

# Sigma Xi Today

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## Fox Named to Presidential Council



Marye Anne Fox

North Carolina State University Chancellor and 2001-2002 Sigma Xi President Marye Anne Fox has been appointed by President George W. Bush

to serve on the President's Council of Advisors on Science and Technology (PCAST).

Of the 24 scientists, engineers and educators joining her on the council, half are Sigma Xi members. PCAST advises the president and his administration on issues relating to technology, scientific research priorities, and math and science education.

The council has been charged with addressing four issues immediately: the science and technology of combating terrorism; improving energy efficiency; the federal investment in science and technology and its economic benefits; and infrastructure for the 21st century.

Fox was named chancellor of N.C. State in 1998 after serving as vice president of research at the University of Texas at Austin. A member of the National Academy of Sciences, she is a native of Canton, Ohio, and a graduate of Notre Dame College. Her doctorate in chemistry is from Dartmouth College.

She is a widely acclaimed chemist who previously served as vice chair of the National Science Board. Fox has received many international awards in recognition of her innovative research. In 1996, she received Sigma Xi's Monie A. Ferst Award in recognition of her outstanding efforts to motivate and encourage research through teaching.

She is currently co-chair of the Government-University-Industry Research Roundtable, a group sponsored by the National Academy of Sciences, National Academy of Engineering and the Institute of Medicine.

Other Sigma Xi members on PCAST include Gerald W. Clough, president, Georgia Institute of Technology; Martha Gilliland, chancellor, University of Missouri at Kansas City; Walter E. Massey, president, Morehouse College, and a former director of the National Science Foundation; Luis M. Proenza, president, University of Akron; and Charles M. Vest, president, Massachusetts Institute of Technology.

They are joined on the council by Sigma Xi members Charles J. Arntzen, professor of plant biology, Arizona State University; Bernadine P. Healy, a former director of the National Institutes of Health; Gordon E. Moore, a founder of the Intel Corporation; Norman R. Augustine, former chairman and chief executive officer, Lockheed Martin Corporation; and Ralph Gomory, president, Alfred P. Sloan Foundation.

PCAST is co-chaired by Sigma Xi member John H. Marburger III, presidential science advisor and director of the White House Office of Science and Technology, and E. Floyd Kvamme, a partner in the high-technology venture capital investment firm of Kleiner Perkins Caufield & Byers.

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## The Changing Face

OF SCIENCE & ENGINEERING



NOVEMBER 14 & 15, 2002  
GALVESTON, TEXAS

## Forum Topic Set

The 2002 Sigma Xi Forum *The Changing Face of Science and Engineering* will be held in Galveston, Texas, November 14-15 in conjunction with the Society's annual meeting.

The forum will address important issues impacting diversity in academia and in the science workforce both in North America and abroad, including the funding and practice of science and the selection and education of scientists and engineers.

These issues will be explored relative to environment, domestic and global culture, ethics, education and political climate and how they impact science and society.

The two-day conference will provide an opportunity for developing activities through which Sigma Xi chapters can help their institutions and communities explore and address these issues. For program updates and registration information, visit [www.sigmaxi.org](http://www.sigmaxi.org)

## Seven Chapters Receive Awards for Outstanding Programs

Program Awards were presented to the following chapters for organizing and/or hosting particularly outstanding programs during the last year.

The Committee on Qualifications and Membership selected winners based on chapter annual reports.

**Charleston** – The chapter sponsored an entire week of activities (nine events in five days) celebrating Charles Darwin's birthday. These included thought-provoking lectures and demonstrations that were open to the public. Overall the celebration was very popular and increased the chapter's visibility.

**Chesapeake** – The chapter organized a quarterly lunchtime program of classic science films that appealed to a large cross-section of the professional and support staff from this integrated government research facility. The films were on such topics as nerve gas in World War II, homemade civilian defenses during wartime, poisonous snakes and cosmic collisions, both minor and catastrophic.

**Geneva** – Through its involvement in the Partner in Science Education program, working in cooperation with scientists from Cornell University and Hobert and William Smith College, the chapter is helping to enrich science education in the local schools. In a related activity, chapter members also participated in the Adopt a Class program aimed at introducing fifth grade students to career options.

**Georgia Southern University** – The chapter's lively panel discussion on "Science and the Media: Relaying Research to Reporters and the Public" proved to be a popular program. At the end of the session, reporters, scientists and the audience came away with a deeper and clearer understanding of each other's goals and concerns.

