



At the Sally Ride  
festival, youngsters  
learned first-hand  
about science  
careers from the  
professionals,  
including seven  
from JPL

E N D L E S S

## POSSIBILITIES



By Mark Whalen

HUNDREDS OF MIDDLE-SCHOOL GIRLS ATTENDED THE MARCH 24 SALLY RIDE SCIENCE FESTIVAL at Caltech and got to meet the famous astronaut, best known for being America's first woman in space. But the experience proved to be so much more.

The sixth annual event, co-sponsored by JPL, offered 25 workshops on a variety of science subjects. Six of the 45-minute sessions were led by women who work at JPL, and a great time was had by all—impressionable young minds met and interacted with women in successful science careers, and JPL's workshop leaders expressed excitement with their opportunity to share their experiences.

In a keynote address, Ride was joined by geophysicist Maria Zuber, the first woman to head the Department of Earth, Atmospheric and Planetary Sciences at the Massachusetts Institute of Technology. The pair focused not on their many career highlights, but on tales of their youth that the audience of mostly teenage girls could relate to.

Ride told the audience about the importance of two of her science teachers who helped her build self-confidence and self-esteem. Ride said she received good advice indicating that "if you do well at math, chemistry and physics in 9th grade, you'll do well at math, chemistry and physics in 12th grade. You don't get dumber as you get older."

She related that while pursuing a doctorate at Stanford University she saw an ad in the student newspaper for NASA's call for astronaut candidates. Although it wasn't her childhood goal, the offer piqued her scientific interests and led to her becoming one of six women and 29 men accepted to the astronaut corps in 1977. "I was lucky to see that ad," Ride said, "but I was prepared for when the opportunity came along."

Zuber recalled being 7 years old when during a lesson on the solar system she got to play the part of the planet Venus because she was wearing a yellow sweater that day. From then on, she said, "science consumed me." She related the joy of starry nights just looking up at space through her telescope. "It was no surprise to anyone who knew me that I decided to go into astronomy."

Pointing to more recent days in her career, Zuber, who has contributed to numerous Mars missions, noted "there's no feeling like when I've sat down at my computer and downloaded pictures from Mars, knowing I'm looking at something no one else knows."

"I will never lose the thrill of discovery," she added.

In her workshop, "The Infrared Universe: That's Hot!," JPL's Amy Mainzer showed students "there's more to light than what your eyes can see." Through discussion and the demonstration of an infrared camera, she explained how astronomers use infrared sensors to study stars, planets, galaxies and Earth.

Mainzer, deputy project scientist for the Wide-field Infrared Survey Explorer, followed a path similar to Zuber's. Mainzer recalled when her love of a National Geographic book titled "The Universe" in her hometown library in Ohio prompted her at age 6 to decide to become an astronomer.

With JPL since 2003, Mainzer's previous experience includes serving as principal investigator for a pointing calibration and reference sensor for the Spitzer Space Telescope. She worked at the Sally Ride festival last year and has spoken at various school and club events.

Some JPL scientists come from the most interesting backgrounds. Mainzer is the first scientist in her family; both of her parents were artists.

"My mother is very supportive and excited for me," she said. "I can brag that my mother now knows more about liquid helium than most people I know."

Amariah, 11, had a fun day overall at the festival and thought the workshop titled "A Place Like Home: NASA's Search for Other Solar Systems" was the "coolest" part of the event. This session was led by JPLer Louise Hamlin, who is an instrument system engineer on the Kepler mission.

*Continued on page 2*

## Festival *Continued from page 1*

Hamlin was particularly impressed with the knowledge, enthusiasm and level of participation shown by workshop participants. “They knew all about extrasolar planets when they came in the door,” she said. When Hamlin explained about how Pluto was demoted from the solar system’s roster of planets last year, she asked the group to discuss the issue. “They came up with every rationale the International Astronomical Union used for taking away Pluto’s planetary status,” she noted.

Also, Hamlin said, the group caught on quickly to the Drake equation, a noted formula used to estimate the number of alien civilizations within our galaxy. “They were also computer-savvy, and did the math on a spreadsheet.

“I had an astounding group of girls,” Hamlin said. “We probably could have hired some of them right now for their bright ideas.”

Michele Judd, a senior engineer in the Earth and Space Sciences Division, joined with Rebecca Castano, supervisor of the Machine Learn-

ing and Instrument Autonomy Group, for their “Teaching Machines How to Learn” workshop. A hands-on activity taught about recognition of patterns and common characteristics and how a computer would make a “rule” to establish when a group of cards form a valid set.

