IISER TIRUPATI

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Prof. Virander S. Chauhan, FNA, FASc, FNASc, FTWAS, Padma Shree
Chairman, Sun Pharma Science Foundation
8C, 8th Floor, Sun Pharma Science Foundation,
Hansalaya Building, 15, Barakhamba Rd,
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Sub: Nomination of Prof. Jayanta Haldar for the Sun Pharma Research Award 2023

Dear Professor Chauhan,

I am delighted to nominate Professor Jayanta Haldar of the New Chemistry Unit & School of Advanced Materials, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore for the coveted Sun Pharma Research Award 2023 in Pharmaceutical Sciences.

I am sure that you will agree that antimicrobial resistance (AMR) has emerged as one of the principal public health problems of the 21st century that threatens the effective prevention and treatment of an ever-increasing range of infections caused by bacteria, parasites, viruses and fungi, which are no longer susceptible to the common medicines and pharmaceuticals used to treat them. The problem of AMR is especially urgent regarding antibiotic resistance in bacteria.

It is in this context, Prof. Haldar's outstanding research work in understanding the emerging phenomena of AMR is path-breaking and most contemporary. His approaches to deal with such menaces already led to the development of highly original and effective therapeutic and preventive strategies towards tackling AMR and complex infections. In recognition to his pioneering contributions in the emerging field of antimicrobial resistance, he has been recently bestowed with the honour and responsibility in the pivotal role of the Editor-in-Chief of the *ACS Infectious Diseases*, a highly regarded journal of the American Chemical Society.

Prior to his return from MIT, I have been closely following his work as an independent researcher for the past fourteen years. During the last decade, his lab has persistently undertaken a diverse set of projects to deal with this challenging goal. He has spearheaded various novel chemical strategies and invented numerous antimicrobial solutions through rationally designed synthetic drug candidates upon understanding their novel mechanisms of action. His group has developed library of small molecular antimicrobial peptide (AMP) mimics that are highly effective against multidrug-resistant superbugs without developing any resistance against them. He has also developed an avenue of research through the deployment of semi-synthetic antibiotics. His innovative approaches adopt targeting of drug-resistant bacteria through the advancement of new classes of glycopeptide-antibiotics and metallo-β-

lactamase inhibitors. These synthetic drug candidates can effectively treat complex biofilm-related infections in animal models. Prof. Haldar has also developed small-molecular membrane perturbing adjuvants which can, in combination, re-sensitize multiple classes of obsolete antibiotics ubiquitously for tackling the most critical drug-resistant Gram-negative pathogens.

As a part of the preventive strategy, Dr. Haldar's group has engineered antimicrobial paints that prevent catheters/implant-associated infection and surgical-sealants that prevent eye infections and promote wound-healing. Very recently, he has developed antimicrobial coatings which can be layered easily on various surfaces, such as Personal Protective Equipment (PPE), and can prevent the spread of respiratory bacterial and viral infections like Influenza or SARS-CoV-2. Another arena of his interest in biomaterials research has led to the innovative anti-infective, haemostatic formulations that can find applications in surgery and trauma care. Thus Prof. Haldar has demonstrated the unique ability to analyze these research problems 360° and emerge with multifaceted solutions.

In summary, the breadth of his research work, spanning across the combination of medicinal and contemporary pharmaceutical chemistry, chemical biology, infection mitigation, AMR, biomaterials, biophysics, etc., is truly unparalleled. The scale of national and international collaborations led by him demonstrates his high standing in the research community and his original approach towards science. He has successfully executed and guided many nationally and internationally funded research projects. The interdisciplinary nature of his research projects highlights his profound expertise in medicinal and pharmaceutical chemistry. He also has a highly impressive publication record, with several research articles, reviews and book chapters to his credit. I believe that Prof. Haldar has struck the right balance between fundamental and translational research, with significant contributions of both kinds emerging from his lab. A large number of his inventions have already been patented, and a couple of them have been out-licenced to the healthcare industry. His work has indeed ushered in a new era in the field of antimicrobial research and stands to alleviate many of the existing clinical concerns in infection spread and treatment.

Accordingly, I am pleased to strongly recommend him for the award of the Sun Pharma Research Award 2023 in Pharmaceutical Sciences.

Please don't hesitate to contact me for any more information at +91-877-2500-202 or by email at director@iisertirupati.ac.in.

With best regards,

Sincerely yours,

Santanu Bhattacharya

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