*Pseudomonas aeruginosa* is a bacterium widely found in the environment, nonetheless is capable of infecting patients with a weak immune system. *P. aeruginosa* has been linked to more than 65% of cases of human infections that exhibit great resistance to antibiotics; moreover, is the predominant cause of mortality in cystic fibrosis patients. *P. aeruginosa* is armed with a sophisticated Type III Secretion System (T3SS) used to inject toxic proteins into human host cells. T3SS has been shown to have an important role in disease and pathogenicity of this bacterium. The T3SS is structured like a syringe that protrudes from the bacterial membrane towards the target cell membrane. Within this system, two secreted proteins called PopB and PopD are found to insert into the target cell membrane and form a pore that will connect with the syringe to serve as a gateway for the toxic proteins into the target cell cytoplasm. Despite recent advances on the characterization of PopB and PopD, their mechanism of assembly on the target cell membrane remains unknown. In the Heuck lab we are interested in the study and characterization of the PopB and PopD. We aim to address how these two proteins interact and most importantly what is the mechanism behind their assembly into the host cell membranes. By labeling these proteins with fluorophores and using fluorescence spectroscopy techniques we are able to gain information on the behavior of these proteins. Moreover, we are trying to establish an *in-vivo* approach to study PopB and PopD structural assembly. Using both of these approaches we are confident that we will be able to obtain data to propose a mechanism of assembly for PopB and PopD in target cell membranes.

![Figure 1. Proposed model for *P. aeruginosa* T3SS assembly.](image-url)