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Paul Berg

Paul Berg has made a lifelong commitment to science and to instilling his enthusiasm for research in his students. Berg, who is Cahill Professor of Cancer Research at Stanford University School of Medicine and Director of the Beckman Center for Molecular and Genetic Medicine, is renowned for his research that led to the Nobel Prize in Chemistry in 1980.

Despite Berg's accomplishments and numerous honors he tends not to dwell on himself or on his research, but on the future of science, particularly the future of young scientists. Berg was not even a member of ASCB when then-president Dick McIntosh recruited him to membership to become the Society's Public Policy Committee Chair in 1994. Berg accepted because he was attracted to the work of the Committee and the commitment of its prominent membership.

As a youngster, Berg's interest in science was inspired by two books: Sinclair Lewis' *Arrowsmith* and *Microbe Hunters* by Paul de Kruif. Only later did he learn that these works had also influenced other scientists in his generation. Berg believes he had an innate interest in science from a young age, but it took these books and a few key teachers to take hold. Growing up in Brooklyn, he was part of a special program that allowed exceptional students to complete two years of Junior High School in one year. These advanced classes attracted the best and the brightest and those who were motivated to challenge one another. "I urge students today to find environments where they can be challenged by one another," he says. One person in high school who influenced Berg more than anyone else was Miss Sophie Wolfe. She was not a science teacher, but rather ran the demonstration lab and organized a science club which stimulated the students' investigative curiosity. "She made science fun, she made us share ideas, and the better you did, the more you were praised." Over the years, Miss Wolfe's influence produced three Nobel Laureates: Arthur Kornberg, Jerome Karl, and Berg. Each has cited her as a great influence.

In urging young people to enter science, Berg says, "great scientists, like great athletes, have to have a passion, to be driven to discover and solve problems. Given that there are often long periods between meaningful experiments, successful scientists have to be resilient in confronting failure. Indeed, a successful experiment can produce a high that is better than any drug could possibly create. It's disappointing to encounter students who have all the right skills and intelligence but lack the drive. By contrast, there are students with less innate aptitude, but who possess the passion to succeed and most often do. Drive is not something you can teach. Our task is to try to get people excited and to experience the special feeling of success." Suzanne Pfeffer, an ASCB Councilor who is a professor of Biochemistry at Stanford, says Berg "is a tremendous teacher. He is incredibly community spirited and serves as a mentor for students and faculty alike."

Berg may be driven to teaching young people because of his own early opportunities and remarkable success. He earned his bachelor's degree from Penn State in 1948 and his

doctoral degree from Western Reserve University in 1952; his first noteworthy discovery occurred the same year when he went to work in Arthur Kornberg's lab at Washington University School of Medicine in St. Louis. Kornberg, who calls Berg "an inspiring leader at the frontier of molecular and cellular biology," gave Berg free rein with an idea despite the fact that Kornberg did not think it would work. To Kornberg's surprise and delight, Berg was able to establish a new mechanism for converting fatty acids into their activated forms (acyl coAs), in the course of which he debunked the prevailing theory of two Nobel Laureates. This discovery also led him to the codiscovery of aminoacyl tRNA synthetases and tRNA. Berg moved to Stanford in 1959 as part of a migration from Washington University, which included Kornberg and five other members of the Microbiology Department. While at Stanford he was awarded the Nobel Prize in Chemistry for developing methods that make it possible to analyze the structure and function of DNA and its role in the development of genetic engineering.

Berg's discoveries led him in a part-jump, part-push to issues of public policy in science. In the early seventies there was a great deal of fear and ignorance about genetic engineering, which engaged the active interest of the federal Government. Berg and a few other scientists organized a committee later known as the "Berg Committee" to study the potential dangers of genetic research. The committee brought preeminent scientists together to weigh the risks and merits of such work; their discussions resulted in a letter, widely published, calling for a moratorium on certain kinds of recombinant DNA research. This letter in turn inspired a first-of-its-kind conference in 1975 known as the Asilomar Conference which called for and eventually resulted in the limitations of certain genetic experimentation. Following the sanctioning of these recommendations, Berg spent two years on the road discussing them with scientists, policy makers, and community leaders throughout the country. Berg acknowledged that many of his colleagues questioned the sanity of his crusade. But Berg's travels left him with an appreciation of the value and importance of public policy work. "It was clear that the NIH was under pressure and these issues were so important that I could not step away from them."

Having now served as ASCB Public Policy Chair for two years, Berg noted that "being the Chair of the ASCB Public Policy Committee is a great deal easier than some, because the staff does such a good job of seeing that it runs smoothly. I am pleased to be part of the ASCB Public Policy Committee's great traditions. They are such a great bunch of people." Berg is keenly aware of the necessity to ensure adequate funding for biomedical research and is continuously pleased with the support key Congress people have given for basic biomedical research.

Despite Berg's continued tireless work in his lab and in public policy, he does take time out to have fun. He likes to play tennis with Stanford friends—his back permitting. Pfeffer, a player herself, concedes of her elder colleague that "he plays a terrific game of tennis." Berg also enjoys collecting contemporary American sculpture and paintings. He and his wife of 50 years, Millie, have one son, John, whose profession is in music and graphic design.

What is most clear from talking to Paul Berg is that he loves where he lives and what he does. He says he has lived at Stanford for over 35 years because, "it is the greatest place to live and Stanford is one of the best universities in the world." He also notes loyally that Stanford fits his personality and interest in young people because, "it is a school that promotes experimentation in education, research, and lifestyles."