MOHAMMAD TANVIR SARWAR, PhD



Professor | Microbiology • Molecular Biology • Bacteriology

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RESEARCH PROFILE

Microbiologist and molecular biologist with a PhD in Oral Molecular Biology and international research experience in Japan and the USA. Research expertise includes bacterial pathogenesis, microbe–microbe interactions, oral microbiology, polymicrobial communities, biofilms, microbiome/culturomics and molecular characterization of bacterial enzymes. Experienced university teacher and research supervisor in microbiology, molecular biology, biotechnology and related laboratory sciences.

RESEARCH INTERESTS

Bacterial pathogenesis and evolution; inter species interactions of bacteria; microbial ecology and microbiomes; antimicrobial resistance; oral microbiology; biofilms; molecular mechanisms of bacterial colonization and adaptation.

ACADEMIC APPOINTMENTS

Professor

March2023–September2023;June2025–Present
Department of Applied Nutrition and Food Technology, Faculty of Biological Sciences, Islamic University, Kushtia, Bangladesh

- Teach Bioinformatics, Food Biotechnology, Research Methodology, Industrial Microbiology and Molecular Biology to postgraduate students.
- Supervise BSc and MSc microbiology laboratory work and undergraduate/postgraduate bacteriology research.
- Develop research methodologies and experimental procedures and prepare research projects.

Associate Professor

October2020–March2023
Department of Applied Nutrition and Food Technology, Faculty of Biological Sciences, Islamic University, Kushtia, Bangladesh

- Taught Food Biotechnology, Research Methodology, Industrial Microbiology and Fermentation Technology.
- Supervised undergraduate bacteriology research and microbiology laboratory practicals.
- Developed syllabi, lesson plans and instructional materials; designed laboratory practicals and demonstrations.

Assistant Professor

September2013–March2020
Department of Applied Nutrition and Food Technology, Faculty of Biological Sciences, Islamic University, Kushtia, Bangladesh

- Taught Molecular Biology, Food Microbiology, Nutritional Biochemistry and related courses.
- Supervised undergraduate Microbiology and Molecular Biology research.
- Trained students in bacterial culture, aerobic/anaerobic growth, colony counting and experimental mouse work; maintained biosafety and laboratory standards.

Lecturer

September2010–September2013
Department of Applied Nutrition and Food Technology, Faculty of Biological Sciences, Islamic University, Kushtia, Bangladesh

- Taught General Microbiology, Biochemistry, Basic Human Nutrition and Food Chemistry; maintained the food microbiology laboratory.

RESEARCH EXPERIENCE

Postdoctoral Associate | October 2023–May 2025

Department of Oral Biology, School of Dental Medicine, State University of New York at Buffalo, USA

- Investigated interspecies interactions between pathogenic and commensal oral bacteria.
- Cultured aerobic and anaerobic bacteria from clinical samples and established a culture library.
- Performed bacterial morphology analysis, biofilm and co-aggregation assays, PCR and real-time PCR.
- Mentored MSc and exchange researchers in the laboratory.

Visiting Researcher | April 2020–September 2020

Department of Oral Molecular Biology, Graduate School of Biomedical Sciences, Nagasaki University, Japan

- Purified and characterized novel enzymes from pathogenic bacteria.
- Investigated dipeptide incorporation and transport in Porphyromonas gingivalis.

EDUCATION

PhD in Oral Molecular Biology | March 2016–March 2020

Nagasaki University, Japan

Dissertation: Identification of dipeptidase from a periodontopathic bacterium *Prevotella intermedia*.

MSc in Applied Nutrition and Food Technology | July 2006–June 2007 (exam 2009)

Department of Applied Nutrition and Food Technology, Islamic University, Kushtia, Bangladesh

Dissertation: Gas-Liquid Chromatographic Analysis of the TLC-purified fatty acid methyl ester of Mustard Oil attributes to the elimination of Erucic acid.

BSc in Applied Nutrition and Food Technology | July 2002–June 2006 (exam 2008)

Department of Applied Nutrition and Food Technology, Islamic University, Kushtia, Bangladesh

Dissertation: Preparation of chitosan and explore its application as food preservative.

RESEARCH & TECHNICAL EXPERTISE

- Microbial systems: Aerobic/anaerobic bacterial culture; clinical isolate culture; microbial co-culture; biofilms; co-aggregation; interspecies interactions; bacterial morphology.
- Molecular biology: Primer design; PCR/qPCR; Sanger sequencing; metagenomics; sequencing data analysis; plasmid construction; deletion mutation; recombinant protein expression.
- Protein biochemistry: Protein purification; HPLC; Talon affinity chromatography; SDS-PAGE; immunoblotting; Bio-Rad protein assay; enzyme characterization.
- Models & microscopy: Phase-contrast microscopy; experimental mouse work.
- Research development: Research methodology; project writing; experimental design; student mentoring and supervision.

