



Students Receive Grants from Sigma Xi

Sigma Xi awarded Grants-in-Aid of Research to 163 graduate and undergraduate students who applied by the October 15, 2013, deadline. Applications came in from 847 students. Since 1922, Sigma Xi has provided funding for researchers early in their careers. It's the first grant for many recipients.

Our next application deadline is March 15, 2014. Grants of up to \$1,000 are available to students in all areas of the sciences and engineering. Designated funds from the National Academy of Sciences allow for up to \$5,000 for astronomy research and \$2,500 for vision-related research. Students use the grants to pay for travel expenses to and from a research site or for purchase of non-standard laboratory equipment necessary to complete a scientific research project.

Approximately 75 percent of funds are restricted for use by dues-paying student members of Sigma Xi or students whose project advisor is a dues-paying member. Students from any country may apply.

To learn about the application process, visit sigmaxi.fluidreview.com.

We are proud that our GIAR program will reach its 100th year in 2022. The GIAR Centennial Campaign seeks to double the endowment to \$20 million by then. This will keep our investment in the future of science and engineering strong. To make a donation, visit <http://bit.ly/117HZKN> •

From the President



Looking Back, Moving Forward

Felicitations as we begin our adventures together in the year 2014. At the intersection of the new and the old, we find ourselves reflecting thoughtfully on the past while brightly anticipating the future.

Among Sigma Xi's treasured memories from 2013 are:

- the prizes that were given to the best and brightest scientists, engineers, and mathematicians in the world—Procter, Chubb, Young Investigator, and McGovern awards;
- the Grants-in-Aid of Research awarded to undergraduate and graduate students whose proposals were reviewed by teams of accomplished researchers who are distinguished members of the Society;
- the Student Research Conference;
- the 5,000 outstanding researchers inducted into the Society;
- the dedicated and great work of the over 500 chapters to communicate science and to build science communities;
- the *American Scientist*, unique, cherished, and receiving national honors;
- the special donations to the Society, both annual giving and designated gifts that help sustain operations and enrich the student leadership program;
- the partnerships with other professional associations such as American Meteorological Society and National Cancer Institute;
- the foundational work on an international white paper on science communication and social media in the 21st century, work that brought together highly regarded professionals in the field and received encouragement and counsel from the White House Office of Science and Technology Policy, the National Academy of Sciences, and the National Science Foundation.

Sigma Xi is hard at work to carry forward the accomplishments of yesteryear and to create new memories that will uplift us when 2014 comes to a close. Among them are:

- **Leadership and Career Development:** Bringing to life a high school scientific journal. With the journal, the Student Research Conference, the Student Research Showcase, and Grants-in-Aid of Research, Sigma Xi's investment in STEM will make a notable contribution in nurturing the next generation.
- **Ethics:** Re-establishing the ethics program. Long a signature of Sigma Xi, this program will be invaluable as we engage the digital environment, as we train the next generation, and as we continue to develop the culture of honor in science.
- **Science Communication:** Sigma Xi will play a significant role in enhancing the public understanding of science, in helping researchers explain the significance and the impact of their work to others, in illuminating the intersection of science and policy, and in magnifying peer communication. Sigma Xi is enhancing the portal to conversations about science—not only with a redesigned website but *American Scientist* vibrantly resonating new technologies, dynamic social media access points, and more!

Thank you for your support of Sigma Xi and for all your work on behalf of science, scientists, and teachers of science. Our New Year's resolution is to honor you in all we do such that at the end of 2014, you will be immensely proud of your membership.

Linda Meadows

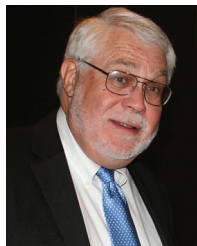
Sigma Xi's New Leadership Team

The next group of leaders for our Society was determined by elections held November 11 to December 10, 2013. Approximately 14 percent of members participated in our third year of online voting.

Many voters commented that the system was easy to use. Another common piece of feedback was on the need to have more than one candidate running for positions.

"We are, and will be, working diligently with all the Committees on Nominations to have more than one candidate for positions in the future," said Jerry Baker, Sigma Xi's executive director. "We want diversity on our committees and boards."