**Greensboro** – About 400 middle school students participated in the chapter's 15th annual puzzle con-

test. Winners were selected for each grade based on the number of puzzles correctly completed. The winners and their family members were guests of honor at the chapter's spring awards banquet.

**University of Michigan** – The chapter's timely forum on the Internet and the Research University included two panel discussions on the impact of distance learning on the mission of the research university

and on tenure and intellectual property rights.

**Whitman College-Walla Walla College** – The chapter's listserv for area teachers continues to grow. Through it, teachers receive announcements about math and science lectures on campus, as well as interesting science news. The teachers say they like belonging to something beyond their own institutions.

## Sigma Xi Poster Available On Request



A new Sigma Xi poster has been developed to promote membership in the Society to students. The 11x18-inch poster is available free of charge by contacting Julia Reed at [jreed@sigmaxi.org](mailto:jreed@sigmaxi.org). To see the full version of the poster, which includes space for local contact information, visit the "Student Information" link at [www.sigmaxi.org](http://www.sigmaxi.org).

## Student Research Symposium Attracts 120 Participants

More than 120 undergraduate and high school students from North and South Carolina, Virginia, Washington, D.C., Missouri and Texas presented research posters at the 2001 Sigma Xi Student Research Symposium, held during the Society's annual meeting in Raleigh.

Judges visited students throughout the day and presented certificates of recognition and cash awards for the most outstanding posters.

The symposium included 22 presentations from high school students, including a number from students participating in Project SEED, a national nonprofit program designed to increase the number of minority and educationally disadvantaged youth majoring in, and pursuing careers in, science.

Students enjoyed a full day of activities that included participation in annual meeting workshops on environmental justice and communicating science.

In addition, a panel of minority and women scientists discussed their experiences in academia, research and various career paths.

Many students partnered for the day with researchers from around the country and also attended a special performance of *Oxygen*, a play by Carl Djerassi and Roald Hoffmann, with a special post-production discussion led by Hoffmann.

The student research symposium was made possible by support from GlaxoSmithKline. Also supporting elements of the program were the Research Triangle Park Chapter of Sigma Xi, the North Carolina Section of the American Chemical Society and the American Chemical Society Matching Gift Fund.

The following were the winning students and their poster topics:

**Gregory Barlow** and **Marc Edwards**, North Carolina State University, "Self-Evolving Hardware for Adaptive Control System Design."



### Symposium Showcases Student Research

Undergraduate and high school students received certificates of recognition and cash awards for outstanding posters at the 2001 Sigma Xi Student Research Symposium in Raleigh, North Carolina. Shown here are (left to right): Marc Edwards, N.C. State; Matt Whaley, UNC-Wilmington; Carl Seward, Elizabeth City State; Nicholas Featherstone, N.C. State; Sigma Xi President Marye Anne Fox; Jamica Wilkerson, Winston-Salem State; Greg Barlow, N.C. State; Anne Fabricius, N.C. School of Science & Math; Aaron Maye, N.C. State; Steve Wallace and Jane Mabe, N.C. State; Shelton Jones II, Hillside High School; Hinda Boutrid, Wake Forest University; and James Bernstein, GlaxoSmithKline.

**Matt Whaley** and **Mark Wainwright**, University of North Carolina at Wilmington, "Unexpected Labilization of Nitrosyl by Phosphines in Cyclopentadienyl Complexes of Rhenium."

**Carl Seward** and **Dr. Claudia Rankins**, Elizabeth City State University and Hampton University, "Form Factors and Distribution Amplitudes for Positively Charged Pions."

**Nicholas Featherstone**, North Carolina State University, "The Evolution of Ejecta Inhomogeneities in Supernova Remnants."

**Jamica Wilkerson**, **John Chua**, **Vincent Chow** and **Kim Tan**, Winston-Salem State University and the National University of Singapore, "Immunization with Flaviviral Vaccines and Determination of Dengue Neutralizing Antibodies."

**Anne Fabricius**, **Kevin Pinney** and **Viroopaksha Velishala**, North Carolina School of Science & Math and Baylor University, "Design and

Synthesis of a Combrestastatin A-1 Derivative as a Tubulin Inhibitor and Vascular Targeting Agent."

**Aaron Maye**, **Matthew Poore**, **Jeannette Moore** and **Jean-Marie Luginbuhl**, North Carolina State University, "Using Soybean Hulls as an Alternative Feed for Meat Goats."

**Steve Wallace**, North Carolina State University, "Pretreatment of Wood Pulp Fibers with Enzymes to Reduce Refining Energy Consumption."

