

# Sigma Xi

## The Scientific Research Society The Year in Review

# 1999

### Lynn Margulis Wins 1999 Procter Prize

University of Massachusetts biologist **Lynn Margulis** received the 1999 William Procter Prize for Scientific Achievement at the Society's annual meeting in Minneapolis. Sigma Xi's highest award, the Procter Prize honors scientists who have made outstanding contributions to research and have also demonstrated an ability to communicate the significance of their work to others. Margulis played a major role in introducing the "serial endosymbiosis theory," which posited that cells with nuclei (eukaryotic cells) evolved through a symbiotic relationship with other cell types. She is also known for her collaboration with British scientist James E. Lovelock, originator of the Gaia Hypothesis, which holds that life has had a greater influence on the evolution of the Earth than was ordinarily assumed, affecting the global environment in ways that favor the continuity of life.

### Landweber Receives Young Investigator Award

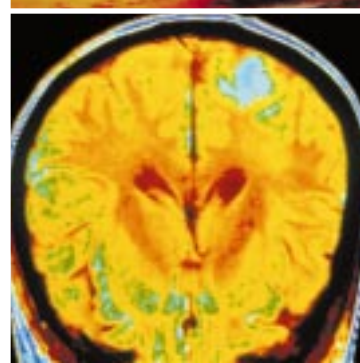
Princeton University biologist **Laura F. Landweber**, a rising star in the field of molecular evolution, received Sigma Xi's 1999 Young Investigator Award in the life and social sciences, which includes a prize of \$5,000. An assistant professor of biology and vice president of the Princeton University Chapter of Sigma Xi, Landweber received her Ph.D. in 1993 at Harvard University. Her talent was recognized early with National Science Foundation (NSF) and Howard Hughes Medical Institute predoctoral fellowships and election to the Harvard Society of Fellows. She has since received a 1998 Burroughs Wellcome Fund New Investigator Award in Molecular Parasitology and additional NSF grants. Landweber has participated in summer workshops for science teachers and led freshman seminars of "Jurassic Park: Myth or Reality?" and "DNA Computing." She also has been a panelist on National Public Radio and is a member of the National Aeronautics and Space Administration's Working Group on Exobiology.

### 1999 Forum Initiates Education Reform Program

Changing the way science is taught is crucial at all levels, from kindergarten through graduate school, National Academy of Sciences President **Bruce Alberts** said at the 1999 Sigma Xi Forum *Reshaping Undergraduate Science and Engineering Education: Tools for Better Learning*. Inquiry-based learning allows students to experience the process and excitement of science, he said, rather than merely trudging through a morass of facts, which often discourages them early on. At the 1999 Forum, held in Minneapolis in November, plenary speakers and panelists addressed the major issues surrounding education reform, and a series of invited sessions and contributed workshops prompted lively discussion on a wide range of related topics. Abstracts of forum demonstrations and posters will be included in the proceedings, to be published in the spring. The 1999 Forum marked the beginning of a multi-phase Sigma Xi program to foster dissemination of effective practices in science education.

### NSF Grant Funds Education Workshops

Sigma Xi has begun a new initiative to promote innovative undergraduate teaching practices in science and engineering. Funded by a \$146,000 development grant from the National Science Foundation, two pilot Sigma Xi chapter workshops and related activities will be designed to disseminate effective practices in undergraduate science, mathematics, engineering and technology education and promote discussion on systemic, institution-wide reform. Sigma Xi chapters at **North Carolina State University** and **California State University at Long Beach** will work closely with campus administrators to design one-day pilot workshops on education reform and plan follow-up activities to keep the discussion going and stimulate institutional reform. The next phase of the project calls for expanding the effort over three years to an additional 22-25 chapters. The project is an extension of the Sigma Xi 1999 Forum and will likely become a key facet of an ongoing program in science education under development for the Sigma Xi Center in Research Triangle Park.



### Rush Holt Receives 1999 McGovern Award

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**U.S. Rep. Rush D. Holt** (D-New Jersey), a Princeton University physicist who was elected to Congress last year, received Sigma Xi's 1999 John P. McGovern Science and Society Award. From 1989 until he began his Congressional campaign, Holt was assistant director of the Princeton Plasma Physics Laboratory, where he created an award-winning office of science education. He was also co-chair of the Princeton University Sigma Xi Chapter's successful Science Advisor Program. In addition, Holt has served in the U.S. State Department as acting chief of the nuclear and scientific division within the Office of Strategic Forces Analysis, where his responsibilities included participating in the Geneva arms control talks and directing analysis of space activities, international science and nuclear weapons proliferation. **The Communities Foundation of Texas** continued its support of the McGovern Award this year with an additional contribution of \$5,000 to the award fund.

