

f. A signed statement by the applicant that the research work under reference has not been given any award. The applicant should also indicate the extent of the contribution of the others associated with the research and he/she should clearly acknowledge his/her achievements (Max: 500 KB)

The nomination for ‘**SUN PHARMA SCIENCE FOUNDTION RESEARCH AWARDS - 2023** in the area of **Medical Sciences – Basic Research** is made based on the following two research publications.

1. Pal R, Madhu MB and **Mukhopadhyay S*** (2022). Therapeutic application of PPE2 protein of *Mycobacterium tuberculosis* in inhibiting tissue inflammation. *EMBO Molecular Medicine*, e14891 (*Impact factor - 14*)

***Corresponding Author**

Contribution of Dr Mukhopadhyay: Dr Mukhopadhyay has unraveled a novel biological, the PPE2 protein of *M. tuberculosis* that can be used as an anti-inflammatory drug. PPE2 suppressed mast cell population and its mediators at the site of injury by downregulating transcription of SCF in neighboring fibroblasts. The synthetic peptide derived from PPE2 showed similar anti-inflammatory property. The present study, where for the first time a description of a protein and a peptide derivative that reduces mast cell population is reported, has a tremendous translational application to treat the mast cell-centric diseases.

A DBT project (BT/PR35722/BRB/10/1837/2019) is sanctioned to Dr Mukhopadhyay to carry out this study, where she is the Principal Investigator. As Principal investigator and Corresponding author, Dr. Mukhopadhyay was involved in proposing the idea, designing, and overall execution of the project. She was also involved in guiding students, analyzing data, writing and communicating manuscripts in *EMBO Molecular Medicine (2022)*. **All experiments were carried out in Dr. Mukhopadhyay’s laboratory at CDFD, Hyderabad.**

Also, one Indian (2020) and one USA patent (2020) have been filed based on these studies and results.

i) Mukhopadhyay S, Pal R and Battu MB. Therapeutic composition for Inflammation/Tissue Injury. Indian Patent has been filed on January 7, 2020 (Priority date – January 8, 2019). Patent Application No 201941000876

ii) Mukhopadhyay S, Pal R and Battu MB. Therapeutic composition for Inflammation/Tissue Injury. The US patent application has been filed on January 8, 2020 at the US Patent Office (USPTO) and the application number accorded is ‘16737012’

2. Srivastava S, Battu MB, Khan MZ, Nandicoori VK, **Mukhopadhyay S***. *Mycobacterium tuberculosis* PPE2 protein interacts with p67^{phox} and inhibits reactive oxygen species production (2019). *Journal of Immunology* 203:1218-1229 (Impact factor - 5.43) (Citation - 23)

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Dr Mukhopadhyay for the first time demonstrated here that PPE2 protein of *M. tuberculosis* inhibits free radicals like reactive oxygen species (ROS) production in activated macrophages (in addition to its ability to inhibit mast cells [*EMBO Molecular Medicine* [2022]]) and helps in better survival of the bacilli inside macrophages. Thus PPE2 suppresses innate defense system of host and contributes to virulence of the bacilli. Also, it provides a clue to use PPE2 as a therapeutic against inflammatory disorder that is associated with higher ROS production.

A DBT Centre of Excellence project (BT/PR12817/COE/34/23/2015) was sanctioned to Dr Mukhopadhyay as Principal investigator to carry out this study. As Principal investigator and Corresponding author, Dr Mukhopadhyay was involved in proposing the idea, designing, and overall execution of the project. She was also involved in guiding students, analyzing data, writing and communicating manuscripts in *Journal of Immunology*. Dr Mukhopadhyay collaborated with Dr. Vinay K Nandicoori, NII, New Delhi for *M. tuberculosis* infection work as CDFD, Hyderabad does not have functional BSL3 laboratory. S. Srivastava, CDFD was at NII, and *M. tuberculosis* work was jointly carried out by S Srivastava and MZ Khan from NII under the guidance of Dr Vinay K Nandicoori and Dr Mukhopadhyay. This collaboration work was incorporated as Figure 4 and Figure 5 and the Experiments of the rest 5 Figures and 1 Table are solely carried out in the laboratory of Dr Sangita Mukhopadhyay

This is to state that the above research work published has not been used for applying any award in the past.

Signature:



Name: Sangita Mukhopadhyay

Date: 22.08.2023

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