



Ahnaf Tajwar

Research Assistant

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RESEARCH PROFILE

An inquisitive life science graduate with a deep-seated curiosity for the molecular world. Expertise spans molecular biology, bioinformatics, and the intricacies of wet lab techniques, including microbiology and phytochemistry. Experience encompasses clinical trials, drug development, and the nuanced analysis of genomic and proteomic data. Adept at diverse laboratory operations, from sample processing to molecular diagnostics. Seeks to unravel complex biological questions through collaborative research and to ignite a passion for discovery in the next generation of scientists. Eager to contribute to impactful research, embracing the potential of emerging tools across academia and industry.

ACADEMIC BACKGROUND

Oct 2022 – Jan 2024
Dhaka, Bangladesh

Master of Science in Genetic Engineering and Biotechnology
University of Dhaka 🔗
CGPA: 3.73 (on a scale of 4.00)

Jan 2018 – Sep 2022
Dhaka, Bangladesh

Bachelor of Science (Honors) in Genetic Engineering and Biotechnology
University of Dhaka 🔗
CGPA: 3.77 (on a scale of 4.00)

Jul 2015 – Jun 2017
Dhaka, Bangladesh

Higher Secondary School Certificate in Science
Dhaka Residential Model College 🔗
GPA: 5.00 (on a scale of 5.00)

Jan 2013 – May 2015
Dhaka, Bangladesh

Secondary School Certificate in Science
Dhaka Residential Model College 🔗
GPA: 5.00 (on a scale of 5.00)

EXPERIENCE

Sep 2024 – Present
Dhaka, Bangladesh

IDD Special Activities, icddr,b 🔗
Research Assistant

- Maintained & troubleshoot laboratory equipment, ensuring operational readiness for research activities.
- Managed complete biospecimen lifecycle (processing, labeling, storage) per protocol, safeguarding sample integrity for analysis.
- Executed microbiological & molecular procedures including microbial ID (RDT, culture, PCR), nucleic acid extraction, and phage characterization.
- Collaborated with senior staff to implement and uphold rigorous QA processes, ensuring high research integrity.
- Provided operational oversight & guidance to clinical trial staff (field workers, MTs, nurses), ensuring protocol adherence.
- Liaised effectively with international sponsors & advisors, fostering collaboration on global health and clinical research projects.
- Developed/managed digital documentation systems (patient records, ICFs, sample tracking) and translated key research/logistical documents (English ↔ Bangla), standardizing procedures for compliance & localization.

Department of Genetic Engineering and Biotechnology, University of Dhaka 🔗

Jan 2024 – Sep 2024
Dhaka, Bangladesh

Research Assistant

- Actively contributed to the design, execution, and analysis of various cutting-edge research projects within the field of genetic engineering and biotechnology.
- Provided mentorship and guidance to novice researchers, fostering their scientific development and helping them navigate project-related activities effectively.

Aug 2021 – Dec 2023
Dhaka, Bangladesh

Thesis Student and Researcher

- Conducted comprehensive research into the antimicrobial properties of *Costus woodsonii* for a Master's thesis, exploring its potential as a source of novel therapeutic agents.
- Engaged in bioinformatics analyses to investigate the virulence factors of *Tsukamurella paurometabola* and *Enterobacter cloacae*, shedding light on their pathogenic mechanisms.

Feb 2024 – Present
Khushab, Pakistan

Notesnook 🔗

Community Moderator

- Provided frontline user support across Telegram, Discord, and Reddit, troubleshooting software issues, resolving user queries, and ensuring a positive experience for all.
- Cultivated a thriving and welcoming online community by fostering positive discussions, enforcing community guidelines, and promoting a respectful environment.
- Acted as a vital conduit for user feedback, relaying valuable insights and suggestions to the development team to inform ongoing improvements to the Notesnook app.
- Helped maintain and update user documentation, FAQs, and knowledge base articles, ensuring users have ready access to comprehensive and helpful resources.

- Orchestrated and moderated live “Comprehensive Arabic 21” course sessions on Zoom, ensuring a seamless, interactive, and engaging learning environment for participants worldwide.
- Managed the participant question queue during live sessions, efficiently relaying questions to the instructor to facilitate dynamic learning and address student queries in real time.
- Maintained a focused and conducive learning atmosphere during live classes by promptly addressing any disruptions and ensuring all participants could fully engage with the course content.

