Cal Poly Pomona

CENTER FOR EXCELLENCE IN MATH AND SCIENCE TEACHING

2025-2026 NEWSLETTER

THANK YOU, Dr. Jodye Selco!

CEMaST Director 2002-2009
Professor 2002-2021
Emeritus 2021-2026

IN THIS ISSUE

CEMaST is both sad to say goodbye and incredibly grateful as we celebrate Dr. Jodye Selco's 24 years of inspiring students, teachers, and colleagues at Cal Poly Pomona. Our mission is to promote and study research-based practices in science and mathematics education while supporting inclusive teaching and learning—and Dr. Selco has truly embodied that mission throughout her career. Here are just a few highlights from her remarkable time with us.

Dr. Selco taught in both the Chemistry and Physics Departments in the College of Science, where she played a key role in updating curriculum and aligning courses with national standards. She also contributed her expertise to the Interdisciplinary General Education Department and the Education Department in the College of Education and Integrative Studies (CEIS). Across all these spaces, she's been known for her deep commitment to students—always making time to support them while still holding high expectations. *Continued on Page 2.*

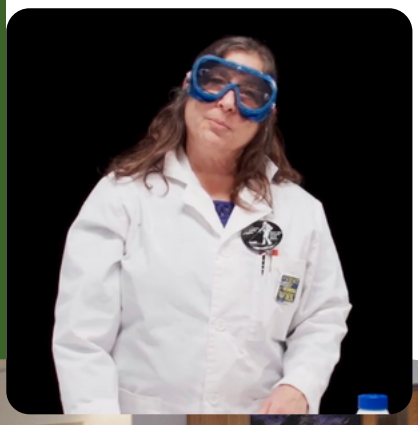


Image Above: Dr. Jodye Selco
Top Left Image: Screenshot of Dr. Jodye Selco in chemistry video
Bottom Left Image: Dr. Jodye Selco leading teachers in an activity

THANK YOU, Dr. Jodye Selco!

By Paul Beardsley

One of Dr. Selco's strengths has been making complex ideas accessible. To help students visualize challenging chemical processes, she developed a range of online simulations through CPP's eLearning platform. Her Chemical Kinetics and Equilibrium simulation, for example, is now used by students and faculty across the country (https://elearning.cpp.edu/learning-objects/dynamic-equilibrium/). She's also a pro at designing engaging, hands-on experiments using everyday materials—resources that continue to benefit learners and educators from K–16. Many of these activities are available on CEMaST's Lesson Plan page (https://www.cpp.edu/sci/cemast/resources/lesson-plans.shtml). Her innovative work has earned well-deserved recognition, including the Crystal Award from the Association for Educational Communications and Technology and two appearances on CPP's Wall of COOL. Beyond the classroom, she mentored 20 undergraduate and graduate students in research, supporting theses, presentations, and publications.

Dr. Selco's impact extends far beyond campus. She has been a dedicated advocate for science education in our local schools, especially in Rialto Unified and Hacienda La Puente School Districts. Through multiple grants, she partnered with teachers and district leaders to develop meaningful, engaging curriculum and coauthor publications. Her work has reached tens of thousands of students—particularly in Rialto, where her influence is still strongly felt today. Among her many contributions are publications in the Journal of Chemical Education, including "Students Doing Chemistry: A Hands-On Experience for K–12" and "Discovering Periodicity: Hands-On, Minds-On Organization of the Periodic Table by Visualizing the Unseen."

She has also contributed broadly to the profession, serving as an editor, reviewer, exam writer, external assessor, Science Olympiad Coordinator for CPP, grant evaluator, and content expert at both state and county levels. Notably, she played an important role in developing California's science content standards for middle and high school as part of the Commission on Teacher Credentialing.