SELECTED PUBLICATIONS

1. Tamil Selvam Saravanan, Chaitany Jayprakash Raorane, Ravula Pranaveer, Megha Gopikuttan, **Mohammad Tanvir Sarwar**, Vinoth Kumar Vaidyanathan, Vinothkannan Ravichandran, and Satish Kumar Rajasekharan , *Antibiofilm and anti-hyphal activity of a valencene-enriched fraction against Candida albicans*, Archives of Microbiology, 2026, 208, 537 (2026). https://doi.org/10.1007/s00203-026-05106-y
2. Sri Bagavathi Perumal RB , Santhosh Hariprakash , A. Liyana Sherin , Harinarayana Ankamreddy, Vaidyanathan Vinoth Kumar, **Mohammad Tanvir Sarwar** , Vinothkannan Ravichandran, Durga Mohan, and Satish Kumar Rajasekharan, *Chapter 13 - Synbiotics: Combination delivery of prebiotics and probiotics*, Advances in Probiotic Delivery Systems, 2025, Pages 329-370
3. Yu Shimoyama, Toshio Ono, **Mohammad Tanvir Sarwar**, Manami Nakasato,Minoru Sasaki,Takayuki K.Nemoto, *Expanded substrate specificity supported by P1' and P2' residues enables bacterial dipeptidyl-peptidase 7 to degrade bioactive peptides,* J. Biol. Chem. (2022) 298(3) 101585 , DOI: https://doi.org/10.1016/j.jbc.2022.101585
4. Mohammad Golam Sakline, Dabashis Roy, Tanvir Ahmad, Shaikh Shahinoor Rahman, Shakh Mohammad Abdur Rouf, Mosammat Nazira Akhter Rithu, Mohammad Mizanur Rahman, and **Mohammad Tanvir Sarwar**, *Antibiotic Resistance Pattern of Clinical Isolates - Escherichia coli, Enterobacter, Pseudomonas andStaphylococcus aureus in the Western of Bangladesh*. Frontiers in Environmental Microbiology, 2021; 7(2): 69-73
5. Yuko Ohara-Nemoto , **Mohammad Tanvir Sarwar** , Yu Shimoyama , Takeshi Kobayakawa , and Takayuki K Nemoto, *Preferential dipeptide incorporation of Porphyromonas gingivalis mediated by proton-dependent oligopeptide transporter (Pot)*, FEMS Microbiol Lett. 2020 Dec 18:fnaa204. DOI: 10.1093/femsle/fnaa204
6. **Sarwar MT**, Ohara-Nemoto Y, Kobayakawa T, Naito M, and Nemoto TK, *Characterization of substrate specificity and novel autoprocessing mechanism of dipeptidase A from Prevotella intermedia.* Biol Chem. 2020 Apr 28;401(5):629-642. DOI: 10.1515/hsz-2019-0387

7. **Md. Tanvir Sarwar**, Md. Hafizur Rahman, Md. Salim Raza, Shakh M. A. Rouf, and Md. Nazibur Rahman, *Determination of Erucic acid content in traditional and commercial mustard oils of Bangladesh by Gas- Liquid Chromatography*, Advances in Biochemistry 2014; 2(1): 9-13

RESEARCH FUNDING

Higher Education Quality Enhancement Project (HEQEP), World Bank Group — Co-investigator, AIF 3rd Round, Window-1, CP No. 3338. Project: Quality Enhancement of Teaching and Learning on Nutrition Science and Food Processing Through Integration on Modern Technology. Duration: 2015–2018. Amount: USD 81,000.

INVITED TALKS AND SCIENTIFIC PRESENTATIONS

Invited Speaker:
Invited Speaker at the International Conference on Biofilms and Microbiome Research (BMR-2026), SRM Institute of Science and Technology, Chennai, India, October 25–28, 2026. Delivered a scientific presentation on antimicrobial discovery and ongoing research.

Poster presentations:

1. Sarwar MT, Ohara-Nemoto Y, Kobayakawa T, Naito M, Nemoto TK. Identification and characterization of an arginine aminopeptidase from *Prevotella intermedia*. Poster, 60th Annual Meeting of the Japanese Association for Oral Biology, Kyushu University, Japan, 5 September 2018.

2. Sarwar MT, Ohara-Nemoto Y, Ono T, Nemoto TK. Identification of dipeptidase from a periodontopathic bacterium *Prevotella intermedia*: Redefinition of dipeptidase A of C69.001 family. Poster, 61st Annual Meeting of the Japanese Association for Oral Biology, Tokyo Dental College, Japan, October 2019.

PEER REVIEW & PROFESSIONAL MEMBERSHIPS

- Peer reviewer: Oral Diseases (John Wiley & Sons); PLOS ONE (Public Library of Science); Frontiers in Microbiology (Frontiers); Springer Nature journals.
- Member, American Society for Microbiology, Western New York Branch (2024–2025).
- Member, Japanese Association for Oral Biology (2018–2019).
- Member, Applied Nutrition and Food Technology Society, Islamic University (2010–present).

ADDITIONAL INFORMATION

Languages: English (professional academic/research use); Bengali (native); Japanese (basic).
Current position: Professor, Department of Applied Nutrition and Food Technology, Islamic University, Bangladesh.