Mohammed Sajjad Hossain Bappi

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Education

Aug 2026 - Present	**The Ohio State University,** Columbus, OH, USA ***Ph.D. in Earth Sciences,*** *School of Earth Sciences*
Jan 2026 - Aug 2026	**University of Texas at El Paso,** El Paso, TX, USA ***Graduate Research Associate,*** *Department of Earth, Environmental and Resources Sciences* GPA: 4.00/4.00 (Completed one semester; Degree not awarded)
Jun 2024 – Jul 2025	**University of Chittagong,** Chittagong, Bangladesh ***Master of Science (M.S.)*** in *Biochemistry & Molecular Biology* CGPA: 3.88/4.00 (2nd among 35 students)
Jan 2019 - Jun 2024	**University of Chittagong,** Chittagong, Bangladesh ***Bachelor of Science (B.Sc.)*** **Honours** *in Biochemistry & Molecular Biology* CGPA: 3.79/4.00 (1st among 45 students)

Research interests

• Geomicrobiology • Biogeochemistry • Microbial ecology • Microbial phylogenetics • Bioremediation

Skills

Wet Lab

Environmental sample collection (soil, sediment, water), microbial culture, biosafety and aseptic techniques, DNA extraction, 16S rRNA gene-based identification, PCR, Gel electrophoresis, metabolite extraction, biochemical assays, UV-Vis Spectroscopy, strain preservation.

Computational Lab

Phylogenetic methods (UPGMA, NJ, MP, ML; PAUP*, IQ-TREE, FigTree), Linux/Unix command-line scripting, sequence retrieval and alignment (NCBI, BLAST, MAFFT, MUSCLE), sequence processing and curation (FASTA, trimAl, AMAS, AliView), comparative genomics, primer design, molecular docking (AutoDock), drug-likeness analysis (SwissADME).

Professional skills

Scientific writing, research proposal and grant writing, teaching and mentoring, scientific presentations, teamwork.

Experiences

Jan 2026 - Present	**Shang Research Group** **Graduate Research Associate** Advisor: Dr. Haitao Shang **Research Focus:** Investigating microbial evolution and its influence on Earth over geological timescales. ▪ Applying computational approaches to study microbial evolution, diversity and phylogenetic tree ▪ Working with bioinformatics tools for sequence-based analysis and large-scale dataset processing ▪ Developing Linux-based workflows for biological data handling ▪ Examining links between microbial systems and environmental processes, including biogeochemical cycles
Nov 2023 - Jul 2025	**Laboratory for Health, Omics, and Pathway Exploration (HOPE Lab)** **Research Assistant** Advisors: Dr. Tanim Jabid Hossain, Dr. Mohammad Razuanul Haque **Project title:** In-silico and In-vitro approach to reveal the therapeutic potential of prodigiosin produced by *Serratia nematodiphila.*

	▪ Identified *Serratia nematodiphila* using 16S rRNA gene-based identification and biochemical tests ▪ Determined optimum growth conditions and extracted the pigment prodigiosin via solvent extraction method; confirmed it as prodigiosin through whole genome sequence data analysis and biochemical tests ▪ Conducted in silico studies to predict the therapeutic potential of prodigiosin through ADMET analysis, drug-likeness assessment and molecular docking ▪ Assessed in vitro antiviral, anti-diabetic, antioxidant, and antimicrobial activities of prodigiosin
Dec 2022 – Nov 2023	**Laboratory of Biochemistry & Pathogenesis of Microbes (BPM)** **Undergraduate Research Student** Advisor: Dr. Tanim Jabid Hossain **Projects and responsibilities:** ▪ Performed assays to assess growth and enzyme activity of extremophiles under stress conditions (pH, temperature, lithium, cesium), including emulsification tests ▪ Contributed to analysis of plant growth–promoting traits in rhizobacteria (auxin production, nitrogen fixation, phosphate solubilization and abiotic stress tolerance ability) ▪ Assisted in evaluating probiotic properties of lactic acid bacteria from date sap (milk coagulation, antibiotic susceptibility) ▪ Conducted computational analysis for multi-epitope vaccine design targeting Mokola virus
Sep 2026 – Nov 2026	**Cambrian College,** Chittagong, Bangladesh **Lecturer (Biology)** ▪ Taught biology at the college-level, prepared lectures, and helped students with coursework.
Feb 2019 – Aug 2026	**BioFun,** Halishahar, Chattogram **Biology Instructor** ▪ Co-founded BioFun and taught biology and chemistry to O-level and A-level students, mentored over 200 students in my six years journey
Funding proposal participation	
Jan 2024	▪ **Improving agarwood inoculation process with lignocellulolytic gut bacteria isolated from *Anobium punctatum*** Funding Agency: Agarwood inoculation technique project, Bangladesh Forest Research Institute – BFRI, Chattogram Bangladesh. ▪ **Utilizing microbial nanoparticles to combat Fusarium wilt in bananas: An application of green-synthesized titanium and silver nanoparticles** Funding Agency: BAS-USDA Endowment Program, Bangladesh Academy of Sciences, Dhaka, Bangladesh. **Contribution:** Independently prepared the full research proposal, including background, research plan, methodology and budget analysis.
Internship & Training	
October 2023	**BioPc - A Bioinformatics Lab of Research and Training** **Research Intern** ▪ Practical knowledge regarding in-silico vaccine and drug design ▪ Structural and functional annotation of hypothetical proteins
Publications	
1.	Islam, S., Hossain, T. J., Afrin, S., Paul, S., **Bappi, M. S. H.**, Ali, F., & Ferdouse, J. (2026). Multifunctional lactic acid bacteria from sugarcane juice with probiotic properties for gut adaptation, health benefits, food preservation and quality enhancement. *Scientific Reports, 16*, 9994. https://doi.org/10.1038/s41598-026-40844-5

