

**1994**

**Annamma Spudich**

Anna Spudich was born in India and raised in an old Christian family that traces its origins to the 7th Century. From an early age, Spudich was surrounded by female family members who were educators. Education for daughters was always a high priority for her family, and it was her parents who were interested in sending Anna abroad for higher education.

Certain of the bad influence that a secular American university would have on their daughter, her parents sent Anna to Nazareth College in Kentucky because of its strong Catholic orientation. Anna was reluctant to leave India, and remembers the trials and tribulations of adjusting to this strange, new environment. But she also remembers riding horses and enjoying Kentucky, with the full expectation that she would soon be returning to India. Spudich graduated from Nazareth in 1960 with a degree in chemistry.

Spudich entered Marquette University, which interested her parents again because of its Catholic affiliation. While at Marquette, she did a laboratory rotation in Michael Laskowsky's laboratory which stimulated her interest in biochemistry and biology, and she earned her Masters in biology in 1962. Another strong influence on her early professional development was John Saunders, now at Woods Hole, who was Chairman of the Biology department at Marquette and Director of the Embryology Course at the Marine Biology Laboratory in Woods Hole at that time. It was Saunders who insisted that Spudich take the Physiology Course one summer at Woods Hole, where she found herself in the midst of a very stimulating and challenging scientific environment. Spudich feels that the Physiology Course at Woods Hole was a pivotal experience in her scientific development.

Another turning point for her at Woods Hole was meeting her future husband, Jim Spudich. One year later they married and moved to California where he was a beginning graduate student in the Biochemistry Department at Stanford.

The next few eventful years derailed Anna Spudich from her plans to pursue a Ph.D. Events back in India, and the birth to her two daughters, Rani and Serena, focused her attention away from graduate studies. Spudich decided to devote herself to her children's developing lives and early school years. With time, she returned to the laboratory and collaborated with her husband on some of the early work on the biochemistry of nonmuscle cytoskeletal systems. During this time, she considered pursuing a degree in the history and philosophy of science, but found it too nebulous. It was not until 1988 that she began work on her Ph.D. with Professor Norman Wessells in the Department of Biological Sciences at Stanford. She then did post-doctoral work with Lubert Stryer, studying cytoskeletal responses to signal transduction systems, and then spent some time in Germany familiarizing herself with molecular genetic approaches. She now serves as a Senior Research Associate and Codirector of the Cell Science Imaging Facility at Stanford Medical School.

At various stages of her career, Spudich has focused on the role of the cytoskeleton in signal transduction, a research area that has vast implications for a number of cell biological processes. Her early research focused on activation of sea urchin eggs by sperm and the changes in the cytoskeleton that are coincident with that activation. Her research in this area is generally recognized as having laid a foundation for related work in that field. Spudich's current research project, which grew directly out of her earlier work on sea urchin fertilization, continues to be focused on the role of the cytoskeleton in cell signaling. Using state-of-the-art computer-assisted video microscopy and light and electron microscopy, Spudich is studying rat basophilic leukemia (RBL-2H3) cells undergoing serotonin and histamine secretion in response to crosslinking IgE receptors on the cell surface by multivalent antigens. These experiments are directed toward defining the role of the cytoskeleton in the complex process of signal transduction.

Spudich says that her decision to devote herself to her family in lieu of full-time work or study was appropriate for her at the time and consistent with her upbringing. Her subsequent return to science was relatively easy because of tremendous support from her husband and other scientific mentors who she had met along the way. She feels that situations like hers, where women would like to be able to spend a good deal of time with a young family, is not unique. But not all women wishing to return to an active scientific career have the advantages and support that a scientist-spouse can give. Spudich admits that the balance between home and work is a complicated and difficult situation with no easy answers. She believes there are very many intelligent and skilled women facing these decisions every day; and how these women can somehow be integrated back into science is a critically important issue that would benefit from more public debate.

Spudich is intensely interested in early science education issues and hopes to devote some of her time to developing ways to bring science to children in an exciting and challenging manner. When her children were small, Spudich was a volunteer teacher in their schools, and her children and their friends were introduced early to the wonders of scientific experimentation. These early exposures, together with her and her husband's careers in science, influenced her two daughters, both of whom are second-year medical students. Rani, 26, is at Yale, and Serena, 23, is at the University of California at San Francisco. Spudich proudly calls them "formidable women."

For recreation, Spudich has taken flight, quite literally, from the pressures of the laboratory by learning to fly. Jim Spudich has been an accomplished pilot for 19 years, and during a trip to Seattle last fall, Anna impulsively decided she wanted to fly too. She describes flying as an "exhilarating experience," not surprising for someone describing take off and landing as "far out." She compares her flight lessons to science but describes flying as "even more on the edge" and finds flying a refreshing distraction-free mental exercise. She is not certain how far she will go, figuratively speaking, with her lessons. For Spudich, never the traditionalist, actually earning her pilot's license cannot be as personally satisfying as the simple challenge of proving that she can actually fly.