

# DISCOVERY



Cal Poly Pomona  
College of Science

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**COVER PHOTO:**

Professor Robin Wilson from the Department of Mathematics and Statistics explains math concepts to his students.

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## Our Vision

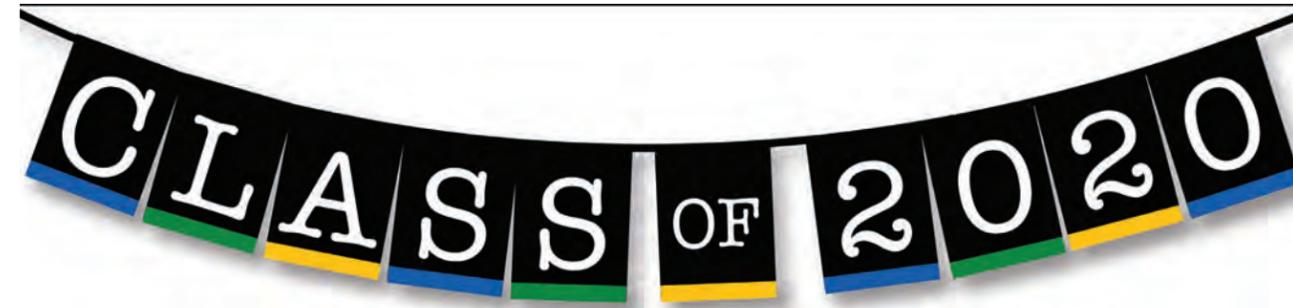
Fostering curiosity and a culture of scientific discovery

## Our Mission

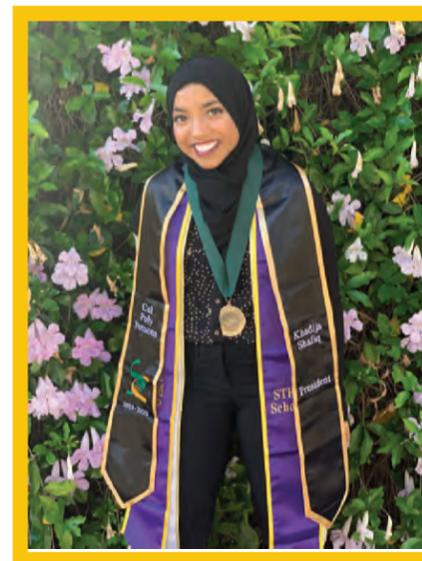
Educate, mentor, and inspire students through scientific inquiry and hands-on learning

## Core Values

Curiosity Integrity  
Collaboration Inclusivity  
Innovation



The postponement of commencement ceremonies due to the COVID-19 pandemic didn't stop students from celebrating their graduation.



College of Science

1013 graduates

921 bachelors  
92 masters



(Clockwise from top left) Khadija Shafiq, BS Biotechnology, Summa Cum Laude, Science Council President, Kellogg Honors College, President's Scholar; Hannah Mae Russell, BS Biology, Magna Cum Laude; Christopher Anthony Sasso, BS Computer Science, Magna Cum Laude, Kellogg Honors College; Dominic Jacob Rivera, BS Kinesiology, Cum Laude, Vice President of Pre-Physician Assistant Club.



The 2020 Valedictorians and McPhee Scholars are Marina Girgis, BS Mathematics (left) and Masato Terasaki, BS Mathematics.



## BAMM! Attacks Lack of Diversity in Math

Cal Poly Pomona is part of a \$1 million grant from the National Science Foundation (NSF) to increase the number of underrepresented minorities pursuing Ph.D.'s in mathematics. The project, called BAMM! Bolstering the Advancement of Masters in Mathematics, is a joint effort between three Cal State Universities. Oscar Vega from Fresno State is the principal investigator (PI) on this project with co-PI's Kimberly Seashore from San Francisco State, and John Rock and Robin Wilson from CPP's Department of Mathematics and Statistics.

"Out of the \$1 million, \$600,000 will fund scholarships for 30 students across three schools and CPP will provide 10 students with two-year scholarships," said Professor Robin Wilson. "This project builds on an existing 10-year partnership we have with the National Alliance for Doctoral Studies in the Mathematical Sciences. They're an organization that includes Ph.D. granting institutions. They

have a mentoring program and provide Ph.D. application assistance."

Associate Professor John Rock said, "We've been taking our students to the Math Alliance's Field of Dreams Conference where they can network, talk to other graduate students, find out about careers in industry, find out about Ph.D. programs and find a mentor."

The BAMM! program will include Math Alliance mentors from Ph.D. granting institutions and CPP professors Rock and Wilson will mentor students during their master's program. Second year graduate students will also mentor first year students. "This is a model that has been successful for other programs such as Cal-Bridge which has increased the number of physics and astronomy Ph.D.'s. That program's success helped influence the development of BAMM!," Rock said.

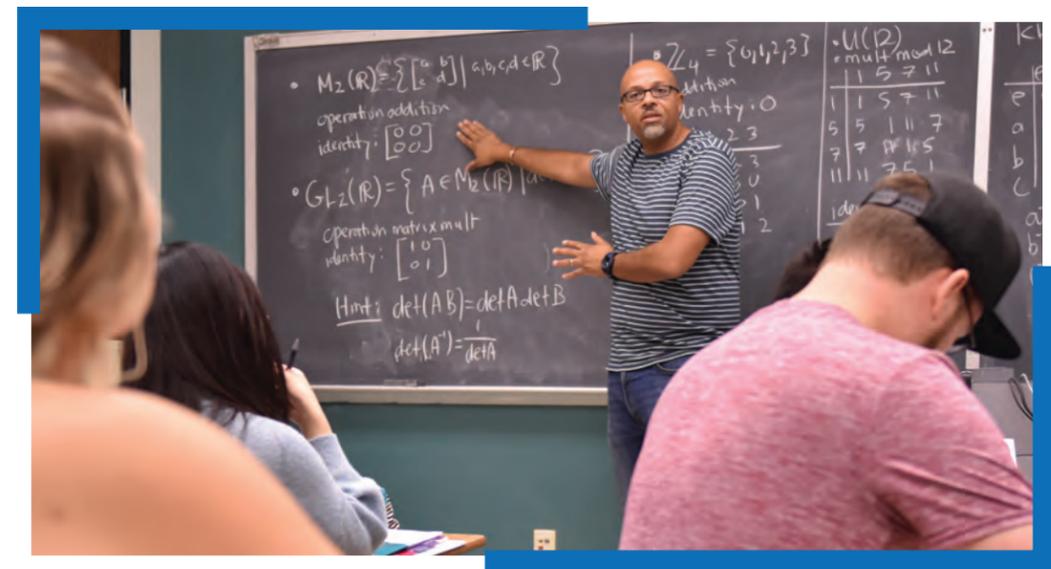
Wilson added, "BAMM! is based on six evidence-based best practices; they are mentoring and community building, support in Ph.D. program applications, travel to network and present research, strengthening academics, having a structured trajectory with benchmarks, and opportunities for community service."

Wilson said that "BAMM! will guide students through the master's program and set them up for success in a Ph.D. program. This will help increase the pipeline of math teachers." The California State University system reports that at least 33,000 new math and science teachers will be needed over the next 10 years.

"There are jobs for graduates with a math degree and not just in education," Wilson said. "A Ph.D. in math is valuable in business, industry, and government. Math is critical in fields such as software engineering, statistics, finance, and data science."



Professor John Rock, co-PI on the grant poses with students at the CSU Alliance for PUMP Summer Program. PUMP stands for Preparing Undergraduates through Mentoring towards Ph.D.'s.



