

# **MD. ARAFAT ISLAM**

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## **RESEARCH INTERESTS**

Environmental Microbiology, Microbes-Host Interactions, Synthetic Microbiology, Microbiome analysis

## **EDUCATION**

<b>M.Sc: Microbiology and Biotechnology (CGPA 3.60/4.0)</b>	March 2016-February 2018
Chungbuk National University (CBNU)	Cheongju, South Korea
• Thesis: Characterization of an ammonia oxidizing archaeon of group 1.1a isolated from an agricultural soil.	
• Roles Played: Research assistantship in environmental microbiology and genomics lab.	

### **Laboratory Experiments**

- Cultivation of ammonia oxidizing archaea (AOA) & bacteria (AOB), *Pseudomonas*, *Bradyrhizobium*.
- Cryopreservation and reactivation of microbial cells.
- DNA extraction, DNA purification, PCR, qPCR, gel electrophoresis, analyzing sequenced DNA.
- Microbial community analysis from soil samples, phylogenetic tree analysis.
- Microbial substrate utilization test, co-culture (bacteria & ammonia oxidizing archaea).
- Determination of concentration of NH4+, NO2-, NO3-, and pyruvate.

<b>B.Sc: Microbiology (CGPA 3.55/4.0)</b>	January 2009-December 2012
Jashore University of Science & Technology (JUST)	Jashore, Bangladesh
• B.Sc Project: Isolation & identification of <i>Lactobacillus delbrueckii</i> from local market curd.	

### **Laboratory Experiments**

- Preparation of primary culture in MRS broth medium from raw curd samples.
- Isolation of *Lactobacillus delbrueckii* in MRS agar medium.
- Anaerobic cultivation of *Lactobacillus delbrueckii* by using anaerobic jar.
- Identification of *Lactobacillus delbrueckii*- gram staining, microscopic observation, and biochemical tests (catalase test, oxidase test, & sugar fermentation test).

## **BIOINFORMATICS & DATA ANALYSIS SKILLS**

- Analysis of high-throughput sequencing data (FASTA, FASTQ formats).
- QIIME 2 analysis workflow (DADA2 denoising, quality assessment, chimera filtering, read merging).
- Sequence-based analyses including GC content, k-mer frequency, motif position, and ORF identification.
- Python programming for biological data analysis (Numpy, Pandas, Matplotlib) & R (ggplot2, heatmap),
- Basic Linux command-line operations for bioinformatics workflows.
- Software-sigmaplot, mega7, bioedit, Microsoft Excel.

## PUBLICATIONS

### Book chapter

1. Role and importance of national and international agencies in quality control regulation, Quality Control and Regulatory Aspects for Biologicals, Gauri Misra, 2024, chapter-3, Page:29-46 (published from CRC Press, Taylor and Francis, UK). <https://doi.org/10.1201/9781032697444>.

### Research article

1. Jung, M.-Y., **Islam, Md. A.**, Gwak, J.-H., Kim, J.-G., & Rhee, S.-K. (2018). *Nitrosarchaeum koreense* gen. nov., sp. nov., an aerobic and mesophilic, ammonia-oxidizing archaeon member of the phylum Thaumarchaeota isolated from Agricultural Soil. International Journal of Systematic and Evolutionary Microbiology, 68(10), 3084–3095. <https://doi.org/10.1099/ijsem.0.002926>. (first co-author)

## CONFERENCES & POSTER PRESENTATIONS

### Conferences Attended

1. 20-22 April, 2016: International meeting of the microbiological society of Korea. Held at Kimdaejong Convention Center, Gwangju, Republic of Korea.
2. 09-10 January, 2015: International conference of biotechnology in health and agriculture (ICBHA) 2015. Held at Nabab Nawab Ali Chowdhury Senate Bhaban, University of Dhaka, Bangladesh.
3. 27 April, 2014: The 27th annual conference of the Bangladesh society of microbiologists. Held at the Department of Microbiology, University of Dhaka, Bangladesh.

