

Modhusudon Shaha

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ACADEMIC QUALIFICATION

- Doctor of Philosophy (**Ph.D.**) in Cell Biology Sep 2019-Current
School of Biomedical Sciences,
Monash University, Australia
Research Topic: The role of the urokinase plasminogen activator (uPA) system in *Helicobacter pylori*-induced cell responses
- Master of Science (**M.Sc.**) in Medical and Molecular Virology Sep 2016- Nov 2017
Faculty of Biology, Medicine and Health,
The University of Manchester, United Kingdom
Thesis Topic: The use of particle stability thermal release assay (PaSTRy) and real-time PCR to explore the mechanism of polymeric antivirals.
- Master of Science (**M.Sc.**) in Microbiology Apr 2013- Nov 2014
Department of Microbiology,
University of Dhaka, Bangladesh
Thesis Topic: Hepatitis B virus: molecular epidemiology and mutation analysis.
- Bachelor (with Honours) of Science (**B.S.**) in Microbiology, Feb 2009- Apr 2013
Department of Microbiology,
University of Dhaka, Bangladesh

KEY RESEARCH SKILLS

Cell biology and clinical skills: Mammalian cell culture (AGS, HeLa, Vero, and BHK-21 cell lines), cell enrichment, cell preservation and resuscitation, cell proliferation and invasion, viral and bacterial infection, cell supernatant and lysate preparation and processing for functional analyses. Human blood, swabs, and tissue sample collection, handling and processing for RNA/DNA isolation and functional genomic analyses.

Microbiology & molecular biology: Aseptic culture techniques, viral and bacterial enrichment, design of microbial culture medium, probe-based enzymatic assays, chromosomal DNA extraction, RNA extraction, DNA/RNA extraction from clinical samples, plasmid DNA preparation, restriction enzyme digestion, PCR, real-time PCR, Primer design for the qPCR, design of expression vectors (construction of plasmids), gene cloning, and plasmid transformation into *H. pylori* cells, protein extraction, Strep-tag purification, protein quantification SDS-PAGE analysis for assessing purity and molecular weight, Western blotting, ELISA, and flow cytometry.

Microbial 'Omics' techniques and bioinformatics: NGS based microbial whole genome analysis, transcriptomics, probe based transcription profiling, high-resolution mass spectrometry-based quantitative proteomic techniques, and cell secretome analysis.

Microscopic skills: Phase contrast and confocal Microscopy, live cell imaging, analysis of microscopic images with ImageJ, including cell movement, cell length, and cell morphology.

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Bioinformatical and statistical skills: transcriptomics and proteomics data analysis through command-based program (e.g, R) & user interface-based tools, assembly and annotation of proteomics data, comparative genomics and proteomics, subcellular localisation and pathway analysis, molecular phylogeny construction, primer designing, protein modelling (i.e., Swissprot and Pymol). Statistical analysis using LFQ-Analyst and GraphPad Prism.

Biosafety and Biosecurity: Trained in biosafety levels 1-4 and Australian biosecurity regulations, by Monash University, Australia. Efficient knowledge of good laboratory practice (GLP), OGTR, and GMOs.

PROFESSIONAL RESEARCH EXPERIENCE

1. Teaching Associate Sep 2019- Current
 Department of Microbiology
 Monash University, Clayton, VIC 3800, Australia
Project: Exploring the mechanism of how *H. pylori* CagL polymorphism modulates the risk of severe gastric diseases

2. Scientific Officer/Research Scientist Sep 2015- Current
(On leave)
 Microbial Biotechnology Division
 National Institute of Biotechnology, Bangladesh
Project: Understanding of how hepatitis B virus causes liver cirrhosis: a genomic approach

3. Lecturer April 2015- Aug 2015
 Department of Microbiology
 Primeasia University, Bangladesh

TRAININGS:

- Biosafety modules 1 and 2 (Oct 2022), Monash University, Australia
- Design and Conduct of Clinical Trials (2023), The Johns Hopkins University, Baltimore, USA
- Good Clinical Practice (2023), Monash Partners, Australia
- HLTAID011: Provide First Aid (2022), PremiumHealth, Australia
- Cheminformatics: Drug Target Discovery and Computer-aided Drug Design (2018), University of Dhaka, Bangladesh.
- Project Management: Healthcare Projects (2020), Monash University, Australia
- Student Project Safety- Risk Management (2020), Monash University, Australia

SCHOLASTIC & RESEARCH AWARDS

- Graduate Research Completion Award 2023 by Monash University Australia
- Research Travel Award 2023 by Monash University Australia for presentation of doctoral research
- Bill & Melinda Gates Foundation Travel Award 2021 by the American Society for Microbiology (ASM), USA to attend and present my research at World Microbe Forum 2021
- The ASM VIC Membership Award 2020 by Australian Society for Microbiology (ASM)
- ASM Microbe 2019 Travel Award by the ASM, USA to attend and present an oral talk and poster at ASM Microbe 2019 in San Francisco, USA.
- International HBV Meeting Travel Award 2019 by Hepatitis B Foundation, USA to attend and

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- present my research at the International HBV meeting 2019 in Melbourne, Australia
- Monash Graduate Scholarship (MGS) 2019 by Monash University, Australia for Higher degree by Research
- Monash International Tuition Scholarship (MITS) 2019 by Monash University, Australia for Higher degree by Research
- Commonwealth Scholarship by the Commonwealth Scholarship Commission (CSC), UK for pursuing a Master of Science at The University of Manchester.
- Dean's Award 2013 by Faculty of Biological Sciences, University of Dhaka for the extraordinary performance in B.S. (Hons) Examination

PUBLICATIONS: (<https://scholar.google.com/citations?user=PhXrHhUAAAJ&hl=en>)

