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Image created in the  
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# **Capture and Engulfment of Extracellular Targets by Regulating Membrane Remodelling in Immune Cells**

Third Prize

My work is focused on understanding how immune cells manipulate their plasma membranes to capture and subsequently engulf large particulate targets. This cellular process is called phagocytosis and in general can be thought of as immune-cell eating. Vital for pathogen removal from the body, phagocytosis represents a primordial and evolutionary conserved defense mechanism that has been observed in all animals. Scanning electron microscopy imaging of this process offers the opportunity to assess immune protein-specific induced cellular changes to the membrane during the phagocytic process, which can be indicative of discrete signaling events important for the control of this response. Understanding how cell signaling modulates the membrane remodelling process is the focus of my studies. This image illustrates an immune cell in the process of binding and internalizing polystyrene microbeads that are used as surrogate targets in my studies. Detailed features observed in this image include membrane protrusion involved in target capture and the progressive migration of the membrane around the beads until they are almost completely engulfed. Understanding the cellular signaling events that regulate membrane movements during phagocytosis will provide important information regarding how cells dynamically control their plasma membrane during this immune response.