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## 1999

### Rex Chisholm

Rex Chisholm grew up a little bit of everywhere because his father did photo reconnaissance for the Air Force and moved the family every other year. During his childhood, Rex lived in "France, England, California, Mississippi, Michigan, Texas and a few other places." He reflects pragmatically that a positive aspect of nomadic life was that "you could screw up one place and when you went someplace else you had a fresh start." His father began his career flying over Russia and China, but he later became an air traffic controller "to have a calmer existence. While in Fort Worth, Texas, the senior Chisholm helped develop the F-111 airplane for General Dynamics. Although his father's career was exciting, there are also darker memories: during the Cuban Missile Crisis, when he was in third grade, Rex thought "we were all going to die."

An only child, Chisholm's parents say he always wanted to be a scientist. He thought about physics and astronomy before discovering biology. At home with his chemistry set, he made foul-smelling concoctions that blew up. In sixth grade he made a computer of sorts out of tin cans that read punch cards. In high school he participated in science fairs and competitions, enjoying the travel it required. From this early experience he has always associated travel as a positive benefit of science.

But Chisholm was single-minded about his science, and admits that he "wasn't a great student in high school," in part because he spent time working on his experiments instead of studying. Nonetheless he went on to the University of Michigan and wasted no time in finding a physics laboratory and the campus observatory where he ran the telescope on the night shift. At first he wanted to be a physics major, but found the mathematics too difficult. He was also distracted from his studies by the political activity that was an integral part of campus life in the late 1960's and early 1970's. In fact, Chisholm became a serious enough activist that he dropped out of college and moved to Washington, D.C. where he lived and worked for two years at "the Source Collective," which produced resources for community organizers.

Chisholm's love of science eventually drew him back to college. He returned to Michigan and ran the university computer system on the midnight shift to earn enough money to re-enroll. Chisholm was more focused and mature in his second college period, joining a lab working on immunology and T-cell differentiation. By this time, the mid 1970's, gene cloning had been developed. Chisholm stayed at Michigan for graduate school because several prominent biologists had moved there, including David Jackson, an early collaborator of Paul Berg who became Chisholm's thesis advisor.

Chisholm's thesis involved cloning SP40 genes in *E. coli* in the hope of developing methods for targeting specific genes. The work of Janet Merts, then a student of Paul Berg, involving the cloning of tumor virus genes, sparked public fear that recombinant DNA technology would lead to a cancer epidemic. As a result, there was a moratorium on Chisholm's research. So he redirected his work to bacterial viruses and in the meantime went on the public speaking and media circuit to help assuage public fears about recombinant DNA. (Chisholm credits this experience for his public education interest which led to membership on the ASCB Public Information Committee.) Even when the moratorium was lifted, Chisholm was forced to finish his doctoral work in a P3 laboratory, experiments that can now be done on the benchtop.

Inspired by a seminar by Harvey Lodish, Chisholm went to MIT for his postdoc in 1980. His time at MIT was pivotal for Chisholm: in Lodish's lab Chisholm applied recombinant DNA techniques to differentiation and embraced the field of cell biology. Chisholm appreciates having been at MIT at the time, since this was when oncogenes were discovered. While at MIT, Chisholm also started teaching the physiology course at the Marine Biological Laboratory, with which he is associated to this day.

Bob Goldman later became the Physiology course director and eventually their acquaintance led Goldman to recruit Chisholm to Northwestern University. Scientifically, Chisholm was attracted to Northwestern to develop his interest in the cytoskeleton and cell motility using *Dictyostelium* as a model system. Personally, he was attracted there because he had met Kathleen Green, his future wife and a postdoc of Goldman, at the MBL.

Chisholm's primary faculty appointment is in the Department of Cell & Molecular Biology, where he serves as Vice Chairman. He holds a joint appointment in the Surgery Department to collaborate on molecular analysis as it relates to aneurysms, because his interest in myosin has also led to an interest in vascular biology.

Chisholm's lab has focused primarily on the role of light chain subunits of myosin II. In *Dictyostelium*, his lab has knocked out the genes for the ELC and RLC and characterized the resulting phenotypes. The lab is now using mutagenesis to understand the contribution to myosin motor activity and cell motility. Recently, the lab has started to apply some of its earlier work to mammalian systems, using mice. The lab

uses embryonic stem cells to produce gene replacements carrying light chain mutations. Interest in this work recently intensified when it was discovered that mutations in myosin light chains are one cause of cardiac hypertrophy. Chisholm believes that mutations in the light chains could lead to defects in cellular motility and other functions.

At the MBL, Chisholm has also been a key participant in the Science Writing Fellowship Program, recently becoming Co-Director. Each year about a dozen science writers, editors and broadcast journalists are selected nationally for the week-long, hands-on science course which seeks to contribute to the appreciation and understanding by the media — and through them, the public — of basic biology. Over 100 science writers have taken the course over the nine-year life of the Program, which is supported in part by the ASCB.

Robert Palazzo, Associate Director of the course says, "Rex has clearly given so much of his time to help educate the public through his leadership in the Science Writers course. For some reason, these weary, glassy-eyed students actually end up begging for more time in the lab at the end of the course. To me, this course personifies Rex, a modern citizen-scientist, striving to serve society while maintaining his passionate pursuit of excellence in biomedical research."

Chisholm's interest in the public understanding of science extends to the ASCB, where, through the Public Information Committee, Chisholm has been a major contributor to a Press Book released to the media prior to the ASCB Annual Meeting that generates press interest in members' science. Kathy Wilson of the Johns Hopkins University, who chairs the Public Information Committee, says of Chisholm, "he's a great guy, imaginative and energetic. The ASCB is heavily indebted to Rex for several high-impact activities, which he accomplishes every year without fanfare or reward. Rex is an awesome writer and editor, and provides outstanding leadership and hard work on the Committee."

Chisholm also was an early advocate for the Society to hire a science writer, which it did last year with the appointment of Stephen Hart. Chisholm also continues to write for the lay public, recently contributing to a book on the human body by National Geographic.

Chisholm's childhood fantasy of being able to travel through science has not been frustrated. He thoroughly enjoys going to meetings to talk science and see friends. "You run into people in another country, and you pick right back up where you left off."

Chisholm and Green spend much of their time in their labs, a 10-minute walk from their Chicago apartment, but they also try to arrange trips together around their science, such as when they managed to tag a week in Venice onto a European meeting last year. To relax, they cook together or eat out in their neighborhood. Happily, Chisholm's other pastimes, running and lifting weights, balances the eating habit nicely.