

BCH 252 Seminar Series



Jin Yu, Assistant Professor,
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**Seminar Title: “Computational interrogation on
transcription machinery stepwise search on DNA
and mechano-fidelity control”**

Abstract: Protein machinery regulating gene transcription consists of factor proteins and enzymes responsible for locating DNA promoter sequences then initiating and elongating for template-based synthesis of RNA. Implementing physical modeling and computation from atomic to coarse-grained level, along with stochastic dynamics/kinetic approaches, we have examined transcription factor (TF) target search along DNA for eukaryotic TF domain and dimeric TFs with structural dynamics, and constructed free energy landscape around DNA binding sites with flanking sequences. We also explored RNA polymerase (RNAP) promoter recognition, investigated the RNAP mechanochemical & fidelity control during transcription elongation, and comparatively studied human mitochondrial RNAP with structurally similar viral polymerases. We would also like to explore potential translocation of methyltransferase along DNA.

Biography: Dr Jin Yu obtained BS&MS from Tsinghua University, and then PhD of Physics from University of Illinois at Urbana-Champaign. She received the UC Berkeley Chancellor’s Postdoctoral Fellowship and later worked at the Beijing Computational Science Research Center as a Principal Investigator. Dr Yu then joined the Department of Physics and Astronomy in UC Irvine in 2019 as an Assistant Professor, where she continued her Computational Biophysics research with a focus on protein machinery in genetic regulation. Dr Yu has a joint appointment with the Department of Chemistry at UC Irvine, and an affiliation to the former NSF-Simons Center of Multiscale Cell Fate Research.

Tuesday, February 11, 2025 12:00 p.m. - 12:50 p.m. PST

In-Person: Genomics Auditorium 1102A

Host: Dr. Jikui Song