



सीएसआईआर – केन्द्रीय औषधि अनुसंधान संस्थान
CSIR-CENTRAL DRUG RESEARCH INSTITUTE



वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद्
COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH

डॉ. राधा रंगराजन
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Dr. Radha Rangarajan
Director

August 28, 2023

To,

The Selection Committee,
Sun Pharma Science Foundation

Nomination justification

It gives me great pleasure to nominate Dr. Manoj Kumar Barthwal, for the award of Sun Pharma Science Foundation Research Awards 2023 under the category of Pharmaceutical Sciences.

Dr Barthwal's research has focused on cellular and molecular mechanisms that lie at the intersection of cardio-metabolic lifestyle diseases and inflammation. His contributions include the development of novel *in vitro* and *in vivo* models of inflammation, identification of new druggable targets and preclinical development of drug candidates for cardiovascular disease. For example, he established a novel model of atherosclerosis with thrombotic complications (*J Physiol Biochem.* 2011 Jun;67(2):205-16) which was subsequently used to identify and profile a novel anti-thrombotic molecule S007-867 (US9206155B2). This compound received approval from the DCGI for a phase-1 clinical trial (IND/FORM44/FF/2019/13498) in 2020. Dr. Barthwal also identified an orally bioavailable small molecule inhibitor of PCSK9, an effort funded by BIRAC and presently being pursued as a first-in-class drug for dyslipidemia.

On the basic research side, Dr Barthwal has shown the importance of miR-99a, RNA binding protein Lin28B, Galectin-3 S glutathionylation, FOXO3a acetylation and p47 phox in macrophage polarization, inflammation and progression of lifestyle diseases (*J. Immunol.* 2011, *Cell. Mol. Immunol.* 2016, *J. Lipid. Res.* 2014, 2020, *Arterioscler. Thromb. Vasc. Biol.* 2015, *Bioessays.* 2016, *Cell. Mol. Immunol.* 2019, *Biochim Biophys Acta.*, *J Leukoc Biol.* 2022, *Free Radic Biol Med* 2021, *Inflammation.* 2020). These studies identified macrophage inflammation, polarization, and their critical determinants as cellular processes that can be modified to slow down lifestyle diseases. Subsequent efforts by Dr. Barthwal also identified M2 macrophage phenotype-specific probes that can be used as tools and diagnostic probes in lifestyle diseases (4242/DEL/2015). Further, Dr Barthwal showed that herbal substances such as *Curcuma oil* and *Xylocarpus moluccensis* that showed good cardio-metabolic protection (*Indian J Med Res.* 2015, *Br J Nutr.* 2013, 2015, *JFF* 2015, *J Ethnopharmacol.* 2018), were also effective in models of acute and chronic inflammation (*J Pharm Pharmacol.* 2020, *Inflamm Res.* 2022) suggesting a role for anti-inflammatory interventions in preventing cardiovascular disease. Overall, Dr Barthwal's research is seamless ranging from understanding basic mechanisms to pursuing new therapeutic interventions.

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Dr Barthwal received the Indo-US and International atherosclerosis society visiting fellowships in 2009, and 2010 respectively. For his contributions in the cardiovascular field, he was elected a fellow of the International Academy of Cardiovascular Sciences (FIACS) 2020. He has served on the editorial board of the journal, Cellular and Molecular Immunology (Nature Publishing group) which was ranked #6 rank among 161 immunology focused journals in 2022. He frequently writes invited commentaries for the international atherosclerosis society and other journals of repute. Recently, he was awarded an Indo-Swiss grant jointly funded by DBT and SNSF to study the cardiovascular complications in COVID19 pathology.

Dr Barthwal is currently Area Co-ordinator for the Metabolic Diseases area at CDRI and head of division of Pharmacology, providing scientific and strategic leadership to a team of scientists. He is an excellent mentor and guide for younger faculty and students.

I strongly recommend him for the Sun Pharma Science Foundation Research Award.

Sincerely,



28 AUG 2023

Radha Rangarajan, Ph.D

निदेशक

Director

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