

2013 Awards Announcements: Dr. Rita Colwell – Procter Prize

Infectious disease expert and former Director of the National Science Foundation (NSF) **Dr. Rita Colwell** has been named the 2013



recipient of Sigma Xi's William Procter Prize for Scientific Achievement. Since 1950, the Procter Prize has been awarded annually to a scientist who has made an outstanding contribution to scientific research and has demonstrated an ability to communicate the significance of this research to scientists in other disciplines.

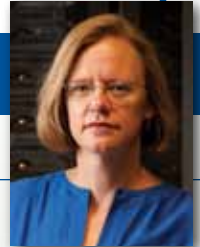
Dr. Rita Colwell currently serves as Chairman of Canon U.S. Life Sciences, Inc. and Distinguished University Professor both at the University of Maryland at College Park and at Johns Hopkins University Bloomberg School of Public Health. Her interests are focused on global infectious diseases, water, and health, and she is currently developing an international network to address emerging infectious diseases and water issues in both the developed and developing world.

From 1998-2004, Dr. Colwell served as the 11th Director of the National Science Foundation. During her time in that role, she served as Co-chair of the Committee on Science of the National Science and Technology Council. Ensuring the continued support for K-12 science and mathematics education and increasing the participation of women and minorities in science and engineering highlighted her agenda as Director. Prior to her time with the NSF, Dr. Colwell served as President of the Biotechnology Institute and



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From the President



Forward Looking

Last year Sigma Xi inducted over 5000 new members—an uptick in new membership that is a positive sign for the future of our Society. Our wonderful staff at the Sigma Xi Center did a lot of outreach and hard work to help make that happen. It is up to us, as the people who can nominate new members, to continue that trend by sharing the honor and fun of Sigma Xi with our deserving students and colleagues. Remember that our membership recently accepted a policy change to allow Associate Members to nominate new members (and also to support promotion of Associate Members); I hope you'll all take advantage and submit nominations this year!

But it's only half the story—we also need to get those new members engaged and keep them as a part of our Society. Not just for financial reasons, though that is of course important, but because those members are the future of our organization—we need their enthusiasm and ideas and we need them to become our future leadership. And while the amazingly dedicated staff at the Center will do everything they can this part is really up to us as members and chapters. Our new members need to know how valuable we each find membership, and why. I love learning about all kinds of science and engineering outside my field—a huge benefit of belonging to a truly interdisciplinary society. I also have found that having a built-in professional network wherever I go to be a great boon. I am enjoying the “Meet Your Fellow Companion” stories and learning about all the interesting people we are connected to through Sigma Xi. I'm sure you all have a similar list of why you continue to be a member and engage. Share those with new members—and ask what they are hoping for from membership. Maybe you'll get a new idea for a chapter event or some other way to engage both our new and (ahem) more-seasoned members alike!

I've been thinking about what new things I might suggest to my chapter leadership (who do a great job of regular Science Cafés interspersed with special events and engagement with our regional science fair—kudos for all their hard work!) and I am percolating an idea related to Science as Art. Every year my employer holds a contest amongst staff for images which are then voted on via a Facebook page gallery. The winning 13 images are made into a calendar that you can download freely from our website. There is a traveling art show this year as well—and I've seen a similar art show from another research organization featured in a major airport. It's a great way to reach out to the “non-sciencey” people in the world and let them know that our work generates beauty as well as knowledge (which is also beautiful, of course).

But my employer is not the only organization represented in my chapter—we're an area chapter with multiple institutions involved. So I'm thinking we could have our own “Science as Art” activity—we could even create something (a calendar is only one option—prints, tshirts, mugs, notepads...) that we could sell to raise money to support chapter activities or awards. The wonderful covers of *American Scientist* should provide a lot of inspiration (and a high standard, as well).

It's just an idea for now, and I am working on fleshing it out (any comments? Suggestions?). We'd love to hear your ideas for new and unique ways to engage members and help them share their work.

Thanks for reading,
Kelly O. Sullivan

Procter Prize

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Professor of microbiology and biotechnology, both at the University of Maryland.

In addition to these prestigious roles, Dr. Colwell has also held many advisory positions in both the public and private sectors. She is a nationally-respected scientist and educator, and has authored or co-authored 16 books and more than 700 scientific publications. Among Dr. Colwell's many board appointments, she has served as Chairman of the Board of Governors of the American Academy of Microbiology, and also as President of the American Association for the Advancement of Science, the Washington Academy of Sciences, the American Society for Microbiology, and the International Union of Microbiological Societies. From 1984 to 1990, she was also a member of the National Science Board.