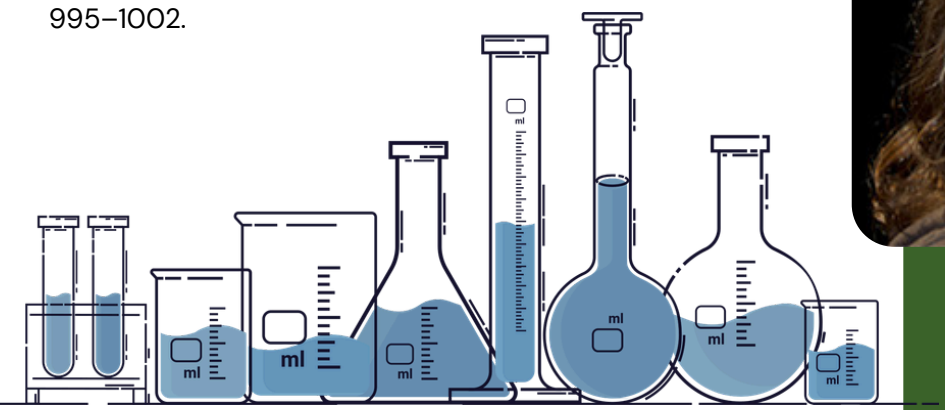
There's no question that science education is stronger because of Dr. Selco's work. While we'll miss her presence at CEMaST, we're excited for her as she steps into this next chapter—with more time to travel and tackle projects at home.

Thank you, Dr. Selco, for everything you've done to support students, teachers, and the broader science education community!

Learn more about Dr. Selco's work:

"Students Doing Chemistry: A Hand-on Experience for K-12", Jodye I. Selco, Mary Bruno, and Sue Chan, Journal of Chemical Education, 89, 2006-210, 2012.

"Discovering Periodicity: Hands-On, Minds-On "Organization of the Periodic Table by Visualizing the Unseen", Jodye Selco, Mary Bruno, and Sue Chan, J. Chem. Educ., 2013, 90 (8), pp 995–1002.



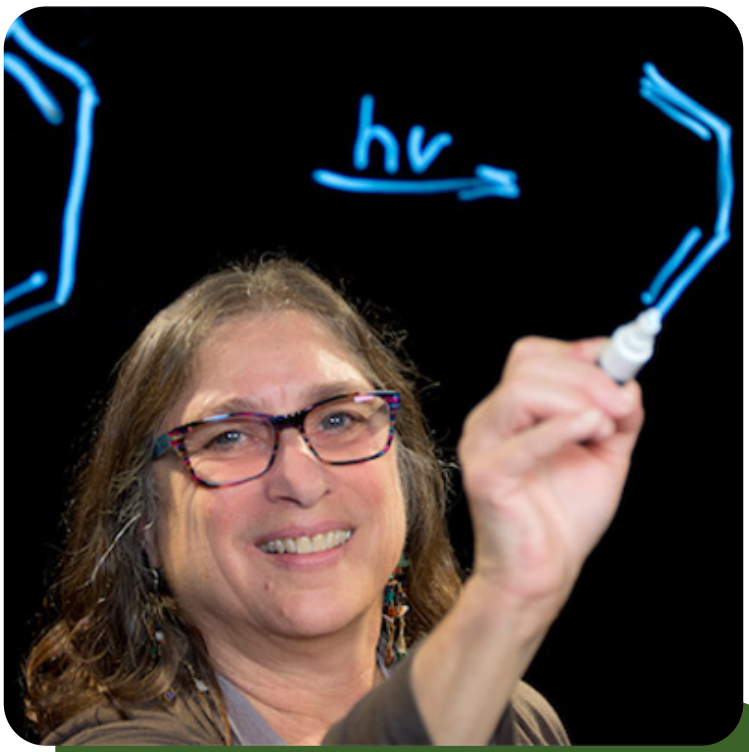


Image Above: Dr. Jodye Selco drawing on a light board.

CEMaST WELCOMES JACOB VIGIL!

By Paul Beardsley

Image Above: Jacob Vigil

Stop by the CEMaST office in 4-2-515 and you will likely see the smiling face of Jacob Vigil, our new Administrator Support Coordinator. Jacob splits his time between CEMaST and the College of Science Dean's Office. Jacob brings great energy, enthusiasm and skills to the office! Let's get to know Jacob a bit better.

