USA SCIENCE & ENGINEERING FESTIVAL

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FREE EXPO: WALTER E. WASHINGTON CONVENTION CENTER
WASHINGTON, DC – APRIL 26 & 27, 2014

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Festival Celebrates Science, Technology, Engineering and Math

It's billed as the "Super Bowl of Science," and it's coming to Washington the weekend of April 26 and 27. The Grand Finale Expo of the 3rd Annual USA Science & Engineering Festival, hosted by Lockheed Martin, will feature more than 3,000 fun, interactive exhibits, 150 stage shows, a career pavilion and a book fair including 30 best-selling science authors. It's all free and it's all designed to inspire the next generation of scientists and engineers so they can help the USA blast off to a successful future.

Meet Bill Nye the Science Guy and *Dirty Jobs* host Mike Rowe. Sing science songs with the Grammy-winning band They Might Be Giants. Contemplate the future with award-winning theoretical physicist Michio Kaku. Learn more about the science and math of sports, what the universe is made of, why the dinosaurs went extinct and what fossils tell us about Earth's secrets. Participate in safe, fun science experiments you can also do at home.

The 2014 event builds on the success of the 2012 USA Science & Engineering Festival, which drew more than 250,000 people to the Walter E. Washington Convention Center. In a new twist this year, the Festival plays host to more than 20 other major events focused on science, technology, engineering and math (STEM), from the U.S. News STEM Solutions conference to the U.S. Environmental Protection Agency's P3 Sustainability Challenge (see inside for more).

"Science is amazing. That's our message to kids and adults attending the Festival. Staying competitive as a nation means we have to encourage more kids to think about careers in science, technology, engineering and math. What better way to capture their imaginations than gathering the rock stars of science in one place and providing activities they can really do?" explained Larry Bock, Festival co-founder.

"We want to show students that STEM is fun and that scientists and engineers change the world for the better," said Dr. Ray O. Johnson, Festival co-founder and Lockheed Martin senior vice president and chief technology officer. "The Festival is a great opportunity to motivate students to pursue these disciplines, which we know are critical not only to our national security, but also to our economic strength and our global competitiveness."

Key Expo Events and Activities

Exhibits. Thousands of hands-on exhibits will give future scientists and engineers the experience of a lifetime. All exhibits (see sidebar) will provide an opportunity to meet and talk with real-life scientists and engineers who are working to answer some of the most important questions of our time.

Book Fair. The USA Science & Engineering Festival Book Fair will include presentations and demonstrations with more than 30 best-selling authors. Among the featured authors are basketball legend Kareem Abdul-Jabbar, author of *What Color is My World? The Lost History of African-American Inventors*; Wonder Years actor, math book author and *Dancing with the Stars* contestant Danica McKellar; and David Macaulay, illustrator and author of *The Way Things Work.*

Career Pavilion. The Expo will feature a STEM Career Pavilion where dozens of companies will showcase STEM internships, mentorships and afterschool programs. An added feature of the pavilion this year is a College Fair where students can meet representatives of more than 50 colleges and universities focused on STEM.

Science Celebrities. The following are just a few of the well-known personalities who will be on hand: particle physicist David Saltzberg, science consultant to the hit TV comedy *The Big Bang Theory*; baseball executive Paul DePodesta, the inspiration for the hit book and movie *Moneyball*; engineer Nate Ball, host of PBS's Emmy-winning series *Design Squad*; sleight-of-hand maestro Apollo Robbins; big wave surfer Maya Gabeira; and Miss California Crystal Lee, a powerful advocate of STEM education for girls.

Stage Shows and Performances. Rounding out the festivities will be more than 150 science-themed performances and stage shows by "mathemagicians", science comedians, Nobel laureates and technology visionaries.

Other Festival Activities

In the weeks leading up to the Grand Finale Expo, the USA Science & Engineering Festival organized a variety of other events. For example, in an outreach effort sponsored by InfoCOMM International, a group of 150 prominent science professionals dubbed the "Nifty Fifty (times 3)" fanned out across the D.C. area during the 2013-14 school year to speak about their work and careers at middle and high schools. The Festival is also sponsoring X-STEM, a sold-out "extreme STEM symposium" on Thursday, April 24, with presentations and workshops by an exclusive group of STEM visionaries.

