

# **ASB13 Restricts EBV Reactivation by Targeting SYK to Suppress B Cell Receptor Signaling**

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Epstein-Barr virus (EBV) is a human  $\gamma$ -herpes virus that exploits cellular machinery to establish a life-long latent infection in B-lymphocytes followed by periodic reactivation. Although viral factors governing latent to lytic switch have been studied, the complete picture of cellular factors contributing to EBV reactivation remained unexplored. In this study, we focus on one cellular factor ASB13 and examine its role in EBV lytic replication. ASB13 is an ankyrin repeat and SOCS box containing protein and an E3 ubiquitin ligase that mediates the ubiquitination and subsequent proteasomal degradation of target proteins. Using the CRISPR/Cas9 genome editing approach to deplete ASB13, we demonstrated that ASB13 depletion promotes EBV replication upon lytic induction in latently infected B cells in a B-cell receptor-spleen tyrosine kinase (BCR-SYK)-signaling dependent manner. Immunofluorescence and proximity ligation assay analysis revealed that ASB13 and SYK co-localize in B cells. ASB13 depletion drastically increases the SYK-signaling as a result of enhanced SYK localization to cytoplasm that occurs during early phase of lytic induction. Intriguingly, we showed that ASB13 depletion sensitizes cells towards SYK-signaling dependent caspase activation which promotes the cleavage of restriction factors and thereby facilitates EBV reactivation. Furthermore, pharmacological inhibition of SYK or caspase suppressed EBV lytic induction in ASB13 depleted cells. Together, our data suggests that ASB13 restricts EBV lytic replication through controlling SYK-signaling dependent caspase activation. Ongoing study will determine how ASB13 governs SYK activation and how ASB13 protein is degraded to facilitate lytic replication.

**Bell Hall 143**

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**Remote: <https://utep-edu.zoom.us/j/82901391798>**

# Dr. Renfeng Li



Dr. Renfeng Li is an Associate Professor in the Department of Microbiology and Molecular Genetics at the University of Pittsburgh in Pittsburgh, Pennsylvania. He received his B.S. in Analytical Chemistry from Beijing University of Chemical Technology and his Ph.D. in Biology from Tsinghua University in 2008 under the mentorship of Dr. Sen-Fang Sui. He pursued postdoctoral training in Virology with Dr. Diane Hayward at Johns Hopkins University, focusing on Epstein-Barr virus (EBV) biology, and received additional NIH K99-supported advanced training in quantitative proteomics in Dr. Akhilesh Pandey's laboratory. For more than eighteen years, Dr. Li has been dedicated to EBV research, integrating biochemical, proteomic, and systems-level approaches to dissect virus-host interactions and epigenetic regulation of viral latency and reactivation. After serving on the faculty at Virginia Commonwealth University from 2014 to 2022, he joined the University of Pittsburgh in 2023. His lab focuses on elucidating the molecular and epigenetic mechanisms that control EBV latency and lytic reactivation, with the overarching goal of uncovering mechanistic vulnerabilities that can be targeted to develop therapies for EBV-associated malignancies.