

1994

John Woolford

John Woolford is currently an Associate Professor of Biological Sciences at Carnegie Mellon University. Woolford grew up in Wichita Falls, Lubbock, and Corpus Christi, Texas, where friends of his parents were scientists and were role models for him. They allowed Woolford to visit their laboratory and often gave him equipment to work on. He describes his mother as a career graduate student and remembers a home that was supportive of academics.

In high school, Woolford was influenced by the enthusiasm of his high school physics and mathematics teacher, James Ferguson. Ferguson taught class without a textbook, using the Socratic method; he also had an uncanny ability to call upon students when they were not paying attention.

Woolford attended Rice University where he graduated with a degree in chemistry in 1971. His aim was to pursue graduate work in chemistry, but as a senior at Rice, he took elective courses in genetics and biochemistry, which he found fascinating.

Woolford also was doing research in a physical chemistry lab but began to think that biology was more relevant to life and the human condition. Woolford called the graduate programs which were considering him in chemistry and withdrew his applications. Instead, he entered Duke University where he earned his Ph.D. in biochemistry in 1976. Woolford's thesis advisor was R.E. Webster, a major influence on his professional development.

Woolford began his post-doctoral work at Brandeis University. He was interested in collaborating with other creative young people and Michael Rosbash's laboratory offered an exciting and rewarding research opportunity. At the end of 1979, Woolford was offered a position as Assistant Professor at Carnegie Mellon University (CMU). One of the great attractions of CMU was that Elizabeth Jones, a leading yeast geneticist and idol to Woolford, was on the faculty. (Jones currently serves on ASCB Council.)

Since moving to CMU, Woolford has focused on understanding the molecular mechanisms of two processes that occur in all eukaryotic cells: the biogenesis of ribosomes, and the removal of intervening sequences from within messenger RNA molecules. His lab's studies of ribosome biogenesis include investigations of the mechanism of expression of ribosomal protein genes, the assembly of ribosomal proteins into ribosomes, and the structure and function of ribosomes once they are assembled. Recently, their research has expanded into investigations of the nucleolus. His lab is identifying molecules that reside in the nucleolus and are necessary for the assembly of ribosomes.

Another major project in Woolford's laboratory is investigation of messenger RNA processing. Woolford's lab has taken a genetic approach to identifying and characterizing the trans-acting molecules that are components of the apparatus necessary for pre-RNA

splicing. Another important theme in his laboratory is the study of RNA-protein interactions. Woolford decided to study ribosome biosynthesis and messenger RNA processing in the baker's yeast *Saccharomyces cerevisiae* because yeast is one of the eukaryotic organisms that can be readily manipulated in physiological, biochemical, genetic, and molecular biological experiments. His lab has identified a number of molecules that participate in ribosome biogenesis and pre-mRNA splicing, and is exploiting yeast molecular genetics to determine the function of these molecules.

Woolford is as devoted to science education and teaching as he is to research, and is involved in science education programs to educate the CMU and Pittsburgh area about biological science.

Woolford introduced two new courses in the Biological Sciences curriculum, Molecular Biology of Eukaryotes and a departmental journal club. The Molecular Biology course includes an advanced section in which undergraduate and graduate students lead discussions of articles on special topics in molecular biology. The students write two research proposals in the format of postdoctoral grant applications and summaries of journal articles. The journal club was established to train students to speak more effectively about their research and facilitate communication among department members. Jon Minden now supervises the journal club and has made several innovations to stimulate faculty involvement. Woolford is currently organizing faculty to develop pilot programs for more effective use of writing in teaching science. Additionally, Woolford has helped to establish two Pittsburgh area journal clubs that meet monthly to discuss yeast biology or RNA processing.

On CMU's Graduate Admission Committee since 1981, Woolford has encouraged graduate students to invite outside speakers to seminars to allow students to meet and learn about science, careers in science, and science policy from prominent biologists. Woolford also has a keen interest in secondary school education. He has taught in the Pennsylvania Commonwealth Partnership in Biology Program for High School Science Teachers and has volunteered to participate in outreach programs sponsored by the ASCB and the ASBMB. Woolford is impressed with teachers' dedication to teaching science in a challenging environment. He also gives lectures and demonstrations at local public and private schools about biological research and careers in biology. Every year, Woolford participates in the Westinghouse Science Honors Program, in which several hundred high school students from the greater Pittsburgh area attend lectures about science on Saturday mornings. Woolford is especially gratified to receive news from many of these gifted young people years later.

Woolford is a self-described running addict. Although he has yet to challenge the city's biggest hills and its grueling marathon, Woolford competes in Pittsburgh's 10K Great Race each year. He and his wife, Carol (a senior scientist in Beth Jones' lab), enjoy the time they spend with their two children, Michelle, age 8, an aspiring artist, and Joshua, 5, who knows more about Apple computers than his father.