



CHARLES EDISON LECTURE SERIES



PETER G. WOLYNES

D.R. Bullard-Welch Foundation
Professor of Science,
Rice University

OCT 9, 2014

4:15 P.M.

127 HAYES-HEALY

Tea will be held at 3:30 p.m. at the
Hurley Globe

THE PROTEIN FOLDING PROBLEM

Protein folding can be understood as a biased search on a funneled but rugged energy landscape. The funneled nature of the protein energy landscape is a consequence of natural selection. Prof. Peter Wolynes will discuss how this rather simple picture quantitatively predicts folding mechanism from native structure and sequence. He will also discuss recent advances using energy landscape ideas to create algorithms capable of predicting protein tertiary structure from sequence, protein binding sites and the nature of structurally specific protein misfolding relevant to disease. Finally, he will compare the physical folding energy landscape with the apparent fitness landscape of evolution as inferred from large genomic data sets.

This lecture is sponsored by the Department of Applied and Computational Mathematics and Statistics.

Peter G. Wolynes' work across the spectrum of theoretical chemistry and biochemistry has been recognized by the 1986 ACS Award in Pure Chemistry, the 2000 Peter Debye Award for Physical Chemistry of the ACS, the Fresenius Award, and the Joseph Hirschfelder Prize. For his work on the energy landscape theory of protein folding he received the 2004 Biological Physics Prize from the American Physical Society (now called the Max Delbrück Prize) and the 2008 Founders Award of the Biophysical Society. He received an honorary Doctor of Science from Indiana University in 1988 and was elected to both the National Academy of Sciences and the American Academy of Arts and Sciences in 1991. He is a fellow of American Association for the Advancement of Science, the American Physical Society and the Biophysical Society. Wolynes graduated with an A.B. from Indiana University in 1971 and received a Ph.D. in Chemical Physics from Harvard University in 1976.

