

Rice Hosts 12th “Reach for the Stars” STEM Festival October 12, 2019

On October 12, the Department of Physics & Astronomy and Rice Space Institute, in conjunction with the Ride Family Foundation and scores of sponsor and volunteers, hosted its 12th “Reach for the Stars” STEM Festival, especially for middle school girls.

(<http://space.rice.edu/reachforthestars/>).

The 2019 festival hosted 502 girls, 132 teacher or parent chaperones, and 204 presenters, exhibitors, and volunteers.

The event began with a street fair from 11-1, with 28 exhibit booths covering a wide range of STEM activities. Principal sponsor Cheniere Energy had a popular booth demonstrating the LNG process.



Above: Cheniere Energy Booth



Left: Lollie Garay with LabRats Robotics; above: Judy Dye with her solar telescope; right: new Space suit design from NASA



Other exhibitors included NASA, Lunar and Planetary Institute, Baylor College of Medicine (TRISH and also the deBakey Dept of Surgery), Texas Space Grant, Mobile Aviation Lab, Solar System Ambassadors, Lab Rats Robotics, Houston Geological Society, American Chemical Society, Association of Women in Science, University of Houston and UH - Downtown, Costello Engineering and Celanese. Rice groups exhibiting included R-STEM, the Tapia Center, Association of Women in Math, Discovery Dome, Solar Telescope, Rice Physics, and Eclipse Club (Rice Rockets).



Above: the girls enjoyed the talk on the quad in the beautiful weather



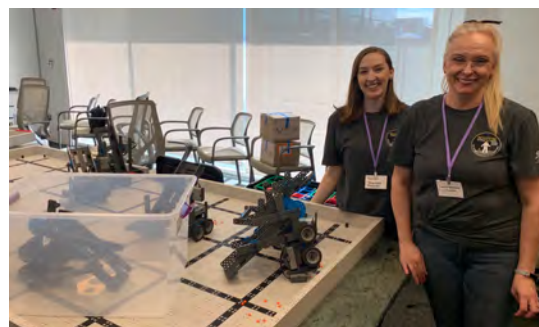
The participants picked up their sack lunches (various sandwiches and snacks including vegetarian and vegan options) and ate under the trees. Water and fruit were provided by Gathering of Eagles.

At 1 pm the girls were captivated by a keynote speech by Dr. Ulyana Horodyskyj (Rice BS, 2007, Ph.D., University of Colorado), relating her experiences as founder of “Science in the Wild” and Commander of the HERA II NASA Mars simulated mission. The

Left: Ulyana showing why her NASA nickname is “Skittles” with Prof. Patricia Reiff, lead organizer, enjoying the joke

students asked her many very interesting questions about her life and experiences, and about how to apply to be an astronaut.

After the keynote, the girls attended two hands-on workshops led by women scientists, engineers, or physicians. There were 24 choices, and the girls signed up ahead of time to choose the workshops that were of most interest. Especially popular workshops were “Chemistry to Dye For” (UH); “Using a cantaloupe as a model for epidural placement” (Baylor College of Medicine) and two sessions of Mars Rovers.



Left: girls making spectroscopes to view line emission; top: Mars robots from Space Center Houston; lower left: chemistry of dyes; lower right: speed racer design



Sponsors We would not be able to host the event without the support of many companies and groups. We are especially grateful to: Cheniere Energy, the Ride Family Foundation, the Transitional Institute for Space Health (TRISH at Baylor); NASA Space Science Education Consortium; Gathering of Eagles, Association for Women in Science, Omega Engineers and several Rice departments and friends including the Department of Physics and Astronomy; the Dean of Natural Science; the Rice Space Institute. Individual donors included Prof. Neal Lane, Kimberly Harden, Doc Brown, Thomas Spencer, Louis & Elise McClutchen, Agustin Castillo, Dolores Garay, Jose Sankoorikkal, Salonica Carter, Armando Garcia, Aichi Lomeli, Elena Gloschen, Vanessa Kramer, Aretha Bruce-Belmar, and Tammie Soto. In all, over half of the participants were sponsored and paid no fees (we did collect a modest fee to cover lunch for those who could afford it).

We especially thank the many volunteers, presenters, and exhibitors without whom it could not have been held at all. The local organizing committee was Prof. Patricia Reiff and Umbe Cantú. Bear Ride helped with planning but was not able to attend this year.

