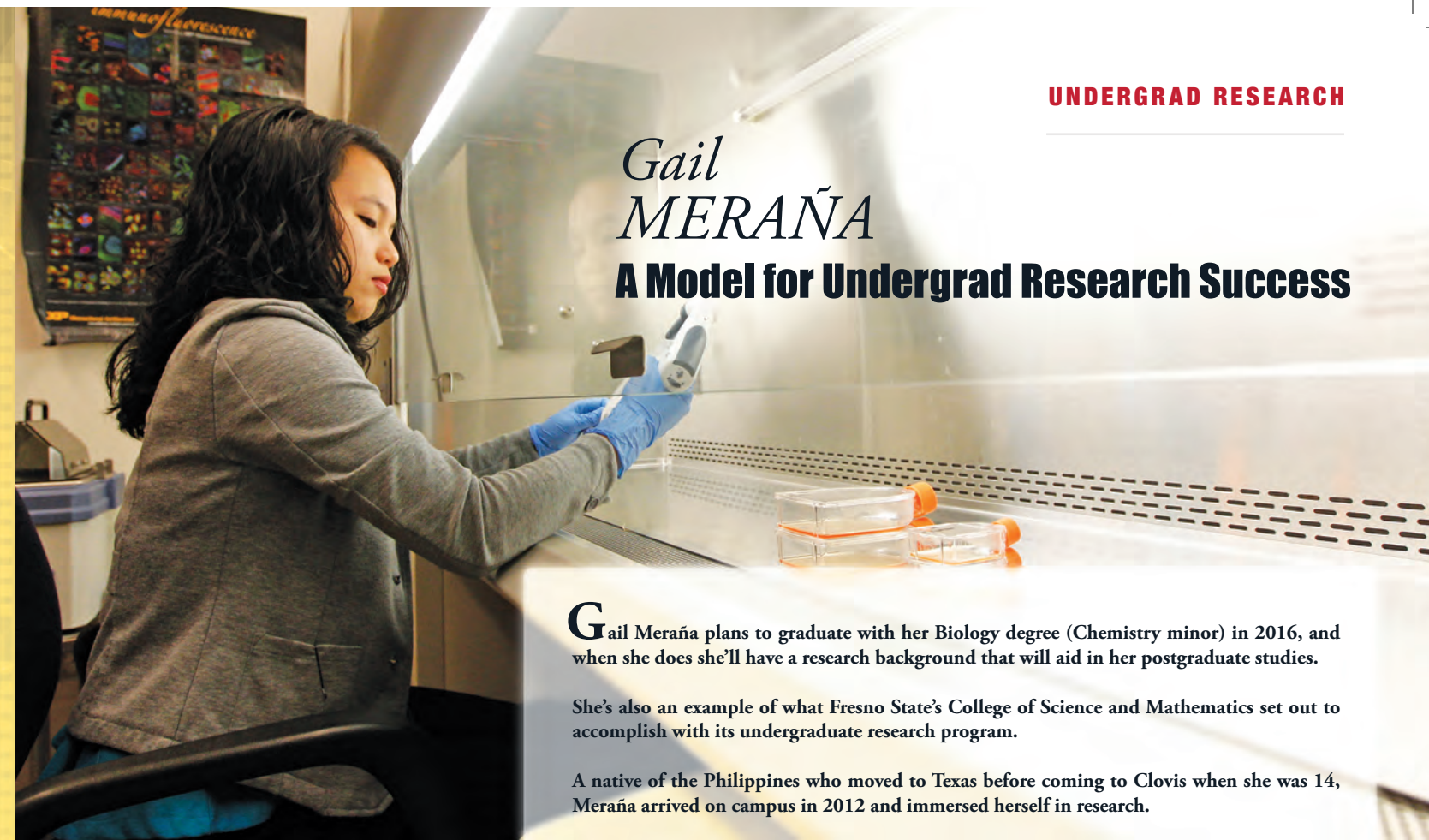
“In 14 years,” he adds, “I cannot recall a single student from my lab who failed to gain admission to a Ph.D./medical school or pharmacy school program if that was their goal.”

Hasson tells this story about the value of undergraduate research at Fresno State:

“A few years ago I took a student to a conference where he presented a poster. Like many students at their first meeting, he was incredibly nervous.

“At the end of the poster session, the student came up to me with a big grin on his face. He had just spent 30 minutes chatting about his work with a professor from Cal Tech. At the end of their conversation, the professor had asked him if he was a Ph.D. student or a post-doctoral researcher.

“The professor could not believe that the research discussion that he had just had was with a junior — an undergraduate Chemistry major.” □



Gail MERAÑA A Model for Undergrad Research Success

Gail Meraña plans to graduate with her Biology degree (Chemistry minor) in 2016, and when she does she’ll have a research background that will aid in her postgraduate studies.

She’s also an example of what Fresno State’s College of Science and Mathematics set out to accomplish with its undergraduate research program.

A native of the Philippines who moved to Texas before coming to Clovis when she was 14, Meraña arrived on campus in 2012 and immersed herself in research.

Gail pictured below with Dr. Laurent Dejean, an assistant professor of Chemistry



Photos by Cary Edmondson

As a research assistant under Dr. Hwan Youn, an associate professor of Biology, Meraña presented her findings at two consecutive annual Central California Research Symposia. Most recently, Meraña has worked with Drs. Laurent Dejean, an assistant professor of Chemistry, and Joseph Gandler, a professor of Chemistry, on the impact of airborne particulate matter on humans.

Meraña is a Howell Foundation for Women’s Health Research-CSUPERB (California State University Program for Education and Research in Biotechnology) scholar. She has won an Undergraduate Research Grant from the University and a Liliane D. Wells Scholarship.

“At Fresno State, students have so many opportunities,” she says. “I’ve gotten to work with professors on two different research projects, have presented my research twice, received several scholarships and joined a community of like-minded students.”

Not everything she’s accomplished has been research-related. Meraña has been an Academic Decathlon tutor for Clovis High School, a student assistant in Technology Innovations for Learning and Teaching Biology and Chemistry tutor for high school students and Chemistry tutor in the campus Learning Center.

Meraña’s “The Day I Realized My Calling” was the college division winner of the William Saroyan Story Writing Contest in 2014 and she has been active in campus Biology and Chemistry organizations.

Her lab work, though, earned an opportunity to participate in the University of California, San Francisco Summer Research Training Program, which she attributes to her professors and the Louis Stokes Alliance for Minority Participation (LSAMP) “family.”

The LSAMP program, funded by the National Science Foundation, promotes STEM participation (science, technology, engineering and mathematics), with special emphasis on students experiencing social, education or economic barriers to careers.

“Research has been one of the most important things I’ve done.” “It has helped me learn how to work with various types of people, how to be patient and hardworking, and how to apply concepts I learned in my classes.”

Meraña adds that research “has helped me figure out what I want to do in the future. I’m excited to see what research will bring me in the future.” □

A VIEW OF THE STARS inspires future scientists

By Jill Wagner

FOR 15 YEARS, THE DOWNING PLANETARIUM AT FRESNO STATE HAS ILLUMINATED THE WONDERS OF THE UNIVERSE AND BROUGHT THE MYSTERIES OF SPACE TO LIFE FOR TENS OF THOUSANDS OF VISITORS, WITH A GOAL OF SHINING A SPOTLIGHT ON ASTRONOMY TO INSPIRE THE NEXT GENERATION OF SCIENTISTS AND ENGINEERS.

