



**Center for Theoretical  
Biological Physics  
SPECIAL SEMINAR**

**"Exploring Energy and Fitness  
Landscapes of Proteins:  
Three Short Stories"**

**Dr. Ronald Levy**

Rutgers University

**Monday, November 18, 2013**

3:00 - 4:00 PM

BRC, 10<sup>th</sup> Floor, Rm 1060 A/B

**Abstract:** I will tell three short stories about our recent landscape explorations. My first story addresses the question: "How long does it take for a protein in the unfolded state to equilibrate?" The answer reaffirms the funnel picture of protein folding and highlights the silliness of the kinetic hub model of folding. The second story is about our recent experience using the framework of statistical mechanics to fashion a practical computational tool for modeling ligand binding and for screening large ligand libraries. My third short story is about correlated mutations and protein evolution under drug pressure. Our analysis of this region of the fitness landscape using a Potts model suggests that it is minimally frustrated. Two of the three stories I will tell owe much to key concepts introduced to the biological physics community over the years by Peter Wolynes and Jose Onuchic.