Rohan Ghosh Dastidar

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EDUCATION

2022 – 2027	**Indian Institute of Technology Kharagpur** B.Tech/M.Tech (Dual Degree) in Chemical Engineering *Minor: Biotechnology & Biochemical Engineering* *Micro Spl: High-Performance Computing and Applications* *Micro Spl: Micro Fluidics and Nano Patterning*	**GPA: 8.78**
2021	**Indira Gandhi Memorial High School** (CBSE Class 12)	**86.6%**
2019	**Pramila Memorial Institute** (ICSE Class 10)	**97.6%**

RESEARCH EXPERIENCE

Computational Structural Biology Lab, IIT Kharagpur *Jan 2026 – Present*
Bachelor's Thesis Project II — Prof. Ranjit Prasad Bahadur
- Developing a machine learning based model for the prediction of SLiMs (short linear motifs) and MoRFs (molecular recognition features) in RNA binding proteins.

Structural Protein Biology & Engg Lab, Iowa State University, USA (Remote) *July 2025 – Present*
Remote Research Intern — Prof. Ratul Chowdhury
- Integrating PLM's with SMILES-based language models to map proteins and ligands into a unified context-aware space to predict protein-ligand binding affinity and discover key interacting residues and atoms in such complexes
- Performed analysis on performance, memory consumption and runtime on different PLM's running Seq2Bind – a protein language transformer based protein-protein binding affinity predictor
- Conducted extensive literature review and developed a corpus of publicly available machine learning models for protein-protein binding affinity

Computational Structural Biology Lab, IIT Kharagpur *July 2025 – Dec 2025*
Bachelor's Thesis Project I — Prof. Ranjit Prasad Bahadur
- Developed a bioinformatics pipeline to predict intrinsic disorder in proteins from gene sequences using machine learning.
- Performed genomic analysis of specific organisms from the three domains – bacteria, archaea, eukarya to assess the nature of disordered regions

Cancer Systems Biology Lab, IISc Bengaluru, India *May 2025 – July 2025*
Summer Research Intern — Prof. Mohit Kumar Jolly
- Investigated the role of Transcriptional Noise in Epithelial-Mesenchymal Heterogeneity to study phenotypic switching.
- Simulated gene regulatory networks using **Stochastic Differential Equations** and high-throughput parameter scans.
- Implemented a "partitioned leaping" algorithm to optimize space and time complexity of stochastic simulations.

Biomolecular Nanotechnology Lab, CIC biomaGUNE, Spain (Remote) *May 2024 – Aug 2024*
Foreign Training Program — Prof. Aitziber Lopez Cortajarena
- Designed CTPR4 protein variants with electron-active Tryptophan substitutions for higher stability and conductivity.
- Utilized **PyMOL** and Python for molecular modeling and structural simulations.

Structural Biology & Protein Engineering Lab, IIT Kharagpur *Nov 2023 – Jan 2024*
Winter intern — Prof. Soumya De
- Learned about designing novel peptides that can inhibit protein-protein interactions linked to specific cancer signalling pathways
- Wet lab - Performed plating, Molecular cloning, SDS PAGE, PCR, Site-directed mutagenesis, Protein purification (Ni-NTA Affinity Chromatography), Primary culture & protein expression
- Computational – Analysis of protein structures in PyMOL and executing energy minimization algorithms in ROSETTA

SKILLS

- **Languages:** Python, MATLAB, C, Julia
- **Frameworks/Tools:** Qiskit, PyTorch, NumPy, Pandas, Matplotlib, PyMOL, Rosetta
- **Methodologies:** Mathematical Modelling, Stochastic Simulations, Deep Learning, Structural Bioinformatics
- **Wet Lab:** Molecular Cloning, SDS PAGE, PCR, Site-directed Mutagenesis, Protein Purification (protein engineering techniques)

COURSEWORK

** indicates ongoing course*

- **Biotechnology:** Microbiology, Cell & Molecular Biology, Biochemical reaction engineering, Bioinformatics*
- **Programming:** Systems Biology – Modelling & Control, Computational neuroscience, Computational biophysics, Machine learning in Biological systems, Programming & Data structures, Quantum mechanics & Quantum computing* **[Course Projects]**
- **Chemical Engg:** Thermodynamics, Transport Phenomena, Biochemical Engineering, Advanced Mathematical Techniques, Advanced Fluid Dynamics, Computer aided process engineering, Advanced Mass Transfer*, Advanced Heat Transfer*, Process Dynamics & Control*