



INDIAN INSTITUTE OF TECHNOLOGY MANDI

भारतीय प्रौद्योगिकी संस्थान मंडी

# Institute Colloquium

## “AI in Biological Sciences”



**Prof. Shekhar Mande**

**Former Director General CSIR  
and Secretary, DSIR,  
Govt. of India**

**विशिष्ट प्राध्यापक, जैवसूचना केंद्र  
सावित्रीबाई फुले पुणे विश्वविद्यालय,  
पुणे ४११००७**



**11<sup>th</sup> September,  
2025**



**05:00 PM**



**Auditorium,  
North Campus**

## **"AI in Biological Sciences"**

**Prof. Shekhar C. Mande, FNA, FASc, FNASc**

Former Director General CSIR and Secretary, DSIR, Govt of India. Distinguished Professor, Bioinformatics Centre, Savitribai Phule Pune University, Pune 411007 & JC Bose Fellow and Honorary Distinguished Scientist, National Centre for Cell Science, Pune 411007.

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### **Abstract: -**

The Artificial Intelligence field has seen dramatic progress in recent years. Although beginning primarily in 1955, the recent developments in analysis of large data sets using ANN's, deep networks and further developments, AI has indeed made deep inroads in almost all fields. Formal recognition in the form of Nobel Prizes in Physics and Chemistry in 2024 has cemented the place of AI/ML in modern science. Among the fields which have very large datasets available, although scattered across the world, and although highly heterogeneous, Biological Data presents an excellent opportunity to apply the recent techniques of AI/ML to the analysis of biological data. My talk will attempt to summarise the recent developments in AI/ML, and present the exciting opportunity of its application to Biological Data.

### **Bio-Sketch: -**

Prof. Shekhar Mande is a structural and computational biologist. He was trained at the Molecular Biophysics Unit of the Indian Institute of Science and determined the first protein crystal structure from India, that of Peanut lectin. He has worked at the CSIR- Institute of Microbial Technology, Chandigarh, Centre for DNA Fingerprinting and Diagnostics, Hyderabad and National Centre for Cell Science (NCCS), Pune. He was the Director of NCCS, Pune between September 2011 and October 2018. Subsequently, he moved to New Delhi as the Director General of the Council of Scientific and Industrial Research (CSIR)- cum-Secretary, Department of Scientific and Industrial Research (DSIR), Govt of India. CSIR is the largest civilian scientific R&D chain of laboratories in India, which he headed. Among his major contributions at CSIR/ DSIR were providing leadership to the scientific and technological response to Covid-19, pioneering cultivation of Asafoetida in India, initiating major program on floriculture (including Lavender in J&K), initiating India's program on futuristic civil aviation (including High Altitude Platforms), promotion of Indian footwear size program, promotion of sustainable aviation fuel, and a major initiative on pan-India health monitoring program, Phenome-India. One of the hallmarks of his leadership was to strongly encourage gender-inclusive scientific leadership.

His academic contributions have been in the area of structure-function relationships of proteins, mostly derived from *Mycobacterium tuberculosis*. He has also contributed to development of computational methodologies for analysis of large biological data. He has been recognized by election to the three science academies in the country, Indian National Science Academy, New Delhi; Indian Academy of Sciences, Bengaluru and National Academy of Sciences, India, Allahabad and the Shanti Swarup Bhatnagar Award in Biological Sciences in 2005. He was recently awarded the Distinguished Alumnus award of the Indian Institute of Science, Bangalore.

Currently, he occupies Distinguished Professorship at the Bioinformatics Centre, Savitribai Phule Pune University (formerly University of Pune) funded generously by philanthropic donation by Dr. Anand Deshpande. He also serves on the board Tata Steel Ltd as an independent director and chairs the board of the Biotechnology Consortium India Ltd. He also chairs the governing board of the National Council of Science Museums, and is the National President of Vijnana Bharati, a large voluntary movement for Science with Swadeshi spirit.

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