AS THE ONLY UNIVERSITY OPERATED PLANETARIUM IN THE CENTRAL SAN JOAQUIN VALLEY, IT'S IN CONTINUOUS USE AS A CLASSROOM FOR ASTRONOMY AND PHYSICS STUDENTS, A DESTINATION FOR K-12 SCHOOL FIELD TRIPS AND A FAVORITE PLACE FOR FAMILY OUTINGS THROUGH PROGRAMS OPEN TO THE PUBLIC.

TODAY'S DOWNING PLANETARIUM FEATURES ADVANCED EQUIPMENT THAT PROVIDES EXCELLENT VIEWING ACROSS THE ENTIRE 30-FOOT DOME AREA, ALLOWING VISITORS TO HAVE THE SENSATION OF FLYING THROUGH SPACE. THE BEGINNINGS OF THE PLANETARIUM WERE MUCH MORE MODEST, AS PROFESSORS COBBLED TOGETHER EQUIPMENT AND FUNDS TO CREATE A VIABLE CAMPUS PLANETARIUM.

Painting of Mars by Lynette Cook

A modest start

The first concepts for a campus planetarium were developed by former Dean KP Wong and (now retired) chemistry professor Dave Zellmer, who in 1994 charted a planetarium as part of a planned Central California Science Center.

Physics professor Dr. Steve White arrived at Fresno State in 1994. "In 1995, the physics department learned that Kansas State University had a planetarium that they wanted to remove to make way for research space," says White. Physics department chair Dr. Brandt Kehoe (now retired) negotiated the arrangements and physics department faculty chipped in \$15,000 to cover equipment costs.

In 1997, White and technician Roger Key flew to Manhattan, Kansas to disassemble the planetarium equipment and load it into a moving van that they drove back to Fresno. "When we arrived in Fresno we had no place to store the equipment so it went into a mini storage," says White.

About that time, Fresno State reached out to Dr. Harold Downing and his family, Dr. Tom and Cynthia Downing, for support in building a campus planetarium. Their significant gifts allowed construction to begin on March 21, 1999 and today's 74-seat star theater opened on April 8, 2000.

Better stargazing

Projection methods at the Downing Planetarium have changed significantly through the years and improved with technology.

The first visitors to the planetarium viewed space displays through a Spitz AP3 star projector supported by 22 synchronized slide projectors controlled by a single computer. Video capability was quickly added, as were 14 more slide projectors. This was a complex and expensive configuration.

"The Spitz projector ran on \$700 arc lamps that had to be replaced every month," says White. "After our first year, we switched to a Minolta star projector with very long lasting filament bulbs."

An optimal viewing environment in a planetarium requires extremely high contrast, so the projection area is as black as possible.



Photo by Cary Edmondson

Stunning Displays

"In a planetarium, stars and planets on a gray dome just do not look right," adds White. "With the newer projectors, contrast ratios of even 1,000,000 to one are possible. That is a breakthrough."

Today a single projector can be configured to show a movie using the entire dome space. But that's not enough for White, who has a quest for improving the viewer experience.

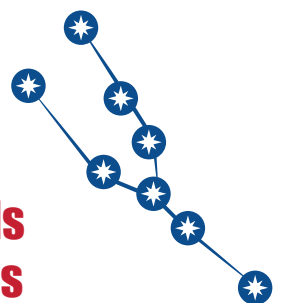
"Currently, I am working on a way to combine six projectors together so that they operate as a single projector," explains White. "The early results are very promising. In February my student Simon Gonzales and I solved the computer programming part of the problem so that multiple computers stay exactly synchronized while playing video files."

Their next step is installing six projectors in the planetarium theater and tackling the image processing part of the problem. Once solved, the resulting display will be stunning. "With six projectors we will get nearly six times as many pixels, six times the brightness and much better sharpness," says White.

Benefactor Dr. Tom Downing has enjoyed watching the evolution of technology in the planetarium. "The technology today is far different from the 35mm slide projectors that were used to illuminate the dome for the shows the planetarium started with 15 years ago," says Downing. "And the star projector, too, is generations from our 'starter' projector. With the new technology the entire dome is used to better awe the audience."

Combining Projectors 6

**= six times as many pixels
= six times the brightness
= much better sharpness!**



With the newer projectors, contrast ratios of even 1,000,000 to one are possible.



Photo by Cary Edmondson

Going for “oohs” and “aahs”

The most recent improvement to the Downing Planetarium is the addition of full dome video, allowing projection using 100% of the dome.

As a child growing up in Reno, Nevada, White often visited the Fleishmann Planetarium at the University of Nevada, Reno. At the time, they were the only planetarium in the world that could project a movie covering the whole dome.

When plans were underway for the Downing Planetarium construction, White visited Reno to see how their full dome display worked.

White explains, “It turns out they had their big star projector on rails so it could be moved in the dark just enough to uncover trap doors in the very center of the theater that would open during the show.”

The trap door covered a basement space where a 70 mm film projector fitted with a fisheye lens was crammed into a tiny room. “The projector lamp produced so much heat that water was

used to provide cooling to keep the whole thing from burning up,” he says. “I wanted one like that but we couldn’t really afford it at the time.”

Progress in technology finally made full-dome viewing affordable. One thing has not changed. The very best stars, in terms of a realistic star field, still come from the old-fashioned optical-mechanical star projector.

“The stars from our machine really look like pinpoints of light and the background sky is truly black like velvet as long cell phones remain off,” says White. “When we fire up the star projector at the end of our full dome show, we still get a lot of ‘oohs’ and ‘ahhs’ from the kids.”

With full-dome projection, visitors will enjoy an immersive experience at the planetarium with the sensation of flying through space. And full dome projection will offer more programming since most of the new presentations are designed for full dome viewing.



Photo by Cary Edmondson

Inspiration among the cosmos

The goal of the planetarium is to inspire students, from preschoolers through college-age, and spark and support their interest in science and exploration.

Says Downing, “Fresno State students today have told me of their field trip to the planetarium when in grade school and how it sparked their fascination with the universe and even may be the reason they are science majors.”

Visits to the planetarium are included as part of the coursework for Fresno State astronomy students, but White explained that the planetarium has other academic uses. “Last fall, we had a program on the life and work of the geometrical artist M.C. Escher.”

“All of us involved with the planetarium and especially Steve White, the planetarium and museum director, are dedicated to inspiring passionate interest in science,” says Downing. “My hope is that no local kid gets through school without a visit to the Downing Planetarium.”

In addition to the star theater, the facility includes a museum consisting of hands-on astronomy and physics exhibits and lobby displays of a solar system scale and an elements scale, a gravity well, and a sundial. The lobby also features display cases with science toys and meteorites, and the Little Dipper Gift Shop that sells science-themed posters, T-shirts, bookmarks and toys.

Current shows include “Black Holes” and “Cosmic Colors.” White explains, “I think our show on black holes is one of the best we have had in the 15 year history of the planetarium. People are so interested in the subject and the artwork in the show is excellent.”