Professor Robin Wilson, co-PI on the grant, discusses different examples of groups in his Abstract Algebra class.



# Seeing the World in 3D

The Department of Geological Sciences has purchased a ground-based LiDAR system that allows students to recreate geological features in three dimensions.

LiDAR stands for Light Detection and Ranging. The device works by shooting laser light at a surface. The reflection of that light from the surface is detected by a sensor. As the laser moves across a surface the sensor creates a “data cloud” of discrete points. Through software, those points are then assembled into a three dimensional image.

While the LiDAR system has important uses in geology, it’s also valuable to environmental biology because it can be used to study the environment by creating an accurate picture of topography and vegetation. Such information can be useful in assessing fire damage and recovery.

The LiDAR will provide opportunities for teaching and research in other departments at the university such as biology, geography, anthropology, and civil engineering.

The Department of Geological Sciences will use the equipment in areas such as seismology, subsurface geophysics, structural geology, and in studying natural disasters.

Graduate student Anselm Krause said, “I’d been exposed to LiDAR data and interpretations at UCR but not until I arrived at CPP was I able to collect and refine data from the field.” The project Krause worked on was field mapping an area affected by the 7.0 Ridgecrest earthquake.

“We would set up the LiDAR system and run multiple scans in a wide area of the valley and track surface rupture

zones and any geologic features that were affected by the earthquake.”

Assistant Professor Nicholas Van Buer said, “In my Field Investigations graduate level class we looked at the fault mainly and we now have 3D pictures of the ground rupture. We also have a whole topographic map of Spangler Hills. It was made from about 30 different locations we took and stitched together.”

“It’s a special privilege to use such high-end scientific equipment. Many industries that hire geologists/geoscientists are gradually switching over to digital



Graduate student Sam Gurley explores the Ridgecrest fault.



Geological science students using the new LiDAR system.

mapping and surveying,” Krause said. His thesis project was focused on the northeastern coast of New Zealand. He has some pre-existing LiDAR data for the project. “With the COVID-19 pandemic, there is a chance that the LiDAR analysis will have to substitute for field work.”

LiDAR also allows accurate assessment of changes in terrain. Professor Jascha Polet said, “I plan to use the LiDAR to study fault structure and also to image changes for currently active landslides. By generating 3D models of landslides and comparing them over time we can identify areas that have experienced significant movement.

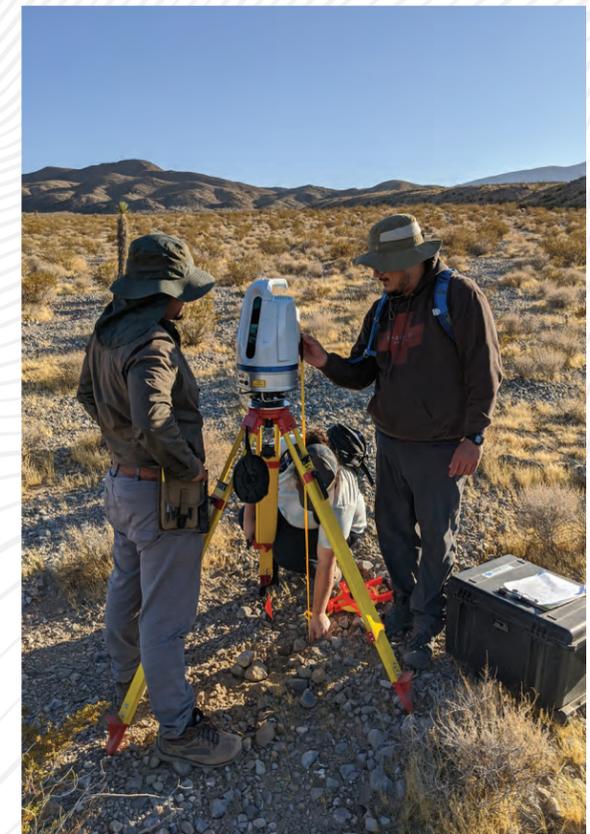
Graduate student Ashley Rivera is leading a team of undergraduate students who are using the LiDAR to study the Blackhawk landslide and Polet is their advisor. “This historic landslide has an extraordinarily long run-out and the mechanism responsible for that is still being debated. This research group hopes to resolve that question,” said Polet.

Rivera said, “Along with LiDAR we’re using ground penetrating radar (GPR) and spectral ratio analysis to give us insight into the internal structure of the landslide. Our findings may allow scientists to better understand the hazards associated with long runout landslides.”

“The COVID-19 pandemic has proven to be challenging in terms of conducting research and fulfilling my responsibilities as a graduate teaching associate. Currently, we’re unable to conduct further field work or attend conferences to present our findings, but it gives us the opportunity to focus on interpreting the data we’ve collected so far,” said Rivera.

As for future plans and other uses, Geological Sciences Department Chair Jon Nourse said, “We are interested in using LiDAR on the big island of Hawaii to map active lava flows of Kilauea Volcano, and the progressive recovery of vegetation.”

Graduate student Rivera concluded by saying, “Having access to high quality LiDAR equipment has allowed us to develop skills that will be beneficial for future employment and academic opportunities.”



# NSF Career Grant Fuels Green Chemistry Research



Assistant Professor Chantal Stieber from the Department of Chemistry and Biochemistry received a National Science Foundation CAREER grant of \$475,000 which is a highly competitive grant for pre-tenure faculty to integrate research and teaching. The grant term is five years and will fund a project called Quantifying Nitrogen-Oxide Activation and Coordination Modes through Synthesis, Spectroscopy and Computations.

The long-term goal of this research is to remove pollutants from the environment and use them as feedstocks in chemical synthesis for pharmaceuticals or making plastics. Most pollutants like carbon dioxide, carbon monoxide, nitric oxide or nitrous oxide aren't very reactive, and scientists are still studying how to form new bonds with them.

"We're studying transition metals used by biological

systems in soil bacteria, such as nitric oxide reductases, and nitrous oxide reductases. Currently, we know the metals that facilitate the reactions, but we don't know how they work," Stieber said. "Our research is looking at both sides. How do the biological systems work and then how can we make something in the lab that mimics that?"

"To study the biological systems, we're developing techniques that use X-rays to figure out the small steps that an enzyme goes through. Then there's a synthetic component which involves making metal complexes that are bound to various pollutants so we can convert them into other products in the lab," Stieber said.

The preliminary work that paved the way for the NSF grant was funded by a CSUPERB grant in 2016-2017, which allowed students to collect data at the Stanford Synchrotron Radiation Lightsource (SSRL) and resulted



Left to right from back to front. Back row: Jacob Brannon, Carson Gorney, Adrian Torres; third row: Alexis Hoxie, Carlos Gutierrez, Neil Dudeja; second row: Evan Bonnard, Justin Cortez, Brenda Henriquez; front row: Chantal Stieber, Zijie Zhang, Briana Arreaga, Isaac Ramirez



Chemistry major Adrian Torres equips the Schlenk vacuum line with a round bottom flask filled with a chemical reagent.

in four publications. CSUPERB is the Cal State University Program for Education and Research in Biotechnology, and the group's research was highlighted in a recent CSU newsletter.

In 2018 Stieber led the acquisition of an X-ray diffractometer (XRD) for the college through a Department of Defense grant, which set the foundation for the educational component of her CAREER grant. The XRD is a \$600,000 instrument that allows researchers to determine the three-dimensional atomic structure of a molecule. Stieber is working with colleague Kathryn McCulloch to incorporate the XRD into coursework across the chemistry curriculum. XRDs are seldom available to undergraduates, so it offers incredible new opportunities to CPP students in both classroom learning and research.

