

Sigma Xi

The Scientific Research Society has been promoting innovative ideas as well as guiding many people's career paths across various scientific fields. **Jerry Baker**, Executive Director, explains in further detail how it supports researchers and inspires future generations of scientists

What are Sigma Xi's key responsibilities and objectives?

Sigma Xi's fundamental objective is the stimulation of a diverse and complex research enterprise for the purpose of improving the human condition. Although broad and ambitious, we know that even small individual contributions will augment larger advances in science and technology. Sigma Xi continues to promote companionship in research and the recognition that the global challenges we face today demand solutions that will be fostered by collaboration across disciplines and perspectives.

Our focus has been on research with integrity, mentoring the next generation of scientists and engineers, and recognition of early career achievement. Our invitations for membership recognise consistent, distinguished research performance that results in attainment of exemplary benefits to the public and the planet. There are many professional associations for specific scientific and engineering fields, but Sigma Xi remains one of the very few that promotes achievement across all those disciplines. Our members encourage and support early career research scientists and engineers to enhance the health of the research enterprise.

In what ways does the Society ensure that its members are aware of ethical best practices and that they adopt these within their research?

Sigma Xi has a long history of sponsoring forums related to ethics and publishing proceedings as well as the publication of *For the Record: Essays on Scientific Publication*, *The Responsible Researcher: Paths and Pitfalls*, and *Honor in Science*. These three booklets are available to academic institutions and chapters for use in courses and workshops. The booklets continue to find value at numerous institutions every year and are available for download from Sigma Xi's website. We have regular articles in *American Scientist*, and various other media over the years. We have also created a video entitled *Sigma Xi: Making a Difference in Science and Engineering*, which is viewable on our website. The annual meeting of Sigma Xi has provided training workshops for chapter officers and delegates related to various ethical practices.

Collaboration with other organisations to host workshops has also been valuable for our members to attend. Many of these are training-the-trainer programmes and the members are able to return to their institution and offer best practice workshops.

How important is the role of education to Sigma Xi? What are you doing to inspire future generations of scientists?

Education plays a key role in furthering the research enterprise. Without new scientists inculcated with the requisite skills, attitudes and ethics, there is no future for the research enterprise. Key programmes in this area

include Grants-in-Aid of Research (GIAR), the Sigma Xi Student Research Conference(s), support of the US Science and Engineering Festival, Intel Science and Engineering Fair, FIRST Robotics, etc., and the Sigma Xi Postdoc Survey (Doctors without Orders).

Since the GIAR programme began in 1922, Sigma Xi has helped advance the careers of more than 30,000 student researchers. The majority of the funds awarded have come from the generosity of Sigma Xi members. Competition for grant funds, especially among beginning scientists has never been more intense than it is today. We are only able to award about one in five of the grant applications that are submitted. But as Rita Colwell, Sigma Xi President 1991-92 stated: "The individual researcher continues to be the very heart and soul of science, because it provides small grants to individual researchers, Sigma Xi keeps the flames burning".

Which organisations are you partnered with? To what extent do these partnerships assist your work?

Sigma Xi has both formal agreements and informal affiliations with various other organisations. Some partnerships have existed for many years and others are recent. We have relationships with The National Academy of Sciences, The National Academy of Engineering, Society for Risk Analysis, American Meteorological Society, American Association for the Advancement of Science, The Science and Human Right Coalition, The Conrad Foundation, American Junior Academy of Science, The Shodor Foundation – a national resource for computational science education, and The Survival Skills and Ethics Programme at the University of Pittsburgh.

These partnerships are important for leveraging resources and broadening the reach of our message. The partnerships are broad in scope and help Sigma Xi address our mission with various segments of society. We have partnerships that address K-12 science, technology, engineering and mathematical (STEM) subjects as well as those that connect with the research scientist in narrow disciplines.

In 2011, Sigma Xi celebrated its 125th birthday. What do you believe to be its greatest achievement so far?

Overall, Sigma Xi has helped to prevent the research enterprise from fragmenting into disciplinary silos, which reinforces the strength of that enterprise – financially, politically and ethically.

Although the research world has changed considerably from when Sigma Xi was founded, the niche we still hold is diversity of membership and the early recognition of achievement. Sigma Xi creates aspiration for excellence in scientific research. Sigma Xi's first constitution (1887) states: "In collegiate

halls to award an honour, which to scientific recipients shall signify, 'Come up higher'". If Sigma Xi has helped scientists young and experienced to rise to their highest levels of excellence and accomplishment, that would be a great achievement indeed.

What would you like to see from Sigma Xi in the future? Do you have any specific goals that you hope to achieve over the next few years?

I have three goals that I hope to achieve in the next few years. First, the Grants-in-Aid of Research programme has been of incredible value to younger scientists applying for their first grant. It has become very competitive and I would like to increase the size of the endowment to allow for more grants and to increase the size of the grants. We have numerous testimonials and success stories from grant recipients attesting to the benefits of this programme. These grants might very well help fund the next significant break-through for one of our global research challenges. The new generation of scientists have so much to offer but face enormous challenges professionally. The second goal is to provide broader networking opportunities between the Sigma Xi members and the business/corporate sectors through our affiliate programme. Our members represent some of the best and brightest minds in their fields and a strong economy requires connections with the innovators. Therefore, it is imperative to provide members with connections to opportunity. The third goal is to take advantage of our multidisciplinary membership and networks to increase membership around the world. The public demands that scientific research be conducted with integrity and high ethical standards; Sigma Xi can contribute to this and serve our mission.

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SIGMA XI
THE SCIENTIFIC RESEARCH SOCIETY