After 15 years of operation, the planetarium is a destination for hundreds of school field trips each year, but its shows are open to the public as well.

“We offer a public program one weekend per month on a Friday evening and Saturday afternoon,” says White. Tickets are available at the door and free telescope viewing is offered with public programs, weather permitting.

To see the schedule for public programs or to support the Downing Planetarium, please visit www.downing-planetarium.org □

PLAN TO VISIT THE PLANETARIUM

Visitors enjoy an immersive experience at the planetarium with the sensation of flying through space.



Painting of Saturn by Lynette Cook



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Collaboration propels chem students into careers

By Lanny Larson

At each Fresno State Commencement, the newly minted grads are asked to generously remember Fresno State as they progress in their careers and can give back to the university and to the students following in their footsteps.

Diane (Woodward) Anderson clearly was listening to that message during the 1976 Commencement in the Amphitheater and she's paying it forward to the benefit of students, faculty, the campus, her business and the entire community.

Anderson quickly put her Fresno State chemistry degree to work as a formulations chemist and then environmental director of the company she worked for. In 1982 she and husband Brad Anderson, also a Fresno State chemistry alumnus, founded Agriculture & Priority Pollutants Laboratories (APPL) in her native Clovis.

APPL preforms environmental testing, primarily for the federal government, analyzing soil and water samples to determine trace chemicals.

Agriculture & Priority Pollutants Laboratories (APPL)

The growth of this locally owned enterprise is a Fresno State success story all by itself. But, there's much more.

Besides chemical analysis and her own family, one of Diane Anderson's passions is getting young people interested in science. "We are falling behind the rest of the world in our scientific abilities, and young people are essential to turning this around."

"Universities cannot afford to purchase and maintain state-of-the-art instrumentation," she adds, so graduating students have the theoretical knowledge but "are not well equipped to walk into a laboratory and be productive."

Anderson is doing something about that deficiency. She stayed in touch with Fresno State as APPL grew and prospered, and when it came time to expand, she consulted with her alma mater. If she dedicated space in APPL's new building to a classroom, would there be any interest in teaching an instrumentation lab there?



Photo by Cary Edmondson

Diane (Woodward) Anderson



Photo by Cary Edmondson

Diane Anderson with APPL Supervisor Moriah Mehlman

Dr. Eric Person, Associate Professor of chemistry, was enthusiastic. "In discussing what could happen with that space, we came to the current model, where students perform testing using APPL's standard operating procedures and equipment." He's referring to Chemistry 106S, formally titled "Instrumental Analysis in Industrial Settings."

"Students take an ethics class and safety training prior to doing any lab work." "They are trained as an employee would be trained. As they learn the tests they will be performing, they must complete an initial demonstration of capability. Once they pass this, they are allowed to run the samples."

Students rotate between sections in the lab, getting help from APPL supervisors. "It has forced our supervisors to be able to articulate what they do and why."

One of those APPL supervisors is Moriah Mehlman, a Portland native.

She came to campus from the Madera Center Community College eager to study chemistry after taking classes in junior high and high school. "I really enjoy science and math," she says. "Chemistry seemed like the perfect mix of both math and science. Chemistry was just so logical to me."

She wanted to specialize in forensic chemistry, but "after getting into my

upper-division classes, I realized that there were a lot of opportunities in this field." Mehlman's financial burden was eased by the Stephen and Risa Rode-meyer Organic Chemistry Scholarship.

Mehlman learned about APPL when Person recommended her for an internship in summer 2012. "I worked at APPL for 12 weeks during the summer, which gave me a taste of agriculture chemistry," she says

She was back at APPL a year later taking the 106S class. "Halfway through the semester, I was offered a position there," Mehlman recalls. "I started part-time the day after finals of that [fall 2013] semester" and full-time after graduation in 2014.

Fresno State "prepared me really well with the theory in chemistry," Mehlman says. "There are many times something has not worked the way it should and I have to troubleshoot. When you know the theory behind something, it's easy to eliminate possibilities for fixing the problem."

"The students are looking at real-world samples with real-world problems," Anderson says, and they're getting state-of-the-art hands-on training just as they're about to launch their careers, so what they learn is immediately applicable.

continued on next page...

"Chemistry seemed like the perfect mix of both math and science. Chemistry was just so logical to me."

Moriah Mehlman



Photo by Cary Edmondson

ANDERSON SAYS

"They are trained as an employee would be trained.

As they learn the tests they will be performing, they must complete an initial demonstration of capability. Once they pass this, they are allowed to run the samples."

The University - APPL Partnership

The University-APPL partnership began Feb. 9, 2009. Initially, students tested water for the Fresno County Office of Education's Scout Island Outdoor Education Center on the San Joaquin River. Students analyzed drinking water samples for potential contaminants.

"We couldn't help Scout Island, without using APPL's equipment and methods," Person told The Collegian in 2012. "This type of program doesn't exist at most schools because most environmental labs wouldn't allow this."

The curriculum is frequently evolving and expanding to keep abreast of changing industry demands and to encourage interdisciplinary teamwork on campus that will serve students after leaving Fresno State.

In fall 2014, Person says, "We started more of a collaborative research model, where our results are used by two Earth and Environmental Sciences classes – stratigraphy (study of rock layers) and hydrogeology." Students from the Lyles College of Engineering also have been involved.

Anderson says, "It has been very successful. This year will be even better."

Person adds, "We are looking to continue this interdisciplinary partnership, possibly shifting the testing from wells north of town to campus, where we could answer questions about nitrogen cycling and residual oil levels in the campus water drainage system."

The most valuable part of the collaboration, as far as Mehlman is concerned: "My internship opened my eyes to how different the industry side of chemistry is from the education."

APPL has hired at least one student from the program each year since it began. APPL also provides laboratory support for Fresno State students working on master's degrees and offers students internships.

The Fresno State connection with APPL, Anderson says, "has definitely made us a better lab."

APPL's Fresno State collaboration also earned a 2013 Fresno Compact Award for businesses who partner with education. School systems, businesses and community leaders are compact partners, dedicated to preparing students for careers.

Diane and Brad Anderson's career accomplishments and work with Fresno State earned them Distinguished Alumni recognition for the former School of Natural Sciences in 1998. They were the College of Science and Mathematics' Top Dog Outstanding Alumni honorees in 2011.

"As an alumna, I am very proud that Fresno State is looking to the future," Anderson Says. "The school is receptive to new ideas and willing to take risks to improve the quality of education for their students and draw quality students to the University." □



Photo by Cary Edmondson

networking builds
tech industry success

By Lanny Larson

Fresno State's Department of Computer Science might not be the first place prospective college students or master's candidates would think could springboard them into technology careers.

But budding careers enjoyed by Fresno State Computer Science grads suggests that's flawed thinking. The empirical data, instead, suggest they'd have a leg up in the industry, just like:

Si

Ch

Ca

Ru

Amitesh Sinha. Took his Fresno State master's training to Silicon Valley and now is at Workday Inc. in Pleasanton, which supplies cloud-based software for human resources and finance industries.

