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: Bioscience and Biotechnology* *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, 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 and Engineering Lab, Iowa State University, USA *July 2025 – Present*
Remote Research Intern — Prof. Ratul Chowdhury

- Integrating PLM's with SMILES-based language models and using a contrastive alignment strategy to map proteins and ligands into a unified "context-aware" space to predict protein-ligand binding affinity without a traditional supervised training scheme.
- Performed analysis on performance, memory consumption and runtime for different PLM's for running Seq2Bind – a 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, 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:** 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*