Shuvankar Patra

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SKILLS:

Molecular Biology techniques: Molecular cloning of three genes into two expression vectors (pDJN1 and pGEX-6P-1), Genomic and Plasmid DNA extraction, RNA extraction, PCR, and Western blot techniques.

Cell culture techniques: I handled MCF-7 and MDA-MB-231 cell lines and performed cell cytotoxicity assay (MTT Assay).

Protein expression experiments: Protein expression check experiments of three different mycobacterial proteins in six different E. coli expression strains, pH, and temperature conditions.

Protein purification techniques: FPLC (AKTA PURE) - GST tagged and his tagged affinity chromatography, Ion Exchange chromatography, Heparin chromatography and Size exclusion chromatography.

Advanced Microscopy Techniques: Negative stating TEM grid preparation and visualisation using TEM, Cryo-Electron Microscopy for high-resolution structure prediction.

Bioinformatics: PyMOL, SnapGene, CryoEM data assessment (CryoSPARC), Structure prediction (AlphaFold), Tools (BLAST, Clustal Omega)

EXPERIENCE:

Research experience:

- **Research trainee at UNESCO-RCB, Faridabad** (Current position)

  Supervisor: Prof. Dr. Deepak T. Nair.

  [Currently, I am focused on getting a high-resolution structure of the clamp loader complex from *Mycobacterium tuberculosis* using Cryo-EM. I am using CryoSPARC software for the refinement of the resultant data.]

- **MSc dissertation project at UNESCO-RCB, Faridabad** (Sep,2022-Aug,2023)

  Supervisor: Prof. Dr. Deepak T. Nair.

  Thesis title: Cloning, purification, and reconstitution of the multi-subunit clamp loader.

  [In a one-year project, I successfully cloned three genes of *Mycobacterium tuberculosis* onto two different expression vectors. I conducted expression check

experiments, purified the three subunits using various chromatography techniques, and reconstituted the protein complex. Additionally, I performed negative stain electron microscopy for structural visualisation.]

- **Short summer internship project at Kalyani University, West Bengal** (May,2018-July,2018)

  Supervisor: Dr. Arunima Biswas.

  Project title: Investigating Elevated Phosphodiesterase Expression and its Impact on cAMP Levels in Breast Cancer Stem Cells.

  [In this project, I acquired proficiency in Western blotting, cell culture techniques, and cell cytotoxicity assays.]

- **Field work at Sagar Island, West Bengal** (September - October 2018)

  Organiser: Organised by Zoology Dept. Sagar Island under the supervision of Professor Amalesh Choudhury.

  Title: Biodiversity of Sagar Island and Educational Mangrove Eco-tourism.

  [During our fieldwork, we identified numerous key species inhabiting Sagar Island and geotagged some observed bird species.]

- **Scientific writing at Ramakrishna Mission Vidyamandira, West Bengal** (2019)

  Supervisor: Dr. Anirban Sengupta.

  Project title: Etiology of Alzheimer's disease.

  [This is a review paper I wrote for my undergraduate course curriculum.]

ACADEMIC BACKGROUND:

Masters of Science in Biotechnology (2021-2023)
UNESCO Regional Centre for Biotechnology, Faridabad
CGPA: 7.42/9.00

Bachelor of Science in Zoology (2017-2020)
Ramakrishna Mission Vidyamandira, West Bengal
CGPA: 8.86/10

AWARDS & CERTIFICATES:

- **DBT-Ramachandran Fellow** 2021-2023
- **All India Rank** in GAT-B: 57 2021
- **All India Rank** in JAM BT: 184 2021

EXTRACURRICULAR:

- Volunteered and participated in the **IUBMB international conference** (2022).
- Volunteered and participated in the **EMBO international conference** (2022).
- Actively participated in the **National Service Scheme** (2017-19).
- **Student Coordinator** in Ramakrishna Mission Vidyamandira (2018).

REFERENCES:

- **Dr. Deepak T. Nair**

  Professor, UNESCO - Regional Centre for Biotechnology, Faridabad.

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- **Dr. Deepti Jain**

  Associate professor, UNESCO - Regional Centre for Biotechnology, Faridabad.

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- **Dr. Arunima Biswas**

  Assistant professor, Zoology Department, Kalyani University, West Bengal.

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