

- f. **Signed** statement from the applicant to the effect that the research work under reference has not been given any award in the past. The applicant should also indicate the extent of the contribution of others associated with the research and he/she should clearly identify his/her achievements (not to exceed 500 words).

Hyderabad
3rd September 2024

To,
The Selection Committee,
Sun Pharma Research Awards.

Dear Sir/Madam,

I, Vinay Kumar Nandicoori, state that the research work under the following two references on which the award is claimed have not been given any award in the past.

1. Khan, M., Singha, B., Ali, F., Taunk, K., Rapole, S., Gourinath, S., & Nandicoori, V.K. (2021) Redox homeostasis in *Mycobacterium tuberculosis* is modulated by a novel actinomycetes-specific transcription factor. *EMBO J*, e106111.

The work was conceptualized and performed in my laboratory. This is the Ph.D thesis work of my student Mehak Zahoor Khan. 90% of the work in this manuscript was performed by Mehak with a some level of help from Biplab Singha for the animal experiments. We collaborated with Dr. Gourinath and Ali for the Biophysical experiments. We collaborated with Taunk and Srikanth Rapole for the metabolomics work.

Mycobacterium tuberculosis (*Mtb*) exploits its transcriptional networks and metabolic pathways to combat the host immune system. In this manuscript we showed that a novel actinomycetes specific transcriptional regulator, AosR of cysteine biosynthesis protects the *Mtb* redox state and promotes bacterial growth in the host cells. We demonstrated that AosR-SigH transcriptionally upregulates, non-canonical cysteine biosynthesis pathway through an auxiliary stress-responsive promoter. The AosR-SigH axis promotes the ability of *Mtb* to combat oxidative stress and facilitates its growth in the host.

2. Kaur, P., Rausch, M., Malakar, B., Watson, U., Damle, N. P., Chawla, Y., Srinivasan, S., Sharma, K., Schneider, T., Jhingan, G. D., Saini, D., Mohanty, D., Grein, F & Nandicoori, V. K. (2019) LipidII Interaction with specific residues of *Mycobacterium tuberculosis* PknB extracytoplasmic domain governs its optimal activation. *Nature Communications* 10, 1231 doi: 10.1038/s41467-019-09223-9.

The work was conceptualized and performed in my laboratory. This work is the Ph.D thesis work of my student, Prabhjot Kaur. Almost 85% work in the manuscript is performed by her with a bit of help from Basanti and Yogesh. We collaborated with Dr. Mohanty and Nikhil Damle for the Bioinformatic work. Prabhjot Kaur worked in Dr. Deepak Saini's lab with help from Ms. Watson at IISc, Bangalore for the microscopy work. Marvin Rausch from Dr. Schneider and Dr. Grein's lab in Germany performed Lipid II binding experiments. Gagan Jhingan, Ms. Srinivasan and Ms. Sharma performed PRM mass spec work during the revision.

In this manuscript, we showed that contrary to the prevailing hypothesis, abrogation of PknB ligand-binding is linked to activation loop hyperphosphorylation, and indiscriminate hyperphosphorylation of PknB substrates as well as other proteins, ultimately causing loss of homeostasis and cell death. This was among the six finalists (among ~70 papers from all over India) for The Inspiring Science Award 2020 for the best published scientific paper in the Life Sciences from India.

N. 915
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