Stieber said, "We also used the XRD to characterize the structure of one of the new nickel complexes my students made. This is air-sensitive chemistry and requires an inert atmosphere glove box to keep air and moisture out, so it is typically difficult for undergraduates. We published a paper showing that undergraduates can make these complex new molecules, which strengthened the CAREER grant application."

The NSF grant offers additional opportunities for students

because it funds salaries so that students can earn money while gaining valuable experience conducting research in their field.

"Being able to work in Dr. Stieber's lab has given me a sense of purpose. I started over the summer volunteering in the lab and now I'm getting paid. Knowing that this work is considered important enough to be paid for doing it is a big deal," undergraduate Adrian Torres said.

There are over 15 students in Stieber's lab and the NSF grant also provides money for students to travel to conferences and to the SSRL at Stanford to collect synchrotron data.

Stieber said, "What we're doing is called small molecule activation. Adding another bond to some of these diatomic molecules is quite difficult; however, some of my students have demonstrated the feasibility of being able to add other atoms to nitric oxide. Now we have to characterize the products and publish our findings."

As for Torres, he is interested in the environmental aspect of the work and plans to get a Ph.D. Torres said, "I'm applying the knowledge I gained in the classroom and that really helps me understand what I'm learning. I'm also a first-generation college student from a low-income background and the support has been very important to me."

# A HAPII Place for Computer Science Research



Assistant Professor Ben Steichen (far left). (Top left-right) Kevin Scroggins, Carla Castillo, Patriz Daroy. (Bottom left-right) Angela Gadon, graduate students: Alex Garcia, Wilsen Kosasih, Jesus Leon.

Whether you're using your laptop to conduct research, typing a text on your phone or asking Siri to tell you a joke, you're experiencing the human/computer interface (HCI). At the HAPII lab in the College of Science, students are working under the guidance of Assistant Professor Ben Steichen to improve that interface.

HAPII stands for Human-centered, Adaptive, and Personalized Information Interaction. "The lab researches novel solutions that aim to understand and support each individual user," Steichen said.

They're currently looking at how they can better support multilingual users in search, and recommended systems, where an interface provides personal recommendations.

"The research I'm involved in is predicting a user's language proficiency based on their eye-gaze data. The end goal is to create an adaptive system," said alumnus Wilsen Kosasih ('20, MS computer science). Eye-gaze is a device that tracks where people look on a computer screen.

"We developed a web browser tool aimed at increasing multiculturalism while browsing the internet," student Angela Gadon added.

Steichen said "A lot has been done on improving search algorithms but not as much on user modeling and personalization. Currently, if you conduct a search, your results are only going to be in the language you use in your

search. If you're multilingual, you could benefit from results in other languages."

Another aspect of personalizing the interface is discovering what sort of information users want in another language. One study the lab conducted found that users prefer to receive news and health related information in their native tongue; however, for technology or business information, users preferred English, regardless of what their first language was.

"The goal of this research is to develop personalized algorithms and interfaces to provide tailored result pages for each individual user," Steichen said. Tailored results are one aspect of the HAPII lab's research, the other is adaptive visualization, which addresses how the information is displayed for the user.

"With so much information available to us, people can get overloaded, and information visualization systems help humans deal with large amounts of information," student Patriz Daroy said. "I utilize adaptive overlays to understand how people interact and synthesize information using different visualizations. I'm interested in ensuring that technology is accessible."

"When we talk about visualization systems we're talking about things like charts and graphs. Right now they're one size fits all, but some people do better with different visualizations. We're looking at people's cognitive styles, abilities, and personalities," Steichen said.

**"Seeing people use something that I created made me even more excited to begin work at Microsoft."**

- Jesus Leon, graduate student

Artificial intelligence can allow systems to learn what's best for a user. "User modeling and personalization are at the crossroads of HCI and Artificial intelligence," Steichen added.

In the College of Science, educational opportunities extend beyond classes and labs. In 2019 Steichen acquired an NSF grant to allow 15 CPP students to attend The Web Conference in San Francisco. It is THE event for all things web related. Tim Berners-Lee and Robert Cailliau, who collaborated to create what we now call the web, spoke at the conference. Steichen was the student relations chair and co-organized the event.

An exciting partnership that Steichen is involved in is placing interns at Microsoft. Distinguished Alumna Maria Alvarez ('95, MS computer science) who is General Manager of Strategy and Business Services for Microsoft's Artificial Intelligence (AI) Platform team, supports students through scholarships and approached Steichen about internships.

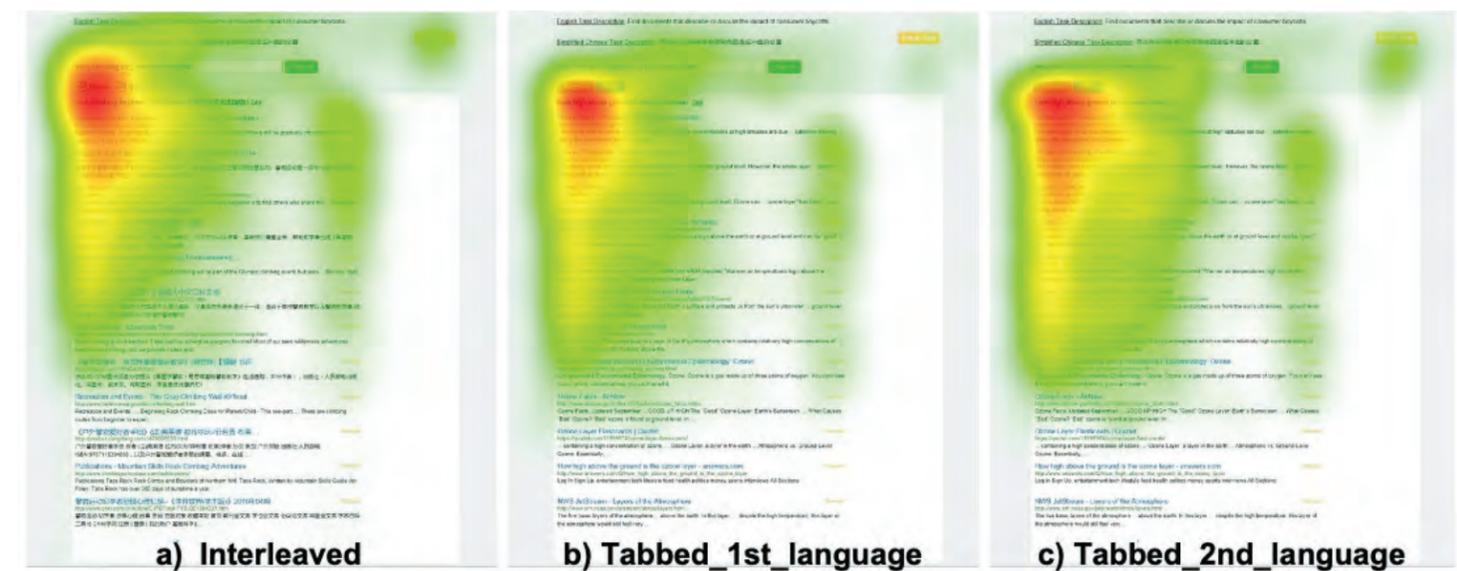
Steichen explained how it works. "We place two students as interns at Microsoft. They work with Maria's team in the areas of user experience, software development, or business. The students are mentored by me and Microsoft staff. If they do well, they may get a job offer."

"Two of my students who participated, Angela Gadon, and Jesus Leon, received job offers from Microsoft and will begin working as software engineers in August," Steichen added.

