



# 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 & troubleshooted laboratory equipment, ensuring operational readiness for research activities.
- Managed complete biospecimen lifecycle (processing, labeling, storage, and disposal) 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.

Feb 2024 – Present  
Khushab, Pakistan

- Engaged in bioinformatics analyses to investigate the virulence factors of *Tsukamurella paurometabola* and *Enterobacter cloacae*, shedding light on their pathogenic mechanisms.

#### 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.

Jun 2021 – Apr 2022  
Dhaka, Bangladesh

#### AI-Quraner Vasha Institute

##### Virtual Classroom Assistant

- 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 Shahrear, 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, 11779322221115535

### 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

Directed essential lab operations and sample logistics for a Phase I healthy volunteer study. Developed effective protocols and automated labeling systems for thorough biospecimen management (plasma, urine, stool, sweat), covering collection through to shipment and disposal, ensuring sample and bioequipment integrity and strict biosafety compliance. Furthered trial execution by collaborating on ICF development, training health workers in collection techniques, precisely managing inventory and IP temperature control, designing vital labels and documents, and maintaining accurate patient record files (CRFs).

2024 – Present

### **A Global Low- and Middle-Income Country Primary Care (PC) Antimicrobial Stewardship Trial using WHO AWaRe system – the AWaRe 1 Trial**

#### *Clinical Trial*

Facilitated the localization effort for this global primary care trial in Bangladesh, translating essential documents and questionnaires into Bangla for surveillance software 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	<b>National Science and Technology Fellowship</b> <i>Ministry of Science and Technology, Government of Bangladesh</i>
2020	<b>6th Prize in Dhaka University Seerat Reading and Competition</b> <i>Dhaka University Dawah Circle</i>
2020	<b>4th Prize, Essay Writing on Seerah</b> <i>National Siratunnabi (PBUH) Celebration Committee</i>
2019	<b>New India-Bangladesh Friendship Freedom Fighters Descendent Scholarship</b> <i>Ministry of Liberation War Affairs, Government of Bangladesh</i>
2014	<b>Second Runners-up in Quiz Competition of Annual Science Fair</b> <i>Dhaka College</i>
2014	<b>Regional Champion (Math and Computer, Dhaka Region, Bangabandhu Creative Talent Hunt Competition)</b> <i>Government of Bangladesh</i>




## EXTRACURRICULAR ACTIVITIES AND ENGAGEMENTS

2022	<b>Editor, Typesetter and Designer</b> <i>BioGen Magazine, Genetic Engineering and Biotechnology Club, University of Dhaka</i>
2014 – 2016	<b>Academic Volunteer</b> <i>DRMC Science Club, Dhaka Residential Model College</i>
2012 – 2016	<b>Quiz Team Member</b> <i>DRMC Inflamers, Dhaka Residential Model College</i>
2010 – 2011	<b>National Math Olympiad Participant</b>

## 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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Department of Agroforestry & Environment, Bangabandhu Sheikh Mujibur Rahman Agricultural University  
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