“We also showed a video of the prototype Fido rover in the Mars Yard,” Judd said. “The kids would see the scene with a person watching the rover, then from the perspective of how the rover sees it. We then explained how the rover is programmed to find interesting rocks and then drives to those rocks. It was all in the context of how rovers learn.”

“It was our goal to introduce ideas on machine learning but most importantly for them to have a good time,” Castano said. “Our groups had a lot of enthusiasm and picked up on the ideas very quickly.”

Judd’s payoff was in “sharing my enthusiasm for JPL and my work. I love my job and all the scientists with whom I get to work.” An important point, she noted, was that the kids realized that “I’m not Amelia Earhart or Sally Ride, but I still have a successful career that I enjoy. They felt like ‘Wow, that’s cool, she can do it, so I can do it.’”

Attendees also learned all about how the Deep Space Network supports JPL missions, thanks to Karla Warner, outreach coordinator at the Goldstone Deep Space Communications Complex.

In addition to covering the network’s history, size and capabilities, she brought along several displays, including aerogel, which was “a major hit. I think they went away with a very positive ‘gee whiz’ feeling about Goldstone and the spacecraft,” Warner said. “Anytime you get to witness young people excited and interested about space and science it’s very satisfying.”

Angelle Tanner, a Caltech postdoctoral scholar working on SIM PlanetQuest, said her upbringing included being ostracized by teachers for being interested in astronomy. “There were no real role models in junior high, but my mom made every effort to make sure I got to participate in science fairs and events at LSU,” she noted.

In Tanner’s workshop, “Design Your Own Alien,” participants created an extraterrestrial lifeform based on a specific type of planet—ocean, desert, jungle, grassland or tundra—and then reported on it. “It’s fun to be a part of the program and know I might be influencing these young minds,” Tanner said.

JPL geophysicist Andrea Donnellan found the kids in her group to be engaged and fascinated with the hands-on “earthquake generator” and were interested in how elastic strain could build up and then release in an earthquake.

“I try to have variety in my workshop ranging from hands-on experience to science lecture, to a bit about myself and field work,” she said. “In addition to being very enthusiastic about the earthquake experiment, they loved the video of penguins in Antarctica,” Donnellan added, referencing one of the many areas she has studied.

“It’s satisfying to see so many girls, and a boy, in my workshop be so enthusiastic about science and learning, and it’s nice to encourage that,” she said.

Donnellan said she wanted to be a scientist “as early as I can remember. The type of scientist I wanted to be evolved over time.” She credited an excellent high-school physics teacher who encouraged her move forward. “He spent his summers working at Fermilab in Illinois and I loved hearing about his experiences there,” she said. “It made being a scientist more concrete. Hopefully the Sally Ride festivals do the same.”

The festivals are organized by Sally Ride Science, a company founded to support the large numbers of girls who are, or might become, interested in science, math and technology. The company creates innovative science experiences for girls that empower them, engage them and encourage their interests. For more information, visit [www.sallyridescience.com](http://www.sallyridescience.com).

*At the festival’s outdoor “street fair,” JPL’s Randi Wessen shows visitors a meteorite, while others enjoyed a solar telescope.*



Photos by Jess Doherty



*JPL’s Andrea Donnellan helps girls with her “earthquake generator” hands-on activity.*





# Celebrating spring

## Students observe Sun-Earth Day

By Susan Braunheim-Kalogerakos



Photos by Tony Griecus

**M**ORE THAN 90 STUDENTS FROM ARROYO ELEMENTARY SCHOOL IN SIMI VALLEY GATHERED AT JPL MARCH 20 TO ATTEND THE LAB'S SUN-EARTH DAY CELEBRATING THE SPRING EQUINOX.

The event, "Living in the Atmosphere of the Sun," highlighted the sun and its connection to the Earth and other planets.

After the kids received an introductory presentation about the sun, the fourth, fifth and sixth graders participated in a wide variety of demonstrations and hands-on activities including working with ultraviolet beads, a lesson in making and using a sundial and making prints using sun-sensitive paper.

Richard Shope, from JPL's Office of Science Research and Analysis, led an exercise that used the children and their movements to demonstrate solar activity. Shope had the students enact two activities, one that modeled the dynamics of 11-year solar cycles and the other to demonstrate how the solar wind meets Earth's magnetosphere.

Placed strategically around the room, the kids were able to act out how the sun rotates, how its outer atmosphere co-rotates and how the magnetic field lines gradually twist until, after 11 years, the polarity is reversed.

Making and eating a cookie model of the sun seemed to be the biggest hit with the students. "I learned about sunspots and solar flares when I was making it but the best part was eating it," said sixth grader Anthony Sinacori.