"The programming languages and software we learned at the HAPII lab helped me with my work at Microsoft. The experience taught me how to ask the right questions and the importance of thorough design – skills that I'm sure will come in handy as a full time software engineer," Gadon said.

Graduate student Leon said, "My research at HAPII exposed me to collaboration and team work. All our mentors at Microsoft were extremely helpful and friendly."

"Making software for people is very different from creating code for a grade. It requires more focus. Seeing people use something that I created made me even more excited to begin work at Microsoft."



The HAPII lab uses eye tracking hardware to create heat maps showing participants' areas of focus on web search results.



## Alumnus Dr. Larry Michel Gives Back

“I chose Cal Poly Pomona over USC for my undergraduate degree,” confides alumnus Larry Michel (’76, zoology). “It was more economical and CPP had such a great reputation for pre-professional programs.”

There were other advantages as well, such as an acceptable commute which allowed Michel time to shadow and volunteer at an orthodontist’s office. “I had braces in high school and ever since that time I wanted to be an orthodontist. I’m still friends with my orthodontist,” he said.

Michel has enjoyed a successful 25-year career as an orthodontist and now teaches and mentors students at USC, where he completed his dental program. He said, “The education I got at CPP really prepared me well for dental school.”

Michel has many fond memories of his time at Cal Poly Pomona. “I remember taking a “pines to palms” trip with Dr. Tim Brown that started in, I think it was Idylwild, and ended in Palm Springs. It was phenomenal.”

“I remember my classes being fun. My lab partner in anatomy was Jim Zorn who went on to become quarterback for the Seattle Seahawks.” Zorn was starting quarterback for the team’s first 8 seasons.

Michel recalls, “The instructors were really good but they also cared a lot about the students.” One Professor was particularly important to Michel. It was David Steele from the Department of Biological Sciences. “He really took an interest in students. He was a big part in helping me get into my profession. He was my advisor and helped lead the way.”

Steele was also advisor to the Pre-Med and Pre-Dental clubs. Michel was a member of the Pre-Dental club because he recognized that membership in student clubs helps in professional development.

While Michel was in dental school he liked to return to CPP to play practical jokes on Steele. “I’d sneak into the back of his class and pretend to fall asleep. Sometimes it was too much for him and he’d crack up and laugh out loud,” Michel said.

“I always kept in touch with him. We’d meet at school or go to dinner. He came to my wedding and my kid’s birthday parties. I stayed engaged with the college through him,” Michel added.

“Larry always loved a good prank.” Steele recalls. “In 2008 he invited me to the Distinguished Alumni Dinner. Larry got up in front of the audience and told them, ‘Steele showed up at our wedding & anniversary and the funny thing was, he wasn’t even invited.’”

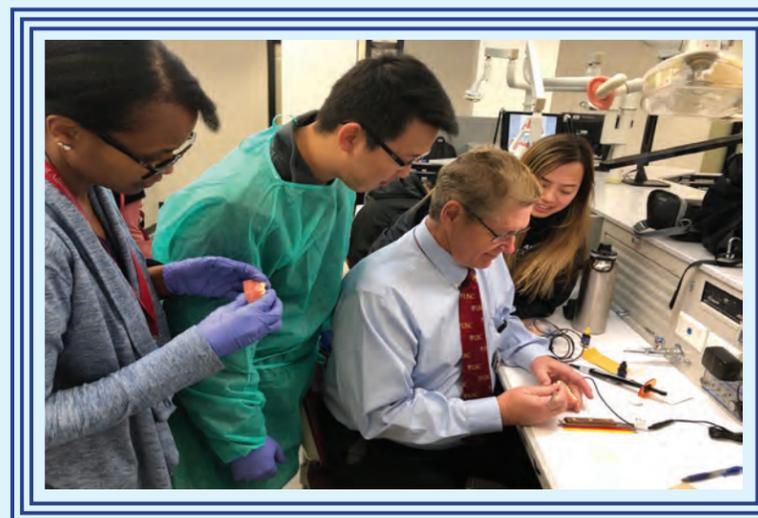
Then Larry Michel announced that he and his wife had set up the David F. Steele Pre-Professional Health Careers Endowed Undergraduate Student Scholarship. “I had no idea,” Steele said. “I guess he wanted it to be a surprise because he knows that I tend to not like attention. They gave me a plaque. I was so out of it, I held the plaque upside down until the photographer pointed it out to me. I’m not used to being the center of attention.”

Steele recalls that “Larry was a great student. He arrived at CPP knowing exactly what he was going to do. He was a man with a plan. We talked about his CPP course sequence but I didn’t have to mentor him much. When it came time to apply to dental school I helped him figure out the where and the why.”

The Steele Endowed Scholarship provides \$1,000 annually to an undergraduate student who is enrolled in a pre-professional health field such as medicine, dentistry, veterinary medicine or kinesiology.

When Michel was asked what motivated him to set up the scholarship, he said, “It’s important to remember the people and institutions that helped us get where we want to go because we can’t get there alone.”

He added, “I’d like to encourage other alumni who benefited from attending CPP to give back. We should be proud of what we’ve done but we need to remember how we got there.”



Alumnus Dr. Larry Michel mentors students at USC.

**“I’d like to encourage other alumni who benefited from attending CPP to give back.”**

**If you’re interested in exploring ways that you can give back to the College of Science at Cal Poly Pomona, please contact Development Director Melissa J. Martinez by email: [melissam@cpp.edu](mailto:melissam@cpp.edu) or by phone: (909) 869-4160.**

# Students Conduct Breast Cancer Research Thanks to NIH Grant

The College of Science has received a National Institute of Health (NIH) grant to study how Usp16-Mediated Histone Deubiquitination Regulates Breast Cancer Cell Invasion. The Principal Investigator is Professor Junjun Liu, biological sciences. He's mentoring three graduate students and one undergraduate.

Graduate student Jade Lolarga said, "I've been working with breast cancer research in Professor Liu's lab for 3 1/2 years and I've been working on different types of cancer research for 6 years. Dr. Liu has been a great mentor in school, lab, and life. He has given me so many opportunities and even helped me get my first job in industry!"

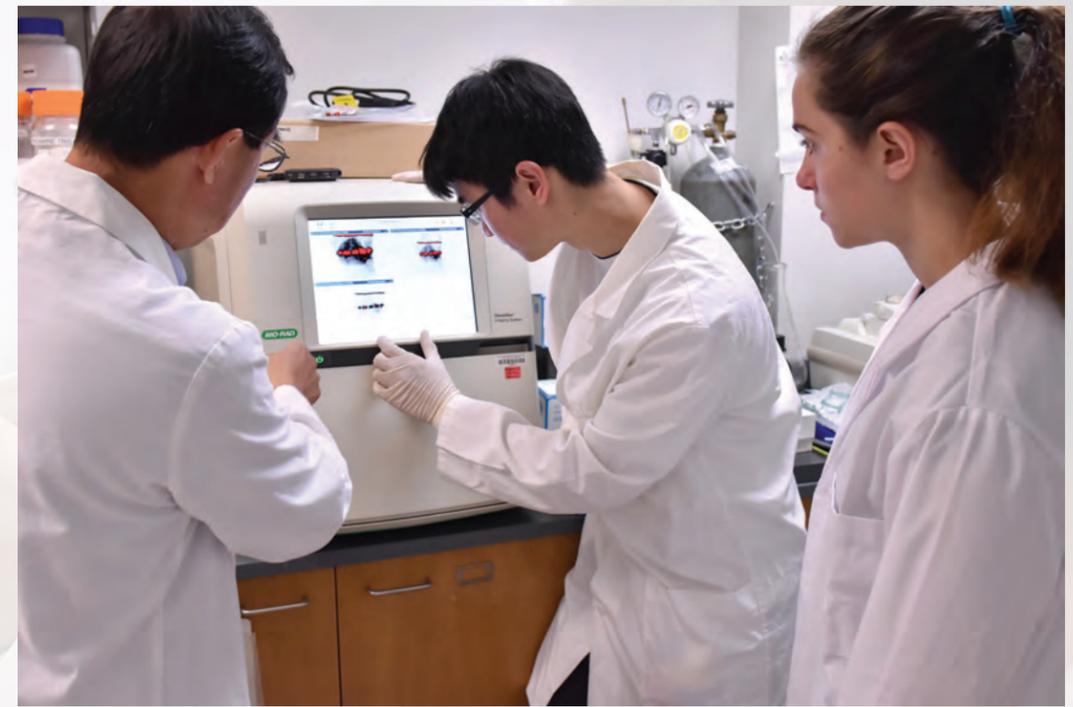
"Students learn about molecular biology and how the cell cycle works in the context of cancer," Liu said. "The breast cancer research is a continuation of work that we've done. In the previous NIH funded work we discovered the importance of a novel PLK1 substrate called Usp 16 and its role in mitosis and published a paper about it in the Journal of Cell Biology."

The current work builds on that and a collaboration with City of Hope. "They found that certain proteins promote breast cancer invasion which is the first step to metastasis," said Liu.

"We're looking at the other side of the equation which is identifying proteins that inhibit cancer cell invasion." The goal is to study whether usp16-mediated deubiquitination of histone H2A, a protein found in chromatin which plays a role in gene expression, inhibits epithelial-mesenchymal transition (EMT) and cancer cell invasion.

Liu writes in his project narrative that "The study is expected to reveal a new mechanism of metastasis regulation and may contribute to the development of novel approaches in the prevention and treatment of metastatic breast cancer."

Lab research is extremely valuable to students. Liu said, "It helps them understand classroom concepts a lot better. They learn about cancer cell biology, cellular and molecular biology, and protein biochemistry. Many of my graduate students become upper division teaching assistants. Those



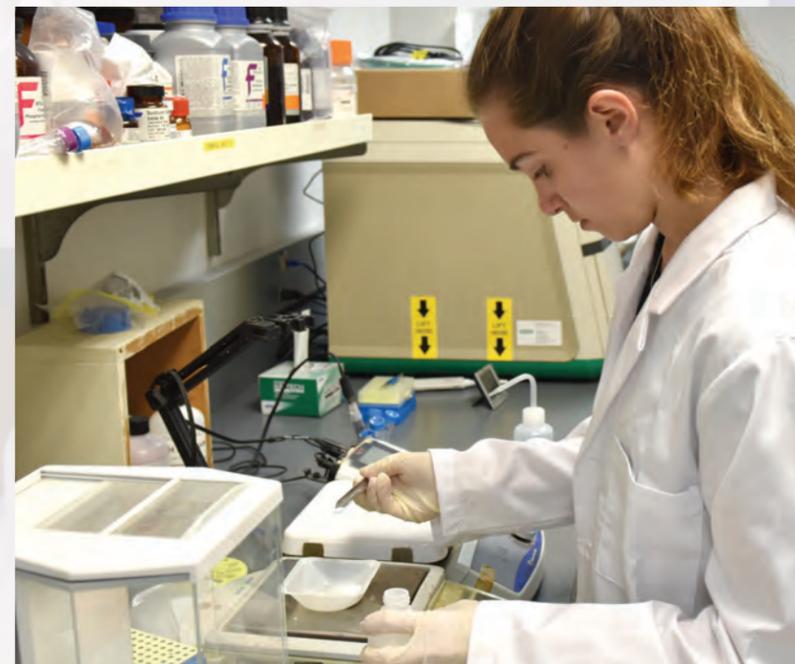
upper division classes are very specialized but the experience that students gain in the lab allows them to assist with tissue culture classes, and recombinant DNA classes."

Graduate student Lolarga said, "I have the opportunity to study the cellular and molecular aspects of cancer research. My research at Dr. Liu's lab challenged me to learn more about protein interactions and pathways. It's definitely a challenge, but Dr. Liu was always there to help me understand and answer my questions."

Undergraduate student Alana Schonbrun said, "I'm learning the lab skills I need to do research. I find cellular biology and cancer research interesting. I want to learn how to do my own experiments. I graduate in 2021 and after graduation will work on a master's degree in biology."

Lolarga added that "Working with tissue culture requires you to be in lab almost every other day of the week. There are times where I have to come back every few hours just to observe results, but when your experiment works, then it pays off!"

In Professor Liu's lab the NIH grant is already paying off in supporting learning and student success. It may one day contribute to the prevention and treatment of breast cancer.



## Distinguished Teaching Award

Stephanie Rothman has established a strong record of excellence in teaching biology since joining Cal Poly Pomona in 2011. She is an enthusiastic and compassionate instructor who makes her courses both relevant and relatable. Teaching with an inclusive perspective, Rothman includes multiple modes of learning for both face-to-face and online courses, and has been recognized as an eLearning Accessibility Champion and received a recent Wall of COOL Award.

### Lecturer Stephanie Marin Rothman Biological Sciences



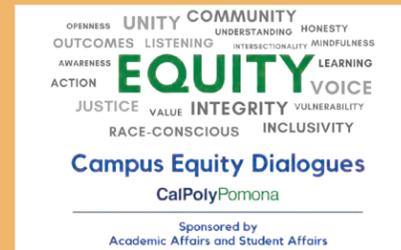
## Uplifting our Communities through Educational Equity and Food Justice



In February, 2020 the College of Science co-sponsored the first Campus Equity Dialogue featuring Maisha Moses and Breanna Hawkins.

Maisha Moses (right) works with the Algebra Project and the Young People's Project to bring the strategies and culture of civil rights organizing to the problem of educational equity and math literacy in the 21st Century.

Breanna Hawkins (left) is an experienced food justice leader and policy professional with a deep commitment to developing healthy and sustainable communities on a local, national, and international scale.



Professor Robin Wilson, from the Department of Mathematics and Statistics, invited Maisha Moses to Pomona Hope Center where she provided a workshop for math literacy workers in January, 2020.

## Ralph W. Ames Distinguished Research Award

Erin Questad has an outstanding record of scholarly work in habitat conservation, global change, and invasive species using remote sensing to guide ecosystem restoration. Her work has been published in 18 peer-reviewed articles since joining Cal Poly Pomona, and she has received more than \$2 million in research funding. As a committed teacher-scholar, Dr. Questad's integration of teaching and research has resulted in specialized field courses in which students engage in cutting-edge research.

### Associate Professor Erin Questad Biological Sciences



## Outstanding Faculty Advisor of the Year Award

Yan Liu is widely recognized for his efforts to provide timely and clear advice to students as they navigate their curriculum and develop their career plans. He has been particularly effective in helping students with semester conversion planning, change-of-major advising, minor advising, and leading orientation advising for new students. Dr. Liu's approachable demeanor provides a welcoming environment for students and supports their success.

### Associate Professor Yan Liu Chemistry and Biochemistry



## Alumni Return to Campus Professor for a Day

Students really appreciate having the opportunity to meet alumni and learn from their experience. Alumni enjoy returning to campus, sharing what they've learned, and joining faculty for lunch at the Restaurant at Kellogg Ranch.

In 2020 the College of Science experimented with panels of alumni from the same discipline. This allowed greater access to students.

The 2021 event is scheduled for the week of March 8-12.

Visit the Professor for a Day alumni webpage for more information.

[www.cpp.edu/alumni/get-involved/professor.shtml](http://www.cpp.edu/alumni/get-involved/professor.shtml)



Photo courtesy of Melissa J. Martinez.



# Scholarship Commemorates 50-Year Anniversary of the Chemistry and Biochemistry Department

The driving force behind the Chemistry (Au) Golden 50th Anniversary Scholarship is Professor Emeritus Ernie Simpson. “It’s my way of honoring the people whose shoulders we’ve stood on and learned from,” said Simpson. He’s referring to the fine faculty, staff and administrators he’s worked with in the College of Science. “In honor of the chemistry department’s 50-year anniversary we set a goal to raise \$50,000 so the scholarship can be endowed.”

They surpassed their goal, and to date have raised \$67,000. Simpson admits that he’s not comfortable asking for money. When he talks to alumni he asks, “Have you used your chemistry?” For most the answer is yes. They are accomplished in their fields and enjoy staying in touch with Simpson who taught many of them.

Simpson’s modesty is apparent when he speaks of standing on the shoulders of the giants of chemistry, because for many

CPP alumni, he IS one of the giants. His career at Cal Poly Pomona started in 1968 when chemistry was just an option in the Department of Physical Sciences.

From 1978 to 2001 Simpson was the Director of the Cooperative Education Program. The program, which involved around 2,000 students across the university, provided paid internships to students, bridging the gap between college and career. The program also created vital connections with industry. Because of the relationship, some companies donated equipment and money for scholarships. Simpson said, “In 1988 we got the industrial chemistry course approved which was important because most chemists end up in non-academic careers.”

Every year, former students and Co-op alumni of Simpson return as guests to speak to Margolese’s Industrial Chemistry classes as part of Professor for a Day. “Our students have been very successful over the years,” Simpson said. Current students

get a lot out of the alumni visits. “They get to hear it from people actually working in the field.” Simpson has been involved in Professor for a Day since its inception in 1999.

Simpson got involved in scholarships in 2001 when he started the Faculty Early Retirement Program. The first scholarship he set up was called the Co-op Alumni Scholarship. He also supports the Collins College with the Dr. and Mrs. Simpson Wine Scholarship. Wine is a subject Simpson is passionate about and he still gives seminars on the chemistry of wine at CPP. That interest began around the time he started at CPP when his mother-in-law enrolled him in a California Wine Institute course and then a wine club. Professor Vasu Dev, who served as Chemistry Department Chair, introduced Simpson to Vernon Singleton at UC Davis. Singleton was a pioneer in the study of phenolic compounds which affect the texture, color and taste of wine. Simpson has given over 250 talks on the chemistry of wine for the American Chemical Society (ACS) and is the section chair of the San Geronio ACS section.

Simpson said, “The Chemistry Golden Scholarship isn’t about any one person. If I could donate it all myself, I would because this is needed. Back when I got started supporting scholarships \$1,500 could cover the cost of a year’s tuition. That’s not the case anymore. It’s important to give back and to think ahead in terms of the future of this field.”

Alumna Niedre Heckman (’88, chemistry) said, “Dr. Simpson was one of my mentors when I participated in the Student Affiliates of the American Chemical Society club and also my professor when I participated in the Co-op program. The program was wonderful. It’s how I got my first full-time job.”

Heckman, who made a substantial donation to the scholarship fund added, “There are students out there who don’t know how to achieve their dream of getting a college degree. If I can help such students, I think that’s a great thing to do. Kindness to others is priceless. If people can support the Chemistry (Au) Golden 50th Anniversary Scholarship they should because this endowed scholarship will be self-supporting and continue to give for countless generations.”



Left to right: Development Director Melissa J. Martinez, Professor Emeritus Ernie Simpson, Alumna & Donor Niedre Heckman (’88, chemistry).



Chemistry students from 1976 yearbook photo.



Chemistry student photo from 1978 yearbook.

**For information on how you can support the Chemistry (Au) Golden 50th Anniversary Scholarship contact Melissa J. Martinez at: (909) 869-4160 or melissam@cpp.edu**



Seated on the left is alumnus Tharindu Jayasinghe ('17, physics) who worked on the Milky Way Project with Associate Professor Matthew Povich.

## Matthew Povich Receives Provost's Award for Excellence in Scholarly and Creative Activities

Each year, three CPP professors are honored with Provost's Awards. The 2019-2020 recipient of the Provost's Award for Excellence in Scholarly and Creative Activities is Associate Professor Matthew Povich from the Department of Physics and Astronomy.

Povich received his Bachelor's Degree from Harvard University in 2000 and worked in the Peace Corps for two years before returning to work at the Harvard-Smithsonian Center for Astrophysics. Povich went on to obtain his Ph.D. at the University of Wisconsin-Madison in 2009 and spent three years as an NSF Astronomy and Astrophysics Postdoctoral Fellow at the Pennsylvania State University before coming to CPP in 2012.

The Provost Award for Excellence in Scholarly and Creative Activities was awarded to Povich for his research work with students. Povich worked on the Milky Way Project with CPP undergraduate students Tharindu Jayasinghe ('17, physics) and Don Dixon ('17, physics). "This project took astronomical survey data and produced images to classify phenomena such as interstellar bubbles and stellar-wind bow shocks in the Galaxy," said Povich. "The people-powered research

platform is called the Zooniverse, and anyone can use the platform, make drawings, and interact with it. By studying baby stars and the gas and dust around them, we learn about the environments in which stars are born as well as how the stars sculpt the nebulae."

The Milky Way Project team, led by Povich, cataloged 2600 nebulae based on volunteer contributions over a span of eight years. In 2019 Povich and his team published the article, "The Milky Way Project second data release: bubbles and bow shocks," led by Jayasinghe and with three other CPP students listed as co-authors. This article acknowledges the work of tens of thousands of volunteer "citizen scientists" around the world.

In 2015, Povich received a prestigious NSF CAREER Award. With this five-year grant, he was able to hire the first postdoctoral researcher in the Department of Physics and Astronomy, write several papers, cover travel for his research group to conferences, buy equipment, and pay students that work for him over the summer. This award ends in June, 2020, but Povich has another NSF proposal and one NASA proposal pending.

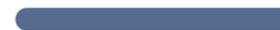
Povich emphasizes the importance of recognizing good, supportive qualities in mentors and looking for those qualities in future colleagues. "I was fortunate to have good mentors but not by complete luck," recalled Povich. "When choosing a graduate program, you are choosing who you want to work with, so I chose people my undergraduate mentors had worked with who were humble and helpful."

Povich strives to be a good mentor. "I tell my students not to be intimidated by me. I want them to be open with me and not be afraid to ask me questions. I have to gauge my expectations based upon each student's demonstrated abilities. Some can handle anything quite independently, some require more direct guidance, and those that are just starting out need an interesting project to ignite their interest."

Povich believes in providing as much support as possible to students. "With Cal Poly Pomona's diverse student body, we have people who are first generation students, underrepresented minorities, marginalized and high-risk students - they need support and professors who believe in them," said Povich. "I am always adapting, and thinking, 'what can I do for my students?' Everyone has a different background, and working with CPP students is an absolute joy."

When asked how Cal Poly Pomona compares to other schools, he said "The professors are down to earth and collaborative instead of competitive. I have noticed that CPP students are more respectful and less entitled compared to some of their peers from more privileged backgrounds."

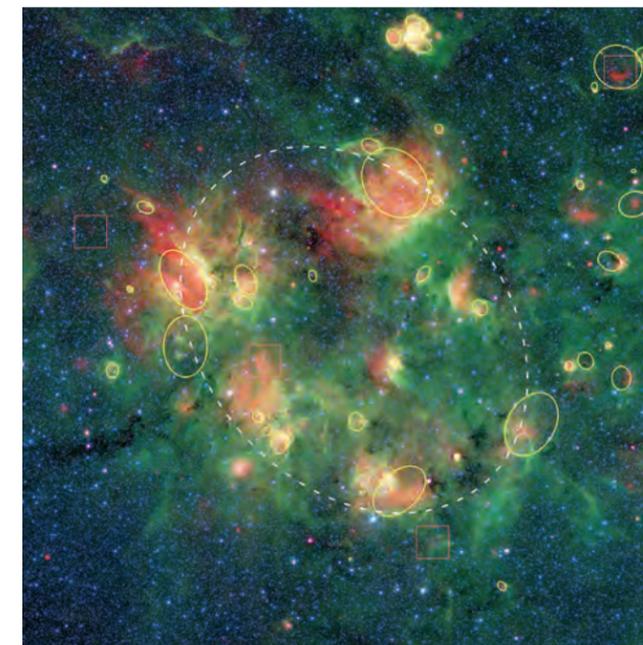
Povich wants to improve measurements of the speed at which galaxies make stars. "Astronomers have done these measurements for a long time and in many different ways, but how accurate are they really?" He currently has a paper in the works with Evan Nuñez ('19, physics) entitled "Characterizing the X-ray Emission of Intermediate-Mass Pre-Main-Sequence Stars." Nuñez, a former Cal-Bridge scholar, is now pursuing a Ph.D. at Caltech.



This cloud of gas and dust is full of bubbles, which are inflated by wind and radiation from massive young stars. Yellow circles and ovals show the locations of more than 30 bubbles. Squares indicate bow shocks, red arcs of warm dust formed as winds from fast-moving stars push aside dust grains.



Alumnus Evan Nuñez ('19, physics) on the right, visits Yorkshire Dales with mentor Povich during an international conference.





## Kinesiology and Health Promotion is a Department in Motion

Kinesiology is the study of the body in motion. The Department of Kinesiology and Health Promotion (KHP) is a department in motion, moving forward on their own strategic plan that is aligned with the College of Science's plan.

Department Chair Laura Chase shared what motivated her to start on the department's strategic plan. "I was excited about being involved at the College level in the planning process. There was also major change in the department. We hired four tenure track faculty and will be adding a fifth. We were also looking at significant curriculum changes. It was the perfect time to do this."

Guiding the process is K2OH Solutions, the same firm that is assisting the college with planning and implementation.

"Like the college, we started with data collection," Chase said.

Focus groups and interviews were conducted with faculty, staff, and students, to gain a thorough understanding of the current situation and desired future outcomes of the department. In total, over 750 comments were analyzed to develop the plan and 176 students provided feedback on the draft plan to validate assumptions and desired future direction.

Chase shared that "Overall, the feedback was positive. One theme was the desire for improved facilities. What's exciting is that we're taking a women's locker room in the gym and converting two-thirds of that space. We'll have three to four thousand square feet. We're beginning a feasibility study on using that space as a multi-purpose exercise science lab. It could be used for exercise physiology, biomechanics, movement anatomy, and electrocardiography.

The feedback the department received resulted in the development of five goals.

**Goal #1: KHP appreciates the diverse ways each sub-discipline advances the art and science of health and human movement.**

**Goal #2: KHP is a welcoming and supportive environment for students, faculty and staff.**

**Goal #3: KHP fosters a culture of professional respect, cohesion and inclusivity.**

**Goal #4: KHP is a destination department for innovators, educators and scientists in health and human movement.**

**Goal #5: KHP provides educational experiences to build leaders in health and human movement.**

The new faculty hired in fall 2019 bring different skills to the department. Two are in exercise science which is the largest interest area for most students. One faculty has a biomechanics background and another is interested in behavior modification which is related to health promotion.

One of the new faculty is Srdjan Lemez, who is interested in the bio/psycho/social aspects of kinesiology. His work is very interdisciplinary and creates connections to the work of all the faculty in the department.

"We wanted these interconnections to create synergies among the new and existing faculty. This will be reflected in our curriculum," Chase said. "We've applied for a curriculum redesign and will do a retreat to examine and revise undergrad curriculum. We're proposing new classes such as a course on reading graduate level literature, and we want to offer expanded experiential learning opportunities either with faculty or through community service."

"We also want to integrate a colloquium experience where all grad students and faculty will present their work."

Lemez believes he can contribute to a greater appreciation of the sub-disciplines within kinesiology. He said, "The field is inherently interdisciplinary and operates best when studied collaboratively. I can play a role in promoting an integrated and comprehensive approach to students."

As a new faculty member, Lemez shared that he is impressed with CPP's student focus. He also shared that "The level of attention to bettering pedagogical practices and providing clear student learning outcomes is gratifying to see."

"Our faculty thinks a lot about student health and well-being

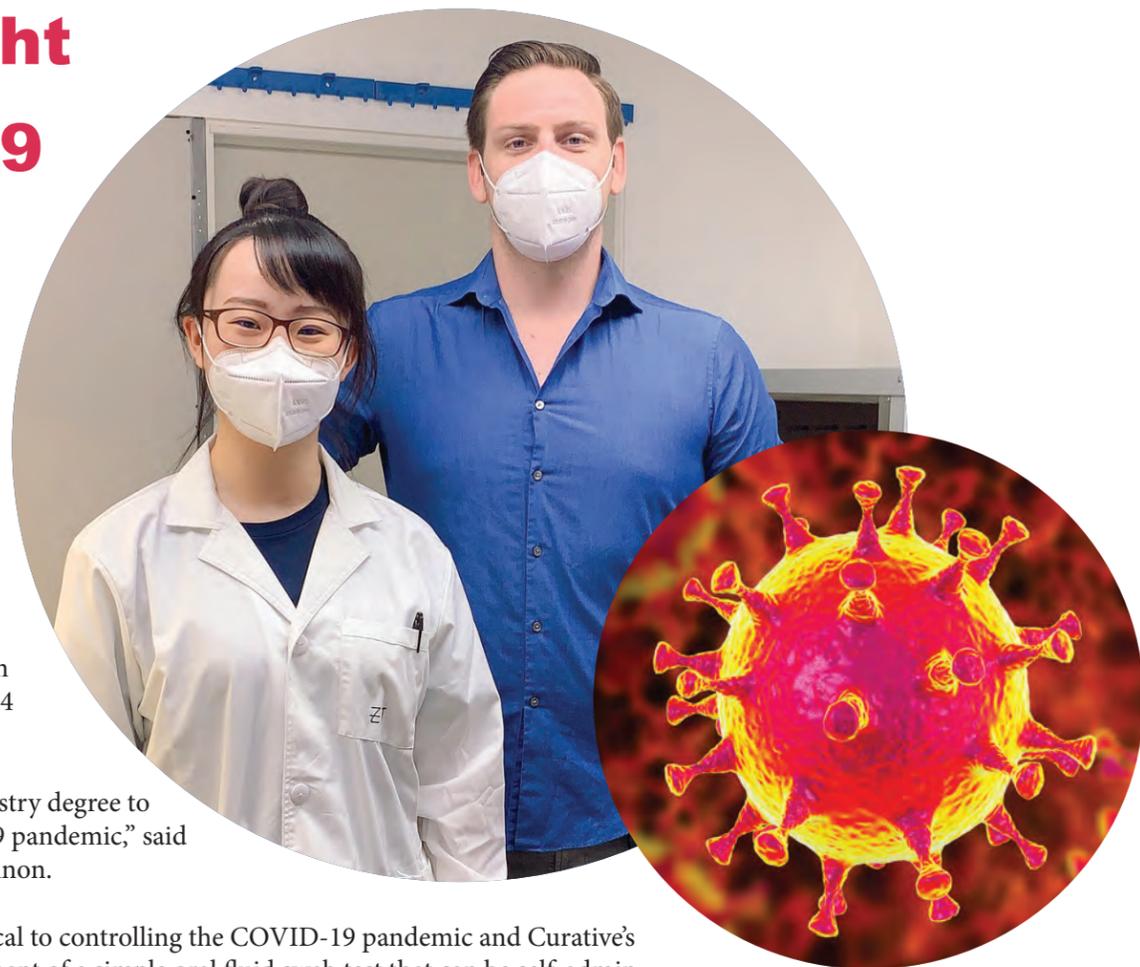
because it's part of what they do," Chase added.