How did you end up at CEMaST? I spent some time at Cal State LA working as a staff member in their College of Science after attending there to earn my bachelor's degree in business. That led me to finding a career in higher education—basically not just a career, but also a passion for helping students like myself who come from lower-income or underrepresented backgrounds in higher ed. Supporting students in that way as a staff member really opened up opportunities for me. After spending about six, almost seven years there, I decided I wanted to look for other opportunities closer to home. I found Cal Poly Pomona and CEMaST to be that option.

What do you like about working with current and future math and science teachers? Teachers in my own life had a big impact on my academic journey as well as my personal journey. They helped me realize there are a lot of opportunities out there if you're willing to work hard, but also that you can't always do things on your own—you need someone to believe in you.

That's what I got from many of my teachers. It's such an important profession, so I really enjoy supporting it and seeing students grow into becoming teachers. That's something CEMaST does that's really unique. Being able to help ensure there are enough teachers out there is a pretty cool job to have.

What's one of your favorite things about being at Cal Poly Pomona? I would say the people I've been able to work with so far. Everyone in CEMaST is great—they take pride in what they do and promote the polytechnic approach of learning by doing. I see that with our MSTI Fellows, our programs, and even our workshops for people interested in becoming teachers. All of our partnerships—with other colleges, credential programs, and organizations like the LA County Office of Education—make it a real team effort. I've really enjoyed the collaborative relationships we've built across campus and beyond. That's what I find most rewarding so far.

What's a fun fact about you? I'd say my board sports background. I've enjoyed skateboarding, surfing, and snowboarding since I was young. So I guess I'm kind of a triple-threat board sporter.

And how do you support students who are interested in those sports? There's actually a club on campus called CPP Skate Club. I follow them and help promote what they're doing. They share opportunities like scholarships specifically for skateboarders—there's even a foundation for that. They're pretty active and host events and skate days around Pomona. It's a cool community to support.

I'm also involved with CHILL. It's a foundation focused on inspiring youth through board sports. We work with underserved youth, teaching them surfing, skateboarding, or snowboarding. We take them out and expose them to new experiences and help them explore passions. It also teaches important life lessons like persistence. Nothing comes easy—you have to practice and keep at it if you want to improve. That applies to anything in life.

PARTNERSHIP SPOTLIGHT

JUANITA CHAN-RODEN

By Jodye Selco

Rialto Unified School District (RUSD) has been one of CEMaST's partners for over 20 years. What began as Professional Development providers for their Cohort 1 California Math and Science Partnership (CaMSP) grant has grown, and the people involved have changed over the years. The current district partner is Juanita Chan-Roden, who is the Director of Science and Career Programs.

In college Juanita began as a biology major before encountering Organic Chemistry. Organic Chemistry made her feel like she did not belong in the science community, so she switched into entomology where she was welcomed. She admits that if someone had encouraged her to continue as a pre-med student her educational pathway would have been quite different. Juanita did research at UC Riverside and realized that lab work was too lonely. At that time, she was volunteering in her mother's 3rd grade classroom and realized that teaching allowed her to be creative and interact with humans.

Ms. Chan-Roden taught 4th grade for 8 years. Her first connection with CEMaST occurred during this time when she participated in RUSD's Cohort 1 CaMSP grant. During this 3-year project Juanita finally realized that she had talent in science and liked the science that was provided during Professional Development because it was done with the appropriate pedagogy for her elementary students. Juanita believes that it is critical that the content experts include appropriate pedagogy in their Professional Development ***and*** advocate for deeper content knowledge for elementary teachers and a broader pedagogical toolbox for secondary teachers.

Juanita then served as a district wide mathematics coach for 3 years and was then tapped to be the Project Director for RUSD's new California Math and Science Partnership (CaMSP) grant which was in partnership with Jodye Selco as PI. Her current position involves writing grant applications, administering the grant projects, overseeing the budgets, setting up outreach into the community, bringing students to CPP, etc.

