Argajit Sarkar

Master's of Science, Molecular Biology
& Bioinformatics

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🌐 *https://argajitsarkr.github.io*

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 appointed by UGC, conducting workshops and events, and promoting key policies and initiatives of the **University Grants Commission (UGC)** and Ministry of Education (Govt. of India) throughout the University.

EDUCATION

Doctor of Philosophy (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

RESEARCH/REVIEW/BOOK CHAPTERS & PREPRINTS

- **Paul, S., Sarkar, A., Ghosh, M. et al. Quercetin as an additive adjuvant enhances ciprofloxacin and tetracycline efficacy against Vibrio cholerae by disrupting membranes, inhibiting biofilms, and reducing virulence levels. 3 Biotech 16, 3 (2026).** *https://doi.org/10.1007/s13205-025-04621-x*

- **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*
- Mandal, R., Saha, S., & Sarkar, A. (2025). Ghrelin as a potential therapeutic peptide in cancer prevention: A narrative review of molecular and cellular mechanisms. In Proceedings of the 10th International Conference on Recent Advances in Bioscience (pp. 49–64). *KSG College of Arts and Science.*

Feb – July, 2024

EXPERIENCE

- **Dissertation project titled** "Exploring the Combinatorial Antimicrobial and Anti-Virulence Potential of Quercetin with Antibiotics Against *Vibrio cholerae.*"

  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

- **Poster Presentation** at International Conference on Advances in Biotechnology, Bioprocessing, and Structural Biology (ICABSB-2025), December 2025 at *IIT Roorkie, Uttrakhand, India* (View Certificate)

- **Poster Presentation** at India International Science Festival (IISF) 2025, December 2025 at *Chandigarh, Haryana, India* (View Certificate)

- **Poster Presentation** at AICBio 2025 (Research Symposium on Artificial Intelligence and Computational Biology), December 2025 at *Amrita Vishwa Vidyapeetham, Coimbatore, Tamil Nadu, India* (View Certificate)

- **Oral Presentation** at Research Catalyst Global Symposium (RCGS), September 2025 Online (View Certificate)

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

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

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

AIRSA: All India Research Scholar Association, Member since October, 2025