

AYESHA SANAM

MPhil Molecular Medicine | Biochemist | Educator

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PROFESSIONAL PROFILE

Dedicated educator with an MPhil in Molecular Medicine and a BS in Biochemistry, possessing a strong academic foundation in Biology, Chemistry, Biochemistry, Molecular Biology, and Genetics. Experienced in teaching, case-based learning facilitation, laboratory instruction, and student assessment within a medical education environment. Skilled at delivering complex scientific concepts in a clear, engaging, and student centered manner, fostering critical thinking, problem-solving, and scientific curiosity. Supported by peer-reviewed research publications and hands on laboratory expertise, with a commitment to promoting academic excellence and creating an interactive learning environment that inspires students to achieve their full potential.

TEACHING SPECIALIZATIONS

Biochemistry, Molecular Biology, Genetics, Microbiology & Cell Biology

TEACHING EXPERIENCE

Trainee Demonstrator — Medical Education | Army Medical College, NUMS, Rawalpindi | 2024 –2026

- ▶ Assisted in undergraduate teaching, laboratory instruction, student assessment, and academic mentoring within the MBBS curriculum.
- ▶ Conducted molecular biology practicals and mentored students in research methodology, literature review, and scientific writing.

Science & Biology Teacher | Beacon Education House, Rawalpindi | 2020 – 2023

- ▶ Taught Science and Biology to secondary level students, developing engaging, differentiated lesson plans that improved student comprehension and examination results.
- ▶ Created a positive classroom culture emphasizing curiosity, accuracy, and scientific thinking.

EDUCATION

MPhil — Molecular Medicine | Army Medical College (NUMS), Rawalpindi | 2026

- ▶ Thesis: Genetic association of GSTP1 single nucleotide polymorphism rs1138272 with diabetic nephropathy in Pakistan

BS — Biochemistry | PMAS Arid Agriculture University, Rawalpindi | 2023

- ▶ Foundation in Biochemistry, Molecular Biology, Genetics, Human Biology, Organic Chemistry, and Pathophysiology

RESEARCH EXPERIENCE

MPhil Researcher | Army Medical College, NUMS | Jan 2025 – Jan 2026

- ▶ Designed and executed a full genetic association study on GSTP1 rs1138272 and diabetic nephropathy from ethics approval through data collection, laboratory analysis, and manuscript submission.
- ▶ Performed DNA extraction, allele-specific PCR, SNP genotyping, and rigorous statistical analysis (SPSS, SNPstat) on clinical patient datasets.

PUBLICATIONS & RESEARCH OUTPUT

- ▶ In Silico Prioritization of High-Risk GSTO2 Missense Variants Using Consensus Pathogenicity Scoring, Static Structural Assessment, and Qualitative Docking — In Silico Pharