

## Four Sigma Xi Members Honored with Stamps

In April, four Sigma Xi members will have postage stamps issued in their honor by the U.S. Postal Service in recognition of their impressive scientific achievements.



Theoretical physicist **John Bardeen** (1908-1991) co-invented the transistor, one of the most important

inventions of the 20th century. Bardeen also collaborated on the first fundamental explanation of superconductivity at low temperatures.



Biochemist **Gerty Cori** (1896-1957), in collaboration with her husband Carl, made important discoveries

that later became the basis for our knowledge of how cells use food and convert it into energy. Among her discoveries was a new derivative of glucose, a finding that elucidated the steps of carbohydrate metabolism.



Astronomer **Edwin Hubble** (1889-1953) played a pivotal role in deciphering the vast and complex nature of

the universe. His meticulous studies of spiral nebulae proved the existence of galaxies other than our own Milky Way.



Structural chemist **Linus Pauling** (1901-1994) determined the nature of the chemical bond linking atoms into

molecules. His pioneering work on protein structure was critical in establishing the field of molecular biology.

Bardeen, Cori and Pauling are among 200 Sigma Xi Nobel laureates commemorated in the Hall of Honor at the Sigma Xi Center in Research Triangle Park, North Carolina. •

## From the President



### Sigma Xi and Critical Issues in Science

Sigma Xi recently conducted an online survey of the membership to get diverse perspectives on how the Society can more sharply define and strengthen its unique role in science and society for the new century. The responses (nearly 7,000) point us to a unified direction that transcends career stage, organizational setting and gender. Ethics, communication of science and public understanding of science were at the top of the priority list.

It is clear that the membership is looking to the Society to advance the conversation on critical science issues. A centerpiece of those conversations must be the science of science policy. When is the science itself ready to inform policy? At that point, how can a policymaker use all the science available to set policy? What variables must be taken into account? How will impact be determined and measured? How will economic investment and return be weighed?

There is no framework to guide this process. Mostly we scientists and engineers advocate for what we think is in society's best interest, and we often seem to have diverging viewpoints. The media sometime take our science and oversimplify it, inflate it or distort it. We ourselves don't do an especially good job of communicating it. We are at our best when we are passionate, but our passion can also belie the science itself, because we don't think about the principles of science in terms of how we let science lead us into advocacy.

We make innumerable assumptions about knowledge creation and utilization. Yet decisions about funding, prioritizing, forecasting how the many attendant variables will interact and measuring impact have no scientific basis for sound policymaking.

The gap in the interface between science and policy threatens this nation's future. Until we formulate the science of science policy, we are doomed to see pork-barrel science funding, earmarked science funding, rider compromised legislation on science funding, divided federal agency actions, failure to capitalize on the power of interdisciplinary collaboration, and a dismaying portfolio of baffling science funding priorities.

Related and equally important is the public understanding of science. Generally we take this to mean scientific literacy. What we must bring into high relief, though, is the need for the public to better understand how science policy is made – how funding for it, and other major decisions affect what science gets done, how it gets done and how it is used.

The science of science policy is an exciting new field for which Sigma Xi is well suited. It is cross disciplinary, and it takes us beyond highly personalized agendas (even when they are cast as “the greater good”).

Sigma Xi will call upon its members to contribute their talents to the science of science policy, and in 2008 we will focus our efforts on one of the critical issues in science—water. The scientific, policy and ethical implications are monumental. Many organizations and scientists are highlighting it. Sigma Xi will serve as a waterwheel to drive continued conversations about it at all levels.

I am very excited about what Sigma Xi has planned in 2008 to address this issue:

- White papers
- Blogs and podcasts
- Discussion points for educators and the public
- A science film competition for students
- An international forum

Our Year of Water, H<sub>2</sub>O<sub>08</sub>, will culminate in a themed Annual Meeting in November, in Washington, D.C., where we can share our collective wisdom on how the many policy issues that are the undercurrents in water might be translated into well-reasoned actions.

James W. Porter

## 2008 Sigma Xi Awards Honor Leading Scientists and Journalists

Jet Propulsion Laboratory Director **Charles Elachi**, Inforex President **Robert Boily**, General Motors researcher **Patrick Usoro** and University of Oxford mathematician **Mason Porter** have been selected to receive the top annual awards presented by Sigma Xi, The Scientific Research Society. Distinguished science journalist **Natalie Angier** has been tapped for induction as an honorary life member of the society.



**Charles Elachi** will receive Sigma Xi's highest honor, the William Procter Prize for Scientific Achievement. As JPL's director for space and Earth science programs

from 1982 to 2000, he was responsible for the development of numerous flight missions and instruments for Earth observation, planetary exploration and astrophysics. The Procter Prize has been presented annually since 1950 to an outstanding scientist or engineer who is known for effective communication of complex ideas. Recent recipients have included conservationist Stuart L. Pimm, biologist Susan L. Lindquist, computer scientist Bjarne Stroustrup and Nobel Prize-winning physicist Murray Gell-Mann.



**Robert Boily** will receive Sigma Xi's John P. McGovern Science and Society Award, presented annually since 1984. He is the founder of Inforex, a Canadian company that

has helped to advance knowledge in such areas as medical imaging, biotechnologies, environment, defense technologies, energy, electronics, aerospace and advanced materials. Recent McGovern Award recipients have included primatologist Russell A. Mittermeier, physicist Alan Lightman and oceanographer Sylvia A. Earle.



**Patrick Usoro** will receive Sigma Xi's 2008 Walston Chubb Award for Innovation. First presented in 2006, the award is designed to honor and promote

creativity among scientists and engineers.

Usoro is a Technical Fellow at the General Motors R&D Center in Warren, Michigan. He has led technical innovations in such areas as power train dynamics and control, transmission mechanism synthesis, advanced hybrid systems, mechatronics and mechatronics—a GM key strategic technology area that he initiated. He holds more than 160 U.S. patents. This is only the third time the Chubb Award has been presented. Past recipients include inventor Stan Ovshinsky and chemical engineer Mark T. Holtzapfle.



PHOTOGRAPH BY JING XU

**Mason Porter** will receive Sigma Xi's 2008 Young Investigator Award. He is a faculty member in applied mathematics at the University of Oxford and a Tutorial Fellow at Somerville College. Mason's research interests are nonlinear science and complex systems, including classical and quantum chaos, billiard systems, nonlinear waves, Bose-Einstein condensation, granular media and nonlinear optics. The Young Investigator Award alternates between the physical sciences and engineering (including mathematics), and the life and social sciences.



**Natalie Angier** will be inducted as Sigma Xi's newest honorary member. She is a Pulitzer-prize winning science columnist for the *New York Times*. Her latest

book is *The Canon: A Whirligig Tour of the Beautiful Basics of Science* (Houghton Mifflin, 2007), a guide to the fundamental scientific concepts that researchers in all the major disciplines wish everybody understood about their work.

Since 1983 some of the nation's top science journalists, as well as others who have made important contributions to science or Sigma Xi, have been elected honorary life members. •

The 2008 Sigma Xi awards will be presented at the Society's Annual Meeting and Student Research Conference, to be held November 20-23 at the Renaissance Hotel in Washington, DC.

Profiles of award winners will appear in upcoming issues of *Sigma Xi Today*.

## Society Directors Elected

During the 2007 Sigma Xi Annual Meeting in Orlando, chapter delegates elected members to the Society's Board of Directors.

The following directors of geographic regions and constituency groups will serve three years beginning July 1, 2008.

**Mid-Atlantic Region:** Andrew J. Velkey, II, Tidewater Virginia. **Northeast Region:** J. Zachary Jacobson, Ottawa. **Research and Doctoral:** Penelope J. Padgett, University of North Carolina at Chapel Hill.

The following were elected to serve as associate directors:

**Area Groups, Industries, State & Federal Laboratories:** Cristina Gouin-Paul, District of Columbia. **Comprehensive Colleges & Universities:** Jonathan B. Clark, Weber State University. **Northwest Region:** Catherine K. Skokan, Colorado School of Mines. **Southeast Region:** Clark A. Gantzer, University of Missouri at Columbia. **Southwest Region:** J. Carter Tiernan, University of Texas at Arlington. •

## Officer Nomination Deadline

April 1 is the nomination deadline for Sigma Xi president-elect and regional and constituency group directors.

The election will take place in the Assembly of Delegates during the 2008 Sigma Xi Annual Meeting and Student Research Conference at the Renaissance Washington, D.C. Hotel in November.

Candidates are being sought for directors in the following geographic regions and constituency groups: Northwest Region, Southeast Region, Baccalaureate Colleges, Canadian/International Constituency.

Associate directors will be elected for the: North Central Region, Research & Doctoral Constituency and Membership-at-Large Constituency.

Committee on Nominations seats are open for: Area Groups, Industries, State & Federal Laboratories Constituency, Mid-Atlantic Region, Northeast Region and Comprehensive Colleges & Universities Constituency.

Nominations should be sent to Margaret Drum at [mdrum@sigmaxi.org](mailto:mdrum@sigmaxi.org). •

## Online Networking Opportunities

Connect with fellow Sigma Xi members and share your interests, both personal and professional. Sigma Xi now offers members the opportunity to network online. We have set up Sigma Xi groups in both **Facebook** (for social networking) and **LinkedIn** (for professional networking). Visit [www.sigmaxi.org](http://www.sigmaxi.org) for details.

### Facebook

A social networking site, **Facebook** enables people to interact online. You will be asked to sign up (free and secure) if you are not already a Facebook user.

The aim of the Facebook group is to inform, educate and even entertain Sigma Xi members and science enthusiasts. The group is open, so non-members can participate. This provides a broader exposure for Sigma Xi, and helps connect all of us who are interested in science.

If you join, please invite friends and colleagues who are interested in science to join, too. As with most aspects of life, you get out of Facebook what you put in. The more you participate, the more you will benefit from the interactive environment.

For example, if you have photos that would interest group members, upload them to the page, and they will appear in a gallery. Also, you can participate in discussions and post comments to a "wall." Check back often to learn about events that Sigma Xi is planning to host or sponsor.

If you have a question, or news to share, you can post it to the wall, or share your favorite Web site or science book. Just start experimenting and you will be amazed at what's possible!

### LinkedIn

**LinkedIn** is a professional networking site that enables Sigma Xi members to build their online network of colleagues, co-workers and others sharing professional interests.

You have to register to join the Sigma Xi LinkedIn group (free of charge). If you are already a registered member of LinkedIn, you can click on the "Sign in and Join this Group" button. If you are not a member of LinkedIn, you can click the "Join LinkedIn Now" button to register.

You must be current on your Sigma Xi membership dues to enjoy the benefits of the LinkedIn Sigma Xi group. Please allow up to one week for review and approval of your request to join the group. •

## Monie Ferst Award Deadline

March 1 is the nomination deadline for Sigma Xi's Monie Ferst Award, which since 1977 has honored science and engineering teachers who have inspired their students to significant research achievements.

This national award is sponsored by the Georgia Institute of Technology Chapter of Sigma Xi and recognizes those who have made "notable contributions to the motivation and encouragement of research through education."

The award, which includes a medal and \$5,000, is presented during a day-long symposium focusing on the achievements of the winner's former students.

Visit Prizes & Awards in the Programs section at [www.sigmaxi.org](http://www.sigmaxi.org) for complete nomination details. The Ferst Award is named for an outstanding engineer and businessman who received his B.S. in mechanical engineering from Georgia Tech in 1911.

While a student, he became interested in scientific research conducted in an educational setting. In 1933, he and two other influential Georgians used their own funds to establish the Georgia Tech Research Institute, to make it possible for faculty members to conduct research, in addition to teaching. •

## Sigma Xi Members Produce NAS Evolution Book

**N**ine Sigma Xi members, including two past presidents of the Society, served on a National Academy of Sciences committee that has produced a new 88-page book designed to update the public on the current scientific understanding of evolution and its importance in the science classroom.

“The discovery and understanding of the processes of evolution represent one of the most powerful achievements in the history of science,” the book’s authors maintain. “Evolution successfully explains the diversity of life on Earth and has been confirmed repeatedly through observation and experiment in a broad spectrum of scientific disciplines.”

*Science, Evolution and Creationism* also asserts that acceptance of evolution does not necessarily undermine religious beliefs.

“We wanted to produce a report that would be valuable and accessible to school board members and teachers and clergy,” Sigma Xi member **Barbara A. Schaal** told the *New York*

*Times*. Vice president of the academy, she is an evolutionary biologist at Washington University in St. Louis and among the book’s authors.

The committee was chaired by **Francisco J. Ayala**, University of California, Irvine, who served as Sigma Xi president in 2004-2005. Former Society president **Peter H. Raven** (2003-2004), director of the Missouri Botanical Garden, also served on the committee. The panel was convened by the academy and the Institute of Medicine, its medical arm.

Three additional Sigma Xi members on the authoring committee included National Academy of Sciences past president **Bruce Alberts**, University of California, San Francisco; **Michael T. Clegg**, University of California, Irvine; and **Robert M. Hazen**, Carnegie Institution of Washington.

They were joined on the committee by Sigma Xi members **Gilbert S. Omenn**, University of Michigan; **Robert T. Pennock**,

Michigan State University; and **Holly Wichman**, University of Idaho.

In *Science, Evolution and Creationism*, its authors insist that “attempts to pit science and religion against each other create controversy where none needs to exist.” And it includes commentary from several eminent biologists and members of the clergy in support of that view.

The book covers such topics as why evolution is important, how science works, growing fossil and DNA evidence that confirms evolution and how science and religion offer different ways of understanding the world. It denounces intelligent design, a form of creationism, as “disproven” and maintains that creationism has no place in the science classroom.

*Science, Evolution and Creationism* can be downloaded free in a PDF format at [www.nas.edu](http://www.nas.edu), the Web site of the National Academy of Sciences. •



**GRANTS-IN-AID  
OF RESEARCH**

S I G M A X I

## Sigma Xi Grants Support Student Research

Sigma Xi Grants-in-Aid of Research have been providing valuable educational experiences to undergraduate and graduate students for more than 80 years.

March 15 and October 15 are the application deadlines annually for research grants of up to \$1,000 to support investigation in any field of science and engineering, including the social sciences.

Special funds allow grants of up to \$5,000 for astronomy and \$2,500 eye or vision related research. Grant proposals are judged by a volunteer committee of Sigma Xi members solely on the basis of their scientific merit. Application guidelines and forms are available online at [www.sigmaxi.org](http://www.sigmaxi.org).