

Princeton University

HONORS FACULTY MEMBERS
RECEIVING EMERITUS STATUS



May 2017

The biographical sketches were written by staff and colleagues in the departments of those honored.

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MARK DAVID ROSE



Mark D. Rose received his B.S. in genetics from Cornell University in 1976. He received his Ph.D. from the Massachusetts Institute of Technology in 1982. His adviser was David Botstein, and his thesis was on “lacZ Gene Fusion: An Assay for Gene Expression in Yeast.” From 1982 to 1985, he was a postdoctoral fellow at the Whitehead Institute for Biomedical Research in Cambridge Massachusetts. His adviser was Gerald R. Fink.

Mark is an exceptional yeast geneticist and has been an outstanding faculty member in the molecular biology department since he arrived in 1986. He was awarded tenure in 1991. Mark is a stalwart in the department primarily because of his strong research program, his exceptional service work, his high standards for excellence, his outstanding teaching, and his good judgment and wisdom as a faculty member.

His research program is recognized internationally and focuses on yeast mating, an excellent venue for the study of fundamental issues in cell biology. One of the most fundamental events in eukaryotic biology is the fusion of two cells to produce a single cell. Fertilization, the fusion of two haploid gametes to create a diploid zygote, is the basis of sexual reproduction, without which none of us would be here. However, cell fusion is not limited to fertilization, but plays important roles during vertebrate development and disease. For example, becoming competent to fuse is part of the differentiation pathway of cells destined to become muscle fibers. For both yeast and vertebrate cells, differentiating cells exit the cell cycle and acquire new functions. The coordination of differentiation and cell division is of vital importance; one hallmark of cancer is the loss of differentiated functions with the renewed capacity for proliferation. Similarly, when yeast cells mate, they must carefully coordinate the transition from the mitotic pathway into the mating pathway. Indeed, many of the proteins required for mating have other essential functions in mitosis, and cells must prevent their premature co-option into the mating pathway. Because several genes required for yeast conjugation have close homologs in all eukaryotic organisms, it is likely that the rules

governing the transition from mitosis to mating will be generally applicable. Mark and his lab members explored these questions by analyzing two of the major steps in yeast mating: cell fusion and nuclear envelope fusion. In order to visualize these remarkable processes, Mark became proficient in live-cell microscopy and EM tomography, and in its early days, Mark brought much-needed rigor in imaging to the molecular biology department imaging faculty.

Mark has a passion for teaching, particularly genetics. His teaching was always rated highly by the students. They really loved the genetics problem sets. He also taught a popular seminar course for graduate students. Not only did these students learn interesting science, they also learned how to prepare effective visual aids and give coherent talks.

Mark's service to the molecular biology department and the University is exceptional. He served as director of undergraduate studies for many years, matching thesis students with advisers; coordinating with Princeton's study abroad program; meeting with freshmen, sophomores, juniors, and seniors in open houses to explain procedures and policies; meeting with prospective undergraduates and prospective majors; meeting on a monthly basis with the department undergraduate committee; assigning senior thesis and junior independent work grades; awarding senior honors; and leading Alumni Day and Class Day programs.

During his term as director, Mark established a number of effective policies and procedures that remain at the heart of the molecular biology undergraduate program. For example, well before it was fashionable, Mark realized that the molecular biology department needed a written grading rubric for our junior independent work and senior thesis efforts that could be used by all faculty. He developed a quantitative assessment form and an unbiased system to assign grades that were based on performance. These rubrics have been recognized and praised by the University as a model for all departments.

Mark understood that we not only had to have ways of assessing our students' performance, we also needed to change our course content and teaching methods: we were teaching with the same courses and methods for the past thirty years. He motivated the Department of Molecular Biology to initiate a larger effort at evaluating our own teaching.

Mark also headed the EM/confocal microscope committee and was also the liaison with the Lewis-Sigler Institute for Integrative Genomics imaging committee. Mark was the MOL representative to the QCB committee (genomics). He was on the Department Seminar Series committee. Mark served as a member of the Council for Science and Technology, rotating off in May 2007. He was on the advisory board for the McGraw Center for Teaching and Learning; he was on the committee on freshman seminars; and he served on the Princeton University Faculty Committee on Grading.

His professional activities include being on the editorial board of *Genetics* and the ASCB Education Committee. He was also on the Life Science Research Foundation Peer Review Committee. He organized and chaired the major 2012 Genetics Society of America/Yeast Genetics Meeting held in Princeton. He served on NIH study sections for many years.

Mark is a passionate researcher with an equal passion for teaching and improving undergraduate and graduate education. He knows how to teach and lead, how to address complicated problems, and how to bring ideas into practice. He is an articulate person, a true scholar, and an exceptional faculty member and colleague.