RESEARCH INTERESTS

Drug and Vaccine Development

- Screening and identification of drug candidates
- *In vitro* and *in vivo* efficacy and toxicity studies
- Development of drug delivery systems
- Antigen discovery and vaccine design
- Immunogenicity and safety assessment

Microbiological Analyses

- Development, optimization and maintenance of pure cultures in diverse growth mediums
- Activity measurement of antimicrobial compounds (MIC and MBC)

Phytochemical Analyses

- Processing of raw plant sample for phytochemical studies
- Extraction and detection of phytochemicals
- Thin-layer chromatography

Functional Genomics and Bioinformatics

- Gene/Gene product identification and functional annotation
- Molecular docking and molecular dynamics simulation
- Gene/Protein interactome analyses

Clinical Trials and Translational Research

- Design and implementation of Phase I-IV clinical trials
- Evaluation of therapeutic efficacy and safety
- Regulatory compliance and ethical considerations
- Translational research from bench to bedside
- Patient recruitment and retention strategies

Metagenomics and Microbiome Analysis

- Analysis of diverse microbial communities
- Characterization of microbiome and its possible roles
- Microbiome-based therapeutics and diagnostics
- Host-microbe interactions

Population Genomics and Evolutionary Biology

- Analysis of genetic variants within animal populations
- Reconstruction of phylogenetic trees and adaptation patterns
- Evaluation of selective pressure on genetic inheritance

Data Wrangling, Analysis and Predictive Modeling

- Development of tools to clean raw biological data
- Visualizing cleaned datasets with codes and tools
- Identifying patterns and insights within large datasets

PUBLICATIONS

2022

Supantha Dey, Sazzad Shahreear, Maliha Afroj Zinnia, Ahnaf Tajwar, and Abul Bashir Mir Md. Khademul Islam (2022). Functional Annotation of Hypothetical Proteins From the Enterobacter cloacae B13 Strain and Its Association With Pathogenicity 

Bioinformatics and biology insights, 16, 1177932222115535

RESEARCH PROJECTS

2024 – Present

A Randomized, Double-Blind, Placebo-Controlled, Safety, Tolerability and Pharmacokinetic Phase I Study of Escalating Single Doses of VPO-227 in Healthy Volunteers

Clinical Trial

Orchestrated critical lab operations and sample logistics for this Phase I healthy volunteer study. Established rigorous protocols governing biospecimen handling from collection (plasma, urine, stool, sweat) through processing to shipment, ensuring sample integrity and strict biosafety compliance. Made key contributions across trial execution: collaborated on ICF development and guided health worker collection techniques; managed meticulous inventory and IP temperature control; and designed essential labels/documents while maintaining accurate patient record files (CRFs).

2024 – Present

The AWARe1 pragmatic cluster-randomised trial, economic evaluation and process evaluation of antibiotic stewardship in primary healthcare of acute respiratory infections in low- and middle-income countries using the WHO AWARe system (AWARe1-Trial)

Clinical Trial

Facilitated the localization effort for this global primary care trial in Bangladesh, translating essential documents and questionnaires into Bangla for Upazila Health Complexes. Identified key personnel for advisory roles and training needs, and developed crucial facility location maps to support logistical planning.

2024 – Present

Clinical Trial on Detection of hepatocellular carcinoma (HCC) with non-invasive method based on DNA methylation of circulated tumor DNA, PBMC and T cells

Clinical Study

Executed vital blood specimen processing and storage protocols for ctDNA methylation analysis in HCC detection. Architected and managed comprehensive digital documentation systems for patient records, ICFs, and test reports. Standardized sample handling and documentation procedures, ensuring regulatory compliance and optimal specimen integrity for shipment.

2023 – Present

Study of Epigenetic Changes in Blood Samples in Breast Cancer Patients

Clinical Study

Managed the complete documentation lifecycle for this epigenetic research study, systematically organizing ICFs and patient records. Implemented efficient digital filing systems, enhancing data accessibility and retrieval. Ensured meticulous sample integrity verification and sorting prior to shipment.

2024

Analyzing Global Aquaculture Production Trends and Insights

Analytical Case Study

Analyzed global aquaculture datasets to identify and visualize production leaders between 2014-2018. Conducted a focused investigation into Bangladesh's aquaculture sector growth (1960-2018), highlighting the impact of biotechnology on industry expansion through graphical representation.

2023 – 2024

Evaluation of Phytochemical Properties and In Vitro Antimicrobial Activity of *Costus woodsonii* Extracts

Masters Thesis Project

Conducted comprehensive laboratory research for Masters thesis. Involved extracting bioactive compounds from *Costus woodsonii* using various solvent systems, performing qualitative phytochemical screening, and evaluating *in vitro* antimicrobial efficacy against pathogenic bacteria via bi-layer diffusion and TLC bioautography.