Feedback We posted a survey for the participants. Thirty nine chaperones/teachers, which reflected 389 students responded, plus an additional 22 parents or students, making an amazing 81% response rate. We are delighted at the following statistics: On a five-point Likert scale (with 5 being the best), the participants rated the following:

Street festival: rated 4.22

Keynote speech: rated 4.28

Hands-on Workshops: rated 4.29

Average interest in STEM careers BEFORE the day: 65; Average interest AFTERWARDS: 74
Because of preregistration, 95% of the girls we able to attend their first or second choice workshops. Overall, 89.7% rated the event as “excellent” or “very good”. The participants reflected the diversity of the city (Hispanic, white, black, Asian) but no specific ethnicity was recorded.

Comments from students on the keynote: *“I really liked how she told us how we can make a difference in our own young lives. She was very specific and told us how she did it at such a young age, and I loved how she gave this quote : ‘Dreams don’t work unless you do.’ That really inspired me to dream big and keep working towards my goals. :)”*; *“Dreams are achievable and fun”*; *“My daughter liked how the speaker persevered and made things happen for herself. She also loved how her interests allowed her to travel the world.”*; *“The fact of how she beat and competed with males in science fairs”*.

History The first Rice festival was held in 2006, at the request of Sally Ride, who was the first keynote speaker. It was originally called the “Sally Ride Science Festival”. Other keynote speakers have been Eileen Collins (2007); Peggy Whitson (Rice PhD 1985) (2008 and 2018); Ellen Ochoa (2009); Wendy Lawrence (2010 and 2015); Catherine Coleman (2011 and 2014); and Barbara Morgan (2013). In 2007



Above: Peggy Whitson sending a message to the Sally Ride Festival participants in 2007. She returned in person in 2008 and 2018.

Peggy Whitson (Commander of Expedition 16) sent a message to the girls from the ISS which can be viewed here

(<http://space.rice.edu/reachforthestars/RideFestival/whitson.mp4>).

Thanks to our amazing 2019 Workshop presenters:

1: "Texas in the Dark: Eclipses 2023/2024"	Prof. Patricia Reiff	Rice University	Astronomy
2: "Telling the Tales of Whales"	Dr. Beri Brown	U. of Southern Mississippi	Biology
3: "Chemistry to Dye For"	Prof. Elene Bohouhoutsos-Brown	University of Houston Downtown	Chemistry
4: "Fun With Chemistry"	Prof. Katie Miller	Rice University	Chemistry
5: "Fire and Ice: Volcanoes and Glaciers"	Dr. Ulyana Horodyskyj	Science in the Wild	Earth Science
6: "Spectroscopy of Light"	Alison Farrish	Rice University	Astronomy
7: "Mars Roving"	Dr. Valerie Payre	Rice University	Engineering Design
8: "Building Communities"	DeKecha Shepherd	Costello Engineering	Civil Engineering
9: "Magnetic Attraction and Electric Shocks"	Dr. Elizabeth Jensen	Planetary Science Institute	Physics
10: "Let's Walk on Mars"	Dolores Garay	Lab Rats Robotics	Planetary Science
11: "Fun with Math Logic"	Patricia McMorris	Milby High School	Mathematics
12: "Using a cantaloupe as a model for epidural placement"	Connie Tran, M.D. and Karlyn Powell, M.D.	Baylor College of Medicine	Medicine/Surgery
13: "Magnetic Fluids"	Prof. Lisa Biswal Sibani	Rice University	Physics/Nanotechnology
14: "Stardust: Capturing our cosmic friends & science you can do at home!"	Paige Graff / Julie Fooshee	Jacobs at NASA/ Johnson Space Center	Planetary Science
15: "The Physics of Butterflies"	Dr. Diane Wiernasz and Dr. Maya Reese	University of Houston	Biophysics
16: "Wind and Solar Energy"	Prof. Penny Morris-Smith	University of Houston Downtown	Physics/Energy
17: "Go Speed Racer"	Ericka Lawton	RSTEM, Rice University	Physics
18: "Apollo and Beyond"	Christine Boldt	Discovery Dome, Rice University	Space Exploration / Physics
19: "Exploring the Solar system"	Drs. Jennifer Gorce, Julie Stopar and Kennda Lynch	Lunar and Planetary Institute	Planetary Science
20: "Mars Rover 2020"	Laurie Newman	Space Center Houston	Planetary Science
21: "Spacesuits: Past, Present, and Future"	Dr. Kristine Davis	NASA/ Johnson Space Center	Human Exploration
22: "How do astronauts speak STEM? World languages on the ISS"	Aimee Roebuck-Johnson & Tony Vanchu	NASA/ Johnson Space Center	Human Exploration
23: "Orion Splashdown!"	Dr. Peggy Eddy	Texas Space Grant Consortium	Space Exploration
24: "Engineering Lab Tour"	Zane Zook / Janelle Clark	Rice University	Engineering