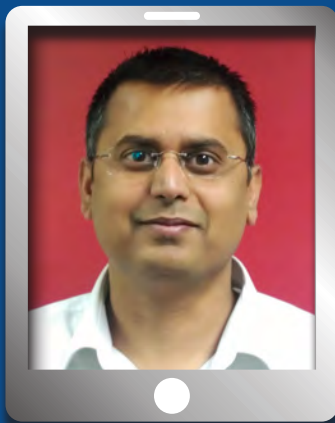
James Cha. Parlayed his master's degree into a career close to campus at Pelco by Schneider-Electric in Clovis, an international company based in France.

Matthew Calderaz. His economic situation led him to Fresno State and then immediately into software development with Sony.

Paul Trebilcox-Ruiz. Graduated in 2013 and works as an Android application developer for the SportsLabs in Boulder, Colo.

“FRESNO STATE

has a great and practical program to help students at all levels” ~ Sinha



Si Amitesh Sinha

WORKDAY INC. IN PLEASANTON,
which supplies cloud-based software for human resources and finance industries.



Ch James Cha

PELCO,
by Schneider Electric



These students' success, and that of many others from Fresno State, is no surprise to Dr. Ming Li, the department chair. He says Computer Sciences is taking advantage of “a very strong job market” by offering more relevant coursework and cultivating opportunities for students to showcase their skills while still on campus.

“We now have big programming projects in most major courses, which is a significant shift within the last 10 years,” says Li.

Fresno State also tries “very hard to connect students with both local and national employers,” Li says. “We have brought speakers from Google, Decipher, Bitwise Industries, Decade Software and other companies on campus.” The department shares the resulting success stories about graduates on Twitter: @CSSciFresnoState

“We have several companies asking to give talks on campus,” he adds. In early 2015, for example, “recruiters from the Naval Air Warfare Center Weapons Division were looking for our students for fulltime jobs or internships. They had not made a campus visit to Fresno State for over 15 years.”

The word's getting out to students checking out university Computer Science programs and even some on campus already pursuing other majors, Li says, inspiring huge growth. Enrollment has more than doubled in four years from 116 in fall 2010 to 256 in fall 2014.

“It is still growing. We receive many change of major requests,” Li says, adding, “it's worth mentioning that we now have more students from the Smittcamp Family Honors College” Fresno State's elite academic program.

Computer Science students get more than classroom and lab training, though. “We encourage students to look for internships with local companies, which has worked very well,” says Li.

Besides department-based placement efforts, the College of Science and Mathematics Advising and Resources Center is setting up a program to promote internship opportunities for students. The Lyles Center for Innovation and Entrepreneurship also provides many opportunities for Computer Science students.

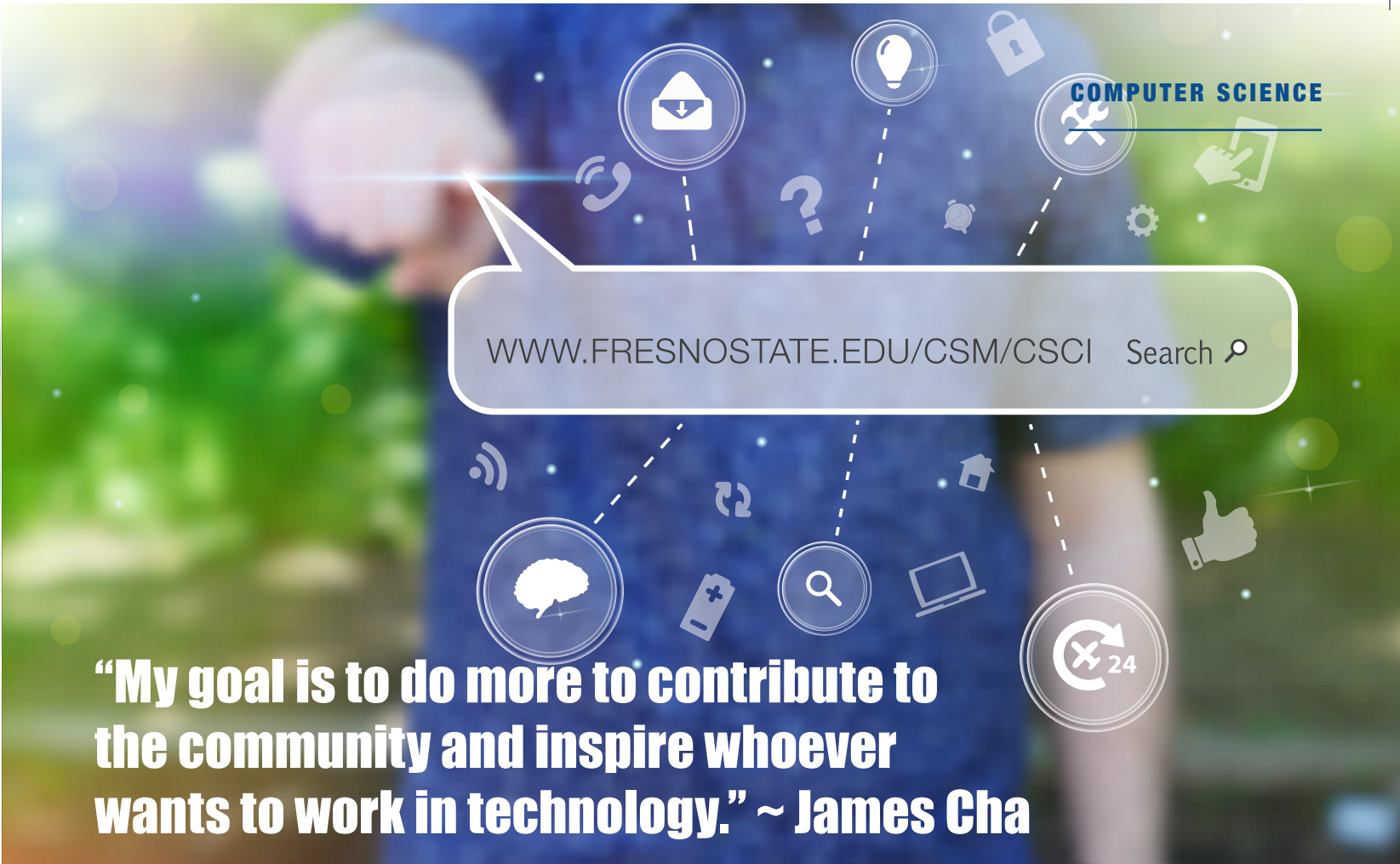
The stories of Amitesh, Paul and James are just examples of how it works.

Sinha was working in the United Kingdom for an international software company after graduating in 1997 from the Birla Institute of Technology in Mesra, India, one of the nation's top 10 technical universities.

“I realized that it would help me with my career if I could get a master's degree,” Sinha says. “Where else could you go except sunny California? So I decided to take a break from work and come to Fresno State,” graduating in 2005.

He worked at Silicon Valley firms before becoming a program manager at Workday, a fast-growing company developing “predictive analytics” for use in human resources. Workday was started in 2005 by Aneel Bhusri and Dave Duffield, former PeopleSoft employees.

Workday has been recognized by Fortune magazine as one of the 20 best American companies to work for. That makes Sinha eligible to participate in what Fortune described as a “flexible, unlimited paid-time-off policy, Cantina Cocktail Fridays and arcade games at the office,” and a program that allows employees to spend a month working in Munich and Dublin offices.