Of most interesting note, a geological site in Antarctica, Colwell Massif, has been named in recognition of her extensive work in the Polar Regions.

Born in Beverly, Massachusetts, Dr. Colwell holds a B.S. in Bacteriology and an M.S. in Genetics, from Purdue University, as well as a Ph.D. in Oceanography from the University of Washington. •



Sigma Xi Exceeds Membership Goals for 2012

We are pleased to announce that Sigma Xi's final initiate member totals for the year 2012 have exceeded the projected yearly goal by 25%!

This year marked only the second time in the last decade that membership numbers have exceeded projections and we could not be more excited for Sigma Xi's bright future.

Many, many thanks to the hardworking and dedicated active chapters and members for all of their help in reaching this goal – we look forward to breaking expectations in 2013 as well! •

John Ahearne Honored by Federation of American Scientists



In November 9th, 2012, Sigma Xi Executive Director Emeritus

Dr. John F. Ahearne was presented with the Richard L. Garwin Award by the Federation of American Scientists (FAS) for his commitment to national security throughout his career.

According to FAS's website, "this award was established by FAS to honor the remarkable career of Dr. Richard L. Garwin, and to recognize his

exceptional contributions in both scientific and technical achievement and his legacy of an enhanced national security to the benefit of society. The FAS Richard L. Garwin Award for Distinguished Service is an annual award that recognizes an individual who, through exceptional achievement in science and technology, has made an outstanding contribution toward the benefit of mankind."

Dr. Ahearne served as Sigma Xi Executive Director from 1989-1997 and has directed Sigma Xi's ethics program since then. A member of the National Academy of Engineering and a former chairman of the U.S. Nuclear Regulatory Commission, Ahearne is an expert on nuclear power and nuclear weapons. He was an adjunct professor of civil and environmental engineering and lecturer in public policy at Duke University and is an adjunct scholar for Resources for the Future. His popular ethics booklet, *The Responsible Researcher: Paths and Pitfalls* (1999), updates and complements Sigma Xi's widely-circulated guidebook, *Honor in Science*. A physicist, Ahearne has also served as U.S. Deputy Assistant Secretary of Energy and Acting Assistant Secretary of Defense and has been active on National Research Council and National Academy of Sciences committees. A past president of the Society for Risk Analysis, he is a fellow of the American Physical Society, the American Academy of Arts and Sciences and the American Association for the Advancement of Science. He was inducted into Sigma Xi in 1964 and currently keeps an office at the Sigma Xi Headquarters in Research Triangle Park, North Carolina. •

Sigma Xi's Electronic Election Results

Thanks in part to a society-wide call for nominations, spearheaded by President Dr. Kelly O. Sullivan, the 2012 Sigma Xi Society Elections were an incredible success for the future of your Society. With a record number of nominations for available leadership positions, the engagement of society members and leaders was at an all-time high. We are very pleased to introduce your new Society leadership, and we look forward to an incredibly successful new year!

Linda K. Meadows, of The Ohio State University, is the new president-elect, effective immediately. She will begin her service as Sigma Xi president on July 1, 2013. George Atkinson, Founder and Executive Director of the Institute on Science for Global Policy, as well as the Professor Emeritus of the Departments of chemistry, biochemistry and optical sciences at the University of Arizona, Tucson, has been elected to the position of president-elect designee. His term in this role will commence on July 1, 2013.



Dr. Linda K. Meadows received her doctorate degree from The Ohio State University, where her research was focused on cognition and the problem-solving strategies of young

children. In particular she was interested in the concepts underlying video game logic and its programming. Dr. Meadows was also drawn to policy making in the research arena and traveled frequently to Washington, D.C., to participate in federal agency forums.

Dr. Meadows served as vice president of The Ohio State University's Research Foundation, which administers nearly one billion dollars in research funds. Meadows also worked as the Assistant Vice President for Research, with responsibility for undergraduate research recognition, research communications and the interdisciplinary centers that reported centrally (Mapping, Cognitive Science, Byrd Polar and Materials). In this role, she supported the interdisciplinary research grants program and the small grants program, along

with the Graduate Research Forum, the Undergraduate Research Forum, State Science Fair, Science Olympiad and Ohio Women in Science projects.

Throughout her career, she has maintained a strong presence in support of science in Washington, D.C., especially at the National Science Foundation and the

National Institutes of Health, where she joined advisory committee meetings and met frequently with program managers. Even now in her retirement, she continues to be dedicated to the promotion of scientific research throughout the world and we look forward to her leadership in the coming year.

