

# Md MOINUDDIN SHEAM

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[Google Scholar](#)

## ACADEMIC RECORDS

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| Aug 2023- Present   | <b>PhD Candidate in Biological Science</b><br>“Biogeochemical and ecological impact of viruses in the aquatic environment”<br>Advisor: Dr. Elaine Luo, <i>University of North Carolina at Charlotte, USA</i> |                                                        |
| Sep 2021- June 2023 | <b>Master of Science (MSc)</b><br>Erasmus Mundus Joint Masters Degree (EMJMD)<br><u>International Master of Science in Marine Biological Resources (IMBRSea)</u>                                             | <b>Grade: (750/1000)</b><br><b>(Great Distinction)</b> |
| Sep 2021- Jan 2022  | Semester 1 (fundamental module): <i>Ghent University, Belgium</i>                                                                                                                                            |                                                        |
| Feb 2022- July 2022 | Semester 2 (applied marine ecology): <i>Marche Polytechnic University, Italy</i>                                                                                                                             |                                                        |
| Sep 2022- Dec 2022  | Semester 3 (impact assessment and mitigation): <i>Sorbonne University, France</i>                                                                                                                            |                                                        |
| Jan 2023- June 2023 | Semester 4 (thesis): <i>Flanders Marine Institute, Belgium</i>                                                                                                                                               |                                                        |
| Jan 2016- July 2020 | <b>Bachelor of Science (BSc)</b><br>Department of Biotechnology and Genetic Engineering<br>Faculty of Biological Sciences<br><i>Islamic University, Kushtia-7003, Bangladesh</i>                             | <b>CGPA: 3.68/ 4.00</b><br><b>(Top 5%)</b>             |

## PEER-REVIEWED PUBLICATIONS (\* PUBLICATIONS DURING DOCTORAL STUDY)

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- 1\* Luo E, Pham ND, Rogers TJ, **Sheam MM** *et al.* Quantitative stable isotope probing (qSIP)-informed metagenomics identifies viruses infecting chemoautotrophs. *Nature Communications*; DOI: [10.1038/s41467-026-71833-x](https://doi.org/10.1038/s41467-026-71833-x)
- 2\* **Sheam MM** and Luo E. Vertical transport and spatiotemporal dynamics of giant viruses in the North Pacific Subtropical Gyre, *The ISME Journal*, **Oxford Academic**; DOI: [10.1093/ismejo/wraf094](https://doi.org/10.1093/ismejo/wraf094)
- 3 **Sheam MM**, Biswas SK, Ahmed KR *et al.* Mycoremediation of Reactive Red HE7B dye by *Aspergillus salinarus* isolated from textile effluents, *Current Research in Microbial Sciences*, **Elsevier**; DOI: [10.1016/j.crmicr.2021.100056](https://doi.org/10.1016/j.crmicr.2021.100056)
- 4 Roy DC, Biswas SK, **Sheam MM** *et al.* Bioremediation of malachite green dye by two bacterial strains isolated from textile effluents, *Current Research in Microbial Sciences*, **Elsevier**, 2020; DOI : [10.1016/j.crmicr.2020.06.001](https://doi.org/10.1016/j.crmicr.2020.06.001)
- 5 Hossain MS, Paul GK, **Sheam MM**, Biswas SK *et al.* Mixed dye degradation by *Bacillus pseudomycoloides* and *Acinetobacter haemolyticus* isolated from industrial effluents: A combined affirmation with wetlab and *in silico* studies, *Arabian Journal of Chemistry*, **Elsevier**; DOI: [10.1016/j.arabjc.2022.104078](https://doi.org/10.1016/j.arabjc.2022.104078)
- 6 **Sheam MM**, Syed SB, Biswas SK *et al.* Community-acquired pneumonia: etiology, antibiotic resistance and prospects of phage therapy, *Journal of Chemotherapy*, **Taylor & Francis**; DOI: [10.1080/1120009X.2020.1807231](https://doi.org/10.1080/1120009X.2020.1807231)