President-elect



Dr. George H. Atkinson will serve as Sigma Xi president from July 1, 2014 to June 30, 2015. He has been a member of Sigma Xi for 43 years.

Atkinson is executive director of the Institute on Science for Global Policy, which he launched in 2008. ISGP focuses on improving the role of credible scientific understanding in the formulation of domestic and international public policy.

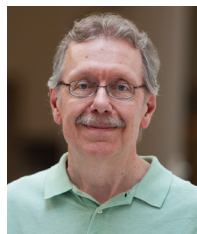
Atkinson previously served as the science and technology adviser to past Secretaries of State Colin Powell and Condoleezza Rice. He was the first science diplomat in the Department of State for science, technology, and diplomacy.

Atkinson was formerly a professor of chemistry and optical sciences and head of the chemistry department at the University of Arizona.

As Sigma Xi president, Atkinson plans to remain focused on the organization's historical commitment to foster and strengthen outstanding scientific research.

"I would also welcome the opportunity to help structure and implement Sigma Xi programs designed to improve communication between the scientific researchers and policy makers, both domestically and internationally," he said in his candidate statement.

President-elect designee



Dr. Mark Peeples, a professor in the Department of Pediatrics for The Ohio State University, will be president of Sigma Xi from July 1, 2015, to June

30, 2016. Peeples is a research scientist who studies the mechanisms of respiratory syncytial virus infection. His goal is to develop a vaccine or antiviral agent to reduce the number of infants who are hospitalized and elderly who die each year from the virus.

In his campaign, Peeples made clear that his intention is to focus on revitalizing chapters to keep Sigma Xi strong.

"Sigma Xi is doing well with high-concept science at the national and international levels but its roots, the local chapters, are not healthy," he said in his candidate statement. "We need to increase the value of our local chapters to their members. New members need to see the value of participating at the local level before they will join."

Peeples has been a sustaining member for 35 years and has held officer positions, including president, for the chapters of Rush University and The Ohio State University.

"I value Sigma Xi for what it has enabled me to do: meet faculty members outside my own department, particularly when my career has taken me to a new institution; support high school students by judging science fair projects and by talking to a class about what my labs has discovered and why I am so excited about what I do; and support new undergrad and graduate students through our chapter's own Grants-in-Aid of Research program." •

Other Elected Leaders

Terms begin July 1, 2014

Treasurer:
Ron Millard

Northeast Director:
Pamela Kerrigan

Mid-Atlantic Director:
Cristina Gouin-Paul

Membership At Large Director:
David Moran

Research & Doctoral
Universities Director:
Frank Abrams

Northwest Associate Director:
Cheryl Jorcyk

Southeast Associate Director:
Charles Lytle

Area Groups, Industries, State,
and Federal Labs Constituency
Associate Director:
HollyAnn Harris

Elected Members to Nomination Committees

Terms began at the conclusion of the voting period

Baccalaureate Colleges Representative for Committee on Nominations:
Francis Dane

Canadian & International Representative for Committee on Nominations:
Jennifer Patterson

To learn more about your leadership team, visit <http://bit.ly/19kHckO>.

2014 Award Winners

Walston Chubb Award for Innovation



Winner:
Rosalind W. Picard

Occupation: Founder and director of the Affective Computing Research Group at the Massachusetts Institute of Technology Media

Lab. Co-director of the Things That Think Consortium. Co-founder of Affectiva, Inc., a company that seeks to emotion-enable technology.

Reason for getting our award: A leading pioneer in the field of affective computing, Picard's work is developing new technologies and ideas to improve how humans and technology interact. This involves developing new technologies with improved understanding of human emotions.

Young Investigator Award



Winner:
Thomas H. Epps, III

Occupation: Thomas & Kipp Gutshall Associate Professor of Chemical & Biomolecular Engineering at the University of Delaware.

Reason for getting our award: He has a growing influence in the field of polymer physics with potential applications in energy and biomedicine.

John P. McGovern Science and Society Award



Winner:
David Rosner

Occupation: Ronald H. Lauterstein Professor of Sociomedical Sciences and Professor of History in the Graduate School of Arts and Sciences at the Columbia University Mailman School

of Public Health. Co-director of the school's Center for the History and Ethics of Public Health.

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Reason for getting our award: His research focuses on the social impact of toxins in the environment, including occupational hazards.

