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 FELLOWSHIPS - 2024** in the area of **Medical Sciences – Basic Research** is made based on the following two research publications.

1. Pal R, Madhu Babu Battu MB and **Mukhopadhyay S*** (2022). Therapeutic application of PPE2 protein of *Mycobacterium tuberculosis* in inhibiting tissue inflammation. ***EMBO Molecular Medicine*, e14891 (*Impact factor - 12.137*)**

***Corresponding Author**

Contribution of Dr Mukhopadhyay: Dr Mukhopadhyay has unraveled a novel biological, PPE2 protein of *M. tuberculosis* that can be used as an anti-inflammatory drug. PPE2 suppressed mast cell population and its mediators 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 the 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. An Indian patent has also been filed based on this research studies (***January 7, 2020 [Priority date – January 8, 2019] Patent Application No 201941000876***).

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 - 5.422) (Citation - 33)***

***Corresponding Author**

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 Co-Principal Investigator to carry out this study. As Co-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 BSL 3 laboratory. Ms S. Srivastava, (CDFD) travelled to NII, N. Delhi and *M. tuberculosis* work was jointly carried out PREDOMINANTLY by S Srivastava (CDFD) with help from Ms MZ Khan (NII). This collaboration work was incorporated as Figure 4 and Figure 5 and the Experiments of ALL FIVE FIGURES and ONE 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: 23.08.2024

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