भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान पुणे
INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH PUNE
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5th September 2021.

This is to certify that the research work under reference is very recent and has not been given any award in the past.

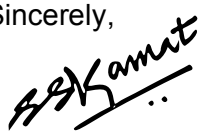
Dr. Siddhesh S. Kamat has made original and significant contributions in the field of functional annotation of uncharacterized enzymes and biological pathways, particularly lipid signaling and metabolic pathways associated with human neurological, immunological and metabolic disorders. Recently, his lab mapped the structures of the potent pro-apoptotic oxidized phosphatidylserine lipids, and showed that the lipase ABHD12 is a major metabolic lipase for this class of signalling lipids in the central nervous and immune systems on mammals, including humans (***Nature Chemical Biology, 2019***). This finding has since lead to the development of specific ABHD12 inhibitors, that are being explored as immunostimulatory and anti-cancer agents, via the ferroptosis pathways. In another interesting study, his lab has reported the first successful synthesis of the immunomodulatory lysophosphatidylserine lipids, and using these, they have shown that as a function of the lipid tail length, these hormone like signalling lipids act through TLRs to elicit pro-inflammatory responses to cause neuroinflammation or via GPCRs to cause activation of macrophages and histamine release from mast cells (***Cell Chemical Biology, 2021***). This study has paved the wave for the development of bioorthogonal lyso-PS lipids, that can now be used to map the protein ligands for this biomedically important signalling lipid class. The two papers under consideration for this award are:

1. Kelkar, D. S., Ravikumar, G., Mehendale, N., Singh, S., Joshi, A., Sharma, A. K., Mhetre, A., Rajendan, A., Chakrapani, H., Kamat, S. S.* (2019) A chemical genetic screen identifies ABHD12 as an oxidized phosphatidylserine lipase, ***Nature Chemical Biology*** 15, 169-178.

2. Khandelwal, N., Shaikh, M., Mhetre, A., Singh, S., Sajeevan, T., Joshi, A., Balaji, K. N., Chakrapani, H., Kamat, S. S.* (2021) Fatty acid chain length drives lysophosphatidylserine dependent immunological outputs, ***Cell Chemical Biology*** 28, 1169-1179. *Article featured on August 2021 issue cover of Cell Chemical Biology.*

Authors' contribution: Siddhesh S. Kamat is the lead corresponding author and has conceptualized and supervised both these studies, that were funded by a DBT/Wellcome Trust India Alliance grant to Siddhesh. The co-first authors in both the papers are Postdocs and Ph. D. students of Siddhesh S. Kamat and the work done by the Ph.D students has been included in their respective dissertations. We collaborated with Prof. Harinath Chakrapani for the synthesis aspects of this project, and Prof. K. N. Balaji provided the TLR2 null mice used in the Cell Chemical Biology paper.

Sincerely,



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