WOMEN & SCIENCE | THE ROCKEFELLER UNIVERSITY

SAVE THE DATE **Thursday, March 2, 2006**

Prions, Mad Cow Disease and Shape-Shifters of Memory

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First detected in British farm animals 20 years ago, "mad cow disease" triggered an international panic in the 1990s when dozens of people in England became sick with a neurodegenerative illness that resulted from the ingestion of beef from affected cattle. The human illness resembled a known syndrome, Creutzfeldt-Jakob disease (CJD), thus presenting a puzzle: classic CJD had not been associated with an infection, but the newly discovered human disorder was clearly communicable.

The answer was both fascinating and troubling. Classic CJD, bovine spongiform encephalopathy (BSE, a.k.a. mad cow disease), and variant CJD—caused by eating tainted beef—were all linked to little-understood proteins called ***prions***. When prions were identified in the early 1980s, they were a radical notion, because they contradicted the widely held assumption that an infectious agent, no matter how simple, must contain genes made of DNA or RNA. Prions contain neither, but they can wreak havoc by causing harmless proteins to undergo changes in configuration that may make them toxic to cells. Prion diseases are unusual in that they may be spontaneous, hereditary, or transmissible.

Susan Lindquist is a leader in the study of prions in yeast cells. Yeast prions exhibit a folding mechanism remarkably similar to that of their mammalian counterparts, and the method by which they transmit the prion configuration from cell to cell is also similar. However, yeast prions are not toxic and this folding mechanism is a part of their normal biology. In pioneering work, the Lindquist laboratory has provided definitive evidence that, in yeast, inherited traits can be passed on via prion proteins, without any change in DNA or RNA—findings that are revolutionizing our traditional understanding of biological inheritance.

The Lindquist group's work has additional significance because misfolded proteins have been implicated in many severe neurological disorders, including Parkinson's and Huntington's diseases. Dr. Lindquist and her colleagues have developed yeast strains that serve as living test tubes for the study of how protein folding contributes to these disorders. Recently, Dr. Lindquist has also provided unexpected evidence that prions play key roles in healthy brain functions, such as long-term memory storage.

A member of the National Academy of Sciences, Dr. Lindquist has received numerous honors, including the Novartis/Drew Award and the Dickson Prize. In 2002, ***Discover*** magazine named her one of the 50 most important women in science.

Host:	Paul Nurse, Ph.D., President, the Rockefeller University	
Time:	7:30 a.m.	Registration & Breakfast Buffet
	8:00 - 9:00 a.m.	Program
Location:	The Rockefeller University	Caspary Auditorium

For more information please call (212) 327-7434.