



GRANTS-IN-AID OF RESEARCH

S I G M A X I

Grants-in-Aid of Research in Science and Engineering

DEADLINES MARCH 15 AND OCTOBER 15 ANNUALLY

“It was one of the formative experiences of our lives, setting not just our doctoral thesis research, but the course of our entire lives.”

*Edward O. Wilson,
Pulitzer Prize-winning
author and 1952 Grant-in-
Aid of Research recipient.*



The Sigma Xi Grants-in-Aid of Research program awards grants of up to \$1,000 to students from all areas of the sciences and engineering. Designated funds from the National Academy of Sciences allow for grants of up to \$5,000 for astronomy research and \$2,500 for vision related research.

Grant proposals are judged solely on the basis of their scientific merit.

Since the program began in 1922, Sigma Xi, the international honor society of science and engineering, has helped to advance the careers of nearly 30,000 student researchers. Sigma Xi grants have funded research on everything from the Shoemaker-Levy Comet to the role of Taxol® in breast cancer therapy to behavioral and ecological studies on endangered species.

Who is Eligible?

Each applicant must be an undergraduate or graduate student formally enrolled in a degree program. Applicants are eligible to receive two Grants-in-Aid of Research from Sigma Xi in their lifetime. While **membership in Sigma Xi is not a requirement to apply for funding** from the Grants-in-Aid of Research program, approximately 75% of funds are restricted for use by students who are dues-paying members of Sigma Xi or students whose project advisor is a dues-paying member. Students from any country are eligible to receive funding.

What Do the Grants Cover?

The program supports direct costs only, such as:

- the purchase of equipment and non-standard supplies required to do the proposed research
- travel to and from a research site
- reimbursement for human subjects (in psychological studies only)

Requests for funding to purchase equipment and supplies that should normally be available through college or university laboratories will not be granted, except in the case of special astronomy awards. The program does not fund travel to meetings or symposia.

How Do I Apply?

Applications for Grants-in-Aid of Research are accepted through an online form only. It is available at www.sigmaksi.org under the “Programs” section. The Web site also includes complete grant guidelines, a sample grant application, helpful tips for applying and a list of recent grant recipients and the titles of their research projects.

Deadlines are March 15 and October 15 annually. The online form is available two months prior to the deadline (January 15 and August 15 respectively). Note that two letters of recommendation are required.



While watching mixed-species bird flocks in the Sri Lankan rainforest, **Eben Goodale** was sometimes mystified to hear what he thought was a flock, only to find a greater racket-tailed drongo perched all by itself. It took a few years to realize that drongos could imitate other species. This marked the first time a cognitive ability of this kind had been seen in birds in the wild. An animal behaviorist who earned his Ph.D. at the University of Massachusetts, Amherst, Goodale said the two Grants-in-Aid of Research he received were invaluable to his work.



Dana Duren credits a Sigma Xi grant with helping to launch her academic research career. It enabled her to conduct a pilot study on primate bone growth for her dissertation research at Kent State University. "The pilot work was so fruitful," she said, "I was later awarded additional grants from the American Museum of Natural History and the LSB Leakey Foundation."



As a graduate student in integrative biology at the University of California, Berkeley, **James Ford Parham** used his Sigma Xi grant to study the origins of modern tortoises, traveling around western North America to look for living and fossil animals. His research demonstrated how the reconciliation of multiple lines of evidence can be a powerful tool for evolutionary studies.



A Sigma Xi grant enabled **John Sullivan** to purchase samples of methanol isotopes for an undergraduate research project at the University of Wisconsin-La Crosse. "It helped lead to the discovery of the shortest known laser emission from the methanol isotope CHD₂OH," he said. He and his colleagues published their discovery in the journal *Applied Physics*. Sullivan went on to pursue a Ph.D. at the University of Arizona's Optical Sciences Center.



A Sigma Xi grant helped Swiss-born **Michael C. Scholl** in his efforts to develop a method of photographically tagging great white sharks in the waters off South Africa. The identification of more than 700 sharks made his the largest database of its kind in the world. Scholl founded the non-profit White Shark Trust to advance research, education and conservation.

A Helping Hand on the Road to Discovery

In 1952, at the age of 23, graduate students **Thomas Eisner** and **Edward O. Wilson** received a Sigma Xi Grant-in-Aid of Research to take an entomological field trip across America. Many years later, both scientists would receive Sigma Xi's highest honor, the William Procter Prize for Scientific Achievement. Both have been Sigma Xi members for more than 50 years.

"We got our grant — \$200, as I remember it — and off we went," recalled Eisner, a winner of the National Medal of Science, who is Jacob Gould Schurman Professor of Chemical Ecology at Cornell University and director of the Cornell Institute for Research in Chemical Ecology. "Twelve thousand miles, more than 20 states, over a period of more than two months — in a 1942 Chevy with 160,000 miles on it. By the time we returned, our hood had torn loose in a storm, and one window had been broken away by a bear in Yellowstone. But what a trip — I don't think I ever learned so much in such a short time in my whole life! That trip made the difference in my understanding nature and seeing the cohesiveness of life, the interdependence of organisms. In many ways I can say I owe it to that Sigma Xi grant."

