

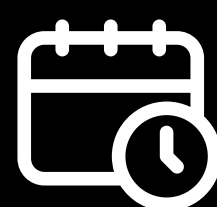
A VIRAL NONCODING RNA IS A MASTER REGULATOR OF GENE EXPRESSION THAT DEFINES HOST CELL IDENTITY AND FUNCTION

About the speaker

I have been interested in the regulation of gene expression during my entire career. My graduate training in the laboratory of Javier Cáceres at the MRC Human Genetics Unit (Scotland) focused on SR proteins, a group of RNA-binding proteins that is essential for the splicing of pre-mRNAs. As a postdoc in Joan Steitz's laboratory I investigated the functions of a set of small nuclear RNAs (snRNAs) expressed by Herpesvirus saimiri (HVS) called HSURs. During my postdoctoral studies I discovered that this oncogenic herpesvirus utilizes these snRNAs to manipulate host miRNAs and regulate specific host genes in transformed cells. While studying these viral snRNAs I discovered the process of target-directed miRNA degradation (TDMD). I continued working with the HSURs in my own lab at the University of Utah, where I discovered that snRNAs perform functions beyond pre-mRNA processing. Work on two of these viral snRNAs over the past years has resulted in the discovery of an entirely new, indirect mechanism by which miRNAs can inhibit mRNA function and in the development of a general method for identification of RNA-RNA interactions in vivo.



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9.00am (SGT , GMT+8)



Via Zoom



About the seminar

HSUR1 is a viral Sm-class noncoding RNA that is abundantly expressed by the oncogenic Herpesvirus saimiri. HSUR1 binds a host microRNA, miR-142-3p, and AU-rich element-binding proteins (ARE-BPs). The functional significance of these interactions, and how HSUR1 functions as an Sm-class RNA, remain unclear. In this talk I will present data that uncovers the main function of HSUR1 as a master regulatory noncoding RNA that interacts through base pairing with hundreds of host mRNAs in latently infected cells. HSUR1 targets mRNAs that encode proteins with roles in several gene expression processes, immune cell identity and function, and apoptosis. Consistently, HSUR1 expression changes the transcriptomic profile and identity of the infected cell and inhibits apoptosis. Mechanistically, we show that HSUR1 regulates target mRNAs by tethering miR-142-3p and ARE-BPs to 3' untranslated regions. These results describe a mechanism by which a virus determines host cell identity and function via noncoding RNAs.