



ICGEB

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Sub: Nomination Letter for Ms Isha Pahuja for Sun Pharma Science Scholars Awards-2023

It is an honor and privilege to recommend Ms Isha Pahuja for the Sun Pharma Science Scholars Awards-2023. Ms Isha is genuinely a gifted student with great potential as a research scientist. She joined my laboratory Immunobiology group at ICGEB, New Delhi, India as PhD student in 2019 and in such a short period of time she excel and completed more than seven projects and now she is winding up her work and about to submit her thesis. She is one of the outstanding researchers. I have had extensive interaction with her during these years and am fully satisfied with her performance. I found her diligent, intelligent, and articulate and having rare ability to synthesize all the concepts to create a new original research idea.

She works extensively on T cells to establish it as crucial component of host directed immunotherapy against tuberculosis. She elucidates that how different immunomodulators can potentiate the host directed therapy and BCG potential during tuberculosis. The field of immunology is always challenging and exhaustive but Ms Isha was never overwhelmed by it; instead she demonstrated considerable patience and compassion. In response to questions that I posed she always responded in a most appropriate manner with precise answers.

For this award she was keen to dissect the immune cross talk of the pulmonary tuberculosis at different stages. She identified Berberine (BBR) ($C_{20}H_{18}NO_4^+$) a bioactive isoquinoline alkaloid modulated the NOTCH3/PTEN/AKT/FOXO1 pathway as the central mechanism of elevated effector memory T cells (T_{EM}) and resident memory T cells (T_{RM}) responses in the human $CD4^+$ T cells. Moreover, BBR-induced glycolysis resulted in enhanced effector functions leading to superior Th1/Th17 responses in human and murine T cells. This regulation of T cell memory by BBR remarkably enhanced the BCG-induced anti-tubercular immunity and lowered the rate of TB recurrence due to relapse and re-infection. Her findings suggest that the tuning immunological memory as a feasible approach to augment host resistance against TB and unveil BBR as a potential adjunct immunotherapeutic and immunoprophylactic against TB (**PLoS Pathogens; 2023**).

In summary Ms Isha is a very hardworking and ambitious student who is committed to expand her knowledge. I am impressed with her growth as a scientist where she is ready to take on cutting edge research, can inspire, teach and train the younger minds.

I, therefore, strongly support her nomination for the Sun Pharma Science Scholars Awards-2023.

Please feel free to contact me for any further details on Ms Isha Pahuja.

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