Indian Association for the Cultivation of Science

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Sub: Justification of Nomination of Dr. Rajib Kumar Goswami for Sun Pharma Research Award 2024.

It is my great pleasure to write this letter in strong support of the candidature of Professor Rajib Kumar Goswami of the School of Chemical Sciences, IACS, Kolkata for Sun Pharma Research Award 2024 in Pharmaceutical Sciences.

Natural products are extremely important source of numerous bioactive compounds and practicing of their chemistry as a whole offered the society fantastic returns from fundamental to applied fields and made the chemical synthesis of natural product as a state of the art. Prof. Goswami has contributed excellently towards this direction through development of synthetic routes for Total Synthesis of Natural Products of Pharmaceutical Importance (*Org. Lett.* **2020**, *22,* 1188-1192; *ACS. Med. Chem. Lett,* **2024**, *doi.org/10.1021/acsmedchemlett.4c00237*; *Chem. Sci.,* **2022**, *13,* 13403-13408 and more) and developed efficient asymmetric synthetic routes of biologically active and structurally challenging nearly 40 natural products belonging to macrolides, cyclodepsipeptides sesquiterpenes, polyketides which have tremendous impact in pharmaceutical research.

The validation of structure of natural product holds the key for exploring therapeutic potential and Prof. Goswami's research resulted correct assignments of alveolaride C, mycalol, penicitide A, sunshinamide, baulamycin A, debilisone A and many more. His work on baulamycin A resulted a follow up work in Nature whereas the art of synthesis of alveolaride C highlighted as literature coverage and an invited perspective entitled "Total synthesis: the structural confirmation of natural products" to a reputed peer reviewed journal.

Prof. Goswami reinvented the utility of Heck reaction while exploring the synthesis of a large number of bio-active macrocyclic natural products and successfully implemented the total synthesis of anticancer natural products biselyngbyolides A, B & C, pestalotioprolides G & H, and created a stepping stone for synthesis of extremely complex polyene antifungal marine natural products strevertene A and macrotermycin C. His approach for synthesis of sensitive skipped olefins following Red-Al mediated *trans*-hydroalumination/allylation protocol is quite impressive.

Prof. Goswami also has focus on biomedicinal applications of natural products and their analogues. The analogs of cananginone E, synthesized in enantiomeric pure form, have been found to inhibit hedgehog signaling pathway associated with several types of cancers propagation. The SAR of anticancer natural products biselyngbyolide B, pestalotioprolide E, beauveamide A, bacilotetrin C and sunshinamide resulted new simplified potent analogues.

Prof. Goswami's research endeavor opened up important avenues for chemical synthesis of natural products and their analogues and their biomedicinal applications. Therefore, I firmly believe that he deserves the prestigious Sun Pharma Science Foundation Research Awards 2024 in Pharmaceutical Sciences.

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