

In the Community

STEMonstrators Connect with Local Students

When Sarah Sam, a graduate student in neurobiology, realized that some of Caltech's Pasadena neighbors knew nothing about the Institute, she decided to do something about it.

"I've been really close to campus and found people who didn't know what Caltech was," explains Sam, who is also president of the graduate-student-run group Black Scientists and Engineers of Caltech (BSEC), "and that was really surprising to me because we're this world-renowned prestigious institution, and for people in Pasadena, right outside the university, it's not even on their radar."

In the spring of 2018, Sam and several of her fellow BSEC members launched STEMonstrations, an outreach project that now also involves Caltech's Club Latino. STEMonstrations brings STEM to students in the Pasadena Unified School District (PUSD), a minority-majority district, through scientific demonstrations led by Black and Latino Caltech graduate students.

Building a relationship between Caltech and its local community was central to BSEC's vision for the outreach program from the start, as was a focus on diversity. "We were looking to get Caltech in touch with a lot of the underrepresented public school students who are locally around us who didn't otherwise have connections to the university," explains BSEC member Kyle Virgil. "The drive was to show students who are of an age when they are thinking about their opportunities in life and what's available to them,



Graduate student Stephanie Threatt (second from the right) shows Blair High School students an experiment involving liquid nitrogen during a recent STEMonstrator.

what it looks like to be a person of color doing high-level science, while simultaneously sharing cool science experiments."

Since launching their project, the STEMonstrators have visited a new classroom every term. During each one-hour session, students are guided through three science demos covering areas related to Caltech research topics such as neurobiology and solar energy. But the project is not only about bringing kids fun science experiences. As graduate student and STEMonstrator Stephanie Threatt explains, "the people who you're exposed to, who teach you, you see as really at the forefront of a given field. That influences you being able to see yourself in that field. So seeing yourself in role models and in people who hold positions in STEM is really important."

Making connections with young people with an interest in science has been one of the most rewarding experiences for the STEMonstrators, who spend time speaking with the students in the school cafeteria after the demonstrations. "If we just went, did the experiments, and then left, just showed up and said 'hey, this is science,' it wouldn't be the same. It would miss the whole point of the demonstration," says Virgil.

The STEMonstrations project is part of a wider landscape of Caltech outreach initiatives. "It's awesome that so many people on campus volunteer their time to do science demonstrations, like science nights," says Sam. "But I think there was that diversity element missing. Our program is coming from scientists who look like the students we're trying to engage."

— Elise Cutts

Meet the STEMonstrators at magazine.caltech.edu/post/stemonstrators

Origins

Fountain of Knowledge

Sitting in the shade of fruit trees in the Beckman Institute courtyard, you can watch small birds drink from the fountain that trickles quietly there. The fountain's basin is a Moorish-inspired four-leaf-clover design, but above that it takes a very Caltech turn.

A polyhedron of 38 triangular and square granite faces, the fountain borrows its shape from the Archimedean solid known as a snub cube. Water flows from its top and tightly hugs the geometric form, giving the cube a shimmery quality.

The Beckman Institute was built in 1989 as a collaborative space for biologists and chemists. The Institute's founding director, Harry Gray, was charged with designing a fountain for the building's central courtyard that would represent the aims of the building and its inhabitants.

Gray and crystallographer Bill Schaefer settled on the snub cube design because of its likeness to ferritin, a protein composed of a core of thousands of iron atoms surrounded by an organic protein shell. With its inorganic and organic components, the protein seemed a perfect representation of the Beckman Institute's goal of combining chemistry and biology.

Once they had their concept, Gray and Schaefer set out to secure funding for its construction. To persuade Caltech's then-president Marvin Goldberger that the multifaceted shape would function well as a fountain, the pair constructed a model of the cube from cardboard and carried it, along with a pitcher of water, into Goldberger's office.

Accounts diverge on whether Gray actually poured water over the cube or merely teetered the jug over the president's expensive rug, but Gray distinctly remembers Goldberger saying, "Stop, Harry, I'll give you the money."

— Lori Dajose

