Department of Biochemistry and Molecular Biophysics Seminar

Wednesday, February 11 at 4:00 p.m. in Ackert 120

Coffee and cookies at 3:45 p.m. in Chalmers 168

Dr. Reuben Harris, Professor, Chairman, and Howard Hughes Medical Institute Investigator

Department of Biochemistry and Structural Biology, University of Texas Health Science Center at San Antonio

Cancer Mutagenesis by Antiviral DNA Mutating Enzymes

Mutations are required for cancer development and progression. DNA cytosine deaminase enzymes called APOBECs function normally to prevent viral infections. However, these enzymes often become dysregulated in cancer and deaminate cytosines-to-uracils (C-to-U) in chromosomal DNA, resulting in mutations, DNA breakage, and larger-scale aberrations such as insertions/deletions and translocations. In fact, APOBEC mutagenesis impacts 70% of all cancer types and is by far the dominant mutagen in many. Accordingly, APOBEC mutagenesis associates with detrimental clinical outcomes, including tumor development, drug resistance, and metastasis, and has become a novel drug target. This seminar will summarize recent progress in this exciting area including the discovery of a unexpected (and daunting) mutational synergy between APOBEC mutagenesis and DNA adducting carcinogens such as those in tobacco smoke and some chemotherapies.

Selected reference: https://www.biorxiv.org/content/10.1101/2025.01.18.633716v1