

**1994**

**J. Michael Bishop**

Mike Bishop was educated in a two-room school house in rural Pennsylvania. The son of a minister, he excelled in school. However, he knew little of science and was captivated by history, an interest he continues to cultivate.

While in high school, Bishop's curiosity about medicine and science were stimulated by the family physician. He entered Gettysburg College and majored in chemistry, with the hope of entering medical school. Bishop was engrossed by many subjects and imagined himself a historian, a philosopher, or a novelist. But never, he insists, a scientist.

Bishop entered Harvard Medical School in 1957 with little interest in practicing medicine, hoping instead to become a professor. At Harvard, he discovered that the road to an academic career in the biomedical sciences was paved with research, something that he was not well prepared to pursue. Nonetheless, Bishop developed an increasing fascination with research, thanks to classmates John Menninger and Howard Berg. When he tried to find summer work in a neurobiology laboratory, however, he was turned down for lack of experience.

Uncertain about his future in medicine, Bishop accepted an offer for a year of independent study with Edgar Taft in the Department of Pathology, chaired by Benjamin Castleman. During this time, he read a great deal on what was becoming a new passion for Bishop, molecular biology.

When Bishop returned for his third year at medical school, he took an elective course on animal virology, taught by Elmer Pfefferkorn, which further aroused Bishop's interest in research. Fortunately for Bishop, a dean approved his proposal to conduct independent research in Pfefferkorn's lab for his final year of medical school, foregoing all but one of the traditional required courses.

After two years of training in internal medicine at the Massachusetts General Hospital, Bishop became a postdoctoral fellow in the Research Associate Training Program at the NIH, where his mentor was Leon Levintow. While there, he studied the replication of poliovirus and published his first research. Levintow left the NIH for UCSF while Bishop remained at the NIH, collaborating with Gebhard Koch, who lured Bishop to Germany for a year. Bishop recalls that his year in Germany was not especially productive scientifically, but worthwhile in that he did learn a lot about Romanesque architecture and German Expressionism. In 1968, at the end of his year in Germany, Bishop moved west to join Levintow at UCSF in the Department of Microbiology, where he served on the faculty under Chairman Ernest Jawetz. Levintow characterizes Bishop as one of the many outstanding people that came from the NIH in this period. He recalls being impressed immediately by Bishop's "extraordinary ability and promise." Levintow believes that Bishop's arrival at UCSF was a major contributor to the emergence of UCSF as a leader in biomedical research.

In 1970, Harold Varmus joined Bishop as a postdoctoral fellow and their relationship evolved into an unusual collaboration spanning two decades. In 1989, Bishop and Varmus were awarded a Nobel Prize in Physiology or Medicine for their discovery that normal cells contain genes capable of becoming cancer genes. Seeking the evolutionary origins of the oncogene SRC carried by Rous Sarcoma Virus, they discovered that the gene had been derived from normal cells by a form of genetic recombination. The discovery of the cellular SRC gene sparked a spectacularly successful assault on the genetic origins of cancer that continues to this day.

While Bishop is most famous for his research, teaching is equally rewarding to him. He typically teaches three quarters a year, including cell biology, advanced virology, and medical microbiology to both graduate and medical students. As Director of the Hooper Foundation and the Program in Biological Sciences at UCSF, Bishop's efforts are dedicated to unifying graduate education there. His friend and mentor, Leon Levintow, describes Bishop as a "fantastic teacher with an absolute commitment to the profession, and is someone who views this vocation as one of his principle functions."

Bishop has contributed actively as a member of the ASCB: he served on the nominating committee that ran Mary Lou Pardue for President; since 1991, he has also been a most energetic Associate Editor for *Molecular Biology of the Cell*. His active contribution to public policy activities started when he was recruited to the Joint Steering Committee for Public Policy on which he still serves; he also is a member of ASCB's Public Policy Committee, and now serves as Scientific Advisor to the Congressional Biomedical Research Caucus. Bishop believes that bench scientists should have the most effective advocacy possible in Washington, not just because of the current funding crunch, but because research scientists, as stewards of public monies, are accountable to the public and obliged to justify continued public trust and support.

The complexion of the basic sciences at UCSF has changed significantly over the past year with the departures of Bishop's friends and colleagues Harold Varmus, Bruce Alberts, and Marc Kirschner. Bishop's hopes for now-NIH Director Varmus are that as such a distinguished scientist, he will restore the focus of the NIH on science, refine the peer review system, and improve the intramural program. As for the extramural program, Bishop remains optimistic and hopeful for bench science. He is confident that research will emerge from the current funding deceleration to a more favorable funding climate. Furthermore, Bishop encourages younger researchers to explore avenues available in science other than academia, such as industry, teaching, administration, public policy, and writing.

Another interest of Bishop's is science education. He readily admits he is not certain about how to dramatically improve science education, but he believes that the problem is not only cultural and social, but is also a failure of political leadership. Bishop feels that the public lacks the commitment required for the significant improvement needed in science education and literacy. In that regard, Bishop believes that outreach programs such as those spearheaded by Alberts, now President of the National Academy of Sciences, are critical.

After winning the Nobel Prize together, Bishop and Varmus sought new heights — professional baseball. Following their Nobel awards, the two were asked by the Commissioner of Baseball to throw out the first pitch at Game Five in the 1989 San Francisco Giants vs. Oakland Athletics World Series (the famed "Earthquake" Series). The A's won in four games. As consolation, the Giants offered the pair of aging jocks an opportunity to throw out the first pitch at a Giants-Dodgers game during the following season. Ingloriously, Bishop threw a one-hopper to the catcher. Varmus threw a perfect strike.

Bishop and his wife, the former Kathryn Ione Putman, whom he met at Gettysburg College, have two sons: Dylan, a Physics major at the University of California at Santa Cruz, and Eliot, a senior in high school who is interested in studying architecture. The senior Bishop is an occasional fly fisherman and a constant reader of almost anything he can put his hands on, with the exception of science fiction and crime novels, which he finds too tedious. He is also a passionate fan of classical music and hopes for reincarnation as a member of a world-class string quartet.