



REGIONAL CENTRE FOR BIOTECHNOLOGY
Seminar series

The transport mechanism for *Salmonella typhimurium* Type 3 Secretion System SPI-1 is influenced by the needle channel properties

Rashmi Gupta, PhD

Max Planck Institute for Infection Biology, GERMANY

Wednesday, 4th, December, 2013

11:00 AM

Seminar Room



REGIONAL CENTRE FOR BIOTECHNOLOGY

Seminar series

Abstract

Gram-negative pathogenic bacteria like *Salmonella typhimurium* and *Shigella flexneri* employ Type III Secretion System (T3SS) to infect human cells. A key component of *S. typhimurium* T3SS is the needle subunit PrgI which polymerizes to form a 25 Å wide, right-handed channel through which proteins are transported into the host cells. We studied in detail the role of amino acids lining the inner surface of the *S. typhimurium* needle channel and found that they provide a distinct helical polarity pattern to the channel. Perturbations in this polarity pattern render the bacteria unable to invade HeLa cells. We also found that needle channel polarity pattern is important for *S. flexneri* infection process. Overall, we show that the properties of the needle channel are essential for the transport of effector proteins and subsequent infection process.
