

Dr. Mariam Ahmed Mujtaba

Lecturer, Department of Biotechnology

Women University Mardan, Pakistan

 mariam_mujtaba@wumardan.edu.pk

 +92 335 7353922

ORCID: <https://orcid.org/0000-0002-4253-5826>

LinkedIn: www.linkedin.com/in/syeda-mariam-mujtaba-75924ab6

PROFESSIONAL PROFILE

Dr. Mariam Ahmed Mujtaba is a Lecturer in Biotechnology at Women University Mardan with expertise in medical biotechnology, molecular diagnostics, genomics, transcriptomics, bioinformatics, and computational biology. Her research focuses on elucidating the molecular mechanisms of infectious diseases, cancer, autoimmune disorders, and neurodegenerative diseases through integrated experimental and computational approaches. She is particularly interested in biomarker discovery, host–pathogen interactions, disease susceptibility, and the development of precision medicine strategies for improved disease diagnosis and management.

Her research also encompasses computational drug discovery and development, including molecular docking, virtual screening, ADMET analysis, and structure-based drug design for the identification of novel therapeutic targets and candidate drugs. In addition, she applies genomic and bioinformatic approaches to aquatic biotechnology and environmental genomics, investigating the effects of environmental stressors on gene expression and physiological responses in fish. Her overarching goal is to translate molecular and computational insights into innovative diagnostic, therapeutic, and monitoring tools that address challenges in human, animal, and environmental health.

EDUCATION

PhD Biotechnology

PMAS-Arid Agriculture University Rawalpindi, Pakistan (2024)

MPhil Biotechnology

PMAS-Arid Agriculture University Rawalpindi, Pakistan (2017)

B.Ed. (Science)

Allama Iqbal Open University, Islamabad, Pakistan (2016)

BS Biotechnology

Gomal University Dera Ismail Khan, Pakistan (2013)

ACADEMIC APPOINTMENTS

Lecturer

Department of Biotechnology, Women University Mardan, Pakistan

September 2023 – Present

- Teaching undergraduate and postgraduate biotechnology courses.
- Supervising BS and MPhil research projects.
- Conducting research in molecular biology, bioinformatics, infectious diseases, and aquatic biotechnology.

- Participating in curriculum development, academic administration, and student mentoring.

Research Associate / Volunteer

HEC-NRPU Research Project

December 2019 – June 2022

- Conducted molecular and bioinformatics analyses related to infectious disease research.
- Assisted in project management, data analysis, and manuscript preparation.

Teaching Assistant

University Institute of Biochemistry and Biotechnology (UIBB), PMAS-AAUR

October 2016 – March 2022

- Assisted in teaching Cell Biology, Immunology, and Immunochemistry practical courses.
- Prepared instructional materials and managed laboratory activities.

Secondary School Teacher

National Academy School, Rawalpindi

February 2014 – September 2015

- Taught Biology and General Science at secondary school level.

RESEARCH INTERESTS

- Medical Biotechnology
- Molecular Diagnostics and Biomarker Discovery
- Infectious Diseases and Tuberculosis Research
- Cancer Genomics and Precision Medicine
- Neurodegenerative Diseases
- Autoimmune Diseases
- Host–Pathogen Interactions
- Functional Genomics and Transcriptomics
- Bioinformatics and Computational Biology
- Drug Discovery and Development
- Structure-Based Drug Design
- Molecular Docking and Virtual Screening
- Aquatic Biotechnology
- Environmental Genomics
- Public Health Genomics

RESEARCH EXPERIENCE

- PhD research on molecular profiling of regulatory factors involved in tuberculosis phenotypes.
- Extensive experience in molecular biology, genomics, transcriptomics, RNA sequencing, and bioinformatics.
- Involved in multidisciplinary research projects focusing on tuberculosis, COVID-19, autoimmune disorders, and environmental health.
- Experience in computational drug discovery, biomarker identification, and statistical analysis of biological data.

COURSES TAUGHT

- Health Biotechnology
- Pharmaceutical Biotechnology
- Animal Biotechnology
- Cell Biology
- Genetic Engineering
- Molecular Genetics
- Introduction to Biotechnology
- Bioinformatics
- Research Methodology
- Biostatistics
- DNA Damage, Repair and Carcinogenesis

RESEARCH SUPERVISION

Postgraduate Supervision

- Currently supervising and co-supervising MPhil students in molecular biology, aquatic toxicology, fish genomics, bioinformatics, and computational biology.

Student Research Achievement

- Supervised MPhil student Ms. Sadaf Ayaz in securing PCSIR-DRSI research support worth PKR 400,000 for RT-PCR-based research sample analysis (2026).

