

Sigma Xi Today

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Annual Meeting to Feature Fresh Perspectives, Vibrant Voices

In addition to lectures and interaction with Sigma Xi award winners Sylvia Earle, Bjarne Stroustrup, Ira Flatow and David Quammen, the 2005 Sigma Xi Annual Meeting and Student Research Conference in Seattle will feature a variety of educational sessions and networking opportunities.

Set for November 3-6 at the Westin Seattle Hotel, the Society's annual business meeting is attended by several hundred delegates from Sigma Xi chapters in North America and around the world.

New for this year's event, a Saturday-only ticket option will give a broader audience the chance to see what the Society has to offer.

Celebrated oceanographer **Sylvia Earle** will participate in several activities throughout the day on Saturday, November 5, before receiving the annual John P. McGovern Science and Society Award and delivering the McGovern Lecture that afternoon.

Saturday sessions will feature some of the Society's newer programs oriented toward early and mid-career advancement—including grant writing, postdoc issues, career options, computational science, and depicting science concepts and results.

Other meeting sessions will feature workshops, panel discussions and roundtables for delegates on chapter leadership and management, outstanding chapter programs and chapter revitalization.

National Magazine Award-winning science writer **David Quammen** will be inducted as honorary members. Both will also be available for book signings and conversations.

Visit www.sigmaxi.org for a complete schedule of activities, on-line registration and details of the Saturday-only ticket option. The following are just a few of this year's event highlights.



Image and Meaning

Sigma Xi and the Massachusetts Institute of Technology are taking MIT's Image and Meaning Project on the road. Sigma Xi chapters can compete to host one of four hands-on regional workshops bringing together scientists, artists, visualization experts and professional communicators to solve problems in the visual communication and expression of complex and technical ideas.

Into the Cool

Thermodynamics originated with the study of isolated systems. Yet most systems in the cosmos are open to matter and energy, organized by energy flow, and all are subject to the "second law." Life itself is arguably organized in its essence by energy flow. Join expert investigators for an intriguing two-part seminar on the importance of the second law of thermodynamics in understanding complex systems—from hurricanes and chemical clocks to ecosystems and economies. Engage with thermodynamic and engineering perspectives that promise to open productive new lines of research on the very process of evolution.

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The Sigma Xi Student Research Conference, set for November 4-5 in conjunction with the annual meeting, will give hundreds of students an opportunity to showcase their research. September 30 is the deadline for student research abstracts.

Again this year, the National Institute of Environmental Health Sciences is a major sponsor of the student research conference.

Also on the program is renowned Texas A&M University computer scientist **Bjarne Stroustrup**, inventor of the C++ programming language, who will receive the annual William Procter Prize for Scientific Achievement and give the Procter Prize Lecture on Friday afternoon.

Texas A&M's **Thomas Spencer**, winner of the Sigma Xi Young Investigator Award, will speak about his groundbreaking research in reproductive biology and endocrinology (see article page 478).

Ira Flatow, host of National Public Radio's popular *Talk of the Nation: Science Friday*®, and three-time

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Spencer Wins Young Investigator Award

Thomas E. Spencer, Texas A&M University assistant professor of animal science, has been selected to receive the 2005 Sigma Xi Young Investigator Award in life and social sciences.

The award and a \$5,000 honorarium will be presented during Sigma Xi's annual meeting November 3-6 in Seattle. Spencer has also been asked to present a brief lecture on his research and its implications.

According to Patrick D. Sculley, Sigma Xi executive director, "The Young Investigator Award recognizes researchers in the early stages of their careers whose outstanding contributions best exemplify the ideals of Sigma Xi."

Life and social sciences are recognized on odd-numbered years and physical sciences on even-numbered years.

Fuller Bazer, distinguished professor and O. D. Butler chair in animal science at Texas A&M, nominated Spencer for the award.

"Dr. Spencer is truly an exceptional young scientist who has developed an outstanding independent research program. (His) intellectual background, technical expertise, imagination, dedication and organizational skills are such that he is already recognized as a leader in reproductive biology and endocrinology," Bazer says.

Spencer earned bachelor's and master's degrees from Auburn University and a Ph.D. from Texas A&M. In 1997 he completed postdoctoral studies at Baylor College of Medicine in molecular and cell biology.

Spencer developed a unique "uterine gland knockout" model in sheep and initiated a research program derived from it to discover hormonal, cellular and molecular mechanisms regulating postnatal uterine development and function of endometrial glands in the adult uterus. His laboratory also works on the biological role of



Thomas E. Spencer

endogenous retroviruses in placental development.

