SCHOOL OF NATURAL SCIENCES

SEMINAR SERIES

The structure and dynamics of noncoding RNAs from mosquito-borne flaviviruses

RNA viruses such as Dengue, Influenza, Ebola, and Corona viruses are among the most deadly infectious agents in the world. All RNA viruses contain RNA structures in their genome to recruit a polymerase for replication and switch between using their genome as a template for replication and as an mRNA for protein synthesis. These functions are regulated by RNA structure and RNA-protein complexes (RNPs) and are highly evolutionarily conserved. As such, they represent a weak point in the virus, and may be targeted by small molecules or manipulated to generate attenuated viruses for vaccines. This motivates detailed mechanistic and biochemical studies of these viral processes. Importantly viral replication operates on two levels: a structural level where the shape and chemical properties of proteins and RNA dictate the specificity of RNA and RNP interactions and a dynamic level, where interactions are regulated to form at specific stages of infection. My research employs methods to understand RNA structure, RNA-protein interactions, and viral conformational dynamics with the aim of translating our understanding of molecular processes into treatments for RNA viral diseases.

Monday, 3/02/2020	**10:15am - 11:15am**	**S&E I, Rm. 270K**	For more information, contact: Professor Miriam Barlow at mbarlow@ucmerced.edu

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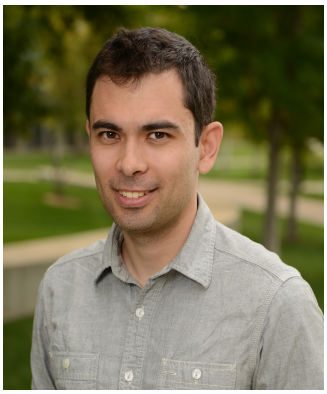

The over-arching theme of my research career has been using biochemical, biophysical, and structural biology techniques to identify the role of RNA in biology and disease. I have employed a mixture of methods—x-ray crystallography, electron microscopy, biochemistry, and single-molecule Förster resonance energy transfer—to identify the structure of folded RNAs and protein-RNA complexes and understand how their dynamics contribute to their function. As a graduate student, I worked on understanding protein-RNA assembly and dynamics in telomerase, a complex assembly of protein and RNA involved in aging and cancer. More recently as a postdoctoral fellow, I have worked on applying a structural and mechanistic understanding of molecular machines to understanding how RNA viruses replicate and establish infection.