



Biophysical Society

9650 Rockville Pike
Bethesda, Maryland 20814-3998
Tel: 301-634-7114; Fax: 301-634-7133
E-mail: society@biophysics.org
<http://www.biophysics.org/>

Officers

President

Yale E. Goldman
President-Elect
Stephen C. Harvey
Past-President
Wilma K. Olson
Secretary
Ruth Altschuld
Treasurer
Mordecai Blaustein

Council

Stephen M. Baylor
Christopher L. Berger
Robert M. Clegg
Julio M. Fernandez
Clara Franzini-Armstrong
Sharona E. Gordon
Susan L. Hamilton
James M. Hogle
Linda J. Kenney
Elizabeth A. Komives
James C. Lee
Barry R. Lentz
David H. MacLennan
Justin E. Molloy
Eva Nogales
Carol B. Post
Eduardo Rios
Frederick Sachs
Lukas K. Tamm
Ligia G. Toro de Stefani

Biophysical Journal

Editor-in-Chief
Robert Callender

Executive Director

Ro Kampman

Publications Manager

Dianne McGavin

Newsletter Production

Andrea Frazier

Profiles

Monica Davis

Public Affairs

Ellen Weiss

The Biophysical Society Newsletter (ISSN 0006-3495) is published six times per year January/February, March/April, May/June, July/August, September/October, and November/December by the Biophysical Society, 9650 Rockville Pike, Bethesda, Maryland 20814-3998. Distributed to USA customers and other countries at no cost. Canadian GST No. 898477062. Postmaster: Send address changes to Biophysical Society, 9650 Rockville Pike, Bethesda, MD 20814-3998.

Copyright © 2004 by the Biophysical Society. Printed in the United States of America. All rights reserved.

Biophysicist in Profile



Stephen C. Harvey

Incoming Society President Stephen Harvey, Professor and Georgia Research Alliance Eminent Scholar in Structural Biology at Georgia Institute of Technology, can best be described in one word: Breadth. Breadth of education, breadth of experience, and especially breadth of interests.

Born in 1940 in Bakersfield, California, which at the time was an agricultural community and a main railroad junction, Harvey claims he got the best education money could buy, because, he says, "I was educated in California public schools at a time when these were among the best in the country." He credits the many wonderful teachers in different subject areas with piquing his interest in a diversity of subjects.....English, math, science, and history.

It also helped that he grew up in an atmosphere where intellectual curiosity was encouraged. His mother loved to read, was interested in politics and history, and encouraged family discussions about whatever subjects he and his two brothers, Dave and Tim, were studying. Harvey's father received a Masters degree in Mathematics during the Great Depression with the intention of teach-

ing the subject. Although he was unable at that time to find a teaching position, his love of teaching and interest in math rubbed off on his children. Both Harvey and his older brother ended up with careers in education. Dave, who recently retired, taught junior high and high school English for many years.

The space race and Cold War of the late 1950s and early 1960s encouraged many students at the time to go into science, and Harvey was no exception. A junior in high school when the Russians launched Sputnik, Harvey notes that it seemed as though "everyone in my graduating class went into engineering," and so did he. Two years into the engineering program at the University of California, Berkeley, however, he found the math, physics, and chemistry courses more interesting, so switched his major to physics. Harvey also found the broader humanities requirements for a physics degree appealing. Switching to physics allowed him to study English, foreign languages, and history. In fact, at the end of four years, Harvey had almost as many credits in history as in physics. Despite his love of history, Harvey says, "it was a subject I could never get an A in because I don't have a historian's kind of mentality." He opted to stay with physics, graduating with his Bachelor's degree in 1963. The one drawback to attending a really large university was that Harvey graduated without getting to know any faculty personally, and without seeing the pleasures of research. Instead of applying to graduate schools, Harvey began looking for work immediately after graduation.

As an undergraduate during the height of the Cold War, Harvey had considered joining the Navy as his older brother had done. But upon graduation Harvey chose to join the aerospace industry in exchange for a draft deferment. Describing his first position, as a

Rocket Test Engineer, he admits that he “wasn’t very good at it and wasn’t happy.” After two and half years, he left his position and the industry.

Frustrated by his experience, Harvey “wanted to get out there and see some of the world,” and in 1965 joined the Peace Corps. Sent to Cali, Colombia and affiliated with the Universidad del Valle, Harvey worked with faculty to bring modern physics into local high schools. “I wasn’t a typical Peace Corps volunteer,” he explains, “I wore a coat and tie

everyday, or at least a tie. Because of the tropical climate, I didn’t often have a coat on!” Working with three other volunteers in the Physics Department at Valle, Harvey traveled throughout the region by bus and train to about a dozen high schools in the area. His Spanish was a little shaky and he mainly gave demonstration classes and assisted in labs. During the second year, one of the faculty members went to Europe on sabbatical, giving Harvey the opportunity to teach a college freshman physics class with forty students. By this time his Spanish had become good enough for him to spend the next year running a course built around lectures and labs, using the classic physics textbook by Sears and Zemansky. He loved the experience, particularly doing demonstrations, and this is when Harvey found his calling as a teacher.