Distinguished chemist **Dr. George H. Atkinson** is Professor of chemistry and optical sciences at the University of Arizona. He is also the founder and CEO



of a laser technology company and has served as science and technology advisor to then-Secretaries of State Colin Powell and Condoleezza Rice. Independently, Dr. Atkinson formulated a novel program, the "Jefferson Science Fellows," that created a new relationship between the American scientific and engineering academic communities and the U.S. Department of State. Under this program, tenured American scientists and engineers from universities spend one year in the Department of State before returning to their academic careers, where they remain available as experienced consultants to the Department for an additional five years. In 2008, Dr. Atkinson also launched the Institute on Science for Global Policy to facilitate the use of credible scientific understanding in societal policies worldwide.

Dr. Atkinson has more than 160 publications in refereed scientific journals and books, and has authored 66 U.S. and foreign patents. He has received numerous honorary awards for research and teaching, and has been a visiting professor in Japan, Great Britain, Australia, Germany, Israel and France. He is the recipient of the Senior Alexander von Humboldt Award (Germany), the Senior Fulbright Award (Germany), the Lady Davis Professorship (Israel), and the SERC Award (Great Britain) and has also received numerous awards in recognition of his teaching, including "outstanding teacher at the University of Arizona" as selected by the students. •

Newly Elected Regional Directors Terms Beginning July 1, 2013

North Central Director

Kim Houchens

Southwest Director

Paul Stein

Area Groups, Industries,
State & Federal Laboratories Director

William Koch

Comprehensive Colleges and
Universities Director

Julio Turrens

Mid-Atlantic Associate Director

Richard Bradley

Baccalaureate Colleges Associate Director

Amy Stockert

Canadian & International
Associate Director

Frederico Rosei

Northeast Associate Director

Phillip Barnes

Newly Elected Representatives to the Committee on Nominations - Terms Effective Immediately

Mid-Atlantic Representative
for Committee on Nominations

John Nemeth

Membership at Large Representative
for Committee on Nominations

Jane Gilman

Research & Doctoral Representative
for Committee on Nominations

Frank Abrams

Northwest Representative
for Committee on Nominations

Scott Burns

Southeast Representative
for Committee on Nominations

David McBride

Adoption of a Policy Change



We are pleased to announce that the Committee on Qualifications and Membership has adopted a change in the policy for defining nominations of new members. In previous years, Associate members have been withheld from nominating or seconding the nomination of new members to the honor of membership within Sigma Xi. Now, thanks to the insight and determination of the Committee on Qualifications and Membership, all active, dues-paying Associate members may now nominate and second their colleagues, acquaintances, and students to membership within your Society!

Your Membership team at Sigma Xi Headquarters in Research Triangle Park, N.C., is extremely excited about this change in policy, as we look forward to working with our many Associate members to identify outstanding candidates for membership around the world.

Please visit our website for further nomination information and forms at www.sigmaxi.org and we'll look forward to receiving your nominations soon! •



Sigma Xi's YouTube Channel

Have you subscribed to Sigma Xi's YouTube channel?

Be sure to do so today to receive some of the most exciting science content available on the internet!

<http://www.youtube.com/user/sigmaxisociety> •

Student Research Showcase 2013

Researchers in the new millennium must be prepared to communicate their work to a diverse audience and through varied media. Coming in 2013, Sigma Xi will offer two opportunities for outstanding high school, undergraduate and graduate students to share their research with professional scientists and engineers.

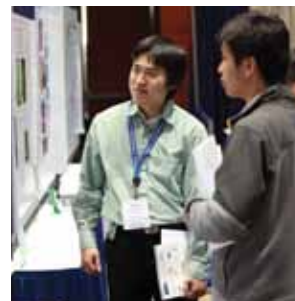
Student Research Showcase—March 18-23, 2013

An innovative virtual hosting of student presentations evaluated online by leading career scientists in a great blog format.

Student Research Conference—November 8 & 9, 2013

Students will present research posters and attend lectures, workshops, and networking events at a traditional face to face meeting held in Research Triangle Park, North Carolina.

More information can be found online at: <http://www.sigmaxi.org/src> •



Condolences to the Family of Sustaining Sigma Xi Member Stanford Ovshinsky

Sigma Xi Sustaining Member and inventor **Stanford Ovshinsky** died in his home in Michigan on Wednesday, October 17, 2012. A largely self-taught scientist, Dr. Ovshinsky is perhaps best known for his developments involving car batteries—specifically the nickel-metal hydride battery—as well as for his contributions to rechargeable batteries, regenerative fuel cells and solid hydrogen storage systems. For these many achievements, Dr. Ovshinsky was named Time magazine's 1999 Hero for the Planet. In 2007, Dr. Ovshinsky was awarded Sigma Xi's Walston Chubb Award for Innovation.



