

Prof. G. Karthikeyan,
Executive Director

Citation of the research work done by Dr. Ramandeep Singh

Dr. Ramandeep Singh has established a strong research program grounded in fundamental TB biology that has immense and direct clinical implications. Using a combination of cutting-edge approaches, Dr. Singh's group is performing novel and hypothesis-driven research to understand the function and regulation of complex metabolic pathways of *M. tuberculosis*. His research group has established that inorganic polyphosphate (polyP) homeostasis is essential for *M. tuberculosis* to establish infection *in vivo*. Using a combination of cutting-edge tools, his group has shown that polyP levels regulate drug tolerance and expression of virulence-associated genes. Another dimension of his research program is performing target-based and phenotypic-based screens to identify small molecules with activity against drug-resistant and drug-sensitive bacteria. The identified molecules possess a novel mechanism of action and inhibit the growth of intracellular bacteria. Dr Singh's laboratory has also successfully established that the fine regulation of the relative levels of toxins and antitoxins belonging to toxin-antitoxin (TA) systems is essential for *M. tuberculosis* to establish infection in the host tissues. His group has also performed biochemical and structural studies to determine the interactions between cognate and non-cognate TA systems. The extensive work being performed in his laboratory has led to the identification of novel vaccine candidates that impart protection in pre-clinical animal models, and immunization with these vaccine candidates has resulted in the induction of T_H1 and activated memory immune response.

Best Regards,

Prof. G. Karthikeyan

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