

*Life Member News* is a twice-yearly newsletter for Sigma Xi's honored Life Members, intended to keep you up-to-date with news about Sigma Xi and its members.

We also e-mail monthly updates and member news.

If you have not been receiving these updates and would like to receive them, please e-mail [kgreenaway@sigmaxi.org](mailto:kgreenaway@sigmaxi.org).

Also, in the interest of saving trees, if you would prefer to receive this newsletter by e-mail as a PDF, please e-mail that request.

**Goals:**

To foster interaction among science, technology and society; to encourage appreciation and support of original work in science and technology; and to honor scientific research accomplishments.

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## Career Focus: Hiroshi Tanooka (1962)

Hiroshi Tanooka (1962) writes: We put together a book last year written in Japanese. It contained 40 essays written by Japanese former students and research fellows who stayed in Rochester, New York, in 1955-1970. The title of the book is *Our Memories of Rochester*. Japan was then poor and America was rich. Without much knowledge about American life, we arrived in the U.S. with a big dream. One of our successful students, Masatoshi Koshiba (Ph.D., 1955; Nobel Prize in physics, 2003) wrote he arrived in Rochester by train, carrying a can of soy sauce with him. Another said, he found canned meat with a picture of a dog on it quite good and inexpensive. So, food was then of much concern. We were shocked by the American spirit, which was fresh and stimulating for us. We were helped by kind professors, friends and landlords. Personally, I thank the late Dr. John B. Hursh, my supervisor, for his continuous encouragement; Dr. Allan M. Campbell, now at Stanford University, for letting me work with bacteriophages in his laboratory full of scientific spirit; the late Dr.



Barry G. Johns for introducing me to American life (we lived in the same house, the Mattessons', next to the house of the late Dr. J. Newell Stannard, well known for his book *Radioactivity and Health*); and Mrs. Joyce C. Collins who was very kind to Japanese students, once even having a funeral ceremony at her home.

Although I am presently working on radiation/cancer

problems, my best scientific contribution in the past might be that I showed evidence for physical repair of DNA in heated bacterial spores (*Science*, 1978). I am hoping to provide further evidence in the future. I am thankful to the late Dr. Franklin Hutchinson for initiation of this idea during my postdoc days, and the late Dr. Paul Howard-Flanders for opening up my career at Yale University. One of my tasks at present is to develop more opportunities for scientists who wish to continue research, especially laboratory work, after mandatory retirement.

*Hiroshi Tanooka (1962) is a guest scientist with the National Institute of Radiological Sciences in Chiba, Japan.*

## Beyond Charitable Rollovers: IRAs and Their IRD Cousins

For the past two years we've been encouraging our members to take advantage of the temporary IRA charitable rollover provision contained in the Pension Protection Act of 2006. Although the IRA charitable rollover expired at the end of December 2007, the gift planning community is working hard to convince lawmakers to continue, and ideally to expand and make permanent, the tax incentives for using IRAs to make charitable gifts during your lifetime.

It is possible that extension legislation could pass in 2008 that will be retroactive to January 1, 2008. Regardless of whether or when this goal is achieved, it's a good idea to be acquainted with the advantages of using IRAs and other retirement plan assets to make charitable gifts upon death. If you would like a copy of a paper we have prepared on this subject, please send an e-mail to [kgreenaway@sigmaxi.org](mailto:kgreenaway@sigmaxi.org), or phone 919-547-5210.

## Life Member Spotlight

Long-time Life Member **J. Daniel Bode** (1949) will be remembered, and honored in perpetuity, with a \$340,000 testamentary gift to the Society. Bode passed away in December 2006, requesting that the remainder of his estate go to support the Society's Grants-in-Aid of Research program, with priority given to research requests in the field of chemistry. Bode's kindness shown to young researchers earns him a privileged place in the Society's **Leroy Record Heritage Society**. Named in honor of one of Sigma Xi's most generous supporters, the Leroy Record Heritage Society recognizes members and friends who have made a commitment to Sigma Xi through their wills and other planned gifts.

## Career Focus: Allen W. Hatheway (1967)

I am a geological engineer by profession, having long been (since 1969) a licensed professional geologist and a registered professional engineer. In 1981, with 20 years of practical experience under my belt, I joined the faculty of the School of Mines & Metallurgy at the University of Missouri as a tenured full professor, taking early retirement 19 years later.

Having written extensively on the basic nature of the learned professions, I strongly believe that the life-long learning characterizing the true professions (versus the trades), should continue into retirement. My wife, Dina, and I chose to remain in retirement at our large, book-crowded home located on 40 acres (19 ha) at the east edge of Rolla, Missouri, but are on the road as much as possible.

In 1989, a close geotechnical engineer colleague from our mutual practice in Boston nominated me to support the Iowa DOT in its defense of environmental remediation liability, stemming from its incidental placement of the west abutment of the then-new Mississippi River suspension bridge on a forgotten manufactured gas plant (1855-1952). In the course of our own diligence, Dina and I worked to characterize the plant's operational history, its gasyard geology and the discovered gas-manufacturing residuals and wastes of the former manufactured gas plant (FMGP), which was located at Burlington, Iowa.

