

MMI 291 Seminar Series

Current Theme: Interdisciplinary Research
Spring Quarter 2024 – CRN 48450

Friday Seminar – 12:10-1 p.m.

“Causes and consequences of genome instability in B lymphocytes”

Research / Bio

The Barlow laboratory investigates the causes and consequences of genome instability, focusing on the impact of DNA damage on B lymphocytes of the adaptive immune system. B cells are highly prone to DNA damage arising from two distinct sources: base modifications made by the enzyme AID (Activation-induced cytidine deaminase) during immunoglobulin gene rearrangement, and replication stress due to their high rate of proliferation. Primary lymphocytes provide an ideal system to study causes and consequences of planned and unplanned gross chromosome rearrangements (GCRs). GCRs are when pieces of a single chromosome or pieces of 2 or more chromosomes are glued together in a new pattern. GCR formation is particularly important for B cell function, as planned chromosome rearrangements govern antibody formation during B cell development and antibody production during activation in response to infection while unplanned GCR formation promotes cancer initiation and evolution. A new area of study is the impact of increased endogenous DNA damage from loss of Senataxin on innate immune system hyperactivation and neurodegeneration.

Publications

Zhao H, Hartono SR, de Vera KMF, Yu Z, Satchi K, Zhao T, Sciammas R, Sanz L, Chédin F, **Barlow J**. “Senataxin and RNase H2 act redundantly to suppress genome instability during class switch recombination”. *Elife*. 2022 Dec 21;11:e78917. doi: 10.7554/eLife.78917. PMID: 36542058; PMCID: PMC9771370.

St Germain CP, Zhao H, Sinha V, Sanz LA, Chédin F, **Barlow JH**. “Genomic patterns of transcription-replication interactions in mouse primary B cells”. *Nucleic Acids Res*. 2022 Feb 28;50(4):2051-2073. doi: 10.1093/nar/gkac035. PMID: 35100392; PMCID: PMC8887484.

April
12



Jacqueline H Barlow, Ph.D.
Associate Professor
Department of Microbiology
and
Molecular Genetics
University of California, Davis

April 12, 2024
12:10 – 1 p.m.
GBSF Auditorium

Medical Microbiology
and Immunology
School of Medicine

Seminar Contact:
Autumn Vega
530-752-9401
avvega@ucdavis.edu

We hope to see you there!