Wilson, who is Pellegrino University Professor Emeritus at Harvard University, has won two Pulitzer Prizes for his books *On Human Nature* and *The Ants* (with co-author Bert Holldobler). In a preface to his Procter Prize address, he fondly remembered that summer on the road to discovery. "We slept on the ground on inflatable rubber mattresses and cooked over an open fire. We lived on items like condensed milk at 12 cents a can, and beans at 11 cans for a dollar. Gasoline, as I remember, was 15 cents a gallon. It was one of the formative experiences of our lives, setting not just our doctoral thesis research, but the course of our entire lives. So I thank you for that, Sigma Xi, and thank you for the Procter Prize as well."

A Grant-in-Aid helped Appalachian State University anthropology major **Robert Carson Thigpen, III** learn about the life of lobster fishermen on a small island off the coast of Belize. Among other things, he found that many there soak the tails of spiny lobsters they catch in order to meet the legal weight limit. Thigpen presented his research at the Belize National Marine Science Symposium.



When he was a doctoral candidate at Florida International University, **Alessandro Catenazzi** used a Sigma Xi grant to study how the distribution of geckos in the Peruvian coastal desert is influenced by the input of marine resources from the Humboldt upwelling. "My work helped reveal species or ecological processes that are key for maintaining abundant populations of terrestrial animals in one of the driest places on Earth."



While a graduate student at the University of Nevada at Reno, **Hillary Robison** used her Sigma Xi grant to help fund horse-pack trips to remote sites in the mountains of Wyoming, where she harvested fragile army cutworm moths and studied their role as a food source for grizzly bears. "The techniques learned and contacts made throughout this project helped me grow as a scientist," Robison said.



Livio Tornabene was an undergraduate at the University of South Florida at Tampa when he used his Sigma Xi grant to study an asteroid impact site in Panama. "This project made my childhood dreams come true." He had always wanted to be involved in planetary exploration, and his work in Panama brought that opportunity. Tornabene went on to become a doctoral candidate at the University of Tennessee under Harry McSween, a leading expert on Martian geology.



Carolina Jaliffa at the University of Buenos Aires said her Sigma Xi grant helped fund research on retinal stress induced by ocular hypertension. "In Argentina," she said, "the money we have for research is not enough to do our experiments the way we would like." That made it especially rewarding to receive this prestigious grant. "I grew professionally. I also became a more self-confident, responsible person."





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Receiving a Sigma Xi grant was like a big brother came by, put his hand on my shoulder and said, "You're worth the risk."

Ted Uyeno, zoology graduate student, University of North Carolina at Chapel Hill



Centennial Campaign

Since 1922, Sigma Xi Grants-in-Aid of Research have made a difference for nearly 30,000 undergraduate and graduate students at a crucial time in their careers. In 2006, the program's endowment totaled \$3.8 million. Competition for grant funds, especially among beginning researchers, has never been more intense than it is today, and our endowment needs to grow so we can help even more promising young research students. To celebrate the Grants-in-Aid of Research centennial, and to increase the investment in the future of science and engineering the program represents, we wish to raise that endowment to \$22 million by the year 2022.

Please help continue Sigma Xi's proud tradition of supporting young, promising students at the outset of their research careers. By supporting the Grants-in-Aid of Research Centennial Campaign you will change lives, challenge thinking and encourage innovation. You can help to shape the future by supporting today's and tomorrow's scientists and engineers.

If you are interested in contributing to the Grant-in-Aid of Research Centennial Campaign or perhaps even endowing a named Grant-in-Aid of Research in perpetuity, please contact Sigma Xi's Development Director at development@sigmaxi.org or 800-243-6534 ext 210. Or visit www.sigmaxi.org

The individual researcher continues to be the very heart and soul of science. Because it provides small grants to individual researchers, Sigma Xi keeps that flame burning.

Rita R. Colwell, Sigma Xi President 1991-1992 and former director, National Science Foundation

A Legacy of Giving

Since its inception, the majority of Grants-in-Aid of Research awarded have come from the generosity of Sigma Xi's members.

Long-time member **Calvin Fuller** was the co-inventor of the solar cell, used to convert solar energy into electricity, which helped make America's space program practical. He and his wife contributed more than \$100,000 to endow in perpetuity the Calvin S. Fuller Grants-in-Aid of Research Fund. "It has been a strong feeling of mine," Dr. Fuller said, "that we older ones who have learned the satisfactions and the value to society of scientific work should try to make the way into science easier for promising young scientists."

Mark W. Martin received two Grants-in-Aid of Research in the 1980s and is now not only a regular contributor to the program, but also a member of the Sigma Xi committee that reviews hundreds of grant applications each year.

"Besides simply supporting basic science and engineering," Martin says, "the Grants-in-Aid program forces students to think through a problem, formulate an hypothesis and a means to test it and then to communicate these ideas cogently. My one regret is that we cannot give more support to the proposals we read."

SIGMA XI

THE SCIENTIFIC RESEARCH SOCIETY

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