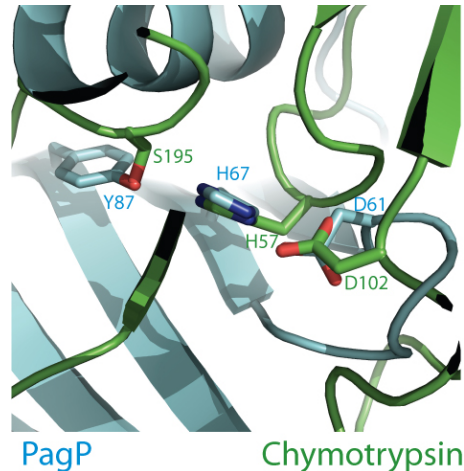




## From Exciton to Optimon: the Enzymology of PagP



PagP is an outer membrane enzyme of lipid metabolism that functions to modulate the host immune response to infections. By incorporating a palmitate chain into lipid A (endotoxin) PagP fortifies the bacterial permeability barrier, but it can also function as a sensory transducer when it is triggered by perturbations to outer membrane lipid asymmetry. Remarkably, PagP displays two active sites, one on either side of the bacterial outer membrane, and each of them is bifunctional. The cell surface active site is an acyltransferase that selects a palmitate chain from a phospholipid donor and transfers it to either lipid A or to the polar headgroup of phosphatidylglycerol (PG). The periplasmic active site is a lipase that deacylates palmitoyl-PG to generate bis(monoacylglycero)phosphate (BMP), which is then itself deacylated into an enantiomer of lyso-PG that likely functions as a novel second messenger. PagP is probably also a flippase in order to translocate palmitoyl-PG across the bilayer, bringing to five its total enzymatic activities.

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Host: Dr. Jun Liu

**Date:** Friday July 14<sup>th</sup>, 2017

**Time:** 2PM

**Place:** Donnelly Centre, 160 College St  
Red Seminar Room