

Department of Molecular and Cellular Biology  
**Graduate Seminar MCB\*6500**

Friday, June 9, 2017 in SSC 2315@ 12 noon

*presented by:*



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**“Inhibition of *Pseudomonas aeruginosa* Lytic Transglycosylases by Ivyp1 and Ivyp2”**

Peptidoglycan is an essential component of the bacterial cell wall. It acts as the cellular exoskeleton, providing strength and rigidity to the cell and counter-balancing the cell's high osmotic pressure, while at the same time providing a scaffold for the anchoring of other cell-wall components such as proteins and teichoic acids. Lytic transglycosylases are important enzymes that cleave the  $\beta$ -1,4-glycosidic linkages making up the peptidoglycan backbone. These enzymes have been implicated in cell wall remodelling, assembly of secretion systems, septation and separation of dividing cells, and flagella and pili formation. However, the regulation of these enzymes is poorly understood, especially in *Pseudomonas aeruginosa*. Recently, the Ivyp proteins have been shown to inhibit the activity of one of eleven lytic transglycosylases in *Pseudomonas aeruginosa*. However, the exact function of the Ivyp proteins remains a point of contention as Ivyp1 has also been shown to inhibit the activity of lysozyme. In this project, I propose that the Ivyp proteins function primarily to inhibit the lytic transglycosylases, and that the inhibition of lysozyme is a fortuitous coincidence. Studying the Ivyp-lytic transglycosylase relationship will also give us insight into the cell's answers for lytic transglycosylase regulation.