Md. Jubayer Hossain

Single-Cell Genomics, Cancer Genomics, Neurogenomics and AI in Biology

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Education and Training

Master of Science in Microbiology
Dhaka, Bangladesh

Jagannath University
2019—2020

- Relevant Coursework: Genomics, Proteomics, Bioinformatics, Research Methodology and Scientific Writing

Bachelor of Science in Microbiology
Dhaka, Bangladesh

Jagannath University
2016—2019

- Relevant Coursework: Biostatistics, Public Health and Hygiene, Bioinformatics I, Bioinformatics II

Specialized Training: AI in Public Health
Dhaka, Bangladesh

Child Health Research Foundation (CHRF)
2023

- Acquired Skills: Epidemiological Modeling, Disease Surveillance using AI, Time Series Analysis (LSTM, ARIMA), Medical Image Analysis (X-ray, MRI)

Research Experience

Visiting Researcher
Dhaka, Bangladesh

Department of Public Health, Daffodil International University (Part-time)
Sep 2025 – Present

- Collaborated with DIU faculty and students on ongoing research projects, grant proposals, and publications in public health and health informatics, resulting in 2 manuscripts under preparation.
- Delivering workshops, online courses, and research mentorship to strengthen capacity building in public health research.

Nextflow Ambassador
Global

Nextflow Community (Voluntary)
Jan 2026 – Present

- Promoted adoption of Nextflow workflows within the bioinformatics and computational biology communities through technical advocacy, tutorials, and peer support.
- Organized and contributed to community-driven events, workshops, and knowledge-sharing sessions focused on reproducible, scalable, and portable scientific workflows.

GBD Collaborator
Washington, USA

Institute for Health Metrics and Evaluation (Part-time, Voluntary)
Jan 2024 – Present

- Contributed critical analytical feedback and statistical modeling to 4 Global Burden of Disease (GBD) studies, including one on routine childhood vaccination coverage published in The Lancet.
- Supported manuscript development and provided methodological input for 3 ongoing high-impact GBD papers (breast cancer, headache disorders, and mental disorders), all currently under peer review.

Selected Publications

*Note: * indicates corresponding author*

1. Fariha, F. T. J., Fuad, M., Saha, C. S., Hossen, S., & **Hossain, M. J.*** (2025). Comprehensive bioinformatics analysis reveals prognostic significance and immunological roles of WNT gene family in breast cancer. Sci Rep 15, 34490 (2025). https://doi.org/10.1038/s41598-025-13315-6
2. Ahmed, M. Z., Billah, M. M., Ferdous, J., & **Hossain, M. J.*** (2025). Pan-cancer analysis reveals immunological and prognostic significance of CCT5 in human tumors. *Scientific Reports, 15*, 14405. https://doi.org/10.1038/s41598-025-88339-z

3. Bari, S.M., Fuad, M., **Hossain, M.J.** et al. A meta-analysis of public RNA-Seq data identifies conserved stress responses in rainbow trout. BMC Genomics 26, 999 (2025). https://doi.org/10.1186/s12864-025-12127-2
4. GBD 2023 Headache Collaborators (**Hossain, M. J.**, 2025). Global, regional, and national burden of headache disorders, 1990–2023: a systematic analysis for the Global Burden of Disease Study 2023. *Lancet Neurology*. https://www.thelancet.com/journals/laneur/article/PIIS1474-4422(25)00402-8/fulltext
5. GBD 2023 Vaccine Coverage Collaborators (**Hossain, M. J.**, 2025). Global, regional, and national trends in routine childhood vaccination coverage from 1980 to 2023 with forecasts to 2030: A systematic analysis for the Global Burden of Disease Study 2023. *The Lancet*. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(25)01037-2/
6. Islam, M. W., Shahjahan, M., Azad, A. K., & **Hossain, M. J.*** (2024). Factors contributing to antibiotic misuse among parents of school-going children in Dhaka City, Bangladesh. *Scientific Reports, 14*, 2318. https://doi.org/10.1038/s41598-024-52313-y
7. **Hossain, M. J.***, Islam, M. W., Munni, U. R., Gulshan, R., Mukta, S. A., Miah, M. S., Sultana, S., Karmakar, M., Ferdous, J., & Islam, M. A. (2023). Health-related quality of life among thalassemia patients in Bangladesh using the SF-36 questionnaire. *Scientific Reports, 13*(1). https://doi.org/10.1038/s41598-023-34205-9