According to Bazer, these findings are expected to advance the knowledge of events leading to abnormal uterine function in women, such as endometrial insufficiency and pre-eclampsia, that contribute to pregnancy loss and intrauterine growth retardation, which are major women's health problems.

"Dr. Spencer's record of achievement in research is exceptional," he says.

Spencer is a member of Sigma Xi, the American Association for the Advancement of Science, The Endocrine Society, Society for Reproduction and Fertility, and the Society for the Study of Reproduction.

He serves as an associate editor of *Biology of Reproduction* and on the editorial board of *Reproduction*.

His honors include a National Research Service Award from the National Institutes of Health and the Outstanding Young Animal Scientist Award-Research from the American Society of Animal Science.

Spencer is also the recipient of the inaugural New Investigator Award from the Society for the Study of Reproduction in 2004.

Sigma Xi Annual Meeting

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It Doesn't Grow on Trees

Designed for researchers early in their grant writing careers, this workshop will highlight portions of Sigma Xi's customized Grant Writing Course. Key elements of effective research proposals will be presented, with a specific focus on communicating and marketing your science.

I Did It My Way

Explore the exciting and diverse career options available to scientists and engineers. Discussion will focus on both academic and non-academic tracks, and will include speakers who have chosen distinctive career pathways that leverage their scientific training.

Communicating Science

Grab a coffee and join Ira Flatow and David Quammen for an informal conversation about their work as science writers—what drew them to science writing and the most exciting stories they've covered.

Classroom Computation

In partnership with the Shodor Education Foundation, Sigma Xi provides instruction and logistical support for chapters interested in hosting a computational science workshop series at their institutions. Funded by a grant from the National Science Foundation, the workshops encourage the use of computational tools in undergraduate science and engineering education.

Doctors Without Orders

The first national, scientific and comprehensive survey of postdoctoral researchers in the U.S. was designed to identify best practices and enable institutions to benchmark their policies and practices against those of peer institutions. Learn about survey results, along with plans for Sigma Xi's future involvement with these issues.

The Leadership of Sigma Xi

Sigma Xi President Lynn Margulis is Distinguished University Professor at the University of Massachusetts, Amherst. Winner of the National Medal of Science, she has been a Sigma Xi member since 1963. Visit the "News" link at www.sigmaxi.org for the full text of her essay, excerpts from which appear here.

...Sigma Xi members, all 65,000 of them, know that science begins with evidence and evidence is gathered by research. Good research is slow; it is expensive and idiosyncratic. All scientific research starts with an esoteric observation or an arcane activity. All science is specialized and, at first, obscure.

...Science properly carries on by activity in this order: exploration precedes reconnaissance and reconnaissance precedes detailed study. All three phases of investigation require careful documentation. Researchers have both illustrious and humble, methodical predecessors.

The glory of Sigma Xi is its unambiguous dedication to its primary goal: to foster research. Any full member has demonstrated research achievement. It is simply not enough to have been elected to high office or performed diligent public service. Any associate member has shown potential to participate in the global research effort. It is not enough to have attended a prestigious summer program or an expensive college.

Sigma Xi members are drawn from government labs, industrial research centers or their own homes. The criterion of importance is that they join fervently in research and practice science as a way of knowing. Sigma Xi members share the belief that science is a valid way of learning about the world.

To me science is not only a way of knowing but it is the best way to find out anything with confidence. To do science of any kind requires certain social interactions, but science is not primarily "he said, she said." Rather it usually requires gentle inquiry of Nature herself.



UNIVERSITY OF SAN FRANCISCO QUITO, ECUADOR

Lynn Margulis

Scientists must be critical. To cajole Nature into yielding a new scientific finding the researcher often has to criticize authority. But to accomplish anything at all the criticism must be constructive. Although a scientist must think for herself, she must also seek "companionship in zealous research."

Without the annual Sigma Xi dinners and initiation ceremonies, certain research scientists, students and faculty on my campuses would never even have become acquainted.

Without the Sigma Xi Grants-in-Aid of Research program, my former students would not have been able to dive in Bahamian caves or collect microbes at Yellowstone's lacustrine deep hot vents... The policy to give small grants to many deserving research students is laudable. I believe it has improved the way in which young potential investigators describe the methods and significance of their research.

The Sigma Xi presidency appeals to me primarily as a means to further the fundamental priority of the organization: to foster the results of original scientific research and to communicate them. I will evaluate any potential action of the Society on the basis of its relation to this goal.

I see Sigma Xi as a means to strengthen the voices of young honest scientists in today's despairing world. *American Scientist* magazine is a cru-

cial, perhaps the most crucial, activity of the Society. In its important issues should be debated.

