

IMCB Invited Speaker



Speaker : A/Prof. Kimberly Kline

Principal Investigator, Singapore Centre on Environmental Life Sciences Engineering, NRF Fellow, School of Biological Sciences, NTU, Singapore

Date : 29 November 2013, Friday

Time : 11:00AM - 12:00PM

Venue : IMCB Seminar Room 3-46, Level 3, Proteos, Biopolis

Host : A/Prof. Philipp Kaldis

Seminar :

Localized virulence factor assembly in *Enterococcus faecalis*

The Gram-positive Enterococci are responsible for a wide variety of diseases including endocarditis, bacteremia, meningitis, wound infections, and urinary tract infections. Conserved among *Enterococcus* and other Gram-positive species is the utilization of membrane-associated sortase enzymes to catalyze the attachment of proteins to the cell wall. In *Enterococcus faecalis*, sortases are involved in the attachment of surface proteins and in the biogenesis of endocarditis and biofilm-associated pili. We have shown that, in *E. faecalis*, sortase enzymes localize with the Sec secretion apparatus at distinct foci and in a hierarchical manner at the cell membrane. Sortase focal localization is crucial for normal pilus secretion and assembly.

Focal localization of sortase and secretion proteins is dependent upon the highly cationic cytoplasmic tail of the sortase enzyme. Exogenous cationic antimicrobial peptides similarly interact with *E. faecalis* in a focal manner to target sites of virulence factor secretion, sorting, and assembly. Genetic determinants that confer resistance to antimicrobial peptide killing also impact focal virulence factor assembly and focal interaction of human beta defensin 2 with *E. faecalis*. Together these findings suggest a novel model for targeted interaction between antimicrobial peptides and Gram-positive bacteria.

About the Speaker :

Kimberly Kline joined Nanyang Technological University in Singapore in November of 2011, where she is an NRF fellow, assistant professor in the School of Biological Sciences, and PI at the Singapore Centre on Environmental Life Sciences Engineering (SCELSE). Kimberly earned her MPH and PhD from Northwestern University studying DNA repair and recombination in *Neisseria gonorrhoeae*, and did post-doctoral research in the laboratories of Scott Hultgren at Washington University in St. Louis, and Birgitte Henriques-Normark and Staffan Normark at the Karolinska Institute in Stockholm. During that time, Kline was an American Heart Association Fellow, Carl Tryggers Fellow, and NIH K99 Career Development Award recipient. The Kline lab integrates molecular, genetic, biochemical, and disease models to investigate how Gram-positive bacteria such as *Enterococcus faecalis* interact with each other and with their environment to cause disease.



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