

## Nifty Fifty Speakers for the 5<sup>th</sup> USA Science & Engineering Festival 2017/2018 School Year

**Kyler Abernathy -** Let this renowned biologist from National Geographic introduce you to the Crittercam -- the miniature high-tech camera that is giving researchers amazing looks into the private lives of wild animals!

**Nadine Afari** - Under the leadership of HTE@USC, discover from this expert at the University of Southern California how a new era of interdisciplinary teamwork is bringing together experts and innovators in fields ranging from science and medicine to art and business to solve challenging problems in healthcare! (*California Speaker*)

**Aaron Alford, Ph.D.** - Discover how this noted research scientist and Director of Research and Evaluation for the National Network of Public Health Institutes (NNPHI) turned his childhood love of "finding critters in the woods" into a mission in paleontology to recover and identify marine mammals from our distant past and donate these specimens to K-12 schools as teaching aids.

**Jatin Ambegaonkar, Ph.D.** - This George Mason University researcher in Exercise and Sport Science is noted for his work in the emerging field of Dance Medicine, helping dancers and performing artists improve their performance and reduce injury risk.

**Joaquin A. Anguera, Ph.D.** - This noted neuroscientist at the University of California, San Francisco is part of a growing cadre of researchers using such emerging technology as mobile apps, virtual reality and computer gaming to study and treat neuro-related disorders, including ADHD, Autism, and depression. (*California Speaker*)

**Ruben Baler, Ph.D.** - In his role as health Scientist at the National Institute on Drug Abuse, part of the National Institutes of Health, he's using brain imaging to teach us about drug addiction.

**Stayce Beck, Ph.D., M.P.H.** - At the Food and Drug Administration (FDA) she is responsible for assuring the safety and quality of medical devices used by millions of people with diabetes. Learn first-hand of the rigorous process that these and other life-saving products go through at the FDA before and after they reach the consumer market!

**Joshua Bell, Ph.D.** - Fascination awaits you as this noted Smithsonian anthropologist takes audiences inside the mysteries of Papua New Guinea's ancestral past, plus Smithsonian's effort to save the 6,000 endangered languages spoken by the world's indigenous people!

**Erik Berkenpas** - This engineer for the National Geographic Society travels to some of the most remote regions of the world testing and using the unique imaging tools he designs to help us better understand our physical world – ranging from the mysteries of the sea to volcanoes and caves!



**Susan Bontems** - Just ask the students that this professor of Chemistry has taught and you'll be told of her unique way of connecting with learners to help make the principles of science come alive. Hear and experience her exciting teaching techniques!

**Damon Bradley, Ph.D.** - As a research engineer at NASA, he helps develop some of the most complex instrument signal processing systems used in space exploration. He also has a special passion for using his background to inspire young students in science literacy and STEM innovation.

**Reginald Brothers, Ph.D.** - From serving as Under Secretary for Science and Technology at the U.S. Department of Homeland Security (DHS), to his current leadership post at the distinguished Chertoff Group in Washington, D.C., this expert has helped shape technological development across public and private sectors.

**Alison Cernich, Ph.D.** - As Director of the National Center for Medical Rehabilitation Research (NCMRR), Dr. Cernich oversees a varied portfolio of research projects, training programs, and rehabilitation research infrastructure network sites aimed at improving the care of individuals with physical disability who require medical rehabilitation.

**Kelvin Choi, Ph.D.** - Dr. Choi is a dynamic and engaging speaker who has been named a NIH Stadtman Investigator for his innovative research on marketing of health risk behaviors and health promoting behaviors, particularly using this research perspective to reduce tobacco use disparities, which is one of the Healthy People 2010 goals. See more here: <a href="http://www.trdrp.org/files/triangulum/kelvin-choi.pdf">http://www.trdrp.org/files/triangulum/kelvin-choi.pdf</a>

**Rita Colwell, Ph.D.** - Earlier in her career, this distinguished microbiologist made key inroads into the study of cholera. She is now heading an international network to address infectious diseases and safe drinking water issues, in both the developed and developing world.

**Velma Deleveaux, Ph.D.** - With a passion for using engineering to solve complex problems and to inspire women and minorities in STEM, this leader is making a difference at Booz Allen, the leading management consulting firm.

