REACH FOR THE STARS

A shared fascination with science led Black Eyed Peas frontman will.i.am. and NASA to join forces in an effort to get more students involved in STEM studies and careers.
Role models play a crucial role in building and sustaining student interest in science and science careers.

When I was six, I fell in love with science. Visiting a friend one day in rural Indiana, her mother, an artist, showed us how to see onion skin cells using a microscope. A whole world opened up to me and I was hooked. Liking science became a part of my identity even though I had never met a scientist nor had I studied science in school.

Research shows that, like me, many STEM professionals can point to an experience, often in early childhood, that inspired them to pursue a science career.

Role models are also known to play a critical role in building and sustaining student interest in science and science careers, as well as changing perceptions of scientists. A surprising number of students still believe that most scientists are white men in lab coats. Moreover, for many students, the only STEM professionals they ever meet are pediatricians and school nurses. Thus, students’ ideas of both who goes into science and available scientific careers are very limited.

How can we provide students with that critical spark and introduce them to role models? Science Festivals, a growing national movement, are one way. The Bay Area Science Festival seeks to inspire and connect attendees of all ages with STEM professionals from a range of fields. The Festival is a 10-day celebration that reaches more than 75,000 people and culminates with a free, hands-on science extravaganza at AT&T Park.

Role models

Many groups around the country also connect science professionals with students in schools, after school programs, and in laboratories. Here at U.C. San Francisco, more than 250 scientists each year volunteer in classrooms via the Science & Health Education Partnership. Through these programs, students develop relationships with scientist roles models, experience enriched science learning opportunities, change their perceptions of scientists, and critically, start to see themselves as scientists.

Finally, a critical place for that love of science to grow, is schools. Schools are the only setting where we can reach nearly all students. But, to do so, we actually have to teach science—our country’s education policies have resulted in most elementary students receiving little to no science instruction.

This year’s release of the Next Generation Science Standards provides an opportunity—both to increase the amount of science taught and the way it is taught. Science is not a list of facts to be memorized. It is a creative endeavor, a dynamic and exciting field, and STEM professionals are constantly learning and solving problems. In our teaching, we need to intimately link doing science with learning science and thus create opportunities for discovery and inspiration in the classroom and beyond.

“...A surprising number of students still believe that most scientists are white men in lab coats.”

REBECCA SMITH, Ph.D. 
editorial@mediaplanet.com

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Publisher: Adeline Gheorghita
Managing Director: Janel Gallucci
Editorial Manager: Sara Quiagley
Lead Designer: Alana Giordano
Designers: Samahna Gabbey

Contributors: Joan Ferrini-Mundy, Nicole Gray, Avery Hurt, Rebecca Smith, David Stronck

Send all inquiries to editorial@mediaplanet.com

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This vibrant community of large and small tech, software, greentech, and life science industry leaders at our innovation campus in Emeryville/West Berkeley—and others like them around the Bay Area—expect the next generation of innovators to be well-prepared for the jobs they continue to create.

Our California public school children deserve the life rewards accessible to them through a Science, Technology, Engineering and Math (STEM) related career path. Support STEM education efforts at the local, state and federal level.

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“Reach for the Stars” by musician will.i.am after it was recorded song was beamed back to Earth, according to NASA. This marked the first recorded song to be transmitted from the surface of Mars by NASA’s Curiosity rover. “Reach for the Stars” is a perfect fit for the occasion, described as “a new composition that a song would hitch a ride on a rocket and when it lands on Mars it would be beamed back to Earth,” says will.i.am. The musician is a passionate advocate for science education. "Kids are natural scientists," says will.i.am. The musician is a passionate advocate for science education.

For the first time in history, a recorded song was beamed back to Earth from another planet. Scientists, special guests and news media gathered at NASA’s Jet Propulsion Laboratory (JPL) in Pasadena, California last August to hear “Reach for the Stars” by musician will.i.am after it was transmitted from the surface of Mars by NASA’s Curiosity rover. This marked the first recorded human voice ever to travel from Earth to another planet and back, according to NASA.

"Reach for the Stars" is a perfect fit for the occasion, described as “a new composition for the singer’s passion for science, technology and space exploration.” The lyric says, "why do they say the sky is the limit when we have footsteps on the moon?" he explains in a video about the song. The music is a curious, always looking for answers.” But it is all too easy to shunt this into, says Shelley Ctist, NASA’s Senior Advisor for Education Integration. "The aim is to help them think like scientists." NASA has a wealth of programs in which kids can not only learn about science, but participate as well. In NASAs Exploration Design Challenge, kids of all ages from around the globe are at work finding solutions to one of the major hurdles associated with deep space exploration: protecting astronauts from the dangers of space radiation. After-school programs Charlie Hutchison, Principal Investigator for the National Part-nerships for Afterschool Sciences (NPASS), at EDC in Waltham, Mass, offers something more immediate and local. NPASS has trained over 1,000 youth workers in 15 states to embed regular science programing into the afterschool schedule. "Kids are natural scientists," says will.i.am. The musician is a passionate advocate for science education. "Kids are natural scientists," says will.i.am.
Finding your career path is one of the most rewarding discoveries you can make.