- 7 Huq AFMA, Biswas SK, **Sheam MM**, Syed SB *et al.* Identification and antibiotic pattern analysis of bacillary dysentery causing bacteria isolated from stool samples of infected patients, *Biologia*, **Springer Nature**; DOI: [10.1007/s11756-022-01299-x](https://doi.org/10.1007/s11756-022-01299-x)
- 8 Nain Z, Barman SK, **Sheam MM**, Moni AM, Biswas SK *et al.* Transcriptomic studies revealed pathophysiological impact of COVID-19 to predominant health conditions, *Briefings in Bioinformatics*, **Oxford Academic**; DOI: [10.1093/bib/bbab197](https://doi.org/10.1093/bib/bbab197)
- 9 **Sheam MM**, Haque Z, Nain Z. Towards the antimicrobial, therapeutic and invasive properties of *Mikania micrantha* Knuth: a brief overview, *Journal of Advanced Biotechnology and Experimental Therapeutics*; DOI: 10.5455/jabet.2020.d112
- 10 Nain Z, Abdulla F, Rahman MM, Syed SB, **Sheam MM**, Adhikari UK *et al.* Proteome-wide screening for designing a multi-epitope vaccine against emerging pathogen *Elizabethkingia anophelis* using immunoinformatic approaches, *Journal of Biomolecular Structure and Dynamics*, **Taylor & Francis**; DOI: [10.1080/07391102.2019.1692072](https://doi.org/10.1080/07391102.2019.1692072).
- 11 Khan MSA, Nain Z, Syed SB, Abdulla F, Moni AM, **Sheam MM**, Karim MM, Adhikari UK. Computational formulation and immune dynamics of a multi-peptide vaccine candidate against Crimean-Congo hemorrhagic fever virus, *Molecular and Cellular Probes*, **Elsevier**; DOI: [10.1016/j.mcp.2020.101693](https://doi.org/10.1016/j.mcp.2020.101693)
- 12 **Sheam MM**, Syed SB, Barman SK, Biswas SK *et al.* COVID-19: the catastrophe of our time, *Journal of Advanced Biotechnology and Experimental Therapeutics*, 2020 ; DOI: 10.5455/jabet.2020.d150.

## CONFERENCES

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| 2025 | Vertical transport and spatiotemporal dynamics of giant viruses in the North Pacific Subtropical Gyre<br>ASLO Aquatic Sciences Meeting, Charlotte, North Carolina, USA |
| 2024 | Metagenomic diversity of giant viruses in the North Pacific Subtropical Gyre<br>International Society for Microbial Ecology-19 Conference, Cape Town, South Africa     |
| 2024 | Exploring the diversity of DNA viruses in the North Sea using a metagenomic approach<br>Flanders Marine Institute (VLIZ) Marine Science Day, Oostenden, Belgium        |

## PROFESSIONAL EXPERIENCES

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| Jan 2024-<br>2026           | April       | <b>Graduate Research Assistant</b><br>Department of Biological Sciences, <b>University of North Carolina at Charlotte, USA</b>                                                                                                               |
| Aug 2023-<br>May 2026       | Dec         | <b>Graduate Teaching Assistant</b><br>Department of Biological Sciences, <b>University of North Carolina at Charlotte, USA</b>                                                                                                               |
| Jan 2023                    | - June 2023 | <b>Master Thesis</b><br><b>Title:</b> Metagenomic diversity of viruses in the North Sea<br><b>Institution:</b> Flanders Marine Institute, Belgium<br><b>Promoter:</b> Dr. Maarten De Rijcke                                                  |
| Aug 16, 2022 – Aug 26, 2022 |             | <b>Summer School</b><br><b>Title:</b> An inter- and intraspecific characterisation study of marine microplastics around Saltö Island and Tjärnö Bay<br><b>Institution:</b> Tjärnö Marine Laboratory, <i>University of Gothenburg, Sweden</i> |