Technical Skills

- **Programming Languages**: Python, R, Julia, SQL, Bash, JavaScript
- **Data Science**: PyTorch, TensorFlow, scikit-learn, XGBoost, PyCaret
- **Bulk RNA-Seq Analysis**: FastQC, MultiQC, Cutadapt, STAR, HISAT2, Salmon, Kallisto, DESeq2, clusterProfiler
- **Single-Cell RNA-Seq Analysis**: Seurat, scverse ecosystem (Scanpy, scVI-tools, scVelo, squidpy), CellRanger, Harmony, SingleR, celldex, velocyto
- **Computational Biology & Cheminformatics**: BioPython, BioPandas, Scikit-bio, RDKit, DeepChem, PyMOL
- **Microbiome Analysis**: QIIME2, DADA2, Phyloseq, PICRUSt2
- **Workflow Management & Reproducibility**: Nextflow, Snakemake, Docker, Git, GitHub
- **Data Visualization & Reporting**: ggplot2, Seaborn, Matplotlib, Plotly, Quarto, Jupyter
- **Computing Environments**: UNIX/Linux, HPC clusters, Cloud computing (AWS, Google Cloud)

Teaching Experience

Faculty
Dhaka, Bangladesh

cBLAST, University of Dhaka (Part-time) — *Aug 2023 - Present*

- Designed and delivered specialized courses in Biomedical Machine Learning, Data Science for Biologists, and Bioinformatics, training over 130 participants across structured academic programs.
- Supervised student-led biomedical ML research projects, mentoring trainees toward publication-ready analyses and conference-level presentations.

Program Lead
Dhaka, Bangladesh

GSA Bioinformatics Internship (Part-time) — *June 2025 - Present*

- Designed and delivered an intensive, hands-on bioinformatics curriculum spanning Bash, R, bulk RNA-seq, and single-cell RNA-seq.
- Mentored research interns on a comparative pan-cancer transcriptomics meta-analysis, guiding data analysis, interpretation, and scientific writing toward conference abstracts and manuscripts.

Teaching Assistant
Dhaka, Bangladesh

Department of Microbiology, Jagannath University (Part-time) — *Oct 2022 - Dec 2022*

- Assisted in lecture delivery, assessment design, and instructional support for undergraduate coursework in Public Health & Hygiene.
- Mentored students on public health research projects, providing guidance on study design, data analysis, and academic presentation.

Leadership Experience

Founder & Chief Executive Officer

Dhaka, Bangladesh

DeepBio Limited (Self-employed)

Jan 2025 - Present

- Founded and lead a bioinformatics company focused on cancer genomics, transcriptomics, and AI-driven healthcare solutions, overseeing a multidisciplinary team of 13 scientists across computational biology and bioinformatics.
- Designed and deployed scalable bulk and single-cell RNA-seq analysis pipelines and professional training programs, enabling translational research, biomarker discovery, and capacity building across South Asia and Africa.

Founder & Executive Director

Dhaka, Bangladesh

Center for Health Innovation, Research, Action, and Learning - Bangladesh (Self-employed)

June 2020 - Present

- Founded and scaled a national non-profit research institute structured into four divisions, advancing public health, bioinformatics, geospatial health, and AI-driven health research while training over 3,000 undergraduate students in research methods, data science, and scientific writing.
- Led scholarly and collaborative initiatives resulting in 20+ peer-reviewed publications, 40+ conference presentations, and sustained academic partnerships with leading national and international institutions to strengthen biomedical research capacity in Bangladesh.