

SANJANA FATEMA CHOWDHURY

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Scientific Officer, Biological Research Division

Bangladesh Council of Scientific and Industrial Research (BCSIR), Dhaka, Bangladesh

Education

MS in Genetic Engineering and Biotechnology **Apr 2019 – Dec 2020**
Shahjalal University of Science and Technology, Sylhet, Bangladesh

BSc in Genetic Engineering and Biotechnology **Apr 2015 – Feb 2019**
Shahjalal University of Science and Technology, Sylhet, Bangladesh

Second Major in Computer Science and Engineering **Jul 2016 – Apr 2019**
Shahjalal University of Science and Technology, Sylhet, Bangladesh

Professional Experience

Scientific Officer **November 2021 – Present**
Biological Research Division, Bangladesh Council of Scientific and Industrial Research (BCSIR) Dhaka, Bangladesh

Research Grants (Selected)

Project Leader

- Prevalence of Inapparent Dengue Virus Infection in Bangladesh and Performance Evaluation of qRT-PCR Based Diagnosis Over Serological Methods (July 2026 – Present) BDT 6 Lac
- Pan Genome Analysis and Horizontal Gene Transfer Mediated Antimicrobial Resistance Investigation in Clinical Isolates (July 2023 – Present) BDT 5 Lac
- Microbial Community and Differential Gene Expression Analysis of Chronic Obstructive Pulmonary Disease (COPD) in Bangladesh (July 2022 – June 2024) BDT 10 Lac

Project Associate

- Genomic and Transcriptomic Analysis of Pelvi-Ureteric Junction Obstruction (PUJO) in Children with Hydronephrosis in Bangladesh (July 2022 – June 2024) BDT 4.5 Lac

Thesis and Academic Projects

- Umbilical cord blood screening for the detection of intron 22 inversion in FVIII gene and in-silico analysis of missense mutations underlying Hemophilia A. Supervisor: Prof. Dr. Md Faruque Miah (Nov 2019 – Dec 2020)
- Study of the inheritance pattern of deletional alpha thalassemia in north-eastern Bangladesh. Supervisor: Prof. Dr. Md Faruque Miah (Jun 2018 – Jan 2019)
- Detection and Risk Analysis of Breast Cancer Using Machine Learning and Conditional Logic. Supervisor: Asst. Prof. Ayesha Tasnim (Dec 2018 – Apr 2019)

Technical Skills and Competences

- Next Generation Sequencing (MiniSeq, NextSeq, NovaSeq platforms)
- Manual and kit-based DNA and RNA extraction from blood, tissue, sputum, plant, bacterial samples
- RAPD, RFLP, PCR, Gel electrophoresis
- Primer design
- Standard PCR, Multiplex PCR, qRT-PCR, Long-distance PCR, Inverse PCR
- Bacterial cell culture methods
- Biofilm assay
- Antibioqram

Computational Skills

- Sequencing data analysis
- Microbial genome annotation and assembly
- Comparative genome analysis
- Phylogenetic tree prediction
- Protein structure prediction and modeling
- Chemoinformatics
- Metatranscriptomics and metagenomic analysis
- Computer-aided drug design
- Molecular docking
- Drug target discovery
- Genomics data analysis

Programming Skills

- Linux and Bash scripting
- Large sequence data file manipulation and task automation
- R programming for biological data analysis
- Moderate command over C, Java, Python

Professional Affiliation

- Treasurer, ISCB Student Council
- Member, International Society for Computational Biology (ISCB)
- International Outreach Member, American Society of Microbiology

Professional Trainings (Attended)

- LC-MS/MS, FESEM Training, BCSIR 9–13 Mar, 12–16 Oct 2025
- AlphaFold Education Summit, EMBL-EBI, Hinxton, UK (Google DeepMind & EMBL-EBI) 14–16 Jan 2025
- Oligosynthesizer MerMade-6 Training, Genomic Research Laboratory, BCSIR 26–28 Feb 2024
- Antimicrobial Resistance in Bacterial Pathogens – Asia Global Training Course, Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand 19–24 Feb 2023
- HackBio Bioinformatics Internship (Virtual) 01 Aug – 05 Sep 2021
- Hands-on Training on Detection of COVID-19 using qRT-PCR, Specialized COVID-19 Detection Lab, SUST 11–28 Apr 2021
- Training on Bioinformatics for Biotechnology Research, NIB 21–25 Mar 2021
- Beginners' Introduction to Next Generation Sequencing and Microbial Genomics, The Bioscience Factory 22 Jan – 12 Feb 2021
- Introduction to Bash Shell Scripting, ISCB RSG Bangladesh 29–30 Aug 2021

Professional Trainings (As Trainer)

- MiniSeq Sequencing Platform and Data Analysis Training, BCSIR Dhaka Laboratories 25–29 Jan 2026
- MiniSeq Sequencing Platform and Data Analysis Training, BCSIR Dhaka Laboratories 20–24 Apr 2025
- Operation and Maintenance of Real Time-Polymerase Chain Reaction (RT-PCR), BCSIR Dhaka Laboratories 04–08 Feb 2024

Publications (Selected)

1. **Chowdhury SF**, Sarkar MM, Al Sium SM, Khan MS. Metatranscriptomic analysis uncovers microbial and immune signatures underlying COVID-19 severity. *Briefings in Bioinformatics*. **2025**, 26(Supplement_1), i14-15.
2. Al Sium SM, Goswami B, **Chowdhury SF**, Naser SR, Sarkar MK, Faruq MJ, Habib MA, Akter S, Banu TA, Sarkar MM, Khan MS. Genome-wide analysis of bacterial defense mechanisms in a uropathogenic *Morganella morganii* isolate from Bangladesh. *PLOS ONE*. **2025**, 20(1), e0313141.
3. Begum M, Barsha KF, Rahman MM, Sarkar MM, **Chowdhury SF**, Bhowmik S, Shormi AS, Bari SM. Gut microbiome profiling of antibiotic-treated *Mystus cavasius* using culture-based and shotgun metagenomic approaches. *Antonie van Leeuwenhoek*. **2025**, 118(12), 183.
4. Sarkar MM, Naser SR, **Chowdhury SF**, Khan MS, Habib MA, Akter S, Banu TA, Goswami B, Jahan I, Nayem MR, Hassan MA. M gene targeted qRT-PCR approach for SARS-CoV-2 virus detection. *Scientific Reports*. **2023**, 13(1), 16659.
5. Miah MF, Rahaman MSE, **Chowdhury SF**, Mahmud MGR. Study of genetic variability of umbilical cord blood using RAPD assay. *Bangladesh Journal of Medical Science*. **2021**, 20(4), 848-854.

Conference Presentations

- Oral Presentation: "Metatranscriptomic Analysis Uncovers Microbial and Immune Signatures Underlying COVID-19 Severity", GIW-ISCB Asia Conference, Hong Kong 2025
- Lightning Talk: "Genome-wide analysis of bacterial defense of *Morganella morganii* isolated in Bangladesh", GIW-ISCB Asia Conference, Singapore 2023
- Poster: "Bacteria Based Self-Healing Concrete", NYBB 5th National Congress 2020
- Idea Hackathon: "Wonder in Onion with CRISPR Cas-9", NYBB 5th National Congress 2020
- Awareness Poster: "Ensure blood test before marriage to prevent alpha thalassemia", National Biotechnology Fair 2019
- Poster: "Production of Agarwood Oil within 3 Months using Biotechnological Approaches", National Biotechnology Fair 2018

Awards

- Full Bursary – AlphaFold Education Summit 2025, EMBL-EBI, UK 2025
- Full Bursary – Antimicrobial Resistance Training, Mahidol University, Thailand 2023
- Full Bursary – ISCB Conferences (Hong Kong 2025, Singapore 2023)
- Winner – ISCB Student Council Symposium 2021 Wikipedia Hackathon 2021
- National Science and Technology Fellowship (54K BDT) 2021
- University Scholarship for Academic Excellence 2020
- Second Runner Up – Poster Presentation, EXCEED 2018 2018
- Champion – National Biotechnology Festival 2018
- Champion – Robi Bangladesh Youth Fest 2017

References

- Available upon request.

Last Updated: Monday 23 February, 2026