Ms. Chan-Roden would like to see more projects like the CaMSP project that brought higher education and district personnel together to develop and deliver professional development to teachers. While the K-12 systems need more content expertise, she believes that in general higher education needs to know more about appropriate pedagogy and incorporate that into professional development. Juanita said that what she appreciates most about working the CEMaST is that we bring the content and pedagogy as a package.

Right Image: Juanita Chan-Roden

FACULTY SPOTLIGHT

SANAA SAYKALI

A Master Math Motivator Who Wants to Rehumanize Math Education

Cal Poly Pomona math students and faculty are lucky to know Sanaa Saykali, a lecturer in Mathematics and Statistics since Fall 2021. In just a few years, she's inspired countless students—helping them believe they can do math and giving them the tools to succeed.

Sanaa doesn't just talk about motivation—she models it. In her classroom, she uses strategies that build confidence and a growth mindset, and she shares those approaches with colleagues as a Motivating Learners Course Faculty Fellow and Calculus II course coordinator. Her impact goes well beyond CPP, too: she serves as a Motivation Fellow, supporting math instructors across Louisiana and California community colleges.

And yes, it shows. One CPP math faculty member shared:

"She is a great listener and offers excellent teaching advice. I learned how to be patient, welcoming, and joyful from her. She always pushes me to bring out the best version of myself and positively impacts my surroundings."

In recognition of her work, Sanaa received the Department of Mathematics & Statistics Excellence in Teaching Award for 2024–2025.

Want to learn from her directly? She'll be leading a virtual professional development workshop for Compton College on **May 22 and May 29, from 10:00–11:00 AM: "Rehumanizing STEM: Reconnecting students to meaning, confidence, and community in STEM."** Contact CEMaST if you're interested in attending.

INTERVIEW HIGHLIGHT

Image Above: Sanaa Saykali

How can we improve math instruction?

"For me, it starts with rehumanizing math—bringing back the people, the stories, and the why. We can get so focused on computations that we forget why math matters.

I like to share stories and remind students that math was created by people, for people. I want them to feel like they belong and to see that math is something they can learn. With the right tools and support, it's absolutely doable.

I also encourage teachers to stay open-minded, keep growing, and bring positive energy into the classroom. Students notice when their instructor genuinely enjoys teaching and believes in them. Small, intentional practices can make a big difference."

BOND ENERGIES: A NEW MULTI-MEDIA LEARNING OBJECT

By Jodye Selco

The energy changes that accompany chemical changes are easily observed. However, understanding the energy changes when bonds are formed or broken is much more difficult! There is a new interactive Multi-Media Learning Object (simulation) available to address this concept. It is available at https://elearning.cpp.edu/learning-objects/bond-energies/ and is free to use. The simulation has users examine energy changes for H-H, O=O, N≡N, and H_2O before tackling the cases of ATP and photosynthesis.

One common misconception is that the bond breaking in adenosine triphosphate (ATP) to form adenosine diphosphate (ADT) is exothermic (releasing energy). The problem with this idea is that energy is required to break chemical bonds. In the case of ATP → ADP, while one P-O bond is broken, two bonds are formed! As can be seen in Figure 1, an input of 335 kJ/mol is required to break the P-O bond in ATP. When the two fragments react with water to form ADP and phosphoric acid 802 kJ/mol are released.