The USA Science & Engineering Festival is engaging business, government, science and technology leaders in the effort to get young people excited about learning. Bring your future scientists and engineers to the Walter E. Washington Convention Center on April 26-27 to find out more!

For more information: usasciencefestival.org

CELEBRATE SCIENCE!
See pages 4-5 of this special section for an event schedule and map of USA Science & Engineering Festival Expo events.

USA SCIENCE & ENGINEERING FESTIVAL: A Sampling of Expo Goings-On

Lockheed Martin: Innovation with Purpose. As the founding and presenting sponsor of the Festival, Lockheed Martin will showcase exciting and innovative work and give participants a chance to talk to the engineers, technologists and scientists that make it all possible. Take a trip to Antarctica, live on Mars, pilot the Orion spacecraft and F-35 fighter jet, plus many more exciting adventures and activities.

mikeroweWORKS Pavilion. From agriculture to innovation, many of the best STEM opportunities rely on people who are willing to master an in-demand skill. At this pavilion hosted by Caterpillar and Walmart, meet Mike Rowe from *Dirty Jobs* and see for yourself just how many great opportunities are waiting for those who can work with their hands as well as their brains.

NSF & Friends: Where Discoveries Begin. Visit the National Science Foundation's exhibit area to explore tsunami waves, mind control, robots, spiders, cranberry acids, crazy physics experiments and more. Stage performances, a wearable tech fashion show and interactive activities will entertain and engage visitors of all ages.

Robots, Gadgets, Gizmos and More. Calling all DIY'ers … learn how to create a robot at home, make your own toys and build just about anything you can imagine. You really have to see it to believe it at the Engineering Pavilion with DIY exhibitors including Robot Fest, Makers Toolbox, 3D Robotics, Birdbrain Technologies and many more.

Buckle Up & Save A Life – Yours! Are you tougher than a crash dummy? Find out when you experience a car crash using Autoliv's new seatbelt technology.

A Lifelong Passion for Science Starts Here! K-12 learners, teachers, parents, college students and science enthusiasts will all find something fun and exciting to do at the Scientific American exhibit, ¨Helping Curious Minds Achieve Great Things!" Discover a marine fossil, "peer review" an actual scientific paper targeted at kids and explore new teaching tools for the classroom.

Girl Zone. Stop by this exhibit for interactive, hands-on activities that are designed with girls in mind by the National Girls Collaborative Project. These activities let girls get creative with science and have fun in the process. There will also be information for parents and educators on ways to get girls more involved in science and engineering.

Rocket Science. Stop by the Astronomy and Space Exploration Pavilion for the ultimate adventure with NASA, Space Camp, Celestron and many more. Become an astronaut trainee for the day, fly jet simulators, or engineer robots. Venture to amazing worlds both cosmically huge and infinitely small.

Journey Into the Wild. NOAA, Stanford University, the Consortium for Ocean Leadership and many others are all in the exciting Earth Sciences Pavilion. Come see and touch plants and animals that live in Washington. Get your hands inky with the dissection of a five-foot-long Humboldt squid. Learn from marine biologists about climate change, ecology, anatomy, physiology, oceanography and fisheries science.

Turn Discovery into Health. Experience a day in the life of a medical researcher at the National Institutes of Health (NIH) multi-activity area. More than 16 NIH institutes will be carrying out mind-boggling experiments. Explore DNA and the human brain. Measure your lung capacity. Find out how your body works.

Science of Our Senses. In a dazzling nine-exhibit display, scientists from the American Association for the Advancement of Science (AAAS) take you inside the inner workings of our five senses — from how babies make sense of sound to how scientists develop a sense of touch in robots.

Forensic Science - Up Close! Learn the secrets CSI pros use to identify crime scene fingerprint patterns, work with hair samples and more.

DIVERSITY IN STEM

Science, Technology, Engineering and Math (known as "STEM") can open doors to a fun and rewarding life and success in a wide range of careers. In the weeks leading up to the Grand Finale Expo of the USA Science & Engineering Festival, we talked with many of the celebrities, corporate leaders and scientists who are participating about the diversity of STEM opportunities — and what it takes to succeed.

