Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally Mandal, Ranga Reddy Dist., Hyderabad – 500 046

Seminar

Molecular and cellular regulation of host immunity

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Host immunity is maintained through dynamic interactions between innate immune sensing, inflammatory signalling and tissue-specific cellular networks that collectively preserve immune homeostasis while protecting against infection and tissue damage. Pattern-recognition receptors (PRRs) and interferons (IFNs) are central regulators of these processes, coordinating communication among epithelial, stromal and innate immune cells to shape antimicrobial defense, inflammation and tissue repair. At barrier tissues such as the intestine and lung, these pathways integrate microbial and endogenous danger signals, including pathogen-associated molecular patterns (PAMPs) and damage-associated molecular patterns (DAMPs), to balance protective immunity with the restoration of tissue homeostasis. Emerging evidence further demonstrates that innate recognition of microbial glycans and other conserved molecular signatures not only orchestrates local inflammatory responses but also programs durable adaptive immunity, providing new opportunities for vaccine design. Understanding the molecular and cellular mechanisms governing these interconnected immune pathways offers a framework for developing innovative therapeutic and immunisation strategies for infectious and inflammatory diseases.

Tuesday, Aug 18th 2026

16:00 Hrs (Tea / Coffee 15:45 Hrs)

Auditorium, TIFRH