An inventor of the greatest caliber—The Economist magazine once called him “The Edison of Our Age”—Dr. Ovshinsky was an involved and dedicated scientist, as well as a champion of the environmental benefits of clean energy. His second wife, Iris Ovshinsky (SX 1961), was his frequent partner in research and predeceased him by six years. He is survived by his third wife, Dr. Rosa Young; his brother, Herbert; three sons; four stepchildren; and six grandchildren and step-grandchildren.

In recognition of Dr. Ovshinsky's 2007 Chubb Award and in celebration of Sigma Xi's 125th year, Sustaining Member Dr. Greg Smestad of Sol Ideas Technology Development interviewed Dr. Ovshinsky in 2011. Please take a moment and explore this excellent interview in full on our website at <http://www.sigmaxi.org/about/125th/OvshinskyInterview.shtml>.

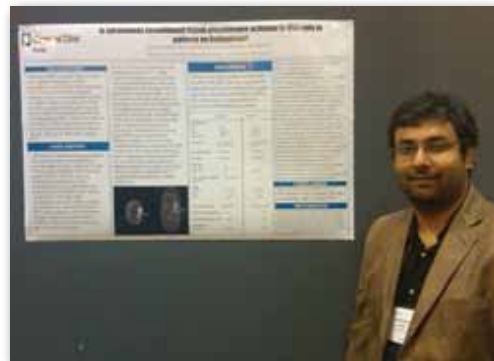
On behalf of the entire Sigma Xi membership and staff, we extend our condolences to the family of Dr. Stanford Ovshinsky in this difficult time. •

meet your fellow companion

Meet Your Fellow Companion: Raghav Govindarajan

The honor of membership into Sigma Xi spans disciplines and courses of research study. Each month in the Sigma Xi Today section of *American Scientist* magazine, and also on our website, we will be highlighting different “Fellow Companions”—asking them about their work and what the honor of induction into Sigma Xi has meant for their career.

Today, we are excited to introduce **Raghav Govindarajan M.D.**, the Chief Neurology Resident at the Cleveland Clinic in Florida. Govindarajan was educated in India before moving to the United States and will soon be starting a fellowship in neuromuscular studies at Washington University. Dr. Govindarajan is a talented researcher, with a passion for interdisciplinary scientific study, and a true dedication to the honor of Sigma Xi.



Do you have a particular teacher or professor who inspired your love of science? Why?

My biology teacher in high school was the first person who introduced me to the world of animal biology in general and human biology in particular. His way of explaining the concepts so that I could understand is what finally led me to career in medicine. Now as a resident, I am inspired by several of my attending physicians—especially Dr. Salanga, who is our Chairman Emeritus; Dr. Salgado, who is my Program Director; and Dr. Galvez who is Chairman of our department. The quality that I admire most in them is their patience in listening and explaining the toughest concepts to me.

What is the focus of your current research?

I am currently working on the factors that predict positive repetitive nerve stimulation response in myasthenia gravis—a neuromuscular, autoimmune disorder that causes weakness in the voluntary muscles of the body.

Tell us about something we might see in our daily lives that directly correlates to your work.

As a neurologist, I interact with patients who are suffering from neurodegenerative diseases like Lou Gehrig's disease and Alzheimer's. As such, I am constantly reminded of the

advances we have made in their diagnosis and at the same time, the huge opportunities that are still present in their treatment and ultimately, their cure. It is this desire to help my patients that drives me to excel not only in patient care, but also in researching better ways to diagnose and treat these diseases.

Give us an example of how multi-disciplinary research directly contributed to your work.

As a neurologist involved in research, multidisciplinary approach is the key mantra for every research project that I undertake. For example, we recently completed a project which assessed the prevalence of infections in myasthenia gravis, where we had input from multiple departments including infectious disease, internal medicine and biostatistics.

What are your thoughts on the future of STEM education?

STEM education is the cornerstone of continuing scientific and technological advancement. For the U.S. to remain competitive, greater emphasis has to be placed on making these programs more fun and interactive to school children of all ages.

What has the honor of induction into Sigma Xi meant to you?

It is truly an honor and privilege to interact with some of the greatest minds around the world.

Has Sigma Xi helped further your career? If so, how? If you haven't started your career yet, how do you believe Sigma Xi will serve you in the future?

Sigma Xi has offered me a window of opportunity to network with researchers and experts in multiple other fields. This has helped me gain a broader perspective, while also trying to answer my own research questions. Furthermore, it has given me a chance to collaborate with other researchers with similar ideas and backgrounds.

