Argajit Sarkar

Master's of Science, Molecular Biology & Bioinformatics

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SUMMARY

I am a **PhD Candidate** bridging microbial pathogenesis with Artificial Intelligence. My research at Tripura University involves applying **Deep Learning** and **Large Language Models** for Drug Discovery to combat **antimicrobial resistance (AMR).** My current project is a data-driven workflow to repurpose drugs against multidrug-resistant pathogens, with the goal of creating a faster, more efficient pipeline for discovering therapeutics against high-priority pathogens.

Apart from that, I'm also an **NEP Saarthi 2020 Ambassador**, conducting workshops, events, promoting key policies and initiatives of the University Grants Commission (UGC) and Ministry of Education (Govt. of India) throughout the University.

EDUCATION

Doctor of Phylosophy (PhD) in Molecular Biology & Bioinformatics　　　　Nov, 2024 – Present
Tripura University, Agartala, Tripura, India
Course work: Completed

M.Sc in Molecular Biology & Bioinformatics　　　　Nov, 2022 – July 2024
Tripura University, Agartala, Tripura, India
CGPA: 8.15/10

B.Sc in Human Physiology with Honours　　　　Mar, 2019 – Sept 2022
Holy cross college, Agartala, Tripura, India
CGPA: 6.45/10

PUBLICATIONS & PREPRINTS

- **Sarkar, A.**, Bhattacharjee, S. Biofilm-mediated bioremediation of xenobiotics and heavy metals: a comprehensive review of microbial ecology, molecular mechanisms, and emerging biotechnological applications. 3 Biotech 15, 78 (2025). https://doi.org/10.1007/s13205-025-04252-2

- **Barik, S., Goswami, S., Nanda, P. K., Sarkar, A., Saha, B., Sarkar, A., & Bhattacharjee, S. (2025). TGF-beta plays dual roles in immunity and pathogenesis in leishmaniasis. Cytokine, 156865.** https://doi.org/10.1016/j.cyto.2025.156865

- **Sarkar, A., Ghosh, E., Bhattacharjee, S (2025). Harnessing Generative Artificial Intelligence for Periodontitis Prediction: A Machine Learning Approach Integrating Systemic Health Indicators for Precision Oral Health in Resource-Limited Settings. SSRN Preprint.** https://dx.doi.org/10.2139/ssrn.5334047

EXPERIENCE

- **Dissertertation project titled "Exploring the Combinatorial Antimicrobial and Anti-Virulence Potential of Quercetin with Antibiotics Against *Vibrio cholerae*".**   **Feb – July, 2024**

  Six months of experience in the molecular biology and bioinformatics laboratory, where I collaborated with PhD scholars to conduct various experiments and relevant data to support our title, culminating in a perfect 10/10 SGPA.

SKILLS

AI & ML: LLM, Machine Learning, Generative AI, AI Ethics, Hugging Face, GitHub.

Lab: Cell culture techniques, Blotting techniques, Gel Electrophoresis, DNA & RNA isolation, Antimicrobial, and Antibiofilm assays.

Data Science: MS Excel and Python.

Relevant Courses: Professional Data Analytics, Python for Data Analytics

COFFERENCE, SEMINARS & AWARDS

- **Participated in the Science Beyond Borders (Global S&T) event, India International Science Festival (IISF), 2024, at IIT Guwahati, Assam.**

- **Oral Presentation at National Conference on Recent Trends in Biological Sciences in Northeastern India (NCRTBSNEI–2025), March 2025. (View Certificate)**

- **Santanu Kar Memorial Merit Award (Holy Cross College), Agartala, Issued February 2021**
- ***Awarded for academic excellence during the academic year 2019/2020.***
- ***View Award Certificate (PDF)***

LICENSES & CERTIFICATIONS

Data Science & Analytics

Python for Data Science and AI (IBM), Issued May 2025
- Credential: IBM20250505-27-27jqee.pdf")

Data Analysis with ChatGPT (365 Data Science), Issued November 2024
- Credential ID: CC–FB6B33CB37

Understanding Data Visualization (DataCamp), Issued November 2024
- Credential ID: d860df08f4b1b2114d0072fc55ca03f3932b962a

AI & Machine Learning

AI Ethics (365 Data Science), Issued April 2025
- Credential ID: https://learn.365datascience.com/certificates/CC-2ED2BAD10C/

NPTEL+ Workshop: WEKA Machine Learning for Healthcare, NPTEL (IIT Madras), Issued February 2025
- Credential ID: NP25WS227620603284

Understanding Machine Learning (DataCamp), Issued November 2024
- Credential ID: 736828043119ec438e22a229c26f0ca64ebea1fd

ChatGPT and Generative AI (365 Data Science), Issued November 2024
- Credential ID: CC-3D92AF4DD9

Bioinformatics & Genomics

Genomic Data Science (Coursera), Issued April 2025
- (View Certificate (PDF) Credential: Coursera 0Q8CTG38Q19J)

Workshop on "Multi-Ligand Docking Training with Vina and PyRx!" (Research Boulevard), Issued October 2024
- *Credential ID: RBT/MD/ADMET/14/10/24/0054 (View Certificate (PDF)*

2 Day Hands-on workshop "Comparative Genomics: Evolutionary Genomics Application," (Kent State University in Collaboration with Tripura University), Issued May 2024
- Relevant Skills: Bioinformatics, Evolution, Evolutionary Biology
- *Certificate (PDF)*

Other Relevant Certifications & Workshops

Other Relevant Certifications & Workshops (IIT KANPUR) 12-Week course: Wildlife Ecology
- NPTEL, Issued January 2024
- (View Certificate (PDF))
- Relevant Skills: Ecology, Wildlife Biology

Affiliations

ASM Global Outreach-Student Member (American Society for Microbiology), Issued January 2025
- *Certificate (PDF)*

Global Outreach-Student Member (British Society of Immunology), Issued August 2025