Dr. Joseph Thomas Memorial Science Club
and
Department of Biotechnology
IIT Madras, Chennai

cordially invite you to the

15th Dr. Joseph Thomas Memorial Lecture

Speaker : **Prof. Amit Singh**

Associate Professor
Wellcome Trust – India Alliance Senior Fellow
Department of Microbiology and Cell Biology
Center for Infectious Disease and Research
Indian Institute of Science (IISc), Bangalore

Title : **Macrophage heterogeneity promotes drug tolerance in *Mycobacterium tuberculosis***

Date : **21st February 2023, Tuesday**

Time : **3:00 PM IST**

Venue : Seminar Hall, Dept. of Biotechnology,
Bhupat and Jyoti Mehta School of Biosciences,
IIT Madras, Chennai - 600036

21st February 2023, Tuesday

Program

3:00 pm	Welcome address	The Head Dept of Biotechnology, IIT Madras
3:05 pm	Remembering Dr. Joseph Thomas	Dr. George Thomas (Dr. Joseph Thomas Memorial Science Club)
3:10 pm	Dr. Joseph Thomas, an IIT perspective	Dr. N. Manoj Dept of Biotechnology IIT Madras
3:15 pm	Introduction of the speaker	Dr. Rama Vaidyanathan, (Dr. Joseph Thomas Memorial Science Club)
3:30 pm	**Macrophage heterogeneity promotes drug tolerance in *Mycobacterium tuberculosis***	**Prof. Amit Singh** IISc, Bangalore
4:30 pm	Vote of Thanks	Dr. T.S. Lokeswari (Dr. Joseph Thomas Memorial Science Club)

Contacts:
Biotechnology Department, IIT Madras: 044 2257 4100
Dr. T. S. Lokeswari: 9790814207
Dr. Rama Vaidyanathan: 9841002846

Abstract of the lecture:

Successful treatment of tuberculosis (TB) depends on eradicating its causative agent, *Mycobacterium tuberculosis* (Mtb), in the host. However, the emergence of phenotypically drug-resistant *Mtb* in the host environment tempers the ability of antibiotics to cure disease. Host immunity produces diverse microenvironmental niches that Mtb exploits to mobilize adaptation programs. Such differential interactions amplify pre-existing heterogeneity in the host-pathogen milieu to influence disease pathology and therapy outcome. Therefore, comprehending the intricacies of phenotypic heterogeneity can be an empirical step forward in potentiating drug action. With this goal, we discovered the interconnectedness between macrophage bioenergetics and bacterial heterogeneity underlying phenotypic drug resistance. We further examined a few clinically-approved host-directed pharmacological agents that manipulate macrophage metabolism to collapse heterogeneity in bacterial physiology, thereby potentiating the lethal activity of anti-TB drugs. Our findings suggest targeting heterogeneity in host-pathogen encounters to shorten TB therapy time.