**Jane Mabe**, North Carolina State University, "Race and Gender Representation: Situations in Prime-Time Television."

**Shelton Jones II**, Hillside High School, "The Effect of Lactoferricin on the Virulence of *Porphyromonas gingivalis*."

**Hinda Boutrid** and **Elizabeth McCorquodale**, Wake Forest University, "Separation of the Enantiomers of N1-nitrosornicotine by Cyclodextrin Modified Micellar Electrokinetic Chromatography."

## Chapter Workshops Explore Ethics

Supported by a grant from the National Science Foundation, a series of five pilot ethics workshops have been held at Sigma Xi chapters around the country, an effort that is expected to expand to other chapters in the years ahead.

Promoting dialogue about developing and refining institutional capacity to deal with ethical issues was among workshop goals.

This initiative is part of Sigma Xi's ongoing ethics program. The initial series included:

**Clemson University** – *Research Ethics and Graduate Education*. Who should be listed as an author on a research paper? When can a reviewer begin a line of experimentation based on a paper he or she reviewed? These are among the ethical issues discussed by faculty, postdocs and graduate students in the sciences and engineering.

**Illinois Institute of Technology** – *Tools for Transforming the Science and Engineering Classroom*. Chicago-area faculty members discussed methods of incorporating ethics into the science and engineering curricula. Stephanie Bird from the Massachusetts Institute of Technology was a featured speaker at the event. Breakout sessions addressed the role of case studies in ethics discussions in the classroom. The program included classroom tools, resources and a case study in biomedical engineering ethics.

**Michigan State University** – *Ethics in the Education of Scientists, Clinicians and Engineers*. This workshop opened with a panel discussion featuring speakers from zoology, medicine and microbial ecology. Small group discussions considered selected case histories. To close the workshop, Stephen R. Palumbi, author of *Evolution Explosion: How Humans Cause Rapid Evolutionary Change*, gave an evening public lecture.

**Saint Louis University** – *Ethics in the Education of Scientists, Clinicians and Engineers*. Faculty and students in graduate and professional schools in the sciences, health sciences and engineering participated in small group discussions of case studies presented by invited speakers.

**University of South Carolina** – *Creating an Ethical Dialogue Across Disciplines*. This workshop provided tools for scientists and teachers who are interested in addressing ethical questions in their classrooms and labs. The keynote address by Robert Pennock from Michigan State University was titled "It's Hard to Get Much Research Done with all these Ethicists Around." This hands-on workshop focused on teaching ethics, either as a stand-alone course or as a module or short topic in an existing course. Such issues as conflict of interest, intellectual property and informed consent supplied a common thread across disciplines.

## Two Members Win Nobels

Over the years nearly 200 Sigma Xi members have been honored with the Nobel Prize, and two distinguished scientists joined this illustrious list in 2001.

**William S. Knowles** of St. Louis shared the Nobel Prize in Chemistry for his use of transition metals to make chiral catalysts for an important type of reaction called hydrogenation.

He and his co-winners opened up a completely new field of research in which it is possible to synthesize molecules and material with new properties.

For example, his research quickly led to an industrial process for the production of the L-dopa drug used in the treatment of Parkinson's disease. Knowles received his Ph.D. at Columbia University and worked at Monsanto Company until his retirement in 1986. He joined Sigma Xi in 1941 at Columbia University

**George A. Akerlof** at the University of California at Berkeley shared the Nobel Prize in Economic Sciences. He is the author of a landmark study on the role of asymmetric information in the market for "lemon" used cars.

His research illustrated how markets malfunction when buyers and sellers operate under different information. The work has had far-reaching applications in such diverse areas as health insurance, financial markets and employment contracts.

Since joining the U.C. Berkeley faculty in 1966, Akerlof has been recognized for research that borrows from sociology, psychology, anthropology and other fields to determine economic influences and outcomes.

His areas of expertise include macroeconomics, poverty, family problems, crime, discrimination and monetary policy. Akerlof was inducted into Sigma Xi at Yale University in 1962.

## Science & Arts Forum Proceedings Online

Selected images and talks from the 2001 Sigma Xi Forum *Science, the Arts and the Humanities: Connections and Collisions* are available online at [www.sigmaxi.org](http://www.sigmaxi.org).

The Web proceedings contains a sampling of the eight plenary addresses and a dozen concurrent breakout sessions. More than 50 scientists, artists, writers and musicians from around the country were on the program for the two-day forum.

Participants gave the conference high marks as one of the most engaging and thought-provoking in series. Since 1991, Sigma Xi has presented forums on topics at the intersection of science and society in conjunction with its annual meeting. The online proceedings is a work in progress.