



Vinod K. Singh, FNA, FTWAS

Rahul & Namita Gautam Chair Professor

The Chairperson
Sun Pharma Science Foundation

September 24, 2021

Dear Sir/Madam,

I wish to nominate **Dr. D. H. Dethe** for the Sun Pharma Research award-2021 (Pharmaceutical Sciences). Dr. Dethe has made outstanding contributions in the field of Organic Synthesis. A major thrust of his research is the design and invention of new annulation strategies for the synthesis of bioactive Natural Products. He has reported total syntheses of a variety of structurally diverse complex natural products and their analogues, which in addition to confirming the structure also established the absolute configuration of the natural products. The notable points in the synthetic route are synthesis of a highly functionalized tricyclic diterpenoid moiety starting from an enantiopure Wieland–Miescher ketone derivative in concise manner via Robinson-type annulation, an elegant hydrogen atom transfer olefin reduction, Lewis acid-catalysed Friedel–Crafts reaction for one-pot C–C and C–O bond formations, [3+2] cycloaddition, Diels–Alder reaction, highly efficient biomimetic C-4 cyclization of indole derivative, a highly fascinating sp³ C–H activation on axial methyl to install the lactone moiety.

His research group has also worked on few industrial projects: i) Development of novel synthesis route for apomorphine (Project no: NSRT/CHM/2016201) with Navin Saxena Research Technology, Gujrat. His group developed a non-infringing route for apomorphine starting from morphine. ii) Development of novel synthetic route for a key intermediate-Noroxymorphone. Project No.-IITK009, under Uchhatar Avishkar Yojna (UAY) scheme. In this project he has developed a non-infringing route for the synthesis of noroxymorphone, an opioid intermediate in the production of narcotic antagonists such as naltrexone and others.

In last 10 years his research output is excellent, as he has published more than 55 research papers (1-JACS, 1-Chem. Sci., 12-Org. Lett., 6-Chem. Commun., 3-Chem. Eur. J., 7- JOC, 3-Org. Chem. Front., etc) in the area of total synthesis and also has one patent to his credit. Natural product synthesis in terms of molecular architecture, biological activity, and medical value will continue to be the magnet and prime guiding force. Natural products and their structural analogues have historically made a major contribution to pharmacotherapy, especially for cancer and infectious diseases. Despite their outstanding biological activity, the limited supply from the natural sources hampers the drug discovery/development. Total synthesis can address the issue of limited material supply in drug discovery/development even for the cases of complex natural products. New reactions, cascade sequences and biomimetic strategies, discoveries and concepts that consistently emanate from programs in total synthesis. Based on immense contribution of Dr. Dethe to the field of total synthesis of biologically active natural products, I firmly believe that he deserves to get prestigious “Sun Pharma Research Award-2021” and I strongly recommend him for this award.

Sincerely,

Vinod Singh
Former Director, IISER Bhopal