“My goal is to do more to contribute to the community and inspire whoever wants to work in technology.” ~ James Cha

Cha came to Fresno State after earning his bachelor's degree from the University of California, Santa Barbara.

Computer Science master's degree in hand, Cha went to work at Pelco by Schneider Electric in Clovis, which has long worked with Fresno State on a variety of projects and has a record of hiring locally.

“I am interested in technology in general and how it can help make our lives better. I also am a big activist in getting the younger generation into programming. My goal is to do more to contribute to the community and inspire whoever wants to work in technology.”

Matt Calderaz, a 2008 graduate from San Luis Obispo, came to campus in some distress. Laid off from his job, Calderaz says, “Fresno State was an attractive option because the Central Valley offered a much more affordable cost-of-living for me while I finished school, compared to where I had grown up.”

His degree was the gateway to working for Sony Corporation of America's Network Entertainment division, headquartered in San Mateo. He started as a software engineer in testing and now has an expanded

software engineering role that has included the PlayStation Store and the launch of PlayStation 4.

Calderaz also is a Scrummaster, employing a nontraditional product development scheme that is highly reactive to changing demands of customers prior to launch. In an environment where change is a constant and new products must offer something different and more advanced than the competition, being agile enough to revise plans and resolve issues within the software creation team is considered pivotal to success, Scrum advocates say.

Fresno State courses that best prepared Calderaz for his Sony career include fundamentals of programming, data structures, networking, web programming, databases and “the graphics and computer vision classes, particularly the complicated projects that we did in these courses.”

Another advocate for Fresno State Computer Science is Trebilcox-Ruiz, who came to campus after studying at Fresno City College. He graduated in 2013, moved to Colorado and began working for SportSLabs, where he had interned the previous summer.

Currently, he's developing a Fresno State version of the Gameday app, which provides live audio, interactive social media and scores and stats so people who are attending a game have all the information they want prior to, during and after the game. Trebilcox-Ruiz says the Bulldog app will be modeled on one developed for Auburn University.

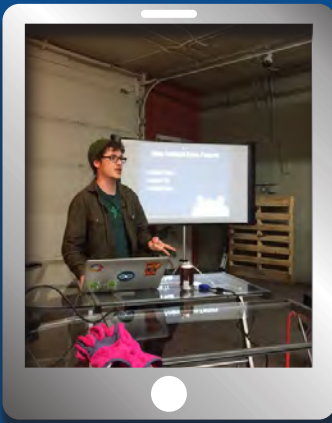
Trebilcox-Ruiz hasn't let work prevent him from exploring his programming passion off the job, too. He's written an Android technical blog, presented at tech meet-ups in Denver and Boulder and won two hackathons.

At Fresno State, he benefited most from classes on system architecture and how the machine works under the code taught by Dr. Jin H. Park. “I was able to understand how memory was being used by a device,” Trebilcox-Ruiz says, “and what makes certain code more efficient or a higher security risk, which has led to a lot better code on my part.”

story continues...

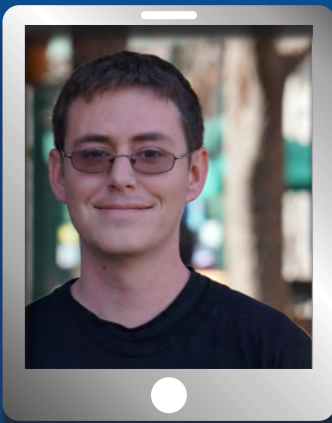


FRESNO STATE,
*connecting students
 with both local and
 national employers*



Ru *Paul Trebilcox-Ruiz*

SPORTSLABS IN BOULDER, COLO.,
Android application developer



Ca *Matthew Calderaz*

SONY, Software Development



The professors have great industry connections

Other classes gave him the background “to at least understand what to look for when trying to solve problems that fall under their domain, which has been useful.”

But not all the learning takes place in the classroom, Trebilcox-Ruiz says. “That’s when everyone figures out that we were all equally lost initially. We learned to work together to build off of each person’s strong points. I still keep in contact with a couple of the guys I had classes with, and even have one guy who moved out here to Boulder to work on my team at SportsLabs.”

“Fresno State has a great and practical program to help students at all levels,” says Sinha. “One of the key benefits was a good overview of topics that industry is interested in” such as Application Security and Cryptography with Dr. Shigeko Seki, a professor emerita, and Data Structure with Dr. Henderson Yeung.

“Some of my interviews revolved around these topics,” Sinha says, “and the professors have great industry connections.”

Fresno State’s Computer Science program, says Cha, “gave me the strong knowledge and background I required to go into the workforce and also gave me the platform to work on my leadership by forming the Computer Science Club.”

Cha’s advice to the next generation of techies: “I recommend not sitting idle and to try to connect with different organizations in the area and network. Having the education is important and so is having a network that will help you shine with the skills you gain.”

Calderaz’s advice for prospective students extends to the universities that train them: “Self-motivation is the biggest factor that will determine success [and] any college that will remove as many obstacles as possible to letting the student succeed on their own is acceptable.”

“Computer science and programming are built around things failing (code having bugs, logic being wrong, etc.),” says Trebilcox-Ruiz. “Make sure you can accept that early on and are patient enough to keep working on the same thing until it just clicks.”

After that, he adds, “Try to find an area that you really like (networking, mobile devices, graphics) and try to learn as much as you can about it in your spare time so that you can tie in whatever you learn in classes to get the most out of your time.”