Students often arrive at college knowing they want to pursue a career in science, but not sure what type of career that might be, or even what branch of science they are most interested in. “Some students come to college with definite intentions, perhaps they have a family member in science and they already know what kind of career they want. But many are uncommitted,” explains G. Steven Martin, MD, dean of biological sciences at U.C. Berkeley.

Planning ahead
Science courses typically require specific prerequisites, so planning is crucial. This isn’t as big a problem as it seems. “People’s career goals generally evolve over four years of study, and I think that is a good thing,” says Martin. “Most fields do not require students to make a decision for the first two years.”

“If you don’t know what you want to do, go ahead and take higher level math and the sequence of science courses. This will leave your options open,” explains Gregory Crawford, dean of the college of science at Notre Dame University.

If you love science, take time to explore. Almost any path in science will be rewarding, and not just financially. “When you make a [scientific] discovery, you are the first to see the future. Science is the most exhilarating thing one can do in life,” says Crawford.

Q: What role can science education play in our society today?
A: Our society is dominated by the applications of science and technology, ranging from smart phones to automobiles. America’s future prosperity will be determined by its creativity in inventing and using new technologies and scientific breakthroughs. Our schools need an emphasis on science education to prepare our citizens to become both intelligent consumers and creative producers of the new technologies and scientific breakthroughs. A failure in effective science education would lead to an economic failure of our society.

U.S. students recently finished 17th in science in the world compared to 31 other countries.

AMERICA’S REPORT CARD: Making the Grade?
38 percent of students who start with a STEM major do not graduate with one.
In 2008, 31 percent of U.S. bachelor’s degrees were awarded in science and engineering fields, compared to 61 percent in Japan and 51 percent in China.

Science careers can be for anyone.

UC San Diego Extension
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A breakthrough year for women: Female scientists pave the way for the next generation of leaders

When she was in middle school, Dr. Mamta Patel Nagaraja, NASA Engineer and Adjunct Professor of Mechanical Engineering at Catholic University in Washington, D.C., decided that she wanted to reach for the stars—literally—and become an astronaut. With an MS in Aerospace Engineering and a Ph.D. in Bioengineering, she now focuses on studying the effect of weightlessness in space on the human body. She explains, “Engineering is about solving problems, finding out what’s wrong and what needs to be fixed.”

In addition to her duties in Mission Control, Dr. Nagaraja, who has been at NASA for 15 years, is Project Manager of Women@ NASA, an initiative that supports women at NASA and mentors girls interested in science. Approximately one-third of NASA’s 18,000 employees are women, including roughly 1,200, who are in technical positions. Dr. Nagaraja notes that 2013 was a breakthrough year for women at NASA. Fifty percent of the new class of astronaut-trainees are women. In fact, Dr. Nagaraja was one of 120 finalists among 6,000 candidates for this year’s training program. Though she was not one of the eight chosen, she continues to advance her career at NASA, while serving as a role model and mentor for young girls and women interested in careers in science.

Mentoring as a pathway to success

Chris Meda, MS, President, Women in BIO San Francisco and Board Director, Claremont BioSolutions, has been in the biotech industry for 30 years. She also views mentoring as an important pathway to success for women in science-related professions. She says, “While there are many more women in biotech than there were 20 years ago, women’s start-ups don’t get funded as easily and there are very few women CEOs.” Ms. Meda aims to change that. “Our focus has been to create an environment where women with advanced science degrees can get together and network.”

Chris Meda is an example of professional success in the biotech industry. She has started and sold two start-ups, and held prominent positions in two others. She has worked in large pharmaceutical companies and has been responsible for a $700 million portfolio of drugs. And now she continues her work in the industry as CEO of RxDxLink LLC, a consulting company to the biotech industry. She has started and sold two start-ups, and held prominent positions in two others. She has worked in large pharmaceutical companies and has been responsible for a $700 million portfolio of drugs. And now she continues her work in the industry as CEO of RxDxLink LLC, a consulting company to the biotech industry. Ms. Meda aims to change that. “Our focus has been to create an environment where women with advanced science degrees can get together and network.”

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When I grow up I want to design fashionable space suits that do cool things and I want to be an orthodontist.”

Martha says, “I used to think that science was just for guys or extremely smart people. Anybody can do science.”

Program Director, Dr. Mamta Patel Nagaraja, says, “Martha showed an unbelievable interest and drive to be part of NASA GIRLS. My favorite story is when her mother shared that Martha announced at dinner that she was going to be a scientist and apparently this was the first anyone in her family had heard her say such a dream!”
Lo Schiavo Science is a cutting-edge science center benefiting thousands of USF students and the Bay Area by producing ethically-minded graduates eminently qualified for the growing industries in science, technology, and innovation.

Please join us at one of the following celebration events to learn more about USF’s commitment to science and innovation.

- **Oct 12**: Lo Schiavo Science Celebration and Open House for High School Students and Counselors
- **Oct 17**: Changing the World Through Life Science Innovation Symposium & Panel Discussion
- **Nov 14**: Changing the World Through Big Data Symposium & Panel Discussion

All events are free and open to the public. Learn More [usfca.edu/loschiavo](http://usfca.edu/loschiavo)