Everyone on these pages is participating in some way in the Expo. Find out how you can see them in person at usasciencefestival.org.

ON BEING AN ASTRONAUT

By Bernard Harris, Jr., MD

I remember watching the moon landing on our black-and-white TV when I was 13 and then running outside to look up at the moon and thinking, "Wow." Ultimately, I flew two shuttle missions and I realized my lifelong dream of walking in space. Travelling around the world at 17,500 miles an hour provided a view with a rainbow of colors not even movie cameras can capture. As I looked down at Earth, I wondered who was now looking up at me.

Bernard Harris was the first African American to walk in space. He currently is president and chief executive officer of Vesalius Ventures, Inc.

AEROSPACE

The Rise of an "Accidental Engineer"

Stephanie C. Hill (above, right) joined Lockheed Martin as a software engineer in 1987 and has worked in a variety of roles with the aerospace giant, which serves as founding and presenting host for the USA Science & Engineering Festival. In her current post, Hill leads a team of more than 9,500 people who deliver information tecÚology systems and services to a range of non-defense U.S. government agencies and businesses. Earlier this year, she was named the 2014 Black Engineer of the Year.

How and when did you first become interested in science and engineering?

I consider myself an "accidental engineer." I always had a knack for math, so I started college with a plan to major in economics and become an accountant. I took an elective course in COBOL computer programming — one of the oldest programming languages — and absolutely fell in love. When it came time to declare a major before my junior year, I decided to pursue both computer science and economics. I've never looked back.

How do you use your engineering knowledge in your work today?

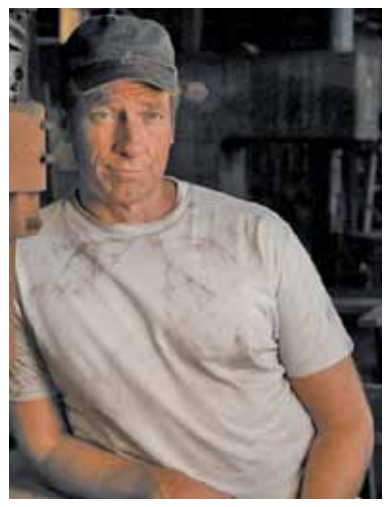
I refer to my engineering knowledge each and every day. It helps me better communicate our Lockheed Martin solutions to our customers. It allows me to ask my team the right questions. And it plays a big role in helping me decide on the right tecÚological investments for our business to ensure we continue growing and remain relevant to our customers' needs.

What's your advice to young people today who may be interested in entering the STEM fields?

If you want to make a difference in the world, a great place to start is as an engineer or scientist. A STEM career is truly rewarding, fun and can be so impactful. Join a STEM-related club or activity in your school or community or go to a summer STEM camp. I would also urge you to pursue your dreams even if someone tries to limit them. Dream big and know that with hard work and determination, anything is possible.

THE SKILLED TRADES

Putting the Skill in STEM: A Conversation with Mike Rowe



Mike Rowe has worked as an alligator farmer, well digger, sausage maker, salt miner, airport runway painter and "worm poop rancher." As creator and host of Discovery Channel's *Dirty Jobs* from 2005 to 2012, Rowe introduced his viewers to men and women who, in his words, "do the kind of jobs that make civilized life possible for the rest of us."

In the process, Rowe developed a deep respect for the value of hard work and the importance of getting more young people to consider jobs in the skilled trades. He is the author of a new book, *Profoundly Disconnected*, about the importance of the skilled trades and he started the mikeroweWORKS Foundation to award scholarships to young men and women who want to master a specific trade through an apprenticeship or trade school program.

***Dirty Jobs* had a great run with 300 shows over a period of seven years. Why do you think that program connected so strongly with people?**

It was really a very simple show and the themes we covered were big and meaty: the dignity of work and the importance of having a good job. And we had a heck of a lot of fun doing it.

When did you first begin to connect what you were doing on the show to the broader theme of getting more people to consider jobs in the skilled trades?

This really started after the economic crash of 2008, when I was hearing from employers about how hard it was for them to find people with the skills to do these jobs. Here we were at a time of spiking unemployment and people were telling me about an invisible labor shortage and it just did not make a lot of sense. The more I talked to people, the more I came to understand that this country was not valuing the jobs that keep our economy humming along day after day after day.