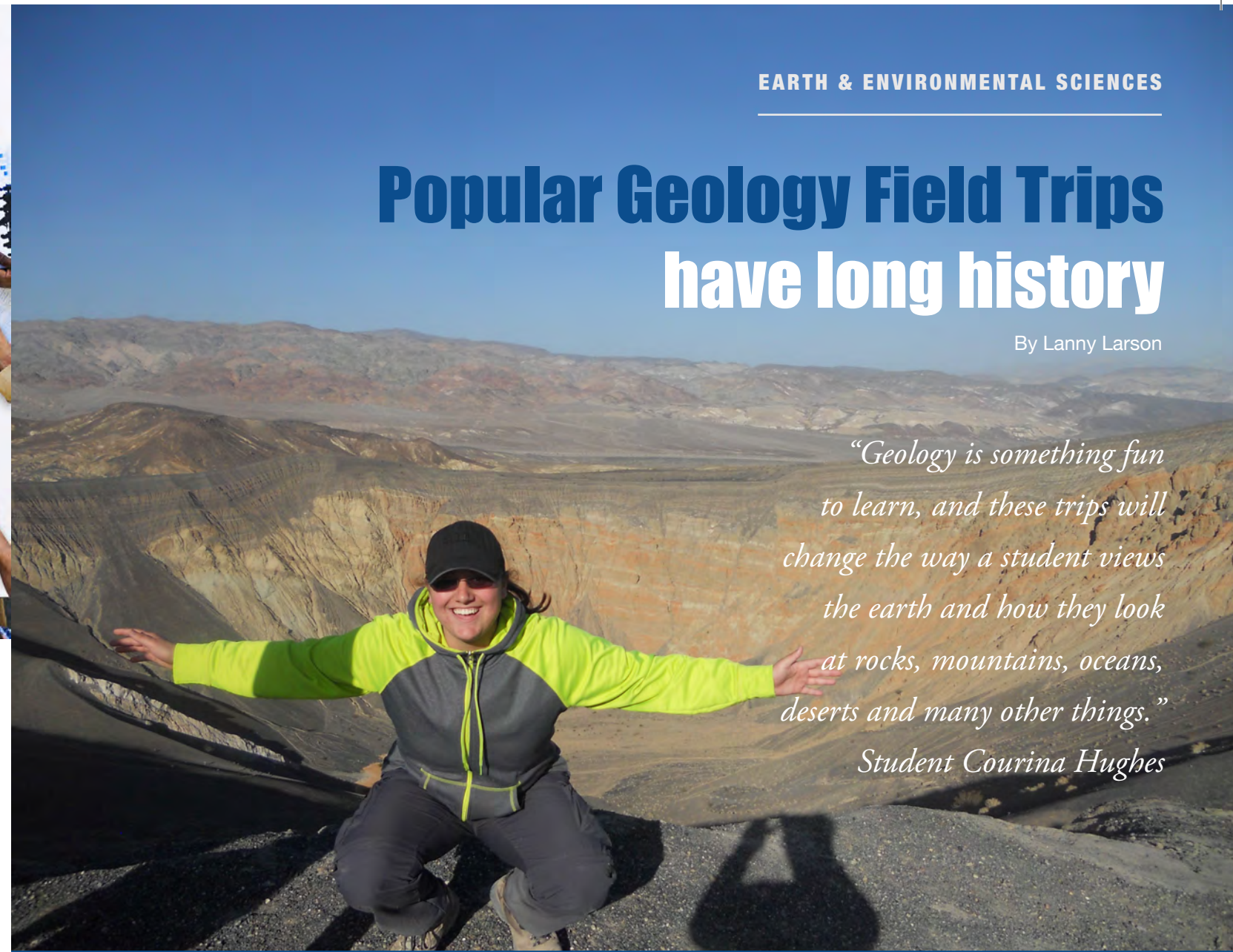
Computer Sciences Chair Li enthusiastically and confidently looks to a future when even more prospective students will learn about alumni careers in tech and decide Fresno State is a great place to launch theirs. □

Popular Geology Field Trips have long history

By Lanny Larson

*“Geology is something fun
 to learn, and these trips will
 change the way a student views
 the earth and how they look
 at rocks, mountains, oceans,
 deserts and many other things.”*

Student Courina Hughes



*Student Jordan Hensley and
 Lecturer Kerry Workman-Ford*

Photo by Cary Edmondson

Fresno State student Jordan Hensley says the best experience of her college life happened 375 miles north-east of campus at Lassen Volcanic National Park.

Enthusiastic endorsements like Hensley’s help keep the Department of Earth and Environmental Sciences “Geology Field Trip” course (EES 3) filled. Word-of-mouth approval combines with the budget-friendly course fee, opportunity to learn in natural environs off campus and exposure to a variety of academic disciplines to guarantee the field trips’ popularity.

Fresno State EES 3 students follow pathways blazed by students 90 plus years ago who caravanned to the Sierra foothills, the hills west of Coalinga, Yosemite, Kings Canyon and Sequoia National

Parks to learn. Fresno State was situated where Fresno City College is now, the cars looked more like the horse-drawn carriages they had recently replaced and such modern conveniences such as cellphones and iPads were pure science fiction.

The University’s history, “A Century of Excellence: 1911-2011,” reports that Professor T.T. Waterman didn’t want to confine his geology students to campus classrooms. He believed students needed to be in natural surroundings to better understand geology and paleontology, so he initiated the field trips.

Geology became a popular part of the science curriculum when Fresno State held summer classes at Huntington Lake from the 1920s to 1940s.

story continues...

Making Lifelong Friends

There's even a Fresno State field trip love story. Students Muriel Schmeiser and Earl Smittcamp sealed their acquaintance on campus with a stolen kiss on a geology outing to a mine near Friant in 1936. They married and became two of the University's most generous alumni benefactors before passing away (Muriel in 2009 and Earl in 2014).

Learning, not love, is the objective of today's field trips, says Kerry Workman-Ford. She's an alumna, a lecturer, the trip organizer and the person whose idea it was to create the mural in the stairwell of Science II that traces earth's history from the Big Bang to today.

Workman-Ford's research includes the Moreno Formation in the Panoche and Tumey Hills along the San Joaquin Valley's West Side (west of Interstate 5), which is underlain with rock dating from the Cretaceous Age about 65 million years ago. The region has produced fossils of mosasaurs and plesiosaurs, whose demise from the planet continues to be a subject of scientific investigation.

Workman-Ford says field trips today are conducted for the same reason as those scheduled by Waterman in the 1920s: "To expose students to geology with hands on experiences outside of the classroom"

The field trips in EES 3 are offered each semester to students for a nominal course fee, which covers transportation, food and camping fees.

The Department of Earth and Environmental Sciences picks up the remainder of the cost, so the trips are affordable for more students.

Hensley went to Lassen Volcanic National Park in September 2014 on a four-day excursion to "fascinating locations, such as the obsidian mountain and lava plumes that are accessible to the public. We also went to Burney Falls, which reminded me just how magnificent and beautiful nature can be."

At each location, Workman-Ford or a graduate student would enlighten us with geological facts, but they also taught us some life lessons and shared laughs with us. "The trip is a good bonding experience, and some of my closest friends were those who I met there."

One of her trip mates was Eri Shimizu, a Geology major from Japan studying at Fresno State as part of an exchange with Kochi University.

There were differences from the field trips she enjoyed in Japan, especially camping out. Shimizu made the most of her experience, saying, "The camping let me feel close to nature."

In Japan, Shimizu adds, "Although we have many good geological places, we don't have such a huge-scale outcrop or geologic place. Therefore, California is the perfect place for me to study Geology." Her favorite was "the sub-way cave made of basalt, showing past volcanic activity."

Sharing a Common Love and Respect for Nature

She'll share what she learned when she returns to Kochi University to get her bachelor's degree. After that, Shimizu says, "I will enter graduate school and continue to study Geology, because I want to be a geologist."

Headed for a career with the federal government is Courina Hughes, a Criminology major from Fresno and frequent field tripper, having participated in the spring excursions annually since 2012, to Death Valley and Morro Bay.

"The great thing about Death Valley is that there's so much evidence of how it has changed over time, allowing scientists to understand its history," she says. "The most exciting part of the trip is when the geology professors give their presentations on the rocks and how one can tell which type of plate boundary has occurred by just looking at the rock."

"The Morro Bay trip has the same concept, except it focuses more on oceanic formations, instead of deserts," Hughes says. "Geology is something fun to learn and these trips will change the way a student views the earth and how they look at rocks, mountains, oceans, deserts and many other things."

Hensley appreciates the field trip vibe, where undergrads, grad students and professors "share a common love and respect for nature."

Hensley, who is a Mathematics major and Geology minor, says there were engineering, natural science, recreation and Earth and Environmental Science students on her trip.

Hughes sees great benefit in the variety of academic backgrounds represented. "Because these trips are available to all majors, students are exposed to more than just Geology," she says. "I have met students from many other departments and have been able to ask them questions about their major and what it is all about."

