

## **Seminar**

### **Cytosolic surveillance mechanisms against bacterial pathogens**

**Anirban Banerjee**

**IIT-B, Mumbai**

Successful elimination of infectious microbes requires an efficient surveillance system, enabling quick pathogen sensing and clearance. We demonstrated that apart from the classical phago-lysosomal pathways, for detection and elimination of pathogens, ubiquitin- proteasomal system is pivotal. This is essential to handle such pathogens that have broken the endo/phago-somal barriers and entered the cytosol. We decoded the identity of the first bacterial protein as substrate for ubiquitination and deciphered the detail mechanism of anti-bacterial ubiquitination. Typically, ubiquitinated pathogens are thought to be eliminated by the host proteasomal system. However, significantly smaller size of the proteasomes compared to bacteria casts doubt on this paradigm. We unveiled a novel mechanism for clearance of these pathogens involving a tweezer like host nanomachine which extracts the ubiquitinated proteins from bacterial surface causing membrane rupture and subsequent death. These highlight an innovative strategy adopted by host to tackle invading pathogens by harnessing the prowess of a tweezer like nanomachine, whose direct activation will provide an immunity boost against severe bacterial infection.

***Wednesday, May 10<sup>th</sup> 2023***

***11:30 AM (Tea/Coffee at 11:15 AM)***

***Auditorium, TIFR-H***