

[<< back](#) 

1997

Elizabeth. H. Blackburn

Liz Blackburn, Chair of the Department of Microbiology and Immunology at the University of California, San Francisco will be the President of the ASCB for 1998. She brings to the Society a longstanding interest in science and how it relates to society, and a deep concern about the future of science.

Blackburn's interest in biology started at a very young age growing up in the small town of Launceston on the island of Tasmania off the south of Australia. Tasmania's population even today is only 500,000. "Tasmania was an idyllic place for growing up. I remember summers staying at the Eastern shore of Tasmania when we would go to a beach, then spurn it as 'too crowded' because we could see some one else on it, and go to a neighboring beach." Blackburn also learned to swim in the 55-degree sea there, although this is a skill she has been happy not to use in the cold Northern Pacific waters off San Francisco. Blackburn was the second of seven children, and with a house and garden full of pets, family life was never dull.

The daughter of two, niece of two, great-grandniece of one, and later cousin and younger sister of physicians, Blackburn recalls "I was the black sheep of the family in becoming a scientist rather than a physician. I have always been interested in biology and living things. My mother tells me I used to horrify her when as a preschooler I would pick up and croon to poisonous jellyfish and stinging ants, telling them how much I liked them. As a teenager I became interested in the underlying basis of biology, which I identified in my mind as biochemistry. I loved the names and structures of amino acids and proteins, and I even had a poster of amino acids up on the wall of my room at home." Blackburn feels lucky that she has almost always known what she wanted to do, although at one point she flirted with the idea of become a musician because she loved to play the piano. "I realized I wasn't good enough to make a living playing the piano and completely stopped playing after high school, but when our son was born we got a piano again and I now play for pleasure -- probably mine more than the family's."

When she was finishing high school, Blackburn's family moved to Melbourne, Australia. She remembers, "I was ready to be in a big city," and proceeded to enroll at the University of Melbourne, where she majored in Biochemistry. "I never had any pressure to go into medicine," she claims, accepting her black sheep role with grace. She attributes her fate to her position as a second child with the natural inclination to rebel.

At the University of Melbourne, Blackburn was in a women's college, which enriched the University's courses with tutoring based on the British system of Socratic teaching still thriving at Oxford and Cambridge. Although at the time she felt the expected annoyance with rules, she now acknowledges that "going to a women's college was very supportive," and remembers it fondly. Having to declare her major early as compared to the American college system, Blackburn focused on her true interest in biological research. Recognizing her potential, faculty encouraged her to continue on to graduate school: one professor had spent time at Rockefeller and another at Cambridge. The one who had returned from New York reported that his books had become blackened by pollution, which tipped the balance to graduate training in Britain.

Although her education to-date had been in the "British School," and she had an aunt and uncle in Cambridge, Blackburn recalls that her voyage to Europe felt "like going to another planet." While at Cambridge, Blackburn studied at the Medical Research Council (MRC) Laboratory. The MRC had very few graduate students, with many more postdoctoral fellows, which was "total heaven" for Blackburn because she was able to focus on her research while at the same time feeling treated as an equal by her colleagues. She remembers morning and afternoon teas every day where famous scientists such as Francis Crick would sit around and engage young people. This atmosphere of total immersion in science was ideal for those who wanted to spend all their time doing research. Blackburn's advisor at MRC was Fred Sanger, whom she had first met when he was visiting Australia. Blackburn describes Sanger as "unassuming," and recalls that "he would let you do your own thing, but he was very hands-on because he was always in the lab." Among the few other graduate students at the MRC at the time were Gerry Rubin and Spyros Artavanis-Tsakonas.

After finishing her degree at Cambridge, Blackburn traveled for the first time to the U.S. to do her postdoc at Yale with Joe Gall, who, remembers Blackburn, "helped me find my way in the world of science." Blackburn admired Gall in particular for his "ability to master anything that was needed to do new and exciting research," which was well-applied during this period when people were beginning to do cloning and DNA analysis. The admiration is clearly reciprocal; Gall recalls that as a postdoc Blackburn was "completely original. Once she got started, I watched in amazement as she used new techniques she had learned in Sanger's lab." Blackburn's work at Yale was on the discovery of telomere sequence in the single cell organism *Tetrahymena*, which at the time was not known to be a universal type of sequence.

After completing her postdoc, Blackburn moved to the University of California, Berkeley, as a young

faculty member; she remained at Berkeley until 1990, during which time she commuted to Berkeley from San Francisco while her husband, John Sedat, whom she had met at Cambridge, was on the faculty at UCSF. They still live in the same home in San Francisco today, but a few years after their son Ben was born in 1986, Blackburn took a position at UCSF. The couple first worked together during their courtship at Cambridge. Sedat works on three-dimensional structures of chromosomes in nuclei, thus their research interests have not overlapped significantly until this year when the couple published a paper on telomere mutants in *Science*. Ben Sedat does manifest an interest in science at home, even suggesting good ideas for experiments, though Blackburn says cautiously, "we think it would also be great if he wanted to be a poet." Echoing both his parents' childhoods, he has two parakeets, two cats, one guinea pig, and three fish.