"Being around graduate students and professors has made me consider enrolling in graduate school after I earn my degree," Hensley adds. "If I had started off my college classes at Fresno State instead of a junior college, I am sure I would have changed my major to Geology instead of Math."

Workman-Ford adds, "The most satisfying thing, from a faculty perspective, is seeing the awe in students' faces when they see real-world rock relationships and learn why things are the way they are. It spurs excitement, curiosity and interest in the natural world." □

"The most satisfying thing, from a faculty perspective, is seeing the awe in students' faces...excitement, curiosity and interest in the natural world."

Lecturer Workman-Ford



Jordan Hensley and Eri Shimizu at the volcano

SHIMIZU SAYS

"California is the perfect place for me to study Geology."

"I will enter graduate school and continue to study Geology, because I want to be a geologist."



Student Courina Hughes



Encouraging minority students engaged in Science, Technology, Engineering and Mathematics (STEM) education to continue their education at the graduate level is the goal of Fresno State's chapter of the Society for Advancement of Chicanos and Native Americans in Science (SACNAS).



Dr. Alejandro Calderon-Urrea and Club President Leonardo Velazco-Cruz

Organization Promotes Advancement of Minority Students in the Sciences

By Isaac Martinez

The Fresno State student chapter of SACNAS aims to encourage and increase the number of Chicano & Native American students to pursue graduate school. A new organization on campus, SACNAS has only been part of the College of Science and Mathematics for four semesters and already has seen its members get accepted into graduate programs at UCLA and the University of Texas, Southwestern.

Fresno State students attribute their acceptance into top summer research programs across the nation and the world to SACNAS. This summer, students Natsinet Ghebrendrias and Alexandra Saxberg will travel to and work in France, conducting research at Universite Paul Sabatier on Microbiology/Immunology, while student Sam Hartanto will participate in a Stanford Summer Research Amgen Scholars Program.

Dr. Alejandro Calderon-Urrea, a biology professor with a focus on molecular genetics and plant biotechnology serves as the club's advisor.

"I thought that having a SACNAS Fresno Chapter could be a good vehicle to inspire our undergraduate students, primarily from under-represented groups in sciences, to pursue careers in science," says Calderon-Urrea.

Leonardo Velazco-Cruz, the SACNAS student president since Fall 2014, is excited about the progress and future of the Fresno State chapter of SACNAS.

"SACNAS is an all-inclusive organization which helps students at any stage in their academic career to learn about graduate school and become competitive applicants," says Velazco-Cruz.

"A big focus of SACNAS at Fresno State is to encourage and give assistance to students wanting to participate in undergraduate research and summer research fellowships. (Our) student members become strong networkers and receive a lot of information on what graduate school is, how to prepare, and how to apply."

Velazco-Cruz himself studies genetics and disease, and in November, earned a presentation award at the Annual Biomedical Research Conference for Minority Students held in San Antonio, Texas. He spent last summer at Washington University in St. Louis for a fellowship studying genomics and has conducted undergraduate research at Fresno State since 2013 with Assistant Professor Joseph Ross. □

Fresno State Alum Runs 190 Miles to Raise \$10,000 for Autism Center

By Jill Wagner

His plan to raise money for the Autism Center: run 190 miles from San Francisco to Fresno in 10 days.

An online fundraising page was developed and the campus student newspaper The Daily Collegian, campus radio station KFSR and local media outlets helped to publicize both Stiner's fundraising efforts and the work of the Autism Center.

"The most difficult part of the process was probably trying to successfully explain to people why I was doing the run," says Stiner. "They understood that it was to benefit the Autism Center, and they knew that it was in conjunction with Fresno State, but a lot of people just couldn't grasp the idea that I just 'wanted' to run 190 miles. That proved to be an interesting topic of discussion."

The run began Thursday, Oct. 30 at San Francisco's Fisherman's Wharf, and concluded Saturday, Nov. 8 at the campus Amphitheater. Word spread about the "Ryan Stiner Run-For-A-Cause" effort, and Stiner collected more than \$10,000 for the Autism Center, well exceeding his \$7,000 goal.

"With partners like Ryan, we are afforded the opportunity to donate the equivalent of 1,500 hours of early intervention services a year to families in need, while providing over 40,000 hours of direct service to the community," said Yeager. Stiner was greeted at the finish line by Yeager, First Lady Mary Castro and staff and clients of the Autism Center. Later that evening,

Stiner crossed a ceremonial finish line during the first quarter of the Fresno State football game at Bulldog Stadium and was welcomed by University President Joseph I. Castro and his wife Mary.

Stiner's motivation is the experience he had as a student at Fresno State. "I take pride in the fact that I earned a degree from Fresno State," Stiner says. "From the professors to the students, Fresno State offered me a place to not only find my passion, but do so in an environment that cultivated itself through hard work and perseverance."

Stiner encourages other alumni to find a way to give back to the university. "If others are considering ways to support Fresno State, I would challenge them to look for a creative and unique way to do so," says Stiner. "Find something you love to do - in my case running - and brainstorm ways you can turn that passion in to a giving opportunity." □



Ryan Stiner

When Fresno State alumnus Ryan Stiner met Tim Yeager, executive director of the Autism Center at Fresno State, he felt compelled to help. "We made a quick friendship with one another and it was through our friendship that I was able to learn a great deal about the wonderful work the Autism Center does," says Stiner.

The Center is the only one of its kind in the region, and provides early intensive behavioral intervention consisting of 20-40 hours of individualized instruction each week for children with autism. Treatment generally begins at the age of four or younger and usually continues for two to three years.

Stiner is a 2011 graduate of the Craig School of Business who now works as a wealth advisor. He's no stranger to putting his running abilities to the test, completing multiple marathons, half-marathons and other distance runs.



Tim Yeager, Ryan Stiner, & Mary Castro

NEWS



Student News

THE FRESNO STATE CHEM CLUB received both the outstanding chapter award and the green chemistry award from the American Chemical Society. Only about 10% of student clubs receive the outstanding chapter award each year. This is the fifth consecutive outstanding chapter award for Chem Club, which was presented at the 249th American Chemical Society National Meeting in Denver, CO in March.



ANNABELLE LOLINCO (Chemistry undergraduate) was selected for the 2015 Student Leadership Award by the American Chemical Society (ACS). This program recognizes emerging leaders in the student chapter network and helps them prepare for leadership opportunities at volunteer organizations such as ACS, and in their professional career. Annabelle attended the 2015 ACS Leadership Institute in Dallas along with student, academic and industry leaders from around the country.

YING VANG, a senior computer science student, has been admitted to the competitive National Science Foundation Research Experiences for Undergraduates program at Purdue University, Calumet in Summer 2015.

This summer three CSM students will be participating in International Research Programs through our LSAMP program. **Erick Escobar** will travel to Johannesburg, South Africa through the Penn State AffricArray program and **Alexandra Saxberg** and **Natsinet Ghebreandrias** will travel to Toulouse, France through a Louisiana State University iREU.

ALEJANDRO HERNANDEZ AND JOY APARICIO-VALENZUELA from the department of Biology have been accepted in the Science, Technology and Research Scholars Summer Research Program at Yale University.

YESENIA THOMPSON, CSM Graduate Dean's Medalist was also named the 2015 University Graduate Medalist, the top honor awarded to a graduate student at Fresno State.