**Rebecca Allen Diamond** - Her career path as a woman in technology has taken her from NASA to professional services firm Ernst & Young LLP. Learn about the role of governance, risk, and compliance in cybersecurity; and compliance as a tool to help secure organizations. (*California Speaker*)

**Tracy Drain** - This Systems Engineer at NASA's Jet Propulsion Laboratory, who has helped develop and execute some of JPL's most notable unmanned space missions, gives exciting insights into what it takes to be a cutting-edge engineer and scientist in space exploration! (*California Speaker*)

**Alvin Drew** - This United States Air Force officer and former combat pilot was one of the last NASA astronauts to perform a spacewalk as part of the Shuttle Discovery's mission to the International Space Station. In his current role as the NASA Liaison to the Department of Defense, he oversees all matters of overlapping interest between the two agencies.



**Sarah Eno, Ph.D.** - A noted physicist at the University of Maryland, she is part of an elite group of explorers worldwide involved in the famous Large Hadron Collider (LHC) particle accelerator project at CERN on the French-Swiss border. Discover first-hand what this undertaking is telling us about how the universe started and what it is made of!

**Aprille Joy Ericsson, Ph.D.** - The achievements of this trailblazing aerospace engineer at NASA Goddard Space Center include being the first African American female there to earn a Ph.D. in Engineering, and spearheading the design of multi-million dollar satellites. Learn of her mission to inspire other minorities in STEM!

**Bobak Ferdowsi** - You'll remember him as the young NASA flight director who sported the cool mohawk hairdo in JPL's mission control center as the rover Curiosity made its historic descent onto Mars in 2012. Now meet this inspiring systems engineer as he tells how his "mohawk experience" catapulted him into the national spotlight, and about the many exciting careers that await young students in space science! (*California Speaker*)

**Paul Fleisher** - From parasites and bad weather to the Big Bang, discover how the books of this noted science author and educator are inspiring young students across the country about the mystery of science.

**Jennifer Golbeck - Ph.D. -** What does our online interaction with Facebook and other social media say about us? And how can we better safeguard our privacy when using them? Get answers from this fascinating University of Maryland computer scientist who is nationally-known for her expertise in online behavior!

**Jordan Goodman- Ph.D.** - Let this renowned particle astrophysicist from the University of Maryland give you an unforgettable look into two of his fascinating research projects -- one located high in the mountains of New Mexico, and the other deep below the daunting ice of the South Pole Station. Both efforts are intended to better understand the high-energy cosmic rays which hit the Earth!

**Matthew Hansen, Ph.D.** - As one of the world's foremost experts on deforestation, this remote sensing scientist was the first to produce global, high-resolution maps of where trees are growing and disappearing worldwide, enabling the problem of deforestation to be better monitored and studied.

**Matthew Hartings- Ph.D.** - Let this noted chemist with a yen for everything culinary reveal the secrets to delicious cooking from an uncommon perspective: chemistry! Discover why his "Chemistry of Cooking" course at American University is not only wildly popular among students for explaining chemistry in exciting ways, but how they also come away from his class with amazing secrets for making the perfect ice cream, macaroni and cheese and other dishes!

**Brad Henning** - He is an electrical engineer with National Geographic's Exploration Technology group and has traveled the world deploying technology for conservation and exploration.

**Nishita Henry-** As the Federal Technology Practice Leader at Deloitte - the industry-leading firm in consulting, tax and auditing services – she provides guidance in technology for every cabinet-level agency in the U.S. government.



**Janet Hubka** - As chief executive officer of ilus Art, she has discovered "art" in the laboratory, in the beautiful images of human cells that reflect life at the microscopic level. These images, taken by scientists as part of their research, have become part of the ilus education program, teaching students and the public about the science behind the art.

**Tristan Hubsch, Ph.D.** - Hang on as this noted physicist and mathematician from Howard University takes you on a journey through three of the most exciting and challenging realms of physics: the string theory, high-energy particle physics, and supersymmetry!

**Robert Hufnagel, M.D., Ph.D.** - As clinical fellow at the Ophthalmic Genetics and Visual Function Branch of the National Eye Institute, he is conducting cutting edge clinical and laboratory research of gene expression, molecular genetics, cell biology, and molecular interactions important to the eye for the prevention, diagnosis, and treatment of diseases affecting the eye and the visual system.