We were both captivated by the interwoven societal fabric of technical history and environmental impairment represented by these "coal-tar" sites, and thus began a driving infatuation with history, technology, geological science, practical organic chemistry and environmental protection and restoration. I subsequently integrated FMGP sites into my two on-going campus-wide courses on remediation of uncontrolled hazardous waste sites (UHWs). I had begun the courses upon my arrival at UMR in 1981, and for several years these were the only such courses available in the entire University of Missouri system. In the decade from 1989, FMGPs were featured in both of my courses, as the "ideal" derelict industrial plant-site examples of multi-compound hazardous-substance threats; as FMGPs are typified by all the classic industrial contaminant groups except the chlorinated solvents.

My first basic summary-discoveries today remain verified and essential to my unwavering position on FMGPs as significant threats to human health and environmental quality:

- Production of manufactured gas also created numerous types of toxic residuals and wastes
- Of the toxins, the "tars" and their "light oils" (PAHs; polycyclical aromatic hydrocarbons), number into the hundreds, perhaps as many as 3000 PAH compounds per incident of gas making
- Several of the prominent and most common PAHs are known or suspected as environmental carcinogens



- The PAHs and other gas-manufacturing toxic chemicals (heavy metals and other compounds) are non-degradable in the natural environment and have persistent lives measured in "geologic time"

- Gas-manufacturing toxic residuals and wastes are soluble to some environmentally significant degree, both in surface water and ground water at, below and surrounding the FMGP sites

- Gas-manufacturing tars (PAHs of three or more benzene rings) are

considered to be DNAPLs (Dense, Non-aqueous-phase Liquids) and are capable of sinking through the groundwater surface to significant depths. They are subject to dissolution into groundwater, and then subject to lateral migration for considerable, off-site, lateral distances

- Most coal-tar sites are located in and around today's urban concentrations of people; generally close to the Central Business District as well as along creeks, streams, rivers, canals, lakes and railway lines
- Most environmentally-remediated coal-tar sites in America today are incompletely and/or inadequately characterized for their potential of undiscovered bodies ("hot spots") of toxic gas-manufacturing residuals and wastes (particularly at the omnipresent gasworks dumps) and, are, therefore "cleaned-up" to false levels of assurance to the public and to its environmental regulatory officials
- Yet, I feel that the ultimate degree of American FMGP remediation remains generally higher than is reached in other nations of the world.

There's not a day that passes, at home or on the road, that I am not moving forward in my coal-tar research. My forthcoming technical book, *Remediation of Former Manufactured Gas Plants & Other Coal-Tar Sites*, has been in compilation for 12 years and is now at the Taylor & Francis Group, in editorial processing, for release in 2009. Meanwhile, with my Web Master Dan O'Brien, an award-winning high school biology and forensic sciences teacher from Polson, Montana, we maintain and frequently update a coal-tar Web site ([www.hatheway.net](http://www.hatheway.net)). The site is designed to "level the playing field" of coal-tar site remediation. Unlike other experts in the field, I have made my findings abundantly known to my peers and to the public-at-large, and the Web site contains many downloadable files for additional use by interested citizens and by science and engineering faculty as well.

I have identified a national "universe" of tens of thousands derelict coal-tar sites, and I urge other Sigma Xi members to apply their considerable science and engineering talents to this unfortunately wide-open environmental threat.

**Allen W. Hatheway, P.E., Ph.D.**, and his wife Dina live in Rolla, Missouri.

## Life Members in the News

**Bruce M. Alberts** (1960), president emeritus of the National Academy of Sciences and former chair of the National Research Council (1993-2005), has been named by the American Association for the Advancement of Science (AAAS) to serve as editor in chief of its journal *Science* beginning March 1, 2008. Alberts, professor of biochemistry and biophysics at the University of California, San Francisco, will become the 18th editor in chief of *Science* since its inception in 1880.

**Lee W. Casperson** (1966) served more than 12 years as a faculty member in the department of electrical engineering at UCLA, 20 years in the ECE department at Portland State University, and has recently become chair of the ECE department at UNC Charlotte. His principal research interests concern lasers and optical systems, and he has more than 200 publications in this area, but his interests extend to several other fields of science.

**Jose L. Cordeiro** (1983) is currently in Tokyo, Japan, working as a visiting research fellow at the Institute of Developing Economies (<http://www.ide.go.jp>), which is part of JETRO reporting to the METI (the previous MITI). He is focusing on comparative development of East Asia and Latin America, with emphasis on telecommunications and science and technology. He recently met up with Life Member **Hiroshi Tanooka** (1962).

**Ernest Greene** (1967), Ph.D., a professor of psychology in the area of brain and cognitive sciences at the University of Southern California, recently published research that suggests there may be dedicated cells in the retina that help combine small bits of information in order to recognize objects. The study is published in the Public Library of Science journal, *PLoS One*.