What's your message to young people about what it takes to succeed in the skilled trades?

My message is that we need to put the "skill" back in STEM. If you are willing to work hard, learn a skill and master the math and science and engineering involved in that skill, then you can make a great life for yourself.

More info: mikeroweWORKS.com

MEDICAL/HEALTH RESEARCH

A Biotech Leader's Journey … and Some Advice for Girls

When she was nine years old, Bahija Jallal lost her father to what, she would later learn, was a medical error. She remembers, "It made me start to wonder why things like that happen and it pushed me to learn more about medicine and biology just so I could try and understand."

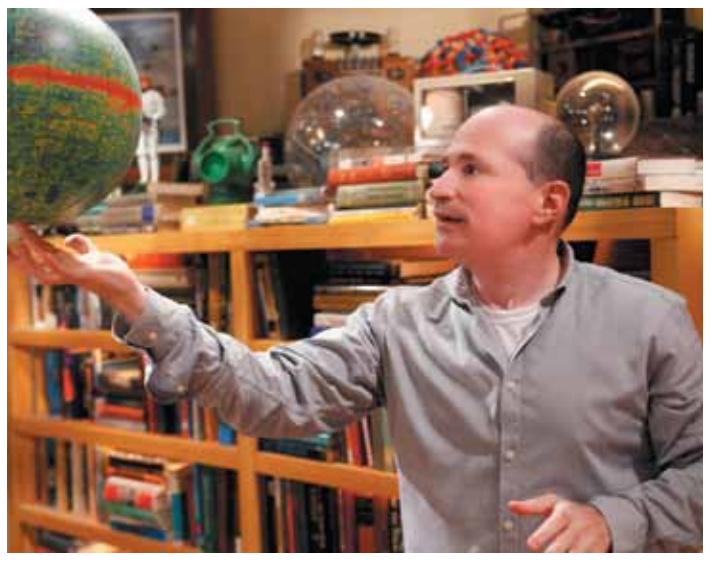
Today, Jallal heads the biotecÚology company MedImmune, the global biologics research and development arm of the pharmaceutical giant AstraZeneca. She said her childhood impulse to want to learn more about science and health became the spark for an educational journey that took her from her home in Morocco to top universities and research institutions in Paris and Germany and, eventually, the United States.

Jallal said the work that is going on at MedImmune and other biotecÚology companies holds the promise of solving medical and health problems that we haven't had the ability to solve in the past. She pointed to the example of how researchers are exploring how to use biologics — drugs and therapies created by biological processes — to manipulate the immune system to attack cancerous tumors. Other key areas where biologics are revolutionizing medicine are in treating rheumatoid arthritis, severe asthma, diabetes and cardiovascular problems.

Jallal is a forceful advocate of getting more young people interested and engaged in the STEM fields, especially girls. Her advice to girls: "Don't let anyone tell you that you can't do something. We need everybody getting excited about science, tecÚology and engineering and math."

ENTERTAINMENT

A Hot Topic in Hollywood: Getting the Science Right



It may be the last thing on your mind when you're watching your favorite television show or the latest big movie. But STEM is playing a starring role in more and more of the entertainment content coming out of Hollywood these days.

David Saltzberg (right), a professor at UCLA whose research focuses on high-energy collider physics, serves as science advisor for CBS's comedy hit, *The Big Bang Theory*.

Saltzberg explained that he plays a variety of roles in advising the program, which focuses on the lives of two physicists, a mechanical engineer, an astrophysicist and their coworkers and friends. He populates the infamous whiteboards that frequently appear on the show with real-world, complex formulae; he consults with the writers and cast about scripts; and he helps the producers make sure the show's plots and dialogue reflect the latest scientific discoveries and debates.

"I am available for whatever needs to be done," said Saltzberg. "I am not here to be the 'science police' but as a resource for the cast and the writers and everyone else."

Getting the science right on shows like *The Big Bang Theory* is important to ensure they are an accurate reflection of reality. But for other TV shows and films with lots of stunts and effects, it can be a matter of life and death.