### Workshop Explores Ethical Challenges

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While the public and Congress seem less concerned today with ethical issues in science, many research institutions have come to realize that misconduct is a low-probability, high-impact problem that merits serious attention. At the same time, university/industry partnerships have proliferated to an extent that conflicts of interest, commitment and effort have added new complexities to ethical concerns in research. These were among the views expressed at a workshop in September called "Ethical Challenges and Practical Solutions for Managers in Research," co-sponsored by Sigma Xi and the U.S. Public Health Service Office of Research Integrity (ORI). The one-day conference in Albuquerque, New Mexico, raised a number of issues that fueled discussion the next day at a planning conference for the 2000 Sigma Xi Forum on ethics in research. The workshop featured talks by Sigma Xi and ORI officials, academic research directors and national laboratory managers. The 2000 Sigma Xi Forum will be held November 9-10 in Albuquerque.

### Sigma Xi Publishes New Ethics Booklet

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A new companion publication to *Honor in Science* is available. The 64-page booklet, titled *The Responsible Researcher: Paths and Pitfalls*, covers a number of ethical issues that have arisen since *Honor in Science* was first published in 1984, including grant pressures and their effects on mentoring, academic/industrial conflicts of interest and undergraduates' exposure to research and ethical issues. While *Honor in Science* is aimed primarily at graduate students, this new Sigma Xi booklet is intended for a broader audience, including undergraduates, postdocs, junior faculty, senior faculty, deans and department chairs and government and industry researchers and managers. *The Responsible Researcher* was published with a generous grant from the estate of the late **Edward F. Obert**, a professor at the University of Wisconsin at Madison who was a long-time Sigma Xi member and supporter.

### 9,000 Subscribe to 'Science in the News'

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More than 9,000 Sigma Xi members have subscribed to a free daily e-mail update on science news stories from major U.S. newspapers prepared by the staff of Sigma Xi's Media Resource Service. Members who request it can receive a daily digest of top science stories, in the form of an e-mail message containing hotlinks to the stories. This service allows subscribers to keep abreast of pertinent science news. Sigma Xi members, such as **Candace Felling** at the University of Hawaii, report that "Science in the News" is a useful teaching tool: "I have begun using your service in my classroom...The students are excited about it, and so am I, for now we all can learn what is currently making news in the science world." To sign up for the free service, contact science-in-the-news@sigmaxi.org.

### Chapters Focus on Local Issues

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The **Montana Tech Chapter** sponsored a day-long symposium last April on "Butte Mining: Problems and Solutions" as part of the 1999 annual meeting of the Montana Academy of Sciences. The symposium featured speakers from industry, government and academia and concluded with a field trip to view and discuss the current status of mining in the Butte area.

The **University of California at Santa Cruz Chapter** took an active role in a community debate over fluoridation of public water supplies in response to a special city referendum on the issue. The chapter published an op-ed article in the *Santa Cruz Sentinel* and participated in a public forum on the scientific merits of fluoridation. Despite these efforts, the measure prohibiting fluoridation passed by less than one percent of the vote.

A talk by science writer Rob Barker, author of the book *And the Waters Turned to Blood*, about the *Pfiesteria piscicida* outbreak in the waters of North Carolina, was a highlight of the year for the **Knox College Chapter**. The talk got a lot of local attention because of the possible connection between agricultural run-off from hog farms and the *Pfiesteria* outbreak.

#### Chapter Activities Cover Broad Spectrum

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As one of only two major sponsors for the K-12 New Haven Public Schools Science Fair, the **Yale University Chapter** holds teacher workshops and also hosts the fair and awards' ceremony on campus. After four years of chapter involvement, the fair has grown to include nearly all New Haven schools, with more than 5,000 students participating, most of them minorities.

**Wendy Baldwin**, deputy director of extramural research for the National Institutes of Health, presented the keynote address at the 11th Annual Sigma Xi Research Symposium for students and faculty held by the **Drexel University Chapter**. Nearly 300 poster abstracts were collected and published as part of the printed program.

About 200 high school students and their teachers attended a Saturday morning science session called "Phase Transitions" sponsored by the **Ford Motor Company Chapter** in cooperation with the company's High School Science and Technology Program.

The **Texas A&M University Chapter** sponsored an essay and art contest for middle and high school students, inviting them to speculate in words or pictures on likely life forms on the planet Mars. This effort to promote interest in science and technology attracted 107 entries.

The **Nalco Chapter** continues to support the Science-Is-Fun! program for roughly 100 elementary schools in the Chicago area. Teams of Nalco Chapter members and Nalco employees conduct experiments designed to stimulate an interest in science at an early age.

More than 200 attended the **University of Hawaii at Hilo Chapter's** Big Island Science Conference this year, which featured 50 presentations by faculty, students and outside researchers. The chapter also sponsored a special Astronomy Night, featuring representatives from three major observatories.

With the help of Sigma Xi's administrative offices, the **Charleston Chapter** initiated Chs-Sci-Net, an electronic discussion group open to anyone with an interest in science. To encourage participation, chapter members met with science liaisons from all local elementary and secondary schools.

