

1993

Lucille Shapiro

Not many aspiring artists wind up as molecular biologists, but Lucy Shapiro always seemed to know where she wanted to go and how to get there. Shapiro graduated cum laude from Brooklyn College with a degree in Fine Arts.

A professor at Rockefeller University, Ted Shedlovsky, who tried to steer young people in the arts to careers in science, suggested that she work in a biochemistry laboratory the summer following graduation. She was hooked, and the aspiring artist decided to pursue science. Shapiro received her Ph.D. in molecular biology from Albert Einstein College of Medicine in 1966 and became assistant professor at Einstein in 1967. She remained at Einstein and was promoted to Professor and Chair of the Department of Molecular Biology in 1977 and in 1983 was named to the Lola and Saul Kramer endowed chair there. In 1986, Shapiro moved to the Columbia University College of Physicians and Surgeons where she held the Higgens Endowed Chair and served as Chair of the Microbiology Department. She moved to Stanford in 1989 to become the Joseph D. Grant Professor in the School of Medicine and Chair of the Department of Developmental Biology.

As a graduate student with Tom August, Shapiro identified and characterized the first RNA phage replicase. She then went on to establish the field of microbial differentiation as a valuable prototype in developmental biology. By establishing the cell biology, biochemistry, and molecular genetics of the simple differentiating organism, *Caulobacter*, she has made major advances in understanding two fundamental questions in developmental biology: first, how can a dividing cell produce two progeny with different developmental fates?; and second, how are subcellular structures built at specific sites in the cell and at specific times in the cell cycle?

In addition to the major thrust of her work in establishing parameters of early cellular differentiation events, Shapiro and her students have devised several techniques that have proven to be universally valuable in molecular genetics. These include the design and implementation of transcription reporter genes which allow access to any chromosomal gene for which there is an *in vivo* assay for its function and, with Ann Skalka, the design of the first *in situ* immunoassay for cloned protein products.

Shapiro's colleague at Stanford, Charles Yanofsky, who has followed her career for over 20 years, says that she is an extremely involved and serious scientist with an obvious love and enthusiasm for research and discovery.

This tireless passion has extended to Shapiro's public service to the biomedical research community, having served on study sections for both the NIH and NSF. She has served on the Advisory Board for the NSF Biological and Behavior Sciences Directorate and the NIH Board of Scientific Counselors for an Institute of the NIH. Shapiro has also served as a member of the American Heart Association National Board, where she evaluated scientific programs and contributed to national policy.

A particularly important public policy concern of Shapiro's is science education and literacy. Shapiro notes that students' lack of interest in science can be largely attributed to failing to convey the excitement of science to students in grammar school. By the time students enter high school, Shapiro believes many have lost all interest. Combined with the uneven quality of science teaching in high schools, the result is a critical loss of potentially great emerging scientists.

But Shapiro is not one to just identify the problems, she has energetically committed herself to correcting them. She works as an advisor to the Exploratorium, the interactive science museum in San Francisco, and has helped it set up a biology program. Shapiro also serves on the Board of the Scientist's Institute for Public Information (SIPI), which has been effective in bringing together the "gatekeepers" of national TV news and select groups of scientists. SIPI has developed a video library on science and has in place high school programs geared towards minority students.

In her experience, Shapiro believes that the media, Members of Congress, and the general public are not only uninformed about science, they are afraid of it. Shapiro admits that scientists are not blameless in this regard. She says that investigators must convey the nature of their work in a more accessible and less threatening manner to the lay public. Through SIPI, Shapiro has met with leading Hollywood producers and directors to encourage them to incorporate science into the mass culture in a responsible way, not as the "mad scientist" as is often portrayed. One of SIPI's goals is to meet with the media to set standards for what is reported. Many public opinion makers do not know what leading science is, and Shapiro says that SIPI offers itself as an information and network resource to the media.

Shapiro was a member of the Board of Advisory Scientists for the Massachusetts General Hospital and the Whitehead Institute at MIT, and was a biotechnology consultant for G.D. Searle & Co. and for the Burroughs Wellcome Fund. She is currently on the Advisory Board of the Howard Hughes Medical Institute and the Helen Hay Whitney Foundation. She has also been a member of the Searle Scholars Program Advisory Board, and is currently a member of the Scientific Advisory Board of Smith Kline Beecham.

Shapiro is the recipient of FASEB's 1994 Excellence in Science Award, presented at the 1993 ASCB Annual Meeting in New Orleans. Shapiro says receiving the award is a great honor and the award funds will greatly help her students. Additionally, she has twice been an American Cancer Society Established Investigator, in 1988 was elected a Fellow of the American Association for the Advancement of Science, in 1991 was elected to the Institute of Medicine of the National Academy of Sciences, in 1992 to the American Academy of Arts and Sciences, and in 1993 to the American Academy of Microbiology.

Originally trained as a biochemist, Shapiro joined the ASCB in 1989 when it became clear that the direction of her investigations were rooted in cell biology. She served on the ASCB Public Policy Committee from 1989-90 and was elected to the Council of the American Society for Biochemistry and Molecular Biology. She is also a member of the

Genetics Society of America, the American Society of Biochemistry and Molecular Biology, and the American Society for Microbiology.

As for her non-scientific pursuits and pleasures, Shapiro remains an active watercolor painter and has had three one-woman shows of her work. She enjoys time with her husband, Harley McAdams, a physicist at Lockheed Corporation, and three grown children: Paul McAdams, 27, a surgical intern at the Naval Hospital in San Diego, Peter Shapiro, 26, a marketing executive with Readers Digest, and Heather McAdams, 24, an environmental engineer with the Bechtel Corporation.