**Lt Col Janelle T. H. Jackson** - After earning a degree in mechanical engineering, Lt Col Jackson has served in a myriad of positions within the United States Air Force, where she currently serves as Commander of the 317th Recruiting Squadron.

**Nancy Knowlton, Ph.D.** - The world's coral reefs are disappearing at an alarming rate. Learn from this renowned Smithsonian biologist and coral expert why she is very concerned and why this critical ecological situation should concern you as well.

**Corinna "Cori" Lathan, Ph.D.** - This innovator trained in both neuroscience and aeronautics at MIT. Now learn how she, as Founder and CEO of the R&D firm AnthroTronix, is spearheading technology designed to help detect the early signs of Alzheimer's and brain injury almost as quickly as taking blood pressure!

**Sean Lawton, Ph.D.** - This noted mathematician at George Mason University is not only conducting groundbreaking research that has applications in such frontiers as 3D printing and virtual reality, but is also on a mission through his wildly popular outreach activities to excite K-12 students about the power of mathematics. NOTE - This Nifty Fifty speaker will offer multiple, hour long, classroom-size activities rather than a large group talk.

**Mallory Lefland -** This systems engineer at NASA's Jet Propulsion Laboratory is playing a key role in the Mars 2020 Mission -- NASA's ambitious project to probe for microbial life on the Red Planet! (*California Speaker*)

**Mario Livio Ph.D.** - Delve into the mysterious world of Black Holes, super novas and dark energy with this world-renowned physicist from the Space Telescope Institute!

**Joel Martin, Ph.D.** - This noted biomechanist at George Mason University is using innovative techniques in biomechanics, kinesiology and motor control to improve human performance in exercise, health/fitness and sports performance.

**Maura McLaughlin, Ph.D.** - Learn how the pioneering work of this noted astrophysicist in studying pulsars and gravitational waves is helping to change the way science views the universe and the laws that govern it.



**Spiros Michalakis, Ph.D.** - Explore the future of physics with this amazing quantum physicist from Caltech University who served as scientific advisor for the Hollywood movie, Ant-Man. (*California Speaker*)

**M. Coleman Miller, Ph.D.** - Hear this renowned astronomer from the University of Maryland as he describes in fascinating detail the key role black holes and neutron stars play in the development of galaxies. His key studies are also indicating that research may soon enable us to see stars eaten by black holes and detect variations in space-time caused by these mysterious entities.

**Angela Leimkuhler Moran, Ph.D.** - When this noted professor of Materials Engineering at the U.S. Naval Academy is not teaching midshipmen, she is deeply involved with her award-winning outreach programs to inspire K-12 students in STEM. Learn the secrets of how she is motivating the innovative leaders of tomorrow!

**Tolulope "Tolu" Olugboji, Ph.D.** - Growing up in his native country of Nigeria, this University of Maryland geoscientist excelled at using the computer to solve daunting problems in math and physics. Get ready for hands-on excitement as he demonstrates how his high-tech computer models are today studying seismic activity deep beneath the Earth's surface!

**Dana Perkins, Ph.D.** - Learn how she made the transition from a bench scientist in microbiology to a key government policymaker on bioterrorism and biosecurity at the U.S. Department of Health and Human Services!

**Briana Pobiner, Ph.D.** - Let this noted paleoanthropologist and science educator from the Smithsonian take you on an unforgettable journey into our evolutionary past as she explores the lives of cavemen and how they influenced our penchant for meat-eating and other dietary habits!

**Karen Rennich, Ph.D.** - Why are bee populations in the U.S. declining at an alarming rate and what can be done about it? Learn how the work of this engineer/beekeeper, as Executive Director of the Bee Informed Partnership, is revealing fascinating insights!

**Griffin Rodgers, M.D.** - Discover how this physician – as director of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) -- is leading the fight against some of the most serious illnesses affecting public health today.

**Steve Rolston, Ph.D.** - This physicist in 1999 led the research group that created the first ultra-cold plasmas (gases of ionized atoms) that today are helping scientists better understand plasma found in white dwarf stars and interiors of planets. Discover the groundbreaking work in quantum physics he is now spearheading as codirector of the noted Joint Quantum Institute!

**Matthew P. Scott, Ph.D.** - This renowned developmental biologist and president of the esteemed Carnegie Institution for Science will fascinate you as he takes you inside his speakers' topic: Why Do You Look Like Your Parents? The Story of Genes That Control How You Grew, and the History of Life.