#### Chapters Receive Certificates of Excellence

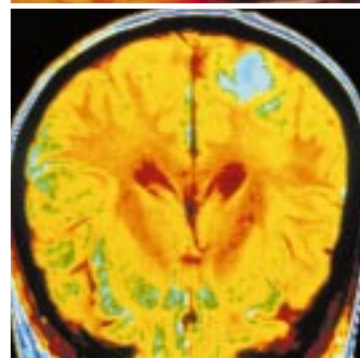
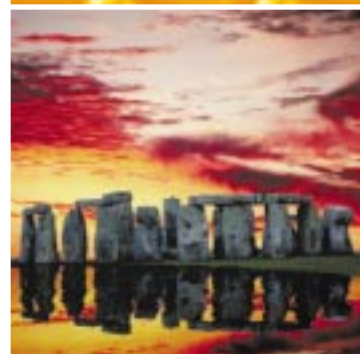
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Sixteen Sigma Xi chapters received special recognition at the annual meeting in Minneapolis for their outstanding programmatic activity during 1998-99. Nominees were chosen by the Regional Directors based on chapter annual reports. The following finalists were selected by the Committee on Qualifications and Membership as Chapters of Excellence.

**Alaska** – Activities included the Alaska High School Science Fair, mentoring K-12 teachers through "Partners in Science" and graduate students through the AAAS Arctic Science Conference, as well as sponsoring a lecture series on science and society issues.

**Ball State University** – The chapter sponsored the Annual Student Symposium, awarded student research grants and developed a speaker exchange program involving area universities.

**Baylor College of Dentistry** – In the chapter's Habitat for Science Program, minority high school students attended seminars and were matched with mentors for summer projects. The chapter was a co-sponsor of Texas Tri-School Research Day, which included a graduate student research symposium and competition.



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**Clemson University Chapter** – The chapter was involved in the promotion of research at the high school, undergraduate and graduate levels. Its High School Research Grants Program is conducted jointly with the University of South Carolina and the Central Savannah River Chapter of the South Carolina Academy of Science.

**Grove City College Chapter** – Among other activities, the chapter held lunchtime workshops, fostered independent undergraduate research projects and participated in a program for local pre-school children called “Chemistry is Fun.”

**Howard University Chapter** – The chapter’s popular “Science Discovery” program brings minority middle school students to campus for a Saturday of hands-on science. A chapter delegation also visited Congressional representatives, and chapter members served as science fair judges and advisors for science clubs.

**Kansas State University Chapter** – Among other activities, chapter members attended state board of education hearings on revising science standards for K-12 classrooms and testified for strengthening the standards and maintaining an emphasis on evolution as the central theory of biology.

**McGill University Chapter** – The chapter coordinated celebrations in honor of National Chemistry Week, including a week-long lecture series to capacity audiences on such wide-ranging topics as “Chemistry and Literacy: Scientific Writing in Quebec” and the “Chemistry of Explosives: From Black Powder to Space.”

**Middle Tennessee State University Chapter** – The chapter continued its support of *Scientia*, a student-run, electronic research journal, as well as an annual graduate research symposium and lecture series. The chapter also co-sponsored the Expanding Your Horizons Conference for girls ages 9-16 and a Women in Science lecture series on campus.

**Ohio State University Chapter** – Seven past chapter presidents were among those attending the chapter’s 100th anniversary celebration this year. Speakers included new OSU President William Kirwan and Sigma Xi Executive Director Peter Blair. The

chapter also gave special recognition to undergraduate and graduate students who had received research awards.

**Pace University** – In addition to sponsoring a lecture series and mentoring teachers and students, the chapter was a co-sponsor of the Bioethics Forum III: Environmental and Legal Issues in Research and hosted a popular student Science Day at the university.

**Quinnipiac** – In addition to being a community resource for speakers, project consultants and science fair judges, the chapter also sponsors public seminars and other programs. It organizes, funds and administers the Robert E. Leonard Award and Certificates of Merit for outstanding undergraduate and graduate student research and holds a pre-college research competition.

**Rice University-Texas Medical Center Chapter** – The chapter joined the national “Partners in Education” program, adopting Northbrook Middle School as a focus for promoting a better understanding of science among sixth- through eighth-graders. Plans call for development of interactive distance learning, with some programs broadcast directly from researchers’ labs.

**Southern Illinois-Carbondale** – The chapter co-sponsors Research Day in conjunction with the Illinois Junior Science and Humanities Symposium each spring; honors outstanding science teachers, graduate students and faculty researchers; and holds a diverse public lecture series.

**Tifton** – In addition to providing all the judges for the Abraham Baldwin College Regional Science Fair and hosting weekly seminars, the chapter initiated the Tift County Underprivileged Children’s Program, providing a walking tour of the University of Georgia Experiment Station.

**University of Michigan Chapter**—Chapter members were among the developers of a faculty forum inspired by the controversial Boyer Commission Report, *Reinventing Undergraduate Education: A Blueprint for America’s Research Universities*. The keynote speaker was study chair Shirley Strum Kenny, president of the State University of New York at Stony Brook.