1. **M Shaha**, S Majumder, MS Hossain, M Jahan, R Rahmat, R Asma, MA Islam, MH Rahman, KC Das, PK Sarker, MA Mahtab, SMF Akbar, M Salimullah. Identification of a novel variant of hepatitis B virus isolated from patient co-infected with hepatitis C virus. **Virus Research**, 2022 Jul 7;319:198859. <https://doi.org/10.1016/j.virusres.2022.198859>.
2. **M Shaha** and M Salimullah. Intra-genotypic recombination and polymorphisms of hepatitis B virus genome circulating in Bangladesh. **International Journal of Infectious Diseases**. 2022; 116:S20. <https://doi.org/10.1016/j.ijid.2021.12.048>
3. **M Shaha**, H Rahman, M Jahan, SK Dey, KC Das, A Hashem, M Salimullah. Identification of a novel tri-genotypic recombinant Hepatitis B virus in Bangladesh. **Virus Research**, 2018, 255: 154-156. <https://doi.org/10.1016/j.virusres.2018.07.014>.
4. **M Shaha**, KC Das, MS Hossain, M Jahan, A Hashem, SR Rahman, M Salimullah. Complete genome sequence of circulating hepatitis B virus genotype C isolated from chronically infected outdoor patient in Bangladesh. **Microbiology Resource Announcements**, 2018, 6:e01601-17. <https://doi.org/10.1128/genomeA.01601-17>.
5. **M Shaha**, SA Hoque, MF Ahmed, SR Rahman. Effects of risk factors on anti-HBs development in hepatitis B vaccinated and non-vaccinated population. **Viral Immunology**, 2015, 28(4): 217-221. <https://doi.org/10.1089/vim.2014.0147>.
6. **M Shaha**, S Chakraborty, MS Hossain, A Hashem, M Salimullah. Molecular evolution and genomics of hepatitis B virus subgenotype C2 strain predominant in the chronic patients in Bangladesh. **VirusDisease**, 2018. <https://doi.org/10.1007/s13337-018-0497-6>.
7. **M Shaha**, SA Hoque, SR Rahman. Molecular epidemiology of hepatitis B virus isolated from Bangladesh. **SpringerPlus**, 2016, 5(1):1513. <https://doi.org/10.1186/s40064-016-3174-5>.
8. **M Shaha**, B Roy, MA Islam. Detection of herpes simplex virus 2: a SYBR-Green-based real-time PCR assay. **F1000Research**, 2021, 10:655. <https://doi.org/10.12688/f1000research.53541.2>.
9. SK Dey, MK Sumiya, **M Shaha**, R Haque, S Okitsu, H Ushijim. Intragenogroup recombination in the complete genome sequence of human Sapovirus circulating in Bangladesh. **Microbiology Resource Announcements**, 2018, 6:e00388-18. <https://doi.org/10.1128/genomeA.00388-18>.
10. **M Shaha**, SF Sifat, MA Mamun, MB Billah, N Sharif, NU Nobel, AK Parvez, AA Talukder, A Nomura, H Ushijima, SK Dey. Comparative evaluation of sensitivity and specificity of

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- Immunochromatography kit for the rapid detection of norovirus and rotavirus in Bangladesh. **F1000Research**, 2020, 8:173. <https://doi.org/10.12688/f1000research.17362.2>.
11. **M Shaha**, MA Islam, F Huq, B Roy, MA Kabir, M Salimullah, MA Mahtab, SMF Akbar. Clinical manifestations of hospitalized COVID-19 patients in Bangladesh: a 14-day observational study. **Euroasian J Hepato-Gastroenterol**, 2021;11(1):14–20. <https://doi.org/10.5005/jp-journals-10018-1340>.
12. **M Shaha**, PK Sarker, MS Hossain, KC Das, M Jahan, SK Dey, S Tabassum, A Hashem, M Salimullah. Analysis of the complete genome of hepatitis B virus subgenotype C2 isolate NHB17965 from a HBV infected patient. **F1000 Research**, 2018, 7:1023. <https://doi.org/10.12688/f1000research.15090.3>.

INTERNATIONAL CONFERENCE PRESENTATION

- 2nd JCA-AARC Precision Cancer Medicine International Conference, Kyoto, Japan. 28-30 June 2023 (POSTER).
- Lorne Infection and Immunity Conference, Mantra, Lorne, Victoria, Australia. 15-17 February 2023 (POSTER).
- VIIN Young Investigator Symposium, Monash University, Australia. 16 November 2022 (POSTER).
- ASM Microbe 2019, organised by the American Society for Microbiology (ASM) in San Francisco, USA. 20-24 June 2019 (ORAL).
- World Microbe Forum 2021, organised by the American Society for Microbiology and Federation of European Microbiological Societies). 20-24 June, 2021 (POSTER).
- International Meeting on Emerging Diseases and Surveillance (IMED), organised by the International Society for Infectious Diseases (ISID). 4-6 November 2021 (POSTER).
- International HBV Meeting, at Melbourne, Australia, organised by the Hepatitis B Foundation, USA. 01-05 October 2019 (POSTER).

SOCIO-CULTURAL AFFILIATION

- Reviewer of 'Infection and Drug Resistance' journal of Dove Medical Press
- Reviewer of 'Briefings in Bioinformatics' journal of Oxford University Press
- Assistant Editor of Scientific Bangladesh
- First Aid Officer of Monash University
- Biochemistry OHS Student Representative at Monash University
- Contributing member of the American Association for Cancer Research (AARC), American Society for Microbiology (ASM), and others
- Accredited Cricket Umpire of South East Cricket Association (SECA) and Victorian Sunday Cricket Association (VSCA)