Steve Wolf engineers effects for TV shows like *America's Most Wanted* and *Law and Order*, Tom Cruise films and other productions. Wolf said his work is "the most fun application of physical science I can imagine" and that he uses science and math every day to set up explosions, car crashes and more.

Wolf also works to engage kids in STEM subjects through his "Science in the Movies" program. "The secret to getting kids interested in STEM fields and on paths to exciting STEM-based careers is to support them in developing a sense of exploration," he said.

More info: scienceinthemovies.com

ROCKIN' SCIENCE:

An Interview with They Might Be Giants' John Flansburgh

They Might Be Giants is a rock band known for writing and performing everything from alternative hits ("Birdhouse in Your Soul" and "I Palindrome I") to the theme song for *Malcolm in the Middle*. The band also is known for bringing science and math into songs aimed at both children and adults.

In an interview, JoÚ Flansburgh (on left, with bandmate JoÚ Linnell) explained how and why the band makes science and tecÚology a recurring theme in its music.

Where does your interest in science come from?

For us, it's really about digging into ideas. It's about seeing how the world works and what systems lie underneath the things you are seeing with your eyes. You can't write every song about romantic love, and science is a fascinating topic.

How do you make science fun and interesting for people of all ages?

We just try to focus on things that spark our interest and that we hope will spark other people's interest too. We are like the barkers in front of a circus just trying to get people inside the tent. And once they are in there, there's this whole world of in-depth stuff for people to explore.

You are known for pushing the envelope when it comes to using technology to create and distribute your music. You created your own online music store before most other artists, you were podcasting before podcasting was cool and you have done a lot of experimenting with electronic music. What does technology do for your music?

I don't feel like we are "techies" but we definitely have been early adopters of lots of things. When we hear about a new or emerging tecÚology and we think there might be an opportunity to do something fun with it, we will. It's just another excuse for exploring new ways of doing what we do.

For more info: theymightbegiants.com

ROBOTICS/ENGINEERING

Exploring the Power and the Potential of Robots

Where is the field of robotics going in the years ahead? We can find clues in the stories of two women who are living proof of the power and the potential of robots to reshape our society and our world.

HELEN GREINER:

From R2D2 to the Real Thing

Helen Greiner recalls watching the movie *Star Wars* as a child and thinking how cool it would be to design a real-life R2D2. Nearly four decades later, she is a pioneer in the rapidly growing field of robotics. Her latest project: flying robots that can serve as "eyes in the sky" for military uses, search and rescue, bridge inspections and more.

A graduate of MIT, Greiner did research at NASA's Jet Propulsion Laboratory in California before cofounding and leading the company iRobot. She now is CEO of CyPhyWorks, where flying robots (also known as "unmanned aerial vehicles") have become her passion. CyPhyWorks' robots are small, hovering devices that are tethered to the ground. They provide high-definition video and support long-distance communications in remote areas, among other uses.

Greiner said what she loves about robotics is that it relies on a broad range of knowledge and expertise. "You need to create a tight integration of the physical or mechanical aspects of the robot with its electrical structure, which is its nervous system and on top of that you need to develop the computational components, which is the brain. Even if you become an expert in one discipline you need to become familiar with the others so you can create the whole," she said.

Greiner's advice to future roboticists is simple: Start building. "When you start making things, you start to learn and figure out what works," she said.

For more information: cyphyworks.com

AMANDA BOXTEL:

Walking Again … Thanks to Technology

Photo by Charles Engelbert

After Amanda Boxtel was injured in a skiing accident at age 24, a doctor walked into her hospital room and uttered six words she will never forget: "Amanda, you will never walk again."

Today, after more than two decades of paralysis, Amanda walks with the help of a bionic exoskeleton suit that demonstrates the power of tecÚology to change people's lives.

Boxtel's exoskeleton suit is the product of Ekso Bionics. She calls it a "wearable robot. " Custom-designed to fit Boxtel's body, it includes motors that work like muscles to move her legs, sensors that act like her nerves to activate the motors and a structure and frame that mirror her bones.

The exoskeleton is the result of years of work by hundreds of people with expertise in everything from human physiology to engineering to computer software. "To put a paralyzed person inside a robot and get her up and walking across the room is a hugely complex undertaking," Boxtel said. "But it's proof of how we can use our imaginations and our understanding of science and tecÚology to do amazing things."