Undergraduate Supervision

- Supervised more than 21 BS research projects in:
 - Infectious diseases
 - Tuberculosis epidemiology
 - Human genetics
 - Computational biology
 - Drug discovery
 - Environmental biotechnology
 - Public health research

SELECTED PUBLICATIONS

1. Shahzad H., **Mujtaba M.A.**, Fatima K., Javed M.I., Shaiq P.A., Raja G.K., Saeed S. (2026). *Genome-Wide DNA Methylation Analysis Reveals Immune Genes in Tuberculosis with Potential Relevance for Host-Directed Interventions*. Iranian Journal of Biotechnology.
2. **Mujtaba M.A.**, Shahzad H., Javed M.I., Kamal S., Rashid N., Saeed S., Kamal M.A. *Immunological and Hematological Characterisation of Mycobacterium tuberculosis Infected Patients*. Reviews on Recent Clinical Trials.
3. Bibi S., Javed M.I., Rashid N., Ain Q.U., Amin S., Qureshi A., Kamal S., Saeed S., **Mujtaba M.A.** (2024). *Association of Biochemical Parameters of COVID Susceptibility in Interferon Gamma Release Assay Positive Subjects*. Kurdish Studies.
4. **Mujtaba M.A.**, Richardson M., Shahzad H., Javed M.I., Raja G.K., Shaiq P.A., Haldar P., Saeed S. (2022). *Demographic and Clinical Determinants of*

Tuberculosis and TB Recurrence: A Double-Edged Retrospective Study from Pakistan. Journal of Tropical Medicine.

5. Kamal S., Shah N.U., Amanullah, **Mujtaba M.A.**, Khan K.A., Deng C., Lai S., Kamal M.A. (2024). *Bioinformatics Approach to Identifying Potential Cancer-Associated Mutations in CCL2.* Tumor Discovery.

CONFERENCE ABSTRACTS

- Identification of Risk Factors for Sputum Positive Tuberculosis: A Comparative Study of Sputum Positive vs Sputum Negative TB Cases. ANSO-PAS Conference (2024).
- Need for an Explicit Health Policy by Low- and Middle-Income Countries for LTBI Management: A Review. IC-SOSDG (2024).
- Expression Profiling of Candidate Genes in Blood and Epidermal Tissue of Psoriatic Patients. IC-SOSDG (2024).
- A Clinical Study on Risk Factors of Multidrug-Resistant Tuberculosis: A Hospital-Based Study. IC-SOSDG (2024).

RESEARCH AND TECHNICAL EXPERTISE

Molecular Biology Techniques

- PCR and Real-Time PCR
- cDNA Synthesis
- DNA/RNA Extraction and Purification
- Gene Expression Analysis

Bioinformatics & Computational Biology

- Sequence Analysis
- Functional Genomics
- Molecular Docking
- ADMET Analysis
- Computational Drug Discovery

Statistical and Data Analysis

- R Programming
- SPSS
- GraphPad Prism
- Statistix

Omics Technologies

- RNA Sequencing (RNA-Seq)
- Transcriptomics
- Genomic Data Analysis

AWARDS, HONORS AND SCHOLARSHIPS

- International Research Support Initiative Program (IRSIP) Scholarship, University of Leicester, United Kingdom.
- HEC Indigenous PhD Scholarship (Phase-II, Batch-III).
- HEC Access to Scientific Instrumentation Program (ASIP) Award.
- Gold Medal in BS Biotechnology.
- Certificate of Merit, Shaheen Foundation PAF (2003–2005).

PROFESSIONAL DEVELOPMENT

Conferences and Presentations

- Oral Presenter, 6th International Conference on Scientific Outlook of Sustainable Development Goals (2024).
- Poster Presenter, 6th International Conference on Scientific Outlook of Sustainable Development Goals (2024).
- Poster Presenter, Fifth International Conference on Emerging Trends in Bioinformatics and Biosciences (2023).
- Oral Presenter, 9th International Conference on Biological and Computational Sciences (2021).

Workshops and Training

- Advanced Training Course: **Molecules to Manuscript**, Decode Science (2026).
- Internship Workshop Project Training on **Vaccine Technology** (2024).
- Hands-on Training Workshop on Basic Laboratory Skills (2023).
- Hands-on Training on Kjeldahl Instrumentation and Analysis (2022).
- One-Day Training Workshop on Next Generation Sequencing (2018).
- Hands-on Training Workshop on Cryopreservation (2018).

Academic and Administrative Contributions

- Member Organizing Committee, 6th International Conference on Scientific Outlook of Sustainable Development Goals (2024).
- Organizer, International and National Climate Change Webinars (2024).
- Organizer, Environmental Awareness Walk, Women University Mardan (2024).
- Member Organizing Committee, Women's Day Ceremony, Women University Mardan (2024).

PROFESSIONAL MEMBERSHIPS & PROFILES

- ORCID: 0000-0002-4253-5826
- LinkedIn Research Profile
- Higher Education Commission (HEC) Scholar