What is your favorite motto?

“Do not follow where the path may lead. Go instead where there is no path and leave a trail.” -Harold R. McAlindon

What advice would you give a young researcher just starting out in your field?

Persist in your studies and find a good mentor who is ready to invest his or her time in your career.

Sigma Xi just celebrated its 125th year. What advances do you see in your field of research over the next 125 years?

I believe we will be able to find effective treatment, prevent the development of, or even possibly find a way to reverse the neurodegenerative changes of conditions like Alzheimer's, Lou Gehrig's and Parkinson's disease. •

Please note that the text above is just a small excerpt of all Dr. Govindarajan had to say in response to our questions. To read his interview in full, please visit Sigma Xi's website at <http://www.sigmaxi.org>.

meet your fellow companion

Meet Your Fellow Companion: Semant Jain

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We are excited to introduce **Semant Jain, Ph.D.**, a Principal Engineer for Goodman Manufacturing in Houston, Texas. A native of India and a graduate of the extremely competitive Indian Institute of Technology, Jain completed his Ph.D. in engineering at the University of Michigan, with a focus on fuel cell research. Throughout his career he has re-engineered the engines of M1A1 Abraham tanks for the U.S. Army to increase efficiency and decrease sound, modeled the DNA and rheology of polymers to answer decades old questions of their structure, AND he's also currently a fashion photographer with work published in *Vogue Italia*! No stranger to the rigors and excitement of interdisciplinary research and working in teams, he now is a Principal Engineer for one of the largest manufacturers of residential air conditioners in the United States, developing new technologies daily to make the homes of millions of Americans more energy efficient.



What is the focus of your current research?

As I work in the industry, I'm always conducting research with the intent of commercialization or providing a business solution. I've done research on improving the heat transfer effectiveness on plate-fin heat exchangers through fine density optimization, air flow analysis, and circuitry studies. This analysis was used to design lighter, more robust, and more compact split residential air conditioners while meeting capacity and energy efficiency targets. 300,000 units using this technology were manufactured this season, saving the company \$3 million.

Currently, I'm developing an Object Oriented computational platform to accelerate research through automation of the design process. The components I've developed have reduced engineering time by 95% and the overall project is expected to improve productivity of the design engineers five times over.



Tell us about something we might see in our daily lives that directly correlates to your work.

Goodman is second largest manufacturer of residential air conditioning units in United States. If you own a 13 SEER 1.5 T or 2.0 T air conditioner which was manufactured in 2011 or 2012, there's a very high chance it's a Goodman unit which I helped design.

What are your thoughts on the future of STEM education?

In “Did You Know” Karl Fisch said: “We are currently preparing students for jobs that don't yet exist, using technologies that haven't been invented, in order to solve problems we don't even know are problems yet.” I totally agree with this statement and believe we must empower future generations with analytical skills that empower them to think beyond what's possible. STEM should be the core of these efforts. However, more than getting the right answer, the emphasis should be on the learning along the way and the journey. We must infuse the love of STEM, set the brains on fire, and let imagination take over.

What has the honor of induction into Sigma Xi meant to you?

Whilst doing my Ph.D., I was a member of Tau Beta Pi, which is the engineering honor society. As a four team officer, I was very active in the Michigan Gamma chapter—one of the largest. So, I've always liked to surround myself with equally

driven colleagues. Sigma Xi seemed to be the perfect organization with a mixture of academics and professionals doing research.

When you're not working on your research, what do you do in your free time?

I have three principal hobbies which I rotate through over the years: photography, dancing, and motivational public speaking. When I was a Ph.D. student, I was on the University of Michigan's Ballroom and Latin Dance Team which offered me an opportunity to compete all the way up to collegiate nationals. Once I started working, through Toastmasters, I competed in the International Speech Contest towards the World Champion of Public Speaking. Currently, I'm a fashion photographer specializing in editorial spreads. I've had my photographs published by Camilla, an Australian designer whose designs have been worn by Oprah Winfrey and Eva Longoria, amongst other celebrities, and recently I had a photograph accepted in *Vogue Italia*.

What is your favorite motto?

When I was preparing for the World Championship of Public Speaking, I listened to the tape of the 2001 champion Darren LaCroix. There's a line in his speech which summarizes the great yearning, sweat, blood, and tears that go into any great endeavor and yet, sometimes, we fail:

“If you are willing to fail, you can learn anything.”

Please note that the text above is just a small excerpt of all Dr. Jain had to say in response to our questions. To read his interview in full, please visit Sigma Xi's website at <http://www.sigmaxi.org>.