INFORMAL SEMINAR

Dr. James Petersson

University of Pennsylvania
Department of Chemistry

Thioamides: Minimalist chromophores for monitoring protein folding and stability

Abstract: Our laboratory is developing new tools to understand protein folding, conformational changes, and proteolysis. We have recently shown that the thioamide – a single-atom substitution of the peptide backbone – can be used as a probe to monitor structural changes in proteins by quenching fluorophores, including the natural amino acids tryptophan and tyrosine, and several unnatural amino acids. We have developed methods for incorporating the thioamides into full-sized proteins by chemically synthesizing peptides containing the thioamides, and ligating them to proteins expressed in *E. coli* cells. Donor fluorophores can be incorporated into the cellularly-expressed fragment using unnatural amino acid mutagenesis or post-expression labeling, so that double-labeled proteins can be generated with a minimum of unnecessary peptide synthesis. Development of these methods allows us to begin study of the role of protein motion in processes such as cell signaling and amyloid diseases. We have also adapted our fluorophore/thioamide pairs to make probes of proteolysis, using the minimally-perturbing nature of the thioamide to investigate cleavage at specific sequences. We have used these tools *in vitro*, and we are working to extend them to use in lysates and living cells.

Tuesday
November 5, 2013
10:00 AM

RH-102 • Pottruck Auditorium

Hosted By:
The Fujimori Lab
Danica Galonić Fujimori
danica.fujimori@ucsf.edu • 415.514.0147

Contact:
Rebecca Wheeler
rebecca.wheeler@ucsf.edu
415.514.1283