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SALLY RIDE SCIENCE

Sally Ride Science partnership lets students 'reach for the stars' with experiments in space



(<https://sallyridescience.ucsd.edu/wp-content/uploads/2019/02/Quest-for-Space-wide-border.jpg>)

February 13, 2019 (<https://sallyridescience.ucsd.edu/sally-ride-science-partnership-lets-students-reach-for-the-stars-with-experiments-in-space/>) by Sally Ride Science (<https://sallyridescience.ucsd.edu/author/mking/>) ·
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SAN DIEGO—When astronaut Sally Ride spoke to young audiences about her experiences as the first American woman in space, she made a point of urging kids to “reach for the stars!”

Now Sally Ride Science is helping students do just that in workshops where they can program heat experiments and then actually run their programs in microgravity on the International Space Station (ISS). The Quest for Space workshops are offered through a partnership with [Space Tango](https://spacetango.com/) (<https://spacetango.com/>) and the [Quest Institute for Quality Education](https://thequestinstitute.com/) (<https://thequestinstitute.com/>).

Shirli Cohen, a research bioengineer who will be teaching some of the workshops, is excited about bringing this unique opportunity to local students.

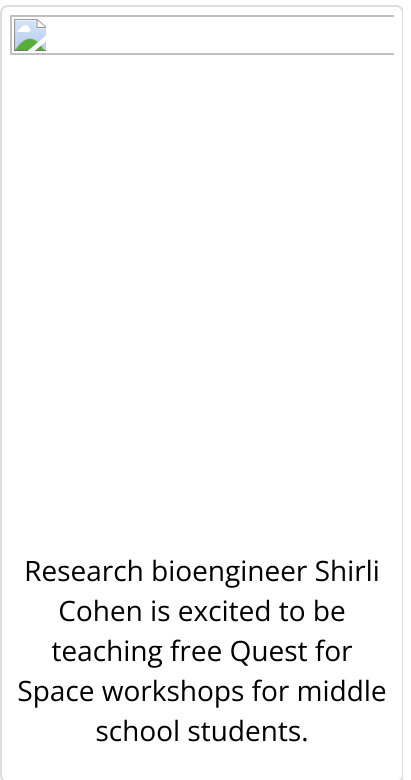
“This is the first time ever that there has been a platform for students to interact with the science going on aboard the ISS,” she said. “Space is really our future. We’re learning how microgravity allows us to create products like therapeutic and diagnostic tools in a whole different way than we can on Earth.”

Sally Ride Science, based at UC San Diego, is offering two versions of the workshop:

- As part of the summer Sally Ride Science Junior Academy (<https://sallyridescience.ucsd.edu/junior-academy/>), high school students can attend an in-depth 4-week course where they program and run multiple experiments to see how microgravity affects heat transfer by radiation, conduction and convection.
- Through a program called Library NExT (<https://sallyridescience.ucsd.edu/next/>), middle school students can take part in a free 3-hour workshop in library branches around San Diego. Students will program a radiation experiment and upload their programs to the ISS. Library NExT is a partnership of San Diego Public Library (<https://www.sandiego.gov/librarynext>) and UC San Diego Extension Pre-College Programs (<https://extension.ucsd.edu/courses-and-programs/pre-college>).

Cohen taught the Quest for Space workshop for the first time Feb. 2 at Pacific Beach Library. “I was impressed with how readily the students absorbed all of the complex concepts we learned, including ideas I wasn’t even exposed to until college,” she said. “They had a blast building their devices using the Quest Space Kit and programming them to run their own heat experiments.”

The students who took part will get the results of their experiments back from space in about a week, Cohen added, along with a video showing a message they wrote displayed aboard the ISS.



Megan Lancaster, program manager for UC San Diego Extension Pre-College Programs, said Quest for Space offers “an amazing opportunity for students to work with industry experts such as Shirli and be exposed to the mysteries of space and opportunities it may hold.”

“This is programming with a purpose,” she added. “The sky is not the limit for these students!”

Students in the Quest for Space workshop send their experiment configurations to the ISS and get data back in about a week.

Space-science partners

Space Tango is a Kentucky-based company that provides a platform for commercial firms and educational institutions to conduct experiments on the ISS. Room on the space station is limited, so Space Tango has created small modules called CubeLabs. These are launched aboard commercial rockets and then plugged in to lab facilities on the space station.

In 2018 Space Tango partnered with the San Jose-based Quest Institute for Quality Education, creators of the Quest Space Kit. Students use the kit to build and customize hardware for heat experiments, and then program the experiments on the Arduino platform in the C programming language. Finally, students run their experiment configurations in Space Tango’s lab modules on the ISS and analyze the resulting data.

Jana Stoudemire, Space Tango’s director of commercial innovation, said the company is pleased to partner with Sally Ride Science and the Quest Institute. “Along with building commercial markets in Low Earth Orbit,

we are focused on inspiring the next generation of students through access to microgravity,” she said. “They are the future workforce for the growing number of high-tech industries and for the commercial markets we are developing 250 miles up to benefit life on Earth.”