In 1967, with the Peace Corps experience under his belt, Harvey decided he was ready for graduate school. He applied to several schools and recalls receiving a “wonderful, handwritten PS in a letter of rejection from the University of Washington telling me I had no business going to grad school,

because a PhD is a research degree and not a teaching license. At the time, I still didn’t know anything about research, so I guess they were right!” Undaunted, Harvey was accepted at Dartmouth College, where he received a PhD in Physics in 1971. While at Dartmouth, which he describes as wonderful, he fell

in love with teaching and research. As a teaching assistant for an Astronomy course lab in the winter term, Harvey took the students out to the rooftop night after night to repeat Galileo’s observations on the moons of

Jupiter. “The temperature was below zero,” he recounts, “it was hard, cold work, but it was fun.”

It was at Dartmouth that Harvey met Eric Jakobsson, whose advice led Harvey to a career in biophysics. Jakobsson was two years ahead of Harvey and told him that “the second half of the twentieth century will offer our generation incredible challenges and opportunities in biology, just as the first half of the century gave earlier generations unparalleled challenges and opportunities in physics.” After reading Schrodinger’s *What is Life*, which Jakobsson loaned him, Harvey was determined to pursue a career in biophysics.

Harvey took a postdoctoral position with Herbert Cheung at the University of Alabama in Birmingham (UAB) in 1971. He credits Cheung with teaching him “to think rigorously about problems at the molecular level.” He joined the faculty at UAB two years later and rose through the ranks to Professor of Biochemistry

in 1986. He served as interim departmental chair for three years (1990-93) and enjoyed three productive sabbaticals.

He chose his first sabbatical (1981) with J. Andrew McCammon, then at the University of Houston, because of McCammon’s role in the development of molecular dynamics simulations for proteins. Harvey had become interested in questions of tRNA structure and dynamics, and he and McCammon did the first conformational energy calculations and molecular dynamics simulations on RNAs, leading to a series of papers in *Nature*, *Science*, and other journals. McCammon describes working with Harvey as “a lot of fun.” However, McCammon says that his best memories were not about science, “Steve’s interests range far beyond science, so the work soon led to discussions of art, international relations, food...my major contribution in all of this might have been in introducing Steve to Thai food.” McCammon and Harvey co-authored *Dynamics of Proteins and Nucleic Acids* (1987), a book presenting the basics of macromolecular mechanics calculations and summarizing the first decade of work in the field.

When Harvey received a recruiting call in 2002 from Roger Wartell, the Chair of the School of Biology at the Georgia Institute of Technology, he was hesitant. He had never interviewed for positions elsewhere and thought he “would be at UAB forever.” However, Georgia Tech quickly persuaded him to move. “Tech has always been an outstanding engineering school,” Harvey explains, “and

“Despite his love of history, Harvey says, “it was a subject I could never get an A in because I don’t have a historian’s kind of mentality.”

“I wasn’t a typical Peace Corps volunteer,” he explains, “I wore a coat and tie everyday, or at least a tie.”

(Continued on page 17.)

(Continued from page 3.)

they've made an incredibly strong commitment to biology, biophysics, biochemistry, bioinformatics, and biomedical engineering over the past decade." Support from the Georgia Research Alliance (GRA) played a critical role in his recruitment, and Harvey holds an endowed chair as GRA Eminent Scholar in Computational Structural Biology. Harvey says that he and Georgia Tech "are a perfect match."

As in everything else, Harvey tends toward breadth in his research. His laboratory uses computational approaches to investigate issues of structure, thermodynamics and kinetics in a variety of macromolecular systems, including proteins, nucleic acids, and lipids. Over the past 15 years he has put particular emphasis on the investigation of very large systems, including the ribosome, high density lipoproteins (HDLs), viruses, and, most recently, the structure of eukaryotic chromosomes. This has required the development of specialized modeling tools, working with long-time collaborator Robert Tan. Most of his research involves collaborations with experimental groups, and a sizable fraction of his students actually do experimental work as part of their training.

But Harvey claims his greatest impact – like that of any academic scientist – has been in the area of teaching and training. He suggests that we "imagine a parallel universe in which none of the members of a particular department had ever been born. The science in that universe wouldn't be substantially different from current science. Someone else would have made all the discoveries that we've made." But, he points out, "the lives of every graduate student and postdoc who ever passed through that department would be completely different, because they would have trained with someone else.

The most important thing we do, in the long run, is touch the lives of others." "If I weren't a research scientist," he declares, "I would be a full-time teacher, instead of a mix of the two. The science is the easy and the fun part, but the important thing that we do is teaching the graduate and undergraduate students, and the hands-on experience we give them in the lab." Chang-Shung Tung, Harvey's first graduate student and now a Staff Scientist at Los Alamos National Laboratory, attests to the value of Harvey's teaching. Originally from an Asian educational background, trained to respect established knowledge, Tung was taken aback by Harvey's method that "when approaching any scientific work, the first step is to make a critical assessment of the work." Tung credits Harvey with teaching him that identifying the possible weakness is the first step in future advancement of the work, a principle he has used throughout his career.