Today, Boxtel is executive director of the Bridging Bionics Foundation, which works to advance research and development of exoskeletons and other bionic tecÚologies.

"Why should I be the lucky one?" Boxtel asks, noting that 6 million people in the United States are paralyzed and could benefit from the tecÚologies that have helped her prove that doctor wrong.

For more information: amandaboxtel.com; eksobionics.com

HOW BOTTLE ROCKETS LAUNCHED A STEM CAREER:

A Conversation with Nate Ball

Nate Ball grew up in a small town in Oregon without a television in the house. His parents, both teachers, wanted him and his sisters to focus on reading, music and other activities to develop their creativity and intellectual curiosity. Odd, then, that Ball, an MIT-educated mechanical engineer and inventor, is best known for his role as a TV host. Since 2007, he has hosted the PBS program, *Design Squad*, which introduces the younger set to hands-on engineering activities, concepts and excitement.

Ball also is the author of a series of science adventure books for kids under the title, *Alien in My Pocket*. As if that's not enough, he is the inventor of the Atlas Power Ascender, a rope-climbing device used by soldiers and rescue workers for scaling buildings and other tall structures.

How young were you when you first became interested in engineering and how things work?

Fourth grade was a real turning point when Mom connected me with some teachers who wanted to start a space and rocketry club. That first pop-bottle rocket launcher was the most complicated thing I had ever built. I remember watching it fly a hundred feet in the air and knowing right then that I wanted to build more cool stuff.

Over time, I moved to larger rockets and I built potato guns and a Tesla coil and lots of other fun and challenging things. My parents really stood behind the value of self-directed learning, even after I set the kitchen on fire one day!

When did you start pursuing a more formal education in engineering?

I took an introductory mechanical engineering class at MIT and decided right off that it was what I wanted to do.

How did you get the idea for the Atlas Power Ascender?

The Atlas Power Ascender developed out of a design competition at MIT. Some friends and I got together to build a powered rope-climbing mechanism after hearing this was something soldiers had requested for getting extracted out of wells and caves in Afghanistan. We stayed up lots of nights working on it because we were so motivated. It's great to know that something you designed and worked so hard on is actually being used by people in all these important ways..

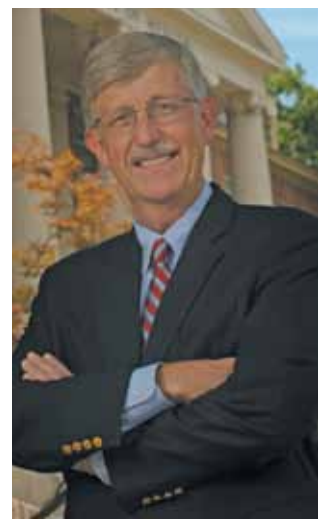
What do you say to kids today about how they can develop their engineering and design skills and make a difference?

Don't be scared. Get out there and try lots of different things. Every child has a natural curiosity about the world and if you keep doing things to satisfy your curiosity you are well on your way to a fulfilling and successful career in school, in STEM and in life.

For more information: pbskids.org/designsquad; atlasdevices.com; alieninmypocket.com

JOIN THE ADVENTURE:

A Conversation with NIH Director Francis Collins



The National Institutes of Health will invest $30.2 billion this year in medical research on behalf of the American people. Francis Collins, M.D., Ph.D., has headed the NIH since 2009. He is a researcher known for landmark discoveries of disease genes and his leadership of the International Human Genome Project.

What do you say to young people about pursuing careers in medical research?

There could hardly be a more exciting time to be in this field. We are learning more and more about how life works and how disease occurs. This is the century of biology. Being part of this great adventure is one of the most rewarding things I think people could be doing now and in the future.

What should young people be doing now if they think they want to get into these fields?

Anyone who is going to be successful in the biological sciences in the years ahead needs a strong foundation of math and computational strategies for making sense of big data sets. Whether you are trying to read out DNA sequences from hundreds of thousands of people, studying brain images, or making sense of millions of electronic health records, you are going to need to know how to glean insights from lots and lots of data.

