Abstract
Mast cells (MCs) are granulated cells, best known for contributing to allergic responses. However, there is a growing appreciation that tissue-resident MCs act as sentinels for infection. To facilitate pathogen surveillance, MCs are strategically located at the host–environment interface, as well as proximal to blood vessels within tissues. Although little is known about MC responses to viral pathogens, recently, MCs were shown to have a role in immunosurveillance for the arboviral pathogen, dengue virus, which is injected into the skin during natural-route infection. MCs degranulate nearly instantaneously in response to dengue, releasing a broad panel of pre-synthesized pro-inflammatory and vasoactive mediators from intracellular stores. MC-dependent endothelial activation during localized, cutaneous dengue infection was protective and involved MC-driven recruitment of cytotoxic cells. In contrast, systemic dengue infection induced MC-dependent vascular leakage, consistent with the vascular leakage that occurs as a complication of dengue virus infection. During secondary infection, both MC degranulation responses and down-stream vascular leakage were enhanced due to cross-linking of virus-bound IgG and FcγRIII complexes. These findings raise the possibility of repurposing MC stabilizers, which are drugs used to treat asthma and allergy, for treatment of vascular leakage during dengue infection.

About the speaker
Ashley St. John is an Assistant Professor at Duke-NUS Graduate Medical School. Her work focuses on understanding host immune responses to virulent pathogens with the aim of developing novel vaccination strategies, diagnostics, and therapeutics for infectious diseases. A major emphasis of her current studies is on understanding the role that mast cells play in promoting immune protection and pathology during viral infections.