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Citation (summary) on the outstanding research work on which award is claimed in about 250 words signed by the nominator.

Novel prime-boost immunization strategies are required to control the global Tuberculosis (TB) pandemic, which claims approximately 3 lives every minute. Towards this, Dr Dwivedi has recently generated an immunogenic complex against *M.tb* which consists of promiscuous T-cell epitopes and TLR-ligands assembled in liposomes (PTLs; peptide-TLR agonist-liposomes). Intranasal delivery of PTL significantly reduced the bacterial burden in the infected mice by inducing robust *M.tb* specific polyfunctional immune-responses and long-lasting central memory responses thereby reducing the risk of TB recurrence (JCI Insight-2021). This molecule has been patented and is presently in National Phases of various South East Asian and African Countries. Interestingly, this complex (PTLs; peptide-TLR agonist-liposomes) induced significant activation of $CD4^+$ T cells and IFNγ production in the PBMCs derived from PPD^+ healthy individuals as compared to PPD^- controls. Furthermore, intranasal delivery of PTLs significantly reduced the bacterial burden in the infected mice by inducing *M.tb* specific polyfunctional ($IFN\gamma^+IL17^+TNF\alpha^+IL2^+$) immune responses and long-lasting central memory responses thereby reducing the risk of TB recurrence in DOTS treated infected animals. The transcriptome analysis of peptide-stimulated immune cells unveiled the molecular basis of enhanced protection. Furthermore, PTLs immunization significantly boosted the BCG-primed immune responses against TB. The greatly enhanced efficacy of BCG-PTLs vaccine model in controlling pulmonary TB projects PTLs as an adjunct vaccine against TB.

Place: New Delhi

Date: 28/08/2023

Signature of the Head of the Institution

Int. Centre for Genetic Engg. & Biotechnology
Director
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