Blackburn has tried to imitate the strengths of her mentors as a mentor herself. Sanger was "laissez faire and yet benevolent" while Gall "provided more input in terms of the science and its direction." Blackburn explains, "what I have taken from that is that input is very important. While I try to give students space to explore their ideas, you need to be there because if the ideas don't work then it is very discouraging and you need to help turn the research into something positive." She enjoys helping graduate students find their own ideas and directions. She also recognizes that, "the easy stuff has been done. The problems that are left are the difficult ones. So you have to be prepared to fail." She is acutely aware of the intensified challenge that people are having in making a career of science now; she feels that younger people today have "less of a safety net than there used to be and it is harder for them to get started." She is concerned that postdocs don't have the fun she did, because "they feel much more pressure about their futures." This is an issue she hopes to give great attention during her tenure as ASCB President.

Blackburn is also concerned about the increased pressure that is being felt at all career stages today as compared to a decade ago. She observes that the current academic system with its many time pressures makes it difficult for scientists to conduct their research. This time pressure forces some to promote research that is "safe" and most likely to succeed. Blackburn's own research was very problem-driven, but has proven to be broadly applicable; she worries that the current climate discourages risk-taking such as she took. She notes that, "there is a huge amount to be learned from all the diverse biological systems" but she sees many not being studied. Blackburn feels that advocacy for further federal funding for research is essential to ensure the diversity of discovery. "The role of groups like the Joint Steering Committee for Public Policy" she comments, "is vital to keeping a healthy budget for research."

Blackburn's current research derives from her work as a postdoc where she became intrigued by what was at the ends of the DNA molecules in eukaryotic cells. Others had worked on linear DNA in viruses, but she was interested in what was at the ends of those chromosomes and especially the DNA. Gall introduced Blackburn to a pond organism that had thousands of short chromosomes which "gives you lots of ends to study." Blackburn's work on the "ends", telomeres, and her later discovery, at Berkeley, of telomerase, have grown into new research questions with important implications for cells. She describes her work as "the generality of telomeres" which are "important because they protect the chromosomes." Now she is using genomics to study telomeres.

Blackburn team-teaches in a core graduate course at UCSF which focuses on molecular biology. It tries to teach students how to design experiments that work and will genuinely advance knowledge. "We want them to think about how to ask questions in ways that will have the greatest impact." She admits that during the course some students "hate it," but inevitably when it's over they realize, "wow, I really learned a lot." Blackburn clearly enjoys teaching and interacting with students but admits that it is hard work.

Blackburn's first involvement with the ASCB was as a postdoc when Joe Gall was President of the Society. She recalls that the first she heard of the Society was on Gall's graduate lecture syllabus where for one week instead of the regular lecture schedule "ASCB Meeting" was written instead. It impressed Blackburn that someone she respected was so dedicated to the Society. Blackburn found her first ASCB annual meetings to be surprisingly collegial even for a young scientist like herself; she was invited to give a talk there early in her career, further endearing her to the Society. Not only did Gall serve as ASCB President himself, but he went on to "raise" three ASCB presidents: Mary Lou Pardue and Susan Gerbi in addition to Blackburn. Of Blackburn's presidency Gall comments, "what Liz brings to the Society is great distinction as a scientist as well as being known as an outstanding individual."

Blackburn has served on ASCB Council and on the editorial board of *Molecular Biology of the Cell*, in which she takes special pride. She sees *MBC* flourishing and establishing itself in the competitive world of journals. She is particularly gratified to see the journal expand to electronic access: "when I observe the younger generation, I see that this is completely how they read journals these days. I think this is a good move with the times."

Although Society duties have already weighed significantly on her schedule, Blackburn notes that she has "long appreciated what the Society means with regard to aspects of science that have been neglected, such as women, minorities and education. I am very proud of the strong stances the Society has taken on these issues." Blackburn specifically sees the need for women scientists to be well-mentored. As President, she is determined to help ensure that people will continue to find it possible to enter the profession of cell biology notwithstanding all of the difficulties faced by both women and men today. "I feel our field is being threatened in that many people make it through to the postdoctoral level only to have a crisis of confidence." She stresses the importance of the scientific community, which she feels is a key element of being a scientist. She especially sees the need for the more-established, well-funded

scientists to recognize the need for a community of scientists. "We don't do research in isolation. If people are feeling competitive over funds and they don't feel free to share ideas, that really slows down science."

Blackburn is attracted to both the mysteries of biology and, in spare time or on long flights back to the West coast, fictional mysteries, particularly those by Amanda Cross, which often are set at universities. She spends most of her "free" time with Ben, who, she says with characteristic maternal pride, is "very wonderful." Blackburn stresses that people in science need to realize that while having a family changes both men and women, the extreme attention required by a young family does not last forever. Simply because someone has a family at some point in their career, she feels, should not preclude them from coming back into the field. "It doesn't make you a bad scientist if you value family. I'd like to see people being taken seriously as scientists even if some time in their life is spent being an active member of society and of their family. I am for socializing and humanizing the culture and practice of science."