**Jarita C. Holbrook** (1998) gave a lecture at Columbia University on February 20th, titled *African Cultural Astronomy*:



*What do we know.* Academics and adventurers have traveled to Africa and asked Africans about their sky knowledge for over 100 years. Looking at this long history, what can be said about African cultural astronomy? Are there general trends or is their astronomy as diverse as their ethnic groups? Included in this lecture are the discoveries that researchers are making today. This talk is in conjunction with black history month. Holbrook is keen to remind Sigma Xians that most of the first African American Ph.D.s in the sciences also became Sigma Xi members. "So, Sigma Xi has a long history of inclusiveness, which we should continue." Holbrook's book, *African Cultural Astronomy: Current Archaeoastronomy and Ethnoastronomy Research in Africa* (Springer, 2008), is available on Amazon.com.

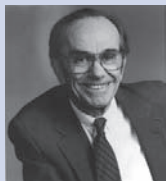
**Grayson W. Marshall, Jr.** (1968), D.D.S., Ph.D., M.P.H. '92 is a professor at the UC San Francisco School of Dentistry. He recently received the 2007 Wilmer Souder Distinguished Scientist Award from the International Association for Dental Research and was also elected vice-president of the American Association for Dental Research.



**Emilio F. Moran** (1980) was recently named Distinguished Professor of Anthropology by Indiana University. The title of distinguished professor is the highest academic recognition given at Indiana University for research excellence.

**George Veni** (1985), Ph.D., was appointed executive director of the National Cave and Karst Research Institute. His priorities are to grow the young institute into an international authority on cave and karst research, education, stewardship and information.

## Sigma Xi Grants Helped Launch Research Careers



We never fail to get a warm fuzzy feeling whenever listening to **Thomas Eisner's** (1954, left) experiences from when he and **Edward O. Wilson** (1950) received their Sigma Xi Grant-in-Aid of Research (GIAR). "Twelve thousand miles in four months at 45 mph... We had real adventures... It was fabulous, absolutely fabulous. And for me it was the trip that made the difference in understanding nature and seeing the cohesiveness of life, the interdependence of organisms; and in many ways I can say I owe it to that \$200 Sigma Xi grant."

### Did you receive a Sigma Xi GIAR?

Do you remember what that meant to you, and the experiences that that grant enabled? We're developing a Web page dedicated to your memories and experiences, to help encourage the next generation of researchers to apply for a Sigma Xi GIAR. Please e-mail your responses, and photos of that era, to Kristen at [kgreenaway@sigmaxi.org](mailto:kgreenaway@sigmaxi.org). By the way, you can hear and view that excellent Sigma Xi interview with Eisner on our Web site at: [www.sigmaxi.org/programs/giar/index.shtml](http://www.sigmaxi.org/programs/giar/index.shtml) (scroll down to the bottom of the page) as he remembers their life-changing 12,000-mile journey. They did indeed have some "real adventures!"

## Looking Ahead in 2008 for Sigma Xi

### The Year of Water

In 2008 we will focus on what many consider the most critical issue in science today— **WATER**. The scientific, policy and ethical aspects are monumental, but Sigma Xi is up to the challenge.

**SIGMA XI**  
THE SCIENTIFIC RESEARCH SOCIETY

**H<sub>2</sub>O 08**  
**Science Policy Ethics**

Visit our Web site as we explore this topic with white papers, podcasts and a blog. Plus, we will culminate the year-long focus at the 2008 Annual Meeting in D.C. in November, with posters on water issues at the annual student research conference, forums sponsored by the Diversity and International Committees on water issues, and a student science film competition on water that will be screened at the annual meeting and posted on the Web site!

We cannot achieve these goals without your support. Thank you!

### Bylaws Task Force

We have instituted a Bylaws Task Force that will recommend changes to our Society's bylaws. This will be an important accomplishment for the Society, because our bylaws have some anachronistic constraints that keep us from adapting to changing environments and from conducting Society business in the most efficient manner. The Task Force encompasses all constituencies to achieve a fair representation of the Society's membership. **Kelly O. Sullivan** (1996), Sigma Xi's constituency director-elect for area groups, industries and state and federal laboratories, is the chair.

### Jerome Baker Named Executive Director

**Jerome (Jerry) F. Baker** (1990) has been named executive director of Sigma Xi. He begins his duties April 14 at the Society's administrative offices in Research Triangle Park, North Carolina. Baker comes to Sigma Xi from the Federation of Animal Science Societies (FASS) in Savoy, Illinois, where he was chief executive officer.

Baker has more than 25 years of professional experience as an animal scientist. He is a former executive director and treasurer of the American Society of Animal Science and has been a faculty member at the University of Georgia, Texas A&M University and the University of Nebraska.

A recognized leader in animal science, Baker has edited three books, written more than 50 journal articles, presented nearly 100 abstracts and served on the editorial boards of the *Journal of Animal Science* and the *Professional Animal Scientist*. He has also served on national and international program committees focused on animal genetics and has received more than \$1.6 million in research grants over the course of his career.

For more information on Baker, look for an article in *Sigma Xi Today*, which will appear in your May-June 2008 issue of *American Scientist*.

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The deadline for  
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the next issue is  
August 22, 2008.

What's  
your  
news?

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