Something else that's important are interpersonal skills. Science is no longer a lonely discipline. As a scientist, you will work side-by-side with interesting people both here in the United States and around the world.

Any other advice?

I tell students to find an experience where you're not just reading about science but actually doing it. When I ask top scientists how they first got into this work, they tell me they had an early opportunity for hands-on experience and they were captivated by the joy that comes with solving problems.

ENERGY

The Path to Becoming a Chevron Engineer

Meeting the future energy needs of the United States and the world is going to require a lot of STEM smarts … and a lot of people like Quinn Woodard.

Woodard took part in a STEM education program at his St. Louis, Mo., high school that put him on track to his current job as an engineer with the global energy giant Chevron. The program was made possible by Project Lead the Way, a nonprofit organization that Chevron supports to deliver hands-on STEM curricula and professional development for teachers at elementary, middle and high schools across the country.

"My parents really encouraged me to do well at school and to take advantage of all the opportunities that came my way, so the classes made possible through Project Lead the Way were like a gift," Woodard said.

After graduating from high school, Woodard enrolled at the University of Tulsa in Oklahoma. He said he majored in electrical engineering because he liked the hands-on aspects of doing things like wiring circuits and testing microprocessors. "Being able to physically do something was important to me," Woodard said.

Woodard was recruited by Chevron immediately after graduating and now lives and works in California. He is a lead electrical engineer in the company's San Joaquin Valley Business Unit, which develops crude oil and natural gas in central California. Woodard supervises a team of six engineers whose job is to keep the electrical systems up and running.

"It's a great job and I love working for a company that's leading the way in bringing people into these kinds of careers," Woodard said.

Chevron has provided $100 million to education initiatives that have touched more than half a million students; the company recently pledged an additional $30 million by 2015. "At Chevron, our goal is to support STEM education initiatives and encourage project-based learning to equip students with the critical skills they need to succeed in the jobs of the future," said Blair Blackwell, manager of education and corporate programs at the company.

For more information: www.chevron.com/education; www.pltw.org

ENVIRONMENT/CLEAN TECH

Competition Spotlights Great Ideas to Save the Planet

One group explored how to use mushrooms as an insulating material. Another looked at turning cashew oil and other natural materials into flame-retardants. Yet another developed a solar-powered cook stove.

These are just a few of the past winners of the EPA People, Prosperity and the Planet (P3) Awards Competition. Hosted this year by the USA Science & Engineering Festival, the competition invites college teams from across the United States to showcase their ideas for solving urgent environmental problems. This year, P3 award winners are eligible to receive a grant of up to $90,000 to implement their ideas as a business or in their communities.

Jaime Blanco and Carlos Cano are working on a project that won the 2012 P3 Award. Their project uses the hulls left over from rice cultivation as building materials. “This material insulates a lot better than what most people are using right now so it’s a win-win situation for the environment,” said Blanco, 24, a researcher on the project who is majoring in civil engineering at Butte College in northern California.

Another past P3 Award winner is the SolSource Solar Cooker, which uses the power of the sun for outdoor cooking. Catlin Powers (above, second from left) is cofounder and chief of operations of One Earth Designs, the company that is now actively marketing and distributing the cooker around the world. She said the inspiration for the cooker came from her travels in rural China during her college years, when she learned that 4 million people die from indoor air pollution exposure each year, primarily from cook stove smoke.

James JoÚson, director of the National Center for Environmental Research at EPA, said the SolSource Cooker and the Rice Hulls for Alternative Building project are perfect examples of why EPA sponsors the P3 competition. “What we’re trying to do is ignite people’s creativity and give some of these ideas a leg up so they can move closer to reality,” he said.

For more information: epa.gov/p3/

SPORTS

HOOKING KIDS ON SCIENCE:
An Interview with Kareem Abdul-Jabbar

Kareem Abdul-Jabbar (above) is famous for the trademark “skyhook” shot that helped him become a basketball legend. Now, he’s trying to hook kids on science as an author, STEM advocate and founder of Camp Skyhook, a STEM-themed camp for fourth and fifth graders in Los Angeles schools.

How did you first become interested in encouraging young people to pursue their interests in the STEM subjects?