2021 – 2022

Exploring the Virulence of *Tsukamurella paurometabola* Through Functional Annotation of Hypothetical Proteins

Bachelor's Project

Executed a bioinformatics pipeline involving protein sequence retrieval, curation of hypothetical proteins, and computational functional annotation to predict potential virulence factors in *Tsukamurella paurometabola*.

2021 – 2022

Functional Annotation of Hypothetical Proteins From the *Enterobacter cloacae* B13 Strain and Its Association With Pathogenicity

Research Project

Provided key support in data acquisition and processing stages for a project focused on the functional annotation and virulence prediction of hypothetical proteins within the *Enterobacter cloacae* B13 strain.

SKILLS AND COMPETENCIES

Laboratory Skills

- Clinical sample handling, processing and storage
- Techniques of molecular biology and rDNA technology
- Microbial assays, plant sample extraction, TLC

Teaching/Presentation Skills

- Tutoring school and college-level students
- Creating high-quality visuals, documents, presentations, and spreadsheets (Microsoft Office/OpenOffice).
- Graphic design using computer/mobile tools (Adobe/Affinity)
- Typing and translation (English-Bengali)

Soft Skills

- Adaptability and critical thinking
- Finding creative solutions to issues
- Effective collaboration with diverse teams

Bioinformatics and Biostatistics

- BLAST, MEGA, phylogenetics, protein studies
- Bioinformatics pipeline/workflow development
- Genomic and proteomic data analysis

Programming/Data Analysis

- Python (IDLE, PyCharm), R (RStudio, VS Code, ggplot2, R Markdown), SQL, Perl, C++ (VS Code), Bash scripting
- Data analysis and visualization (Python and R)
- Data querying and functional programming (SQL, Perl, C++)
- Software development and problem-solving (C++)

Additional Skills

- Cloud computing, Linux/UNIX systems, CLI, file I/O
- Git, documentation, user support and beta testing
- Website deployment (Hugo/WordPress/Flask/Netlify)

AWARDS AND HONORS

2023

National Science and Technology Fellowship

Ministry of Science and Technology, Government of Bangladesh

2020

6th Prize in Dhaka University Seerat Reading and Competition

Dhaka University Dawah Circle

2020

4th Prize, Essay Writing on Seerah

National Siratunnabi (PBUH) Celebration Committee

2019

New India-Bangladesh Friendship Freedom Fighters Descendent Scholarship

Ministry of Liberation War Affairs, Government of Bangladesh

2014

Second Runners-up in Quiz Competition of Annual Science Fair

Dhaka College

2014

Regional Champion (Math and Computer, Dhaka Region, Bangabandhu Creative Talent Hunt Competition)

Government of Bangladesh

EXTRACURRICULAR ACTIVITIES AND ENGAGEMENTS

2022

Editor, Typesetter and Designer

BioGen Magazine, Genetic Engineering and Biotechnology Club, University of Dhaka

2014 – 2016

Academic Volunteer

DRMC Science Club, Dhaka Residential Model College

2012 – 2016

Quiz Team Member

DRMC Inflammers, Dhaka Residential Model College

2010 – 2011

National Math Olympiad Participant

LANGUAGES

• Bengali

• English

• Arabic

• Hindi/Urdu

CERTIFICATIONS AND TRAININGS

• Master of Science in Genetic Engineering and Biotechnology

• Bachelor of Science in Genetic Engineering and Biotechnology

• Good Clinical Practice (GCP) Training - National Institute on Drug Abuse (NIDA) 

• Biosafety and Biosecurity Trainings in Both Laboratory and Clinical Care Settings 

• Higher Secondary School Certificate in Science

• Secondary School Certificate in Science

• Protecting Human Research Participants Training 

• Introduction to Programming in R for Biologists

REFERENCES

Dr. Abu Ashfaqur Sajib, *Professor and Chairperson*, Department of Genetic Engineering and Biotechnology, University of Dhaka
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Dr. Mohammed Nazmul Ahsan, *Professor and Former Chairperson*,
Department of Genetic Engineering and Biotechnology, University of Dhaka
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Dr. Hasan Muhammad Abdullah, *Associate Professor*,
Department of Agroforestry & Environment, Bangabandhu Sheikh Mujibur Rahman Agricultural University
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