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| Apr 2022- June 2022 | <b>Intern</b><br>The Department of Science of Life and Environment, <i>Marche Polytechnic University, Italy</i> .<br><b>Project: Bioaccumulation of toxic chemicals in marine organisms</b><br><b>Description:</b> Evaluation of the bioaccumulation of Paroxetine (antidepressant) and Ibuprofen (NSAID) in marine organisms across the Italian Coast and Mediterranean mussels are used as bioindicator organism.<br><b>Supervisor:</b> <u>Professor Francesco Regoli</u> |
| Jan 2019- May 2020  | <b>Research Assistant</b><br>Department of Biotechnology and Genetic Engineering, <i>Islamic University, Bangladesh</i><br><b>Project: Bioremediation of textile dyes</b><br><b>Description:</b> Isolation and characterization of bacteria and fungi from the aquatic ecosystem and subsequent bioremediation of toxic textile dyes.<br><b>Supervisor:</b> <u>Dr. Sudhangshu Kumar Biswas</u>                                                                              |

## PROJECTS

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| Sep 2023 – Dec 2024  | Vertical transport and spatiotemporal dynamics of giant viruses in the North Pacific Subtropical Gyre ( <a href="#">Sheam and Luo 2025, ISME journal</a> )<br><i>Analyzed 861 time-series metagenomic samples collected over 6 years across 15 depths.</i>                       |
| Jan 2025 – Dec 2025  | Metagenomic Insights into the Biogeography of Giant Viruses in Deep-Sea Hydrothermal Vents ( <a href="#">Sheam and Luo 2026</a> )<br><i>Analyzed 514 metagenomic samples from globally distributed hydrothermal vents, along with 800 metagenomic samples from pelagic ocean</i> |
| Jan 2026 - Present   | Tripartite interaction among giant virus-virophage-microbial eukaryotes in the open ocean                                                                                                                                                                                        |
| Jan 2023 – June 2023 | Metagenomic diversity of double-stranded bacteriophages in the North Sea<br><i>Analyzed 7 metagenomic samples from the North Sea</i>                                                                                                                                             |

## UNDERGRADUATE (HONS BSc) RESEARCH MENTOR

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| May 2024 – Apr 2025 | Temporal dynamics of cyanophages during harmful algal bloom in a freshwater reservoir in North Carolina |
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## HONOURS & AWARDS

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| Sep 2021 | <b>Erasmus Mundus Joint Master's Degree Scholarship (48,000 Euro)</b><br>Organization: European Commission                                                                                              |
| Aug 2020 | <b>Bronze award at International Conference on Biotechnology, Bioinformatics and Biomedicine-2020</b><br>Organization: Asian Institute of Medicine, Science and Technology (AIMST University), Malaysia |
| Jan 2019 | <b>University Academic Excellence</b><br>Organization: Islamic University, Bangladesh                                                                                                                   |

## PROFESSIONAL SKILLS

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| Computational biology | <b>High Performance Computing:</b> Slurm workload manager, Conda, Portable Batch System<br><br><b>Large-scale metagenomic data analysis:</b> Quality control and preprocessing, genome assembly, binning, functional and taxonomic annotation, phylogenetic analysis, read mapping, and microbiome/community analysis<br><br><b>Programming languages:</b> Linux bash, Python, R<br><br><b>Statistical analysis:</b> multivariate analysis (e.g. t-SNE, nMDS), weighted gene co-expression network analysis (WGCNA), PERMANOVA |
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Laboratory

Aquatic sample processing: sample collection for DIC and POC, fixation, filtration for cellular and viral fraction, DNA extraction & quantification, Flow cytometry for VLP and CLP quantification, bacterial isolation, culturing, and morphological characterization.

## **FIELD SAMPLING**

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**Weekly aquatic sample collection from freshwater lakes (May–November 2024):** water filtration (cellular and viral fractions), sample fixation, flow cytometry analysis, and physicochemical measurements.

**Mentored one undergraduate student;** the collected data were used for an undergraduate honors thesis.

## **ACADEMIC SOCIETY**

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American Society for Microbiology (ASM)

International Society for Microbial Ecology (ISME)

Association for the Sciences of Limnology and Oceanography (ASLO)