

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 and troubleshooted complex laboratory equipment, ensuring optimal functionality and a smooth workflow for all research activities.
- Meticulously processed, labeled, and stored a diverse array of biological samples under appropriate conditions, safeguarding their integrity for crucial downstream analysis.
- Isolated and identified microbial targets from a diverse range of sources, including clinical samples (blood, urine, stool, and other body fluids), environmental samples, utilizing a combination of rapid diagnostic tests, culturing techniques, and advanced molecular methods like PCR.
- Extracted nucleic acid and characterized bacteriophages through a suite of phenotypic and molecular tests, contributing to a deeper understanding of their biology.
- Collaborated closely with senior colleagues to implement and maintain rigorous quality assurance processes, ensuring the highest standards of research integrity.
- Oversaw the activities of field workers, medical technologists, and nurses during clinical trials, guaranteeing their smooth and efficient execution.
- Effectively communicated and engaged with international sponsors and foreign advisors, fostering strong collaborative relationships and ensuring the proper conduct of research projects.
- Translated and developed key documents, presentations, and other relevant research, office and logistics materials.

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.

Jun 2021 – Apr 2022
Dhaka, Bangladesh

Al-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, 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

Contributed to the clinical trial by collaborating on the development of informed consent forms (ICFs) and establishing protocols for sample handling (blood, urine, stool), equipment disinfection, and waste management. Created labeling for sample containers for accurate identification and handling. Conducted a thorough inventory of necessary logistics, compiling a detailed list for smooth trial operation. Oversaw investigational product temperature monitoring to preserve its integrity.

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 localization for Upazila Health Complexes and offices by translating key documents and questionnaires into Bangla. Assembled a list of senior officers as potential advisors and identified Upazila Health Complex workers requiring training. Produced a detailed map of facility locations.

2024 — Present

Non-HCC Biomarker Analysis Study

Clinical Study

Took part in blood specimen processing and storage protocols for the Non-HCC Biomarker Analysis (NHBA) Study, coupled with managing comprehensive documentation systems. Organized patient test reports, prescription records, and informed consent forms (ICFs) digitally for efficient access. Standardized procedures for both biological sample handling and document management, ensuring optimal specimen integrity and adherence to regulations.

2023 — Present

Study of Epigenetic Changes in Blood Samples in Breast Cancer Patients

Clinical Study

Managed documentation for an epigenetic breast cancer research study, including systematic organization of informed consent forms (ICFs) and patient prescription records. Established digital filing systems to improve data accessibility. Confirmed sample integrity and sorted samples in preparation for shipment.

2024

Analyzing Global Aquaculture Production Trends and Insights

Analytical Case Study

This project investigated a fishing dataset to identify the top aquaculture-producing countries from 2014 to 2018, visualizing their production data using graphs. It also examined the significant growth of aquaculture in Bangladesh from 1960 to 2018, emphasizing the role of biotechnology in the industry's expansion.

2023 — 2024

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

Masters Thesis Project

Generated ethyl acetate extracts from powdered leaves, stems, and roots of *Costus woodsonii*. Subsequently, analyzed their phytochemical composition and assessed their potential antimicrobial activity against six pathogenic bacteria using bi-layer diffusion and TLC bioautography assays.

2021 — 2022

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

Bachelor's Project

Retrieved protein sequences of *Tsukamurella paurometabola*, curated the hypothetical proteins, and performed functional annotation and virulence prediction.

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

Research Project

Supported data collection and processing for functional annotation and virulence analysis of hypothetical proteins of *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
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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*,
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nahsan@du.ac.bd, (+88) 01718340750

Dr. Hasan Muhammad Abdullah, *Associate Professor*,
Department of Agroforestry & Environment, Bangabandhu Sheikh Mujibur Rahman Agricultural University
hasan.abdullah@bsmrau.edu.bd, (+88) 01533102323

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