Dr. Arnab Mukherjee, PhD

Kolkata, West Bengal, India

Summary

A passionate and motivated researcher specializing in Computational Biology, enthusiastic about data-driven discovery and cancer genomics, aiming to apply and dessiminate my expertise for continuous scientific advancements.

Education

Manipal Academy of Higher Education

Ph.D. (Dr. TMA Pai Research Scholar)

April 2021 – December 2024

Systematic Identification of Volatile Leads to Target Lung Cancer

- Utilized computational methods, molecular simulations, and integrative omics to identify multi-target volatile leads for lung cancer.
- Uncovered biomarkers, regulatory networks, and therapeutic targets driving lung cancer progression.
- Demonstrated the potential of volatile leads in drugging a novel lncRNA transcript, inhibiting the protein-protein interactions, aberrantly DNA methylated targets, and a mutated EGFR in lung cancer.
- Acquired advanced skills in data visualization, cheminformatics, integrative omics, and systems biology.

Roles and Responsibilities:

- Designed and delivered modules for the M.Tech Biomolecular Data Analytics Laboratory.
- Mentored B.Tech and M.Tech students on academic and research projects.
- Supported the technical team for the Hands-on Workshop on Biologics & Vaccine Design in collaboration with **Schrödinger India**.

SRM Institute of Science and Technology

M.Sc., Biotechnology

2018 – 2020

Dissertation: Evaluation of Antioxidant and Anticancer Properties of RP12 Peptide Derived from Tachykinin Protein of *Channa striatus* in In Vivo And In Vitro Model

Maulana Abul Kalam Azad University of Technology

B.Sc. (H), Genetics

2015 – 2018

Dissertation: Antioxidant and Hepatoprotective effects of *Andrographis sp.*

Technical Skills

1. **Computational Tools, Resources and Libraries:** R, Bash Scripting, GNU/Linux, Python, GROMACS, High-Performance Computing (HPC), Bioconductor, BEDtools, SAMtools, UCSC Genome Browser, Genome Assembly LiftOver, COPASI, CellDesigner, Cytoscape, AutoDock, Glide, GROMACS, Desmond AlphaFold, Robetta, RNAfold, and RNA Composer.
2. **Data Analysis and Visualization:** RNA-Seq, Hi-Seq, ChIP-Seq, Repli-Seq, WES and WGS, Bisulfite-Seq.
3. **Expertise in the systematic database exploration and curation** of genomic data using ENCODE and GTEx, with a specialized focus on databases of regulatory elements such as enhancers, ncRNAs, promoters, CpG islands, and chromatin accessibility profiles.
4. **Scientific Communication:** Writing Fellowships, Grants, Publications, and International Conferences.

Achievements

1. Presented a poster and flash talk at **IIT Madras–EMBL-EBI Winter School 2021** on “Systematic Identification of Lung Cancer Biomarkers Using Dynamic Network Analysis.

2. Selected as one of 23 delegates for **CompBio22-23** (Thailand and Singapore), funded by the National Science Foundation (NSF, USA), XSEDE, and TEIN* Cooperation Centre.
3. Participated in **SERB High-End Workshop (Karyashala)** on “Bioinformatics and Statistical Analysis of Genome-Scale DNA and RNA Sequencing Data” at DBT-National Institute of Biomedical Genomics, Kalyani, West Bengal, India.
4. Presented a poster at the **International Conference on Drug Discovery 2022**, BITS Pilani, on “Identification of lncRNAs Driving Radioresistance in Non-Small Cell Lung Cancer.”
5. Secured **Bioconductor** Travel Fellowship to deliver a talk at **BioC2024** in Grand Rapids, Michigan, USA.
6. Appointed as a Judge at the Regional Level of the **National Science Congress 2023** by Kendriya Vidyalaya Sangathan (Bengaluru Region).
7. Reviewed original articles for ***Heliyon*, CellPress**–Elsevier and ***Scientific Reports***.
8. Graduate Student Member, **American Society of Human Genetics** (May 2023 – December 2023).
9. Visiting Scholar at Prof. Colin Jamora’s Lab, **DBT-inStem, Bengaluru**, India (August – October 2023), specializing in cell culture, staining, and imaging techniques.

Selected Publications

1. **Mukherjee, A**., Acharya, P. B., Singh, A., & Kuppusamy Selvam, M. (2023). Identification of therapeutic miRNAs from the arsenic induced gene expression profile of hepatocellular carcinoma. Chemical Biology & Drug Design, 101(5), 1027–1041. https://doi.org/10.1111/CBDD.14132
2. **Mukherjee, A**., Abraham, S., Singh, A., Balaji, S, & Mukunthan, · K S. (2024). From Data to Cure: A Comprehensive Exploration of Multi-omics Data Analysis for Targeted Therapies. Molecular Biotechnology 2024, 1–21. https://doi.org/10.1007/S12033-024-01133-6
3. **Mukherjee, A**., Yadav, P. H., & Mukunthan, K. S. (2023). Unveiling Potential Targeted Therapeutic Opportunities for Co-Overexpressed Targeting Protein for Xklp2 and Aurora-A Kinase in Lung Adenocarcinoma. Molecular Biotechnology, 1–12. https://doi.org/10.1007/S12033-023-00879-9
4. Raju, S. V., **Mukherjee, A**., Sarkar, P., Issac, P. K., Lite, C., Paray, B. A., Al-Sadoon, M. K., Al-Mfarij, A. R., & Arockiaraj, J. (2021). RM12 similar to substance P from tachykinin of freshwater murrel Channa striatus influence intracellular ROS in vitro fish erythrocytes and developmental toxicity and antioxidant enzymes in vivo zebrafish embryo. Fish Physiology and Biochemistry, 47(4), 1073–1085. https://doi.org/10.1007/S10695-021-00950-9
5. **Mukherjee, A**., Kansagra, G., & Mukunthan, K S. Unsupervised Machine Learning Based Screening of Volatile Leads to Target T790M Mutated EGFR in lung Cancer **(Submitted).**
6. **Mukherjee, A**., Boonbangyang, M., & Mukunthan, K S. Unraveling the Intricate Molecular Landscape and Potential Biomarkers in Lung Adenocarcinoma through Integrative Epigenomic and Transcriptomic Profiling **(Accepted *Scientific Reports*).**

Experience

The Carpentries Instructor
(Data, Library, and Software Carpentries)
July 2024 – Present

Bioconductor
The Carpentries Certified Instructor
(Central and Self Organized-The Carpentries-Bioconductor Workshops)
July 2024 – Present

References

1. **Dr. Mukunthan KS** (PhD Supervisor)- Associate Professor, Manipal Institute of Technology, India
   mukunthan.ks@manipal.edu
2. **Dr. Ravindranath BS**- Associate Professor, Manipal Institute of Technology, India, ravindranath.bs@manipal.edu
3. **Prof. Jesu Arockia Raj A**- Professor, SRM Institute of Science and Technology, India, jesuaroa@srmist.edu.in