Harvey also stresses the importance for young scientists to join professional societies for both personal and professional reasons. Over the years, he has belonged to many different professional societies, and feels they are an essential source for young scientists to meet like-minded people and to help educate the public about the importance of science. When he went to his first Biophysical Society meeting in 1971, he did not expect to meet people there that he would see and socialize with for the next 33 years. "Scientific societies are ways of expanding your horizon and your perspective about the world," he says.

And Harvey knows about expanding horizons. Although professionally he

refers to himself as a Computational Structural Biologist, he also describes himself as a "an amateur musician in the twilight of a mediocre career." "If I were forced to retire," he says, "and couldn't do science, I would probably get serious about my music." He enjoys singing, playing the guitar, piano, accordion, and concertina. He and his wife, Marie, enjoyed celebrating their 17th anniversary in January. Marie, a fine artist and graphic designer who was a fellow faculty member at UAB, now works in her own studio. They share a love of cultural activities and entertaining. Both love to cook and eat good food. Conversely, they also enjoy the outdoors, hiking, bicycling and rollerblading. Harvey is also close to his stepson, Ian, whom Harvey describes as "a talented young artist." Ian, 23, is a junior in the Illustration Program at Virginia Commonwealth University.

They also share a love of travel. Harvey picked up that bug from his

"...science is the easy and the fun part, but the important thing that we do is teaching the graduate and undergraduate students, and the hands-on experience we give them in the lab."

parents when, at the age of 11, he flew with his family to Illinois to pick up a new car, which they drove back to California. "We were gone four or five weeks," he explains, "and for an eleven year old, that was just heaven." Harvey keeps his Spanish fluent by watching Spanish films and television programs, and also by reading novels. He spent three months in the laboratory of Jose Garcia de la Torre at the University of Murcia (Spain) in 1982, and he and his wife traveled in Argentina and Chile following the 2002

(Continued on page 18.)

(Continued from page 17.)

IUPAB Meeting in Buenos Aires. Despite his love for Latin America, Harvey's favorite city is Paris. In 2000, Harvey spent three months there on a sabbatical, in Richard Lavery's lab, with whom he has collaborated on and off for fifteen years. "Paris is a beautiful city," he says, "full of culture, with great public transportation and a place you can walk anywhere." He continues, "There is nothing like Paris...I love the French. They are just wonderful people."

Harvey looks forward to future travel, but in the meantime, he concentrates on the task at hand: preparing future biophysicists. Harvey advises prospective graduate students that, "the decision about whether or not to go to graduate school is just like the decision about whether or not to get married—you should not do it unless you are absolutely compelled, unless you feel you must do it." He continues, "look around...you have to be broad...the frontiers of science will move and you need to be prepared to move as well. You must be broadly trained to succeed."

Harvey will become President of the Biophysical Society at the Annual

Meeting in February. Among his priorities, he lists four things. "First, we face a real financial challenge," he says, "because of the changing technological and financial aspects of publishing Biophysical Journal. The Council, under Yale Goldman's leadership, has begun to tackle this, but much hard work lies ahead." Of nearly equal importance is "the need to work effectively with other professional societies to increase funding at the interface of the physical and biological sciences." Harvey praises the efforts of Ken Dill and Mary Barkley in the development of the "Bridging the Sciences Coalition" as "exactly what the Society should be doing." His third priority is to continue to expand the Society's efforts in the training of young biophysicists. "The Education and Early Careers Committees have done a great job in reaching out to students, postdocs, and young faculty members, and I want to do whatever I can to support and expand those efforts," he says. Finally, noting that about 20% of the Society's members live outside the United States, he asks "are we doing enough to support the research and educational efforts of those members, particularly those in third world countries?"

Public Affairs

Bridging the Sciences Coalition Moves Forward with Initiative

In early 2003, BPS formed a coalition to look at ways to increase federal funding for research at the interface of the biomedical sciences and the physical sciences. The coalition has grown to eight scientific societies. With the planning stage complete, the Coalition is now prepared to push for new federal money to create a Bridging the Sciences Center within NIGMS at NIH. The Center will support research between the mathematical, computational, physical, and chemical sciences, and the biological and medical sciences. The Biophysical Society is spearheading this effort.

Presently, the coalition is preparing to begin its efforts and is recruiting more societies to broaden the coalition. During 2004, the Coalition will continue to use the services of the Honorable John Porter, former U.S. Representative from Illinois, and his law firm, Hogan and Hartson LLP. With his assistance, the Coalition will work to garner support for legislation creating the Bridging the Sciences Center from the scientific community, federal agencies, the Administration, and Congress.

(Continued on page 21.)



David Beveridge, Steve Harvey, Richard Lavery, Krystyna Zakrzewska and Peter Kollman (left to right) in Paris, May 2000.

2004 Annual Meeting Itinerary Planner now Online at www.biophysics.org/