Fifth-grade teacher Beth Wight thought the event was extremely useful. "The information presented is really valuable and I think all of the hands-on activities will be effective in helping the kids remember the material," she said.

"I believe that this event was the best Sun-Earth Day we have had at JPL," noted Andrea Angrum, the Voyager and Ulysses project administrator and education and public outreach lead. The students were interested participants in all the activities, she said. "The activities generated many questions from them and I think they had a wonderful time learning about the sun."



The event was sponsored by the Sun-Earth Connection Education Forum. The forum, made up of several outreach specialists from NASA solar-related missions, provides a unique contribution to education communities by focusing on the overall theme of sun-Earth connection science while highlighting the contributions of NASA missions. JPL's Voyager and Ulysses missions both play active roles in the forum.

The forum uses celestial events, like total solar eclipses and the transit of Venus, as well as the spring equinox, to engage K-12 schools and the general public in space-science activities, demonstrations and interactions with space scientists. Sun-Earth Day comprises a series of programs and events that occur throughout the year, culminating with a celebration on or near the spring equinox.

Arroyo Elementary School was selected to participate in the event because master teacher Debi Soukup has worked closely with the Voyager and Ulysses missions in the past and has helped develop both of the missions' poster activities.

# News Briefs



Ed Stone



Tom May



READ AND SUBMIT CLASSIFIED ADS  
AT JPL'S ONLINE NEWS SOURCE

<http://dailyplanet>

E-MAIL US AT

[universe@jpl.nasa.gov](mailto:universe@jpl.nasa.gov)

# Universe

## Editor

Mark Whalen

## Design

Audrey Steffan

## Production

David Hinkle

## Photography

JPL Photo Lab

Universe is published by the Office of Communications and Education of the Jet Propulsion Laboratory, 4800 Oak Grove Drive, Pasadena, CA 91109.

## Aviation Week honors Stone, Stardust

Former JPL Director Ed Stone was named the winner of Aviation Week magazine's Philip J. Klass Award for Lifetime Achievement at last month's 50th annual Laureate Awards.

Stone, a Caltech professor of physics and vice provost for special projects, served as JPL director from 1991–2001. He has been a principal investigator on nine NASA missions and a co-investigator on five other NASA missions. Since 1972, he has served as the project scientist for the Voyager I and Voyager II deep-space probes. His previous awards include the NASA Outstanding Leadership Medal, the Aviation Week & Space Technology Aerospace Laureate Award, the National Space Club Science Award, the National Medal of Science Award from President Bush, and the COSPAR Award for Outstanding Contribution to Space Science.

Also honored at the Laureate Awards, which recognize outstanding achievements in aviation, aerospace and defense, was the team supporting JPL's Stardust comet sample return mission. The award cited JPL's Tom Duxbury, Stardust's project manager, and Peter Tsou, deputy project investigator, along with Don Brownlee, Stardust principal investigator, University of Washington, and Joseph Vellinga, Stardust program manager, Lockheed Martin Space Systems Co.

Stardust also received honors last month from the National Space Club, earning the Nelson P. Jackson award for the most significant space achievement in 2006. Vellinga accepted the award on JPL's behalf on March 23.

## May receives SBA award

Thomas May, manager of the Business Opportunities Office and Supplier Diversity Program at JPL, has received the Legacy Award from the U.S. Small Business Administration's Los Angeles District Office.

May received the honor March 6 at the 19th annual JPL High-Tech Conference for Small Business for successfully increasing contracting to small-, minority- and women- and veteran-owned businesses. More than 1,000 people attended to network and form teaming relationships.

For the past 19 years, May has successfully brought together prime contractors; corporate, federal, state and city government representatives; and the small-business community to discuss potential contracting and subcontracting opportunities.

The Supplier Diversity Program's major goal is to increase the maximum number of procurement actions and dollars awarded to small businesses each year.

For more information on the Business Opportunities Office, visit <http://acquisition.jpl.nasa.gov/boo>.

## Caltech engineering gets high ranking

In a recent U.S. News and World Report survey, Caltech shared the top spot for best engineering school in the aerospace/aeronautical/astronautical category, as voted by engineering school deans and deans of graduate studies nationwide.

Caltech tied for the lead with the Massachusetts Institute of Technology and Stanford University in the category, one of six assessed in the survey. Caltech's ranking was two spots higher than last year's.

"This ranking is particularly impressive given our small faculty and student body sizes," said Ares Rosakis, director of Caltech's Graduate Aeronautical Laboratories, who noted that Stanford and MIT's aeronautics and astronautics departments are two and a half and five times Caltech's size, respectively. "It primarily reflects the quality of our faculty and most importantly it demonstrates the excellent reputation of our graduates, who routinely occupy leading positions in academia, national labs and industry."

