



Dr. Rajesh Pandey's (<https://www.igib.res.in/?q=RajeshPandey>) tryst with Biological Science started with Graduate degree in Zoology from University of Calcutta, followed by Master's degree in Zoology, from University of Delhi. During PhD in Biotechnology from CSIR-Institute of Genomics and Integrative Biology (CSIR-IGIB), he *functionally elucidated the regulatory role played by Noncoding RNAs in Stress Response*. Subsequently, Rajesh's stint as *Research Scientist at Johns Hopkins University, Maryland, USA and MRC Harwell Institute, Oxfordshire, UK*, helped enhance the understanding further with exposure to different diseases and strength of Genomics.

As *Principal Scientist* and Group leader at CSIR-IGIB, his lab is focussed on ***INtegrative GENomics of HOst-PathogEn (INGEN-HOPE)*** to elucidate the hierarchical regulation of factors modulating *Disease severity sub-phenotypes and Clinical outcome*.

- Pathogens' Genomes.
- Human host response.
- Co-infections.
- Non-coding RNA.
- Cellular heterogeneity (Single Cell Genomics) and effective Immune response.

The SARS-CoV-2 pandemic has highlighted the role of Next Generation Sequencing (NGS) based sequencing platforms which can combine Scale, Speed, Sensitivity and Sample cost (4S) for pathogen discovery. Once we understand the pathogen genome architecture, we need to develop strategies for timely detection of variants posing threat to public health. Our lab has developed experimental innovations which has helped mapping of SARS-CoV-2 footprint in India by *sequencing thousands of samples* for the Community surveillance, International travellers as well as clinically important samples, with pan-India hospitals partnership. An important milestone has been a ***Point-of-care Mobile Sequencing*** at the Delhi airport, wherein SARS-CoV-2 RT-PCR positive International travellers' samples can be sequenced in quick time for identification of variants of concern (VOC). The understanding developed herewith is being translated to other pathogens challenging human health for future Pandemic Preparedness.

The pathogen and host response findings have been published in more than ***81 research articles*** in journals inclusive of Nature, Science, Lancet Infectious diseases, Nature Communications, Cell Reports, Genome Biology, Frontiers in Microbiology, Clinical & Translational Medicine and Microbiology Spectrum.

Rajesh has academic interest towards writing Books and book chapters elucidating aspects of host-pathogen *Interactome*. His Book, RNA-based *Regulation in Human Health and Disease*, published by Elsevier, is having high global readership. Presently, writing a book on *Genomic Surveillance and Pandemic Preparedness*, to be published by Elsevier. We value collaborations (within the lab, within and outside Institute and industry partners).