Honorary Member



Winner:
Derek Muller

Occupation: Science communicator, filmmaker, and television presenter. He is best known for creating the YouTube channel Veritasium.

Reason for becoming an honorary member:

Muller has made a big impact on science communication with his YouTube channel, which has more than 1 million subscribers. He has said the goal of his short films is to show science's "relevance, comprehensibility, and lack of dry, boring textbook-style exposition."

Honorary Member



Winner:
Michael Stevens

Occupation: Creator and host of Vsauce, a YouTube channel—which now includes Vsauce2 and Vsauce3. His videos tackle

questions such as "Why Do We Get Bored?" and "How Big Can a Person Get?"

Reason for becoming an honorary member:

His videos generate interest and enthusiasm for learning. As of December 2013, Vsauce had more than 6 million subscribers and more than 525 million views. "The channels investigate weird questions, look at the science, math, history, geography of interesting things. And by interesting, I mean anything," Stevens has said. •

Our Awards



The **Walston Chubb Award** for Innovation honors creativity among scientists and engineers. The winner receives a \$4,000 honorarium and an invitation to give a lecture at our annual meeting.



Our **Young Investigator Award** includes a certificate of recognition and a \$5,000 honorarium.



The **John P. McGovern Science and Society Award** is presented to an individual who has made an outstanding contribution to science and society. The award comes with a medal and a \$5,000 honorarium. The recipient is invited to present a lecture at our annual meeting.



Since 1983, people who have made important contributions to science but are not eligible for Sigma Xi membership have been elected as **honorary members**.



To be announced: The 2014 winner of the **William Procter Prize for Scientific Achievement**. •

Register by March 10 for the Student Research Showcase

Sigma Xi's Student Research Showcase is an opportunity for undergraduate, graduate, and advanced high school students to get firsthand experience in presenting their research. And they don't have to leave home—the showcase is held online, which saves travel time and expense.

Presenters earn a bullet point on their curriculum vitae and receive feedback from professional scientists who judge the competition. Prizes are awarded for the best presentations.

How to get involved:

1. Get approval to participate today by sending a project description in 50 words or less to meetings@sigmaxi.org with the subject line, "Showcase Presentation Description."
2. Follow instructions in Sigma Xi's e-mailed response.
3. Pay your registration fee, create a presentation website, and send your link to meetings@sigmaxi.org by March 10.
4. Interact with judges online as they look through the presentations March 17–March 23.
5. Watch for the announcement of student award winners on March 24.
6. Look for feedback on your presentation from judges in the following weeks.

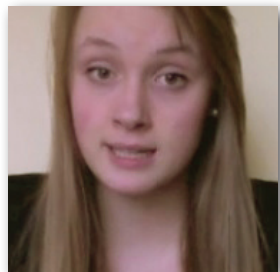
The cost:

The registration fee for sustaining members is \$35, which is a \$15 discount off the regular fee.

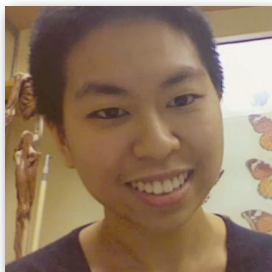
Not a student?

Volunteer as a judge! E-mail meetings@sigmaxi.org with the subject line "Showcase Competition Judge" to get started.

Screen shots from the 2013 Student Research Showcase



Alys Ferragamo of St. Peter High School in St. Peter, Minnesota, was a winner in the high school division of the 2013 Student Research Showcase. Her presentation was titled "Perception of Ambiguous Figures."

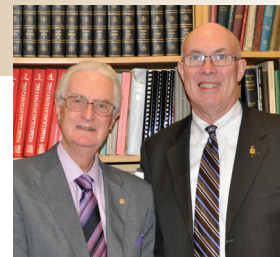


Welly Lang of LaGuardia Community College in Corona, New York, took the top spot in the undergraduate division last year for her presentation, "Super Males: Antioxidants Boost Male Fertility and Sperm Viability in Fruit Flies."



The showcase's 2013 graduate division winner was Eddie Lee of Princeton University in Princeton, New Jersey. His presentation was "Statistical Mechanics of SCOTUS."

