

# Princeton University

HONORS FACULTY MEMBERS  
RECEIVING EMERITUS STATUS



*May 2015*

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# LEE MERRILL SILVER



Lee Silver did his graduate work with Sarah Elgin at Harvard University in the early day of the molecular revolution that transformed biology by the introduction of recombinant DNA techniques. His thesis work focused on proteins that associate with DNA and seemed to play a potential role in regulating gene activity. It is easy to imagine that those molecular studies sparked his interest in development, especially to the extent that individual steps and processes in the developing embryo might be associated with expression of specific genes. The problem faced by all developmental biologists at the time was how to identify the relevant genes and understand their roles in development. The only possible approach seemed to be genetics. Lee's next big step was to move from relatively crude and general molecular approaches to a focused analysis of a specific genetic lesion in mouse, an organism that has provide fundamental insights into genetics and development since the early 1900s.

The T/t complex gene that Lee chose for his studies was one of the best characterized mouse genes, known for its interesting developmental phenotypes (truncations of the tail and embryonic lethality) and for its complex, somewhat confusing inheritance patterns. Lee initiated his work on the T complex with one of the great mouse geneticists at the time, Dorothea Bennett, at Sloan-Kettering Cancer Center, and continued his work on the T locus at Cold Spring Harbor Laboratory and in his own lab at Princeton, after joining the Department of Molecular Biology in 1984. The 1980s were a heady time in molecular biology, and Lee's papers from this period document his steady progress, from the mapping of the T locus to a particular region of chromosome 17, to his characterization of the phenotypes on mutant embryos, to his final identification of the gene product itself, an analysis carried out by an international team centered in Hans Lehrach's lab at the European Molecular Biology Laboratory

in Heidelberg. The resultant molecular characterization indicated the importance of the gene and supported Lee's insightful choice 10 years earlier in making it the focus of his research program. Subsequent work has shown that the T gene product (called Brachyury or T box) plays a fundamental role in development in all vertebrate embryos, establishing both a general body plan and controlling cell differentiation during organogenesis.

In the years that followed, Lee maintained a lab focused on T-box genes, investigating their effects on sperm development and their unusual inheritance patterns in mice. He also assumed an increasingly important leadership position in mouse genetics, serving on the governing boards of the Genetics Society of America and the International Mammalian Genome Society, as well as authoring and coauthoring textbooks and other resources for genetics education.

It was during this period that he took on a more public role, explaining the impact of modern molecular biology on society. By 1998, public policy and social issues had come to represent the largest fraction of his published scholarly work and, unlike many of his contemporaries in molecular biology, Lee willingly tackled complex social and ethical questions in his writings. He joined the Woodrow Wilson School of Public and International Affairs in 1999, and in that venue he has continued to offer undergraduate- and graduate-level courses in public policy and bioethics. In 2006 and 2007, Lee produced his two major books on bioethics intended for the general public: *Challenging Nature: The Clash between Biotechnology and Spirituality* and *Remaking Eden: How Genetic Engineering and Cloning Will Transform the American Family*. The transition to emeritus status will probably reduce the time he can spend on those activities somewhat, but it is hard to imagine a totally silent Lee Silver, given his active involvement and continued interest in the impact of molecular biology on social issues.