When I wrote my book, *What Color Is My World: Forgotten African-American Inventors*, I had the opportunity to visit a lot of schools across the country and interact with the children. For some of those children, they hadn’t been brought up in an environment where studying, especially science, was a top priority. The book exposed them to a whole spectrum of inventors — some self-educated, some barely educated, some Yale-educated. What the kids saw was people from all walks of life overcoming great obstacles or racial prejudice and poverty to pursue their ideas. That response from the children inspired me to help spread the word about STEM.

What kind of student were you when you were young?

I was a very good student. Being so much taller than the other kids made me feel a little like an outsider and I was able to escape some of that insecurity in my studies. Even after I became a successful athlete, I studied hard and read whatever books I could get my hands on.

Why should today’s young people care about STEM?

The need for tecÚology-savvy people is increasing each year. But I don’t think we should promote any kind of education on the basis of employment alone. Learning about STEM subjects makes our children smarter, more well-rounded, intellectually disciplined and more informed about the world they live in.

For more information: skyhookfoundation.org

GIRLS AND STEM

STEM Makes You Stronger: Miss California Crystal Lee’s Message for Young Girls

Crystal Lee was crowned Miss California in 2013 and was the runner-up in the Miss America pageant. A graduate of Stanford University with a degree in human biology, Lee has used her time in the national spotlight to encourage more girls and young women to make the STEM subjects a focus of their academic studies and careers.

What was your exposure to the STEM subjects when you were young?

My mother was the only woman on the information tecÚology team at the community college where she works. My father was an optician but he was interested in computers, too. He enjoyed buying parts through Craigslist and putting together computers to donate to my school. They were both inspirations to me and they brought me up in an environment where tecÚology was everywhere.

Did you do well in science and math in school?

I majored in biology but that was tough because I didn’t have a strong STEM foundation in my earlier years. That’s one of the reasons why it’s important for me to get the message out about STEM. I want young girls going through their formative years to have another voice in their ear reminding them that they can do it.

What’s your advice to young girls today about STEM?

I hope that girls and young women will give themselves room to fail on their STEM journey. The secret to success is to lose your fear of failure. Keep at it and improvement and understanding will come.

What are your plans for the future?

I want to start a company in the tecÚology or healthcare industry. Improving quality and access to healthcare is a battle worth fighting and I’d like to get involved in projects and new tecÚologies that will allow people to live better lives.

THE EMPLOYER VIEW

Tech Leaders’ Advice for Future STEM Workers

What do America’s top employers look for in their STEM workforce? Senior tecÚology leaders at three corporate sponsors of the USA Science & Engineering Festival talked about their companies’ workforce needs and their advice for students.

KARENANNE TERRELL
Executive Vice President and Chief Information Officer, Walmart

Walmart employs construction and lighting engineers, aviation and auto mechanics, software engineers, renewable energy experts and scientists who work with farmers to help them increase crop yields and farm more sustainably. We even have our own meteorologist on staff. When you think about everything we do, we could not do it without people with strong STEM skills. And demand for these skills is growing. My advice to today’s students is to keep your options open for the future by sticking with your math and science studies. And if you have an opportunity to get real-world experience applying those skills, then go for it.

KIM HAUER
Vice President of Human Services, Caterpillar Inc.

Now more than ever, Caterpillar and its dealers must possess the right balance of academic knowledge, tecÚical skills and critical thinking to keep up with the rapid changes in processes and tecÚologies used to manufacture and support our products and serve our customers around the world. Our education system has placed too much emphasis on career pathways that require a four-year college degree. We need more students interested in pursuing a career in a skilled job (such as a machinist or tecÚician) that requires two or fewer years of formal education following high school. We must show youths that jobs in tecÚical fields also offer a rewarding career.

STEPHEN SCHMIDT
Chief Information Security Officer, Amazon Web Services

Amazon and other technology companies like to break problems into pieces and solve the most important parts of those problems first. We will never get it 100 percent right the first time, so we aim for getting it 80 percent right and then iterating quickly. Doing that takes a certain kind of tech person. We have a principle at Amazon where we “invent and simplify.” In the security world, having an excellent engineer who makes things super-complicated doesn’t benefit anyone. We want people who can help us design simple security controls. And that takes talent. My advice to today’s students is to keep asking questions about how things work. The process of learning is constant.