For more information, visit <http://bit.ly/11PX15b>. See presentations from last year's winners at <http://bit.ly/1j511V6>. •



Dr. M.A. Whitehead, left, received his award from Sigma Xi executive director Jerry Baker.

Whitehead Honored for Outstanding Service

Dr. M.A. Whitehead, professor emeritus in chemistry at McGill University in Montreal, Canada, received on December 13 Sigma Xi's 2013 Evan Ferguson Award. The plaque comes with a lifetime subscription to *American Scientist*.

This award has been presented each year since 2008 in recognition of outstanding service to Sigma Xi and its mission.

Whitehead has given nearly 50 years of service to the Society, including serving as president so many times for his local McGill-Montreal chapter that he was named its honorary life president. •



PAT RAVEN © 2014

Raven Takes Home McGovern Award

Peter H. Raven received our 2013 John P. McGovern Science and Society Award last fall.

Raven is president emeritus of the Missouri Botanical Garden. He also served as Sigma Xi president from 2003–2004. For more information on Raven, see the May–June 2013 edition of *American Scientist*. •

meet your fellow companion

Meet Your Fellow Companion: Dr. Michael Gomez Selvaraj



Sigma Xi's motto is the Greek "Spoudon Xynones," or "Companions in Zealous Research." With that thought in mind, we like to highlight "Fellow Companions" to learn more about their work and what the honor of induction into Sigma Xi has meant for their career.

The goal of molecular crop biologist **Dr. Michael Gomez Selvaraj** (SX 2011) is to improve food production. He works at the International Center for Tropical Agriculture in Colombia. Its mission is to conduct interdisciplinary and applied research through partnerships to increase the eco-efficiency of agriculture and reduce hunger and poverty in tropical regions.

Tell us about your educational background, including your doctoral research.

I received my BS and MS degrees in agriculture from Tamil Nadu Agriculture University (TNAU) in Tamil Nadu, India, which is one of the leading agricultural technology providers in India. Without delay, I began my PhD in biotechnology with a specialization in molecular drought stress physiology at the Center for Plant Molecular Biology at TNAU. As a recipient of the very prestigious Rockefeller Foundation fellowship, I started my PhD research in India on gene mapping and marker-assisted selection for drought-resistant traits in rice. My research took me to the Texas AgriLife Research and Extension Center, a part of the Texas A&M system. I currently focus my research on peanut breeding and stress physiology.

What is the focus of your current research?

My current research at International Center for Tropical Agriculture (CIAT) focuses on improving eco-efficiency of crops in the global climate change, by establishing robust protocols and screening methods to integrate remote sensing tools such as imaging systems, for the automated quantification of functional traits contributing to abiotic stress. My responsibilities are to establish and lead a phenotyping platform to facilitate gene discovery and target trait validation related to abiotic stress tolerance for CIAT mandatory crops, such as rice and cassava.

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

Agriculture is essential in daily life. Too little nitrogen in rice production results in low yield and profit, while too much can lead to environmental pollution. I am very proud to work on improving nitrogen use efficiency in rice to mitigate gas emission, which is a threat to the world.

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

Our team of researchers is trying to find the answers to the mystery of drought-tolerant and nitrogen-uptake mechanisms utilizing next-generation sequencing technologies, gene transformation, physiological, and remote sensing approaches in rice. I strongly believe that integrated approaches for crop improvement will lead to the next green revolution.

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

The honor of nomination into the Society boosted my confidence in my research tremendously.

Has Sigma Xi helped further your career? If so, how?

Sigma Xi provides an excellent opportunity for members to meet other researchers and learn about innovations in varied fields of science and engineering.

What is your favorite motto?

"Worrying is like a rocking chair: it gives you something to do, but doesn't get you anywhere."

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

Be aware of the impact of climate change on food security. Working in agriculture offers students the opportunity to truly change the future of society with their research efforts.

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

I strongly believe solid traits/genes that withstand stress tolerance in crop plants will be identified, allowing farmers to fight the effects of global climate change. Agricultural innovations on nitrogen and water use efficiency will reduce the cost of food production, and will no doubt help improve the lives of farmers around the world. •



The text above is just a small excerpt of all Dr. Selvaraj had to say in response to our questionnaire. To read his interview in full, please visit Sigma Xi's website at www.sigmaxi.org.