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***Rab11a in the transcytosis of polymeric immunoglobulin receptor (pIgR) in lacrimal gland acinar cells***

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**Lay Abstract:**

The low IgA concentration in the tears of dry eye patients may be related to their increased risk of eye infection. Free IgA in serum binds to polymeric immunoglobulin receptor (pIgR) on the surface of lacrimal gland acinar cells and is then internalized and secreted into tears. I will study how the transcytosis of pIgR is mediated by an intracellular trafficking protein, Rab11a, and whether this process is dependent on internal filaments within the cell called microtubules. The purpose of my research is to understand how transcellular transport of immune factors functions in the tear gland. This may help us understand potential disorders caused by defective transcellular transport, as well as determine the tear gland's role in ocular surface immunity.

**Scientific Abstract:**

In lacrimal gland acinar cells, polymeric immunoglobulin receptor (pIgR) on the basolateral membrane binds free dimeric IgA (dIgA) in the serum and is then transcytosed and secreted into tears. I hypothesize that there is a distinct cytoskeleton-dependent transcytosis pathway mediated by Rab11a. I propose that the transcytosis of pIgR is dependent on the cycling of Rab11a between GDP-bound and GTP-bound states as well as the integrity of the microtubule (MT) network. According to my hypothesis, disrupting either Rab11a cycling or the MT network will inhibit the transcytosis of pIgR. My research will investigate the mechanism of Rab11a-mediated protein sorting and transcytosis, in order to reveal Rab11a's physiological functions in lacrimal gland acinar cells.