UC RIVERSIDE

BCH 252 Seminar Series

Marco Bravo, Biochemistry & Molecular Biology Graduate Student, UC Riverside

Seminar Title: "Functional Insights into Archaeal NER Proteins: Investigating XPB and Bax1 Roles in DNA Repair"

Abstract: Nucleotide excision repair (NER) is a critical DNA repair pathway that corrects damage caused by UV radiation and chemical mutagens. While archaeal NER has been studied, its molecular mechanisms remain less understood compared to the well-characterized pathways in bacteria and eukarya. This study focuses on the functional characterization of XPB helicase and Bax1 nuclease, two key archaeal NER proteins, to investigate their roles in DNA unwinding and incision. Electrophoretic mobility shift assays, ATPase assays, and helicase assays revealed that truncating the unique N-terminal domain of XPB impacts DNA binding, ATPase activity, and helicase functionality. Meanwhile, structural studies of XPB are ongoing, aiming to elucidate the unwinding mechanism of this helicase and define the specific contributions of its additional domain. Concurrently, Bax1 nuclease is being analyzed for its role in DNA repair, with high-throughput screening and thermal shift assays underway to identify conditions for stabilizing Bax1 and advancing crystallization efforts. These findings provide insights into the functional roles and biochemical properties of XPB and Bax1 in archaeal NER, establishing a foundation for further exploration of this essential DNA repair system across domains of life.

Tuesday, January 21st, 2025 12:00 p.m. - 12:50 p.m. PST

In-Person: Genomics Auditorium 1102A

Host: Dr. Li Fan