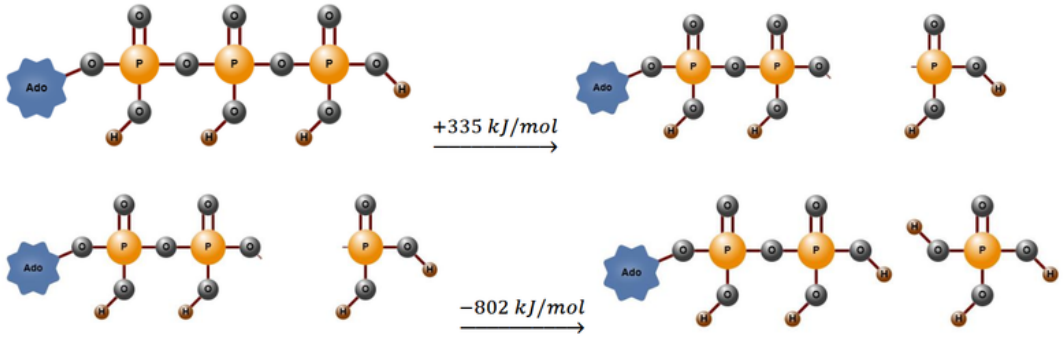


Figure 1: The upper row of images shows a cartoon of ATP breaking the O-P bond to the third phosphate unit. Breaking this bond required an input of 335 kJ/mol. The lower images show that when the molecular fragments formed are then hydrolyzed (react with water) to form ADP and phosphoric acid, 802 kJ/mol is released.

Overall, the process of forming ADP and phosphoric acid from ATP is exothermic (releases energy). To find the overall energy change, the two energy changes are added together:

+335 kJ/mol + (-802 kJ/mol) = -467 kJ/mol

The value of this overall process is negative, indicating that there is energy released. In other words, the overall process of breaking one bond and making two is exothermic, just not the bond breaking portion.

EDUCATIONAL TOOLS

TIP: TURN NAME TENTS INTO A FEEDBACK LOOP

By Jessica Perez

Looking for a simple way to build stronger connections and gather meaningful feedback? Try using name tents as a two-way communication tool. On the outside, include students' full and preferred names to encourage interaction and help everyone learn names quickly. You can also have students note different partners, making future groupings easier.

On the inside, invite students to write a short note about any topic or a piece of feedback at the end of each class. Since weekly courses can make regular check-ins challenging, this creates a consistent touchpoint. Responding to these notes helps foster one-on-one relationships, giving students a voice while strengthening engagement in a low-effort, high-impact way.

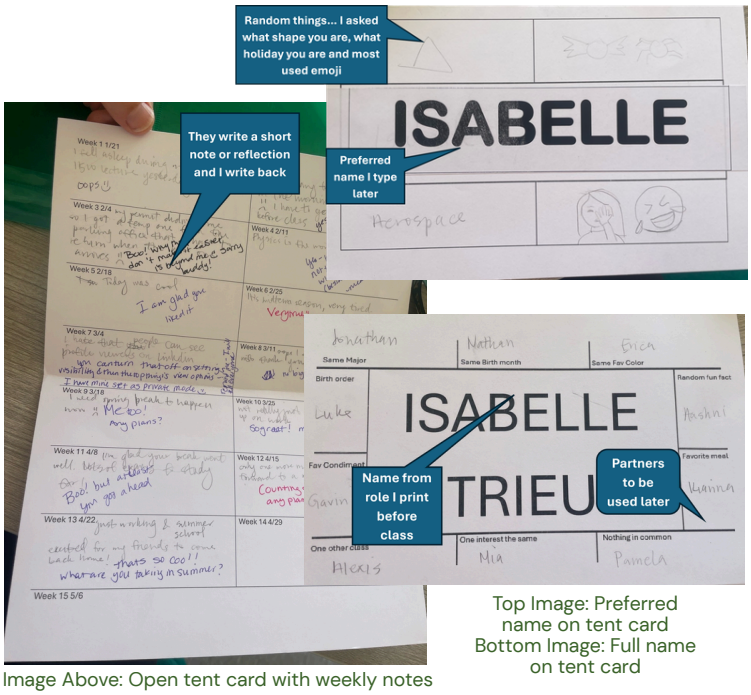


Image Above: Open tent card with weekly notes

Top Image: Preferred name on tent card
Bottom Image: Full name on tent card

micro :bits MACRO OPPORTUNITY

CEMaST partnered with Los Angeles County Office of Education (LACoE) to offer a full day workshop for 30 teachers in Grades 3-8 on Integrating Computer Science (CS) Using micro:bits. The hands-on professional development took place on April 28, 2026 at Kellogg West. In the session LACoE expert Jose Ramirez showed teachers how to use a micro:bit (https://microbit.org/) , which is a small but mighty pocket-sized computer. Teachers were also given a classroom set of micro:bits and lessons aligned with Computer Science Standards that can be integrated in any math, science, or ELA class! It was exciting to see how these tools can release students' creativity and increase their engagement.