Among these I easily identify a few: The degradation of the environment correlated with human overpopulation and loss of non-human lives and the diminishment of cultural diversity (both planetary and human). I see as a serious problem the proliferation of dangerous unstated assumptions in many scientific activities especially in the reconstruction of cosmic, evolutionary and climate history. I deplore the all-too-human tendency toward dichotomization and our knee-jerk responsiveness to symbols.

The deprecation and misunderstanding of the importance of museums and their collections deserves far more discussion, as does the education of both the young scientist and the student who will never become a scientist.

Scientific publishing, so crucial to the research enterprise, poses current problems: the domination of scientific journals by greedy publishers, the excessive control of the marketplace over the science and math textbooks, the proliferation of irresponsible popular science books and the increasing reluctance of publishers, even university and other academic presses, to invest in quality primary science books.

I suspect that as university scientists increasingly accept industrial, product-oriented research the quality and quantity of basic science diminishes.

My experiences, especially in Spanish-speaking countries, have made me acutely aware of the difficulties for researchers who happen not to be United States citizens. The increasing imperative of at least broken, American English as the lingua franca of world science is a burden to many.

I welcome the opportunity to help Sigma Xi and *American Scientist* lead and, with collegiality, extend the core values of research science throughout the world.

—Lynn Margulis

Chapters Host Distinguished Lecturers



Kimberly Thompson

Every year, Sigma Xi chapters give members, students and the public a chance to hear exceptional talks by more than 30 researchers at the forefront of science and technology through the Society's Distinguished Lectureship program.

Several speakers are sponsored jointly with partner organizations, including the American Meteorological Society, National Academy of Sciences, National Academy of Engineering and the Society for Risk Analysis.

For details on speakers and topics for this year's Distinguished Lectureship program, visit the Programs section at www.sigmaxi.org or contact lectureships@sigmaxi.org.

Kimberly M. Thompson, associate professor of risk analysis and decision science at the Harvard University School of Public Health, has served as the Society for Risk Analysis/Sigma Xi Distinguished Lecturer since 2003.

The Society for Risk Analysis (www.sra.org) is a multidisciplinary, interdisciplinary, scholarly, international society that provides an open forum for all those interested in risk analysis.

As creator and director of the Kids Risk Project (www.kidsrisk.harvard.edu), Thompson is a leading authority on the risks to children and the need for better information to improve decisions made by kids, parents, policy makers and others. She performs active research on the messages in popular media (e.g., motion pictures and video games).

A popular and engaging speaker, Thompson talks about the serious topic of "Life in the Age of Risk

Management" using humor and real-life examples that are relevant to broad audiences.

She demonstrates the hazards of failing to consider the real differences between individuals that matter when making public policy decisions, and she talks about how to become empowered by uncertainty, instead of paralyzed by it.

Thompson is author of *Risk in Perspective: Insight and Humor in the Age of Risk Management, Overkill: How Our Nation's Abuse of Antibiotics and Other Germ Killers Is Hurting Your Health and What You Can Do About It* (with Debra Bruce) and more than 50 peer-reviewed publications.

Her work has been widely covered in the popular media. She is currently a visiting faculty member at the Massachusetts Institute of Technology Sloan School, teaching system dynamics and working to integrate characterization of variability, uncertainty and time in complex models.

Sigma Xi Grant Guidelines Online

October 15 is the next application deadline for Sigma Xi's popular Grants-in-Aid of Research program.

Undergraduate or graduate students in a degree program are eligible to apply. Research awards are made to support scientific investigation in any field.

Grants range from \$100 to \$1,000, except for astronomy and eye- or vision-related research, for which awards of up to \$2,500 are available from special funds from the National Academy of Sciences.

Visit www.sigmaxi.org for additional information including an online application form.

American Scientist Wins Two Awards

The Society of National Association Publications (SNAP) has once again recognized *American Scientist* in its annual EXCEL awards competition.



In June, the magazine received top honors, a Gold Award, for a feature article in the January-February 2004 issue called "The Evolution of Jealousy" by University of California at San Diego psychologist Christine R. Harris.

The article focused on the theory that jealousy is a specific innate module, a circuit in the brain that reflects the different selective pressures that acted on ancestral men and women. Harris reviewed this theory critically in light of new studies suggesting that a gender difference is not so clear, and offered alternative hypotheses.



American Scientist also won an "Award of Excellence" for the March-April 2004 issue in the annual APEX Awards

for Publication Excellence sponsored by Communications Concepts, Inc. There were more than 4,900 entries in multiple categories for this year's competition.

"Recognition with Excel and APEX awards is a credit to an entire community—the scientist-authors, editors and artists who work together to communicate research to a broad audience," said Editor Rosalind Reid. "I'm grateful that the Society's magazine has once again been honored by our publishing colleagues."