**Padmanabhan "Padhu" Seshaiyer, Ph.D.** - This professor of Mathematical Sciences is on a personal mission to change the often-negative perception young students have about math. Discover the motivating techniques he uses to turn math haters into math lovers!

**Anat Shahar, Ph.D.** - Get ready to explore the Earth's mysterious origins with this pioneering geologist from the Carnegie Institution for Science. She gained scientific acclaim in 2016 for recreating in the laboratory the approximate intense pressures that existed at Earth's core when the planet was formed!

**Arthur Shapiro, Ph.D.** - Delve into the fascinating world of the science of visual illusions with this internationally-known cognitive neuro-scientist from American University. Discover what his work is teaching us about how optical illusions can trick the eye the eye and brain in the perception of reality, and how this research is being applied in the real world -- ranging from devising more effective diagnostic methods for eye conditions, to explaining why a curve ball is so hard to hit!

**Sabrina Sholts, Ph.D.** - Learn how this noted Smithsonian anthropologist (who became hooked on a career in this field after her first anthropology class in high school) is using the study of bones to shed light on the connections between human and environmental health from the distant past to present day.

**Sarah Shomstein, Ph.D.** - In an age of information overload characterized by ringing cell phones, the internet, 24/7 news channels and multi-tasking our brains are challenged like never before to process information for efficient decision-making. Learn from this cognitive neuroscientist what her research is revealing about how the brain makes decisions, and how our brain is helping us respond and adapt to life in the information age!

**Siddhartha Sikdar, Ph.D.** - Pain. The word itself makes us cringe. But for this noted bioengineer, learn how pain is a major focus of research as his lab at George Mason University uses the power of biophysics to develop new diagnostic ultrasound techniques to treat and diagnose chronic pain- an affliction that impacts millions of Americans each year and costs the nation over \$300 billion in lost productivity annually.

**Alain Silk- Ph.D.** - As a reviewer for the US Food and Drug Administration, this cell biologist is responsible for reviewing newly-submitted medical devices for their quality and safety before they are made available on the market.

**Steve Smalley -** Learn why this project engineer with Northrop Grumman says, "In a country driven by technology, we need more inventors and engineers!"

**Raymond St. Leger, Ph.D.** - By studying the pathogenic fungus of insects, this noted entomologist at the University of Maryland, could be paving the way for producing insect-resistant farm crops and toxin-boosted fungi that control mosquitoes

**Ellen Stofan, Ph.D.** - Her father was a rocket scientist in the early days of the U.S. space program, and today she is making her mark on this frontier as well - first as a groundbreaking planetary geologist studying the terrains of Mars, Venus and Saturn' Moon, and as the former Chief Scientist at NASA. Discover this fascinating leader in space exploration and the future she foresees for NASA and spaceflight!



Raman Sundrum, Ph.D. - This celebrated particle physicist (famous for his collaboration in the groundbreaking Randall-Sundrum models in physics) is providing insight into some of the most mysterious realms of his field, including warped space and parallel universes! Be there as he takes you into these worlds and shows what science is revealing.

**Johanna Teske, Ph.D.** - Delve into the exciting world of this noted astronomer from the Carnegie Institution for Science as she explores giant and small planets of the solar system, twin and host stars and other planetary bodies using some of the most powerful telescopes in astronomy! (*California Speaker*)

**Alan Turchik** - Learn how this young engineer at National Geographic uses his ingenuity to give us the stunning remote images in science exploration that we have come to expect from NG!

**Melina Uncapher, Ph.D.** - This noted neuroscientist from UC San Francisco is applying neuroscience research to solve real-world problems in education and technology – including investigating whether technology use is associated with neurocognitive changes in kids. (*California Speaker*)

**Alycia Weinberger, Ph.D.** -Go on the hunt for extrasolar planets with this noted research astronomer. Learn how her groundbreaking work at the Carnegie Institution is shedding light on how planets are formed via young stars and their disks!

**Jacquline Yancy, Ph.D.** - In her position as Senior Regulatory Health Project Manager at the U.S Food and Drug Administration, this medical microbiologist oversees regulations that help ensure the quality and safety of new products and drugs for children.

Learn more about the Nifty Fifty program at:

http://usasciencefestival.org/explore/school-programs/nifty-fifty/speakers/