Elements – Brief News

DR. ERIC PERSON was selected as a member of the Chemistry/Instrumental Analysis Scientific Area Committee's Controlled Substances Subcommittee within the National Institute of Standards & Technology. Dr. Person is one of only two academics in the country selected for this committee. www.nist.gov/forensics/osac.cfm

DEPARTMENT OF PSYCHOLOGY faculty and students presented a total of 32 posters and had a chance to network with psychological researchers from across the Western states at the annual Western Psychological Association meeting in Las Vegas April 30-May 3.

DR. ALEX LIU from the Department of Computer Science joined the editorial board of Applied Soft Computing Journal.

DR. JASON BUSH from the Department of Biology was reappointed to the State of California Carcinogen Identification Committee, where he has served since 2012.

JERRY DE GRAFF, lecturer in the Department of Earth & Environmental Sciences, was named the Richard H. Jahns Distinguished Lecturer (2015-2016) for the Geological Society of America.

DR. MATTHEW SHARPS, Department of Psychology, received the Edward Schafer Annual Award for Best Research Paper from the Society for Police and Criminal Psychology.



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October 10, 2015
CSM Homecoming tailgate

Visit www.fresnostate.edu/csm for details

CSM ALUMNI: WE WOULD LOVE TO HEAR FROM YOU!

Submit your personal or professional news to csm@csufresno.edu

CONGRATULATIONS



PROVOST AWARD WINNERS
Innovation Award
presented to Dr. Eric Person, Chemistry



Promising New Faculty
presented to Dr. Mara Brady,
Earth & Environmental Sciences

COLLEGE OF SCIENCE AND MATHEMATICS AWARD WINNERS 2014 - 2015



Dr. Matthew Sharps, Psychology
Outstanding Faculty Research



Dr. Ulrike Muller, Biology
Outstanding Teaching



Donald Williams, Physics
Outstanding Teaching - Lecturer



Dr. Melissa Golden, Chemistry
Distinguished Faculty Service



Donnie Golden, Chemistry
Distinguished Staff Service



Dr. Reza Sadri, MS Computer Science '93,
Founder & CEO of Levyx, Inc.
Distinguished Alumnus

A sampling of the 188 Faculty & Student Publications from 2014-15

BIOLOGY

Dianna K. Padilla, Thomas L. Daniel, Patsy S. Dickinson, Daniel Grünbaum, Cheryl Hayashi, Donal T. Manahan, James H. Marden, Billie J. Swalla and Brian Tsukimura (2014) Addressing grand challenges in organismal biology: the need for synthesis. *BioScience*, vol. 64, no. 12, pp. 1179-1187.

COMPUTER SCIENCE

Yogesh Bansa and Jin H. Park (2015) Multi-hashing for Protecting Web Applications from SQL Injection Attacks. *International Journal of Computer and Communication Engineering (IJCCE)*, vol. 4, no. 3, pp. 187-195.

CHEMISTRY

Riann J. Egusquiza, Robert Benjamin Runyon, Jordan Ringel, Craig W.C. Seber, Gonzalo Leyva, Jose Correa, Coulibaly Datoliban Roland, Mujahid Umar, Ming Xiao, John T. Bushoven, and Joy J. Goto (2014) Calcium oxalate crystal yield in various gravity environments. *Gravitational and space research*, vol. 2, no. 2, pp. 3-12.

(student authors are underlined)

EARTH AND ENVIRONMENTAL SCIENCES

Mara Brady (2015) Stratigraphic completeness of carbonate-dominated records from cratonic interiors versus continental margins: stratigraphic thinning occurs via condensation and omission at multiple scales. *Journal of Sedimentary Research*, vol. 85, pp. 337-360.

MATHEMATICS

Tamás Forgács, James Haley, Rebecca Menke and Carlee Simon (2014) The nonexistence of cubic Legendre multiplier sequences. *Involve, a journal of mathematics*, vol. 7, no. 6, pp. 773-786.

PHYSICS

James Macdougall and Douglas Singleton (2014) Stokes' theorem, gauge symmetry and the time-dependent Aharonov-Bohm effect. *Journal of mathematical physics*, vol. 55, p. 042101.

PSYCHOLOGY

Paul C. Price, N M Kimura, A R Smith, and L D Marshall (2014) Sample size bias in judgments of perceptual averages. *Journal of experimental psychology: learning memory, and cognition*, vol. 40, pp. 1-11.

New Faculty

We would like to welcome our new
faculty who will join us this fall:

Dermot Donnelly, PhD
CHEMISTRY EDUCATION
University of Limerick, Ireland

Hubert Muchalski, PhD
CHEMISTRY
Vanderbilt University

Khang Tran, PhD
MATHEMATICS
University of Illinois at Urbana-Champaign, Illinois

Jenna Tague, PhD
MATHEMATICS EDUCATION
Ohio State University, Columbus

Tricia Van Laar, PhD
CELL AND MOLECULAR BIOLOGY
University of Texas at San Antonio

Emily Walter, PhD
LEARNING, TEACHING AND CURRICULUM
University of Missouri

Katherine Waselkov, PhD
EVOLUTION, ECOLOGY AND POPULATION BIOLOGY
Washington University, St. Louis, Missouri

GREEN BAG LUNCHES PROMOTE ENVIRONMENTAL AWARENESS ON CAMPUS

By Vincent J. Treas

Several times each semester the Department of Earth and Environmental Sciences, in collaboration with other on-campus departments, hosts Green Bag Lunches, informal gatherings providing an opportunity for faculty and staff to learn about what others are doing related to environmental issues on campus and in the community. Students and staff from across all majors and community members are welcome to come learn and voice their opinions.

During a Green Bag Lunch event, a guest speaker addresses various topics regarding local environmental issues. Dr. Beth Weinman, a Professor in the Department of Earth and Environmental Sciences is a fan of Green Bag Lunches. "I've learned a lot from each one of them," she says. "They are fun and there are a lot of people doing sustainable things all over campus."

One of the topics that most impressed Weinman was learning about on-campus sustainability issues related to water. "There's a lot we're doing to save water and our folks over at Plant Operations manage our groundwater in a way so that it isn't being depleted as fast as the surrounding city," she says. "Impressively, they've cut water use on campus down to below compliance levels, and we're also improving the quality of our water by recycling groundwater with high nutrients to irrigate our agriculture."

Other topics covered include how biodiversity is monitored on campus, student clean-up projects on the San Joaquin River, the campus Food Recovery Network and solar energy projects on campus. Weinman adds, "From students, staff, faculty and the community, we've had a lot of lessons. I really had no idea that the campus was doing as many sustainable activities as we are, and it is heartening to learn about everyone's efforts."

When guest speakers conclude their presentation, those attending then engage in discussions about what they have learned and how they can help find solutions to an environmental problem, if one has been introduced. Organizers say that collaboration of faculty, staff, students, and community members is paramount to promoting a better environment and formulating solutions to matters that relate to the ecosystem, air quality, water preservation, and pollution.

The lunches are open to anyone on campus or in the community and are featured on the Fresno State events calendar.



FRESNO STATE

College of Science and Mathematics

College of Science and Mathematics
California State University, Fresno
Science II, Room 301
2576 E. San Ramon Ave., M/S ST90
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