For more information, visit [www.usnews.com](http://www.usnews.com).

## Blood donors sought in May

The next JPL/Red Cross blood drive will be held in von Kármán Auditorium on Tuesday, May 15, from 9 a.m. to 4 p.m. and Wednesday, May 16, from 7 a.m. to 1 p.m.

Sign up on the confidential Red Cross website at [www.givelife.org/index.cfm?hcl=JPL](http://www.givelife.org/index.cfm?hcl=JPL). Enter "JPL" instead of a zip code or sponsor code. Click "search" and the JPL blood drive dates will come up. Confirmations will be sent via e-mail. Advance signup sheets will also be available at Occupational Health Services in Building 310-202, prior to the blood drive, if you are unable to access their website.

For last-minute signups, or to change your appointment, please call the Red Cross at 213-400-0140.

To donate blood you must be at least 17 years old, weigh no less than 110 pounds, lived in the United States for no less than three years and be in good health. If you have a tattoo, it is a temporary deferral for six months to one year. A picture identification is required for registration. If you have donated recently, please keep in mind there must be 56 days between blood donations.

If you donated at the last drive and were recruited to donate on the Alyx machine for double red-cell collection, you are not eligible to donate at the JPL May drive.

Occupational Health Services notes that blood supplies are critically low, with a high demand for type O blood.

At the two-day drive in February the Red Cross collected 162 pints of blood, from which 486 lives will benefit.

The May blood drive will be a "pint for a pint" event in which donors will receive a coupon for Baskin Robbins.

For more information, visit <http://www.redcross.org/services/biomed/blood/supply/tse.html>.

# Passings

**Arnie Ruskin**, 69, principal engineer in the Mission Systems Concepts Section, died Dec. 28, 2006.

Ruskin worked at JPL from 1978 to 2006. He was a system engineer and then served as manager of strategy development in the Office of Telecommunications and Data Acquisition in the 1970s and 1980s. He led planning on the Cassini project in the 1990s, and contributed to many flight projects and proposals over the last several years. Most recently Ruskin was the manager of the Products, Processes, Tools and Technology element of JPL's Systems Engineering Advancement Project.

In addition to his JPL career, he played prominent roles as an educator at various institutions, including the University of Michigan, the Claremont Colleges and Harvey Mudd. His most recent position was director of the Engineering Executive Program at UCLA, where he also taught.

Ruskin is survived by his wife, Nancy. A memorial service was held Jan. 21.

**Carolyn Brunder**, 69, a former secretary in Section 430, died Feb. 22. She worked at the Laboratory from 1991 to 1996.

Brunder is survived by her husband, George.

**William Sleigh**, a retired engineer from Section 387, died March 18. He worked at JPL from 1957 to 1995.

# Letters

To co-workers and friends at JPL, it is with much sadness that I must report that Willam "Bill" Sleigh passed away March 18 in Arcadia, CA. He had worked at JPL for 38 years on many missions. He is survived by his loving wife Janet, daughter Tamara Fowler, and grandchildren Larry and Alexis Whitman, as well as his sister.

A memorial service was held

March 31 at Turner and Stevens Live Oak Chapel in Monrovia.

*Janet Sleigh*

My family and I thank our friends and co-workers at JPL for their thoughts and condolences at the recent passing of my brother. Your kind thoughts, prayers, cards and donation are greatly appreciated. We want to thank JPL for the plant. It was so beautiful.

*Asbok Savla*

My family and I would like to thank everyone for their support during the illness and recent death of my father. The flowers and plant from my "JPL family" were lovely and much appreciated, as were the cards and sentiments.

*Cami Vongsouthy*

I would like to express my sincere appreciation for all the flowers, cards, letters and e-mails sent to me and my family for the passing of my mother Victoria. I would also like to thank everyone from JPL who attended the funeral and

graveside services. The outpouring of love and respect for me personally and my family was more than I had ever imagined and overwhelming, and made me feel as if I have been a part of the JPL family for a lifetime.

*Fred Doumani*

My family and I would like to thank JPL for the beautiful plant and JPL friends for their generosity, prayers and kind expressions of condolences in the recent passing of my husband, Al.

*Cruz Abellana*

# Retirees

The following JPL employees retired in April:

**Richard Horttor**, 43 years, Section 330; **Stewart (Andy) Collins**, 38 years, Section 382; **Mary Bothwell**, 34 years, Section 2631; **Don Noon**, 28 years, Section 355A; **Michael Coryell**, 25 years, Section 111; **Diana Meyers**, 21 years, Section 2745.