### Poster Presentations

1. Joo-Han Gwak, So-Jeong Kim, Woon-Jong Yu, Seol-Hee Kim, **Md Arafat Islam**, Ngoc-Loi Nguyen, Soo-Je Park, Sung-Keun Rhee\*. "Reconstruction Archaeon Genome from Anoxic Intertidal Mud Flat." 2017 International Meeting of the Microbiological Society of Korea, 2017.4, 208-208 (1 page).
2. Man-Young Jung, Heeji Hong, Eugene L. Madsen, **Md Arafat Islam**, Sung-Keun Rhee. "A Physiologically, Genetically, and Morphologically Novel Isolated Ammonia-oxidizing Archaeon, Nitrosocosmopolitan oleophilus, from Terrestrial Sediment. 2016 International Meeting of the Microbiological Society of Korea, 2016.4, 20-20 (1 page).
3. So-Jeong Kim, Jong-Geol Kim, Joo-Han Gwak, Hee-Ji Hong, Woon-Jong Yu, **Md. Arafat Islam**, Soo-Je Park, Sung-Keun Rhee. "Physiological Properties of Bacterioplankton during Phaeocystis Bloom in Polynya of Amundsen Sea, Western Antarctica." 2016 International Meeting of the Microbiological Society of Korea, 2016.4, 21-21 (1 page).
4. Joo-Han Gwak, So-Jeong Kim, Woon-Jong Yu, **Md. Arafat Islam**, Soo-Je Park, Sung-Keun Rhee. "Genome Reconstruction for Prediction of Metabolic Potential of Subsurface Archaea in Intertidal Mud Flat Sediment." 2016 International Meeting of the Microbiological Society of Korea, 2016.4, 22-22 (1 page).

## WORK HISTORY

**The ACME Laboratories Limited** (<https://www.acmeglobal.com>)

Dhulivita, Dhamrai, Dhaka

**Senior Executive & Training Coordinator, Microbiology Department**

January 2023-Present

- Led the team for different laboratory activities including field sample management (sample collection, processing, and preservation), cell culture techniques (culture maintenance and storage of different microbial cultures), document preparation (protocol and procedures), report writing (process and method validation reports, batch reports).
- Analytical method development for suitable microbial recovery from medicines.

- Prepared & reviewed laboratory protocols and laboratory test reports.
- Collaborated and coordinated with interdisciplinary teams of the industry.
- Training management: conducting training on new analytical procedures, coordinating job readiness training for new joiners.

### **Executive, Microbiology Department**

July 2018-December 2022

- Applied microbiological methods: microbial enumeration tests (pour plate, spread plate & membrane filtration), efficacy test of antimicrobial agents against pathogenic bacteria & fungi, recovery of microorganism from swab samples.
- Isolated and identified microorganisms from water & environmental samples by using gram staining, microscopic observation & BD phoenix identification system.
- Prepared microbial culture media: agar media (CET, MSA, R2A, SDA, TSA, VRBGA, XLD) & liquid media (BSCPS, EEBM, MCB, RV, TSB).
- Data analyses and data management by using Microsoft excel.
- Laboratory housekeeping to ensure regulatory inspection readiness.

### **TRAINING**

- Data science & machine learning with python for beginners; organized by OSTAD online training platform; 20 August-20 December, 2024.
- Statistical data analyses based on R language at National Nakdong River Biological Resource Center, Sangju-si; August 17-18, 2017.

### **LANGUAGE PROFICIENCY**

- English (CEFR Level C1 | **IELTS Score 7.0**- Listening 7.5, Reading 7.0, Writing 6.5, Speaking 6.5).
- Bengali (native).
- Hindi & Urdu (short social interactions).
- Korean (short social interactions).

### **LEADERSHIP & EXTRACURRICULAR ACTIVITIES**

- Led the organization of conference & debating events, sports, and cultural events at university.
- Led article writing and data entry projects on virtual marketing platforms (upwork).

### **AWARDS & ACHIEVEMENTS**

#### **Academic**

- BK21 plus & fresher student scholarship-2016 at Chungbuk National University, South Korea.

#### **Professional**

- Outstanding performance award for hard work & passion in 4<sup>th</sup> quarter of the year 2024- awarded by The ACME Laboratories Limited.
- Promotion from executive to senior executive, 2023.
- Certification of FDA-2023; WHO prequalification-2022; Save The Children-2018; MHRA-2019.

#### **Extra-Curricular Activities**

- Man of the match in the final of match of cricket tournament organized by The ACME Laboratories Limited (contributed to be winner of the tournament).
- Special performance award in the international culture festival 2016 at Chungbuk National University, South Korea.
- Best performance award in the international culture festival 2017 held at Chungbuk National University, South Korea.

- Champion team in inter-department debating competition 2011 held at Jashore University of Science and Technology University, Bangladesh.
- First runner-up in essay writing competition in Tree Plantation Fair 2004 held at Jashore, Bangladesh.

## **REFERENCES**

- Available upon request.