Aboard the ISS, astronauts Drew Feustel (left) of NASA and Alexander Gerst of the European Space Agency work with Space Tango’s CubeLab modules.
NASA photo

The Quest Institute provided special training for Cohen and other Sally Ride Science instructors who will teach the workshops.

Cohen, a research associate at the J. Craig Venter Institute (<https://www.jcvi.org/>) in La Jolla, has a degree in bioengineering from UC San Diego. She got interested in conducting experiments in space while working on a NASA-funded project to investigate bacteria that grow in the water system on the ISS.

“That was my first exposure to space-related research,” Cohen said. “I learned so much about day-to-day life for astronauts and how they interact with microbes on the space station.”

Now she is sharing the excitement with students in the Library NExT workshops. “It’s going to bring new creative, intelligent minds to the field of space research and product development,” she predicted.

Game-changing experience

The program has even been shown to help struggling students raise their grades, said Danny Kim, director of innovation for the Quest Institute. “Quest for Space helps underperforming students by challenging them to do something that they thought was impossible,” he said. “The self confidence that comes when they realize they just did a science experiment on board the International Space Station gives them a renewed interest in learning.”

Cohen agreed about the potential to inspire students. “Space is such a foreign idea to students today,” she said. “They know it exists, and they might know that there is an International Space Station, but the idea that they could interact with it at all has been outside of the realm of possibility—until now.”

The Quest for Space partnership continues Sally Ride’s legacy as a champion of science education for girls and boys of all backgrounds. After retiring from NASA, Ride became concerned about the lack of women in science and engineering. She joined with her partner, Tam O’Shaughnessy, and three friends to found Sally Ride Science in order to inspire students in STEM (science, technology, engineering and math). Ride died in 2012, and in 2015, Sally Ride Science became part of UC San Diego under the direction of UC San Diego Extension (<https://extension.ucsd.edu/>).

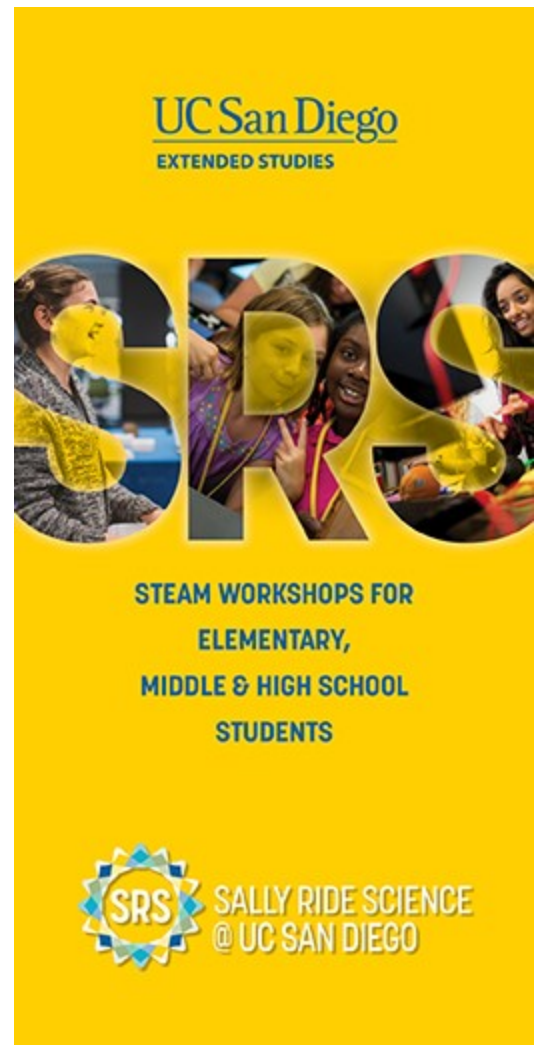
Watch a video (<https://www.youtube.com/watch?v=CJ9Efx-8YFg&feature=youtu.be>) about Space Tango's lab modules on the ISS.

<https://www.youtube.com/watch?v=CJ9Efx-8YFg&feature=youtu.be> (<https://www.youtube.com/watch?v=CJ9Efx-8YFg&feature=youtu.be>)

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[Sally Ride Science mourns passing of cofounder Terry McEntee \(https://sallyridesience.ucsd.edu/sally-ride-science-mourns-passing-of-cofounder-terry-mcentee/\)](https://sallyridesience.ucsd.edu/sally-ride-science-mourns-passing-of-cofounder-terry-mcentee/) For this Sally Ride Science instructor, STEAM inspiration is a two-way street (<https://sallyridesience.ucsd.edu/for-this-sally-ride-science-instructor-steam-inspiration-is-a-two-way-street/>) ↻

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