2. Nafiz, I. H., Sultana, J., Akther, K., Khan, M. S., Hasan, S., **Bappi, M. S. H.**, Rahman, T., Faisal, I. K., Chowdhury, M. N. A., Zedny, S. A., Ali, F., Uddin, M. K., & Hossain, T. J. (2026). Anthropogenic alkaline niches as a habitat for alkalitolerant bacteria: Taxonomy, ecophysiology, and biotechnologically relevant hydrolases. *SSRN*. https://doi.org/10.2139/ssrn.6987418 **[Preprint]**.
3. Rahman, T., **Bappi, M. S. H.**, & Hossain, T. J. (2024), Prodigiosin demonstrates promising antiviral activity against Dengue virus and Zika virus in in-silico study. Analytical Science Advances, 5(11-12), e202400039. https://doi.org/10.1002/ansa.202400039
4. Chowdhury, M. N. A., Hossain, T. J., Zedny S. A., **Bappi, M. S. H.**, Rahman, M., Hossen, M. M., Nafiz, I. H., & Islam, R. (2024), Multifaceted plant growth promoting traits and abiotic stress resistance abilities exhibited by *Chrysanthemum* rhizobacteria. Current Applied Science and Technology, 24(5), e0259128. https://doi.org/10.55003/cast.2024.259128
5. Zobaer, M., Ali, F., Anwar, M. N., **Bappi, M. S. H.**, Bakar, T. B., Hossain, T. J. (2023) Isolation of biosurfactant producing bacteria from oil-spilled soil and characterization of their secreted biosurfactants in pathogen-inhibition and oil-emulsification. *International Journal of Pharmaceutical Sciences and Research*, 15(4), 1226–1234.
6. Rahman, T., **Bappi, M. S. H**., & Hossain, T. J. (2025). Prodigiosin as a potential multi-target antidiabetic agent: Molecular docking and dynamics simulations with type 2 diabetes-related proteins. *SSRN*. https://doi.org/10.2139/ssrn.5656771 **[Preprint].**
7. Zobaer, M., Ali, F., Anwar, M. N., **Bappi, M. S. H**., & Hossain, T. J. (2025). Glycolipid-and peptidoglycolipid-like biosurfactants from Pseudomonas spp.: Preliminary characterization of stability, emulsification, and antimicrobial activity. *SSRN*. https://doi.org/10.2139/ssrn.5362789 **[Preprint].**

Conference and Symposium presentations

Poster Presentation:

An immunoinformatics approach to design multi-epitope vaccine candidate against Mokola Virus (MOKV), at

- 1st ISCB RSG Bangladesh CompBio Symposium 2023, organized by International Society for Computational Biology (ISCB)
- Idea for Innovation 2.0 Research work Presentation 2023, organized by BMBCU Career Club.

Three-Minute Thesis:

Isolation of Biosurfactant Producing Bacteria from Oil-Spilled Soil and Characterization of Their Secreted Biosurfactants in Pathogen-Inhibition and Oil-Emulsification, at

- Idea for Innovation 2.0 Research work Presentation 2023, organized by BMBCU Career Club
- BSBMB International Conference 2023, organized by Bangladesh Society of Biochemistry & Molecular Biology

Achievements

- Academic Excellence Award for Ranking 2nd, M.S. in Biochemistry and Molecular Biology Session 2022-23, CU (2025)
- Academic Excellence Award for Ranking 1st, B.Sc. in Biochemistry and Molecular Biology Session 2018-19, CU (2024)
- NST Fellowship, Ministry of Science and Technology, Bangladesh (2024)
- Champion, Idea for Innovation 2.0 Research Article Presentation, BMBCU Career Club (2023)
- 2nd Runners up, Idea for Innovation 2.0 Research Poster Presentation, BMBCU Career Club (2023)
- 2nd Runners up, Instant Science Speech in Science Carnival 2.0, Chittagong University Scientific Society-CUSS (2022)
- Champion, Scientific Blog Writing Contest, Chittagong University Robotics & Innovation Club (2020)
- 6th Position, 8th Bangladesh Chemistry Olympiad, Chattogram Division (2017)

Community involvements

- Executive Member, Chittagong University Research & Higher Study Society (2020-2021)
- Coordinator, BMBCU-Career Club (2019-20)
- Chief of Operation, Idea for Innovation 1.0 organized by BMBCU Career Club (2019)

- Session Moderator, BSBMB International Conference (2019)
- Child Journalist, National Children's Tasks Force-NCTF, Chittagong (2016)