The Hughes Science Pipeline Project
presents

Distinguished Women in Science: A Lecture Series

Epigenetics and the Wiring and Re-wiring of Genomic Information

by Laura Landweber
Associate Professor of Ecology and Evolutionary Biology at Princeton University

12 March 2008
Sulzberger Parlor

Global DNA rearrangements occur in many cells but are most exaggerated in ciliated protozoa, a type of single-celled organism. During development of the somatic nucleus, these protozoa destroy 95% of their germline genome, severely fragmenting their chromosomes, and then sort and reorder hundreds of thousands of remaining pieces. Professor Landweber's research shows that RNA molecules provide a scaffold to orchestrate DNA rearrangements during development, unveiling a new role for RNA, normally thought of as a passive messenger in gene expression. As an example that inheritance takes place beyond the conventional DNA genome, her work demonstrates that RNA may epigenetically transfer information across generations, hinting at the power of RNA molecules to sculpt the information in our genes.

Laura Landweber is Associate Professor of Ecology and Evolutionary Biology at Princeton University. Her research seeks to shed light on how cells and nature "compute," read, and rewrite DNA, by processes that modify sequences at the DNA or RNA level. She was named "Distinguished Scientist of the DNA Computing Community" in 2001 at the meeting of DNA Based Computers and in 2005 was elected Fellow of the American Association for the Advancement of Science.