The Centre for Blood Research presents

CBR SEMINAR SERIES

Wednesday, October 18, 2023
1:00PM - 2:00PM PT

Life Sciences Centre
1003 (LSC3) & Zoom

"Calling the shots: micro (RNA)-management of viral infection"

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Hepatitis C virus (HCV) is a positive-sense RNA virus that has an unusual interaction with a liver-specific microRNA, called miR-122. While microRNAs typically bind to target RNAs and downregulate gene expression, miR-122 interactions with the HCV genome actually promote viral RNA accumulation. We recently showed that miR-122 plays at least three roles in the HCV life cycle: it acts as an RNA chaperone, or 'riboswitch', allowing the formation of the viral internal ribosomal entry site; it provides genome stability; and promotes viral translation. However, the relative contribution of each role in the viral life cycle remains unclear. Herein, we used point mutatios, mutant microRNAs, and HCV luciferase reporter RNAs to isolate each of the roles and evaluate their relative contribution to the overall impact of miR-122 in the HCV life cycle. Our results suggest that the riboswitch has a minimal contribution in isolation, while genome stability and translational promotion have similar contributions in the establishment phase of infection. However, in the maintenance phase, translational promotion becomes the dominant role. Additionally, we found that an alternative conformation of the 5' untranslated region, termed SLIIalt, is important for efficient virion assembly. In this talk, we'll also explore some outstanding questions including whether miR-122 has an additional role(s) in the viral life cycle and how HCV escapes canonical RNA silencing…(or does it?).

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