Image Above: Teachers in attendance for the workshop

MAKE EVOLUTION COME TO LIFE USING HHMI BIOINTERACTIVE'S POPULATION GENETICS EXPLORER

CEMaST Director Dr. Paul Beardsley worked with colleagues at HHMI BioInteractive and other biology faculty to produce a new simulation tool for evolution educational use. Check it out at https://www.biointeractive.org/classroom-resources/population-genetics-explorer. This interactive online tool models how allele and genotype frequencies change under key evolutionary forces, including natural selection, genetic drift (such as population bottlenecks), mutation, migration, inbreeding, and assortative mating.

Built on the Hardy–Weinberg framework, the simulator tracks one allele and three genotypes within a two-allele system. It allows students to experiment with a wide range of scenarios by adjusting model parameters, while also offering clear explanations of the underlying biological concepts and terminology.

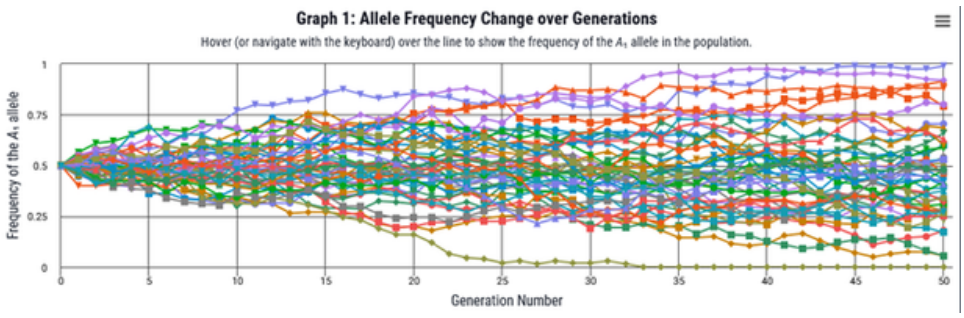


Image from Howard Hughes Medical Institute CC BY-NC-SA 4.0.

Dr. Beardsley also published a case study with BioInteractive that uses the simulator and video interviews with Dr. Joseph Graves to explore how natural selection, genetic drift, and mutation may affect the frequencies of the sickle cell allele. It is available at: https://www.biointeractive.org/classroom-resources/population-genetics-and-sickle-cell-disease-mechanisms-evolution

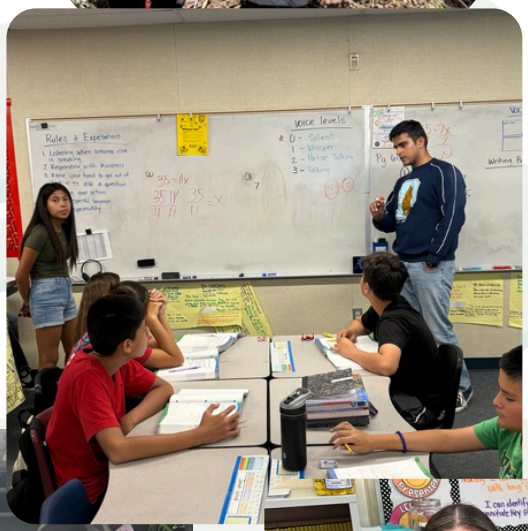
PRETE FELLOWSHIP PROGRAM COMPLETES ITS 7TH YEAR

By Janel Ortiz

The Prete Fellowship Program is a K-12 partnership program with Kellogg Polytechnic Elementary School that brings CPP students to the Kellogg campus to partner in class with a teacher. Fellows build real-world teaching experience which culminates in a lesson teaching math or science using the school's Panther Garden. The 2025-2026 academic year marks the 7th cohort of the program with 13 students across a variety of majors including Biology, Kinesiology, Civil Engineering, Liberal Studies, and Computer Science. We look forward to returning to Kellogg in the coming year!

