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Dean Biosciences & Health Research

Trivedi School of Biosciences

Dated: August 28, 2024

Subject: Nomination for Sun Pharma Science Foundation Research Award - Medical Sciences-Basic Research

I am delighted to recommend Prof. Debarka Sengupta for the Sun Pharma Science Foundation Research Award in the Medical Sciences-Clinical Research category. His groundbreaking work and significant contributions to biomedical research, particularly in **single-cell genomics, cancer genomics, and liquid biopsy** have firmly established him as a leading scientist in India.

In the realm of translational research, Dr. Sengupta's team has made remarkable strides in **blood-based cancer detection and AI-driven precision treatments**. Their interdisciplinary approach, integrating single-cell transcriptomics, microfluidics, and AI, has led to the development of innovative methods for detecting **circulating tumor cells from patient blood samples**, particularly in cases of **Triple Negative Breast Cancer** (Journal of Clinical Medicine, 2020; Genome Research, 2022). His group also developed a **platelet gene panel for early cancer detection**, resulting in a successful technology transfer (BMC Genomics, 2020). This work earned Dr. Sengupta the 2022 INAE Young Innovator & Entrepreneur Award. Recently, his lab set a new benchmark in personalized drug response predictability using tumor RNA-seq profiles and drugs' structural (Nature Communications, 2022). Nature Communications recognized this work as one of the [Top 25 Health Sciences Articles of 2022](#).

At the beginning of his career as an independent researcher, Dr. Sengupta's laboratory established **India's first single-cell genomics research program**. His team developed several groundbreaking algorithms that have achieved global acclaim, including the dropClust suite for cell subtype detection (Nucleic Acids Research, 2018; Bioinformatics, 2020), a transcriptome search algorithm (Nucleic Acids Research, 2018), and FiRE for rare-cell discovery (Nature Communications, 2018). These innovations have set new benchmarks in the field by improving accuracy and reducing algorithmic complexity.

Dr. Sengupta has mentored **nine Ph.D. students**, all of whom have secured positions in leading research laboratories worldwide. He has been bestowed with **Adjunct Professorship at Queensland University of Technology** and has been honored with several national awards, including the **INSPIRE Faculty Award, the INAE Young Innovator and Entrepreneur Award, and election as a Fellow of the National Academy of Sciences, India (FNASc)**. He has also received the **Merck Young Scientist Award and the Humboldt Fellowship for experienced researchers**. Dr. Sengupta serves on the editorial boards of multiple international journals. Notably, his entrepreneurial spirit led him to establish **GeneSilico.ai, a precision oncology company with a presence in India and the USA, employing over 35 professionals**.

Dr. Sengupta's remarkable achievements make him an exemplary candidate for the Sun Pharma Science Foundation Research Award.

Sincerely

Anurag Agrawal