"We want to create a sense of belonging through events like sporting activities and barbecues, or lunches. We will be adding awards for students and faculty, and the award presentations will include keynote speakers to add an educational component," Chase said.

"We're also going to host a KHP career fair so students know what sort of jobs are available. There are many options with a KHP degree, such as physical therapy, occupational therapy, working as a trainer, or working in schools."



# CPP Science Students Help Fight COVID-19



Close to 20 chemistry students and several biology students from the College of Science are working at Curative Inc., a testing facility that is able to return COVID-19 test results in 24 hours.

“I wanted to use my chemistry degree to help during the COVID-19 pandemic,” said recent graduate Jacob Brannon.

Widespread testing is critical to controlling the COVID-19 pandemic and Curative’s innovation is the development of a simple oral fluid swab test that can be self-administered, which frees up healthcare workers.

Curative was founded to develop tests for sepsis but pivoted in March to meet the urgent need for COVID-19 testing. The company has two CLIA-approved labs in California and Washington D.C.

CPP chemistry student Zijie Zhang said, “I’m on the plating team and use a pipette to transfer equal amounts of patient samples to a 96 well plate. My analytical chemistry courses gave me opportunities to practice using the micropipette and my biology courses helped me understand what we’re doing in the Curative lab.”

Brannon works in research and development. “My job includes validations and testing of new materials to help our tests perform better,” he said.

“I was able to put my CPP lab experience to good use because I gained both physical and data processing skills,” Brannon added.

Zhang intends to go to graduate school and wants to conduct pharmaceutical research. Brannon, who will start a Ph.D. program in the fall said, “I’d like to do research on the removal of toxic substances or safely storing waste to keep people safe. I’m also interested in metal medicines.”

“My goal is to help as many people as possible. Helping everyone live better lives is one of my biggest motivators.”

# Steve Alas Honored with 2019 CSU Faculty Innovation and Leadership Award

Professor and alumnus Steve Alas ('94, biology) from the Department of Biological Sciences was recognized for his work as director of the Science Educational Enhancement Services (SEES) program. While a student, Alas was a member of the SEES program that supports the academic success of over 600 underrepresented minority (URM) students in STEM every year.

As director of SEES Alas has narrowed the graduation gap between URM and non URM students from 17.6% to 3.9%.

One of the key components of the SEES program is community building and peer support, a model that is being incorporated into other programs such as BAMB! (p. 2).

In addition to leading the SEES program, Alas started and runs science Discovery Camps for kids 5-18 years old and leads the CSU Louis Stokes Alliance for Minority Participation (CSU-LSAMP) program at CPP.

“Dr. Alas is the epitome of a teacher-scholar-mentor-leader who is deeply committed to transforming the lives of our students and should be recognized for his tremendous impact on student success at Cal Poly Pomona,” said Sylvia A. Alva, Ph.D., provost and vice president for Academic Affairs.

The award includes \$10,000 for professional activities in the Department of Biological Sciences.



Professor Steve Alas presenting at the 2018-2019 Provost’s Awards where he received the Excellence in Service Award.

## 2019 College of Science Semesterly Staff Awards



Frank Wille, (right) jumps for joy with students on a field trip to view the solar eclipse.

The College of Science acknowledges two exemplary staff members every semester with an award and luncheon. The nominating process is open to faculty, students, and staff who submit nominations based on four different categories. The categories are job performance, successful interaction and/or relationships, college/university-wide service, and noteworthy accomplishments that advance the goals of the College of Science.

### FALL 2019

**Vanessa Lopez**, Retention and Graduation Specialist  
(College of Science Advising Center)

**Frank Wille**, Electromechanical Technician II  
(Geological Sciences)

### SPRING 2019

**Eve Garcia**, Administrative Support Coordinator II  
(Dean’s Office)

**Sabrina Otero**, Administrative Support Assistant II  
(Mathematics and Statistics)



Sabrina Otero (center) was surprised with a poster commemorating her spring 2019 Staff Award.

# You Made a Difference on Giving Day

The College of Science raised close to \$19,000 during the annual university-wide fundraising campaign.

Giving Day 2021 will take place in April. We're looking for Giving Day Ambassadors who are willing to reach out to their networks via email, text messages and social media. We're also looking for matching gifts to kick off the event. Please contact Melissa J. Martinez (next page) for more information.



*Our inspiration was to provide the opportunity we were given during our college years to others in similar circumstances.*

Sarah and Richard Lay ('89, physics)



*Diane's experience at Cal Poly in earning her bachelor's and master's degrees and her teaching credential was excellent, and we are happy to be able to assist the College of Science in providing the same opportunity for others. Many of her outstanding faculty have passed on, and this is our way of thanking and recognizing them.*

Diane ('71 & '79, kinesiology) and Stan Hales

## Estate Planning Resources for Alumni & Friends

Our new planned giving website includes valuable personal, financial and estate planning information and resources. You'll learn about the best tax saving strategies when planning gifts to your family and Cal Poly Pomona. Discover how to receive supplemental retirement income from making a gift to the university. Download the complimentary copy of our Estate Planning Guide. Sign up for our FREE Estate Planning Newsletter, and learn how to join the Kellogg Voorhis Legacy Society.

Visit: [www.cpp.edu/plannedgiving](http://www.cpp.edu/plannedgiving)



## You Too Can Make a Difference by supporting the College of Science

Choose an area that's of special interest to you or support one of these initiatives:

### Discovery Through Research

This initiative funds research opportunities for undergraduate and graduate students, including experiential learning and remote scholarly activities. These experiences are proven to have an enormous impact on students' growth and career success.



### Scholarships

Scholarships alleviate the financial burden of students and allow them to focus on their studies.



### Science For All

This initiative provides all students with technology resources and practical experiences to prepare them for a STEM-related career.

For more information, please contact:

Melissa J. Martinez, CFRE  
Director of Development, College of Science  
(909) 869-4160 | [melissam@cpp.edu](mailto:melissam@cpp.edu)

Or visit: [give.cpp.edu/science](http://give.cpp.edu/science)

## Bronco Mentoring Program

### CPP Alumni:

With just a little bit of your time, you can give students the confidence to go after the career they want.

You're invited to join the CPP Bronco Mentoring Network, our career-mentoring and advice-sharing network that makes it easy for you to connect with others in the Cal Poly Pomona community. The goal of the program is to increase student success by connecting students with alumni who have expertise in their industry, major, or future career.

**Sign up to become  
a mentor today!**



**Current students  
can sign up here:**



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