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

वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद्
COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH

प्रोफ़ेसर तपस कुमार कुंडू
पीएचडी, डीएससी, एफएनएएससी, एफएएससी, एफएनए, सर जेसी बोस नेशनल फेलो
निदेशक

Professor Tapas K. Kundu
PhD, DSc, FNASc, FASc, FNA, Sir J C Bose National Fellow
Director

September 07, 2021

Subject: Nomination of **Dr Prabhat Ranjan Mishra** for SUN Pharma Research Award-2021 in Pharmaceutical Sciences.

Justification for Nomination

I am happy to nominate **Dr Prabhat Ranjan Mishra** Ph.D, FNASc, Senior Principal Scientist & Head, Division of Pharmaceutics and Pharmacokinetics, who has made innovative contribution in developing bio-functionalized nano-therapeutics and explored ligand receptor interactions, endosomal pH responsiveness and receptor mediated endocytosis and its link to nano-therapeutics. He is not only developing targeted nano-therapeutics but also elucidating the mechanism of its uptake to achieve higher therapeutic index with low toxicity of drugs. **Dr Prabhat Ranjan Mishra** has contributed in engineering biomaterials to explore niche area of translational research based on controlled and targeted drug delivery technologies for enhanced therapeutic efficacy and has more than125 peer reviewed publications and 23 patents. He focuses on (a) development of strategy for cost-saving, patient-friendly and evidence-based products for industry; and (b) bringing goods to patients. He has more than 18 years of research experience including his industrial experience and at Free University, Berlin Germany.

He elucidated Aggregation Induced Emission mechanism demonstrating image-guided chemotherapy through anisamide anchored nano-liquid crystals along-with modulation of tumor microenvironment using endogenous stimuli responsive lyotropic nano-liquid crystals achieving comprehensive cancer **nano-theranostics**. He also established functional oral nano-therapeutics modulating P-gp reversibly for paclitaxel delivery ensuing patient friendly "chemotherapy". He also discovered that pyridoxine tethered nanoparticles exerts proton sponge effect and escapes lysosomal degradation to facilitate intracellular localization resulting enhanced antitumor efficacy. He established potential role of pluronylated putrescine and spermine in targeting glypican-1 receptor and cell surface heparan sulfate proteoglycan (HSPG) respectively through nano-constructs for the treatment of metastatic breast cancer. Overall, his contributions signify a major role in establishing specific delivery of drugs through innovative nano-therapeutics thereby bypassing the otherwise established biological barriers.

Dr Mishra is the recipient of several awards, among which are prestigious **Tata Innovation Fellowship** (2018-19) by Department of Biotechnology (DBT, Govt. of India) for outstanding contribution in the area translational research. He is an elected fellow of National Academy of Sciences **(FNASc)**, Prayagraj. Recipient of **INSA-DFG Fellowship** (2008), Young scientist by DST (2006), **Visiting Scientist** at Freie University of Berlin, Germany and at Bradford University UK, CDRI **Excellence Research Award** and **Technology Award** 2019. He **licensed five products in all** to companies while two are successfully commercialized as **"Joint Fresh™"** and **Reunion®**. In addition, he has been actively involved in developing Umifenovir and its formulation under repurposing for covid patients whose **Phase III clinical trial** was approved by DCGI and the trial has been completed while data is submitted to DCGI for marketing approval.

(Tapas Kumar Kundu)

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