PRETE FELLOWS

Juliet Esparza
Janine Bokingkito
Reese Buckway
David Milian
Lina Sandoval
Gabriella Perez
Abdelrahman Nouh
Cruz Oganesyan
Emily Marroquin
David Torres
Rene Romo
Ethan Nguyen
Pranav Sharma



PRETE STAFF

Fellow Mentor
Jimmy Allard
Garden Coordinators
Subrina Hamdan
Ryan Vazquez

Image Above: Open tent cue with weekly notes

Top Image: Fellow leading a garden activity with students
Middle Left Image: Fellow receiving a hug from students
Middle Right: Fellow leading a lesson
Bottom Left: Fellow leading a drawing activity
Bottom Right: Fellow guiding student in worksheet

INTRODUCING THE STEM TEACHING AMBASSADORS

Thinking About Becoming a K-12 Math or Science Teacher? Contact the CEMaST STEM Teaching Ambassadors!

CEMaST is proud to announce the spring 2026 STEM Teaching Ambassadors! From mathematics we have Juan Rodriguez (jfrodriguez1@cpp.edu) and Owen Siglin (otsiglin@cpp.edu). For science, we have two biologists; Alexandra Tejeda (aitejeda@cpp.edu) and Serena Wang (serenawang@cpp.edu). All the ambassadors are current students in CPP's credential program. Feel free to contact our Ambassadors to learn about why they chose a teaching career and any advice they have about getting into the credential program. Congratulations to the Ambassadors!

Top Left Image: Alexandra Tejeda
Bottom Left Image: Juan Rodriguez
Top Right Image: Owen Siglin
Bottom Right Image: Serena Wang

RECOGNITIONS & ACCOMPLISHMENTS

DR. JANEL ORTIZ RECEIVES PUSD COMMUNITY IMPACT AWARD

Dr. Ortiz was nominated by Principal Vargas of Kellogg Polytechnic Elementary School for her contributions to the Panther Garden. On April 22, she was recognized at the Annual Community Impact Awards event held by the Pomona Unified School District. During the event, community members, parents, partner organizations, and vendors who continue to make a meaningful impact on PUSD schools and students are called to the stage to receive a certificate of appreciation.

Image Above (L-R): Dr. Janel Ortiz, Principal Esmeralda Vargas, and Kellogg Parent
Bottom Left Image: Dan McCarthy

CONGRATULATIONS TO DAN MCCARTHY

Dan McCarthy is receiving the College of Science's Distinguished Teaching Award due to his innovative, inclusive teaching practices which includes a support course he started for Foundations of Biology students, a hand-on course for future elementary teachers, and important professional development for Teaching Associates as the coordinator for BIO1210 labs. He joins 3 other CEMaST faculty fellows who previously earned the award.

CEMAST BY THE NUMBERS...

9 Publications

$708,500 in Funding

10 Presentations

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UPCOMING ACTIVITIES & EVENTS

CAFE Summer Institute 2026: AI Retrofit, May 26-27 & 29 *More Info*

Office of Academic Innovation Summer Conference: Human at the Core: Navigating AI in Higher Education, June 3-4 *More Info*

Monthly Math and Munch After School Seminars for In-Service Math Teachers, Starting Fall 2026

Motivating Learners Course, January 2027

CEMaST STEM Teaching Ambassador Selection, Fall 2026

WANT TO BE FEATURED ON OUR ALUM SPOTLIGHT?

Tell us more about you and your path here!

The CEMaST Newsletter Committee welcomes news from faculty, staff, students, and teachers. Please contact us at cemast@cpp.edu for information on how to be included in an upcoming issue!

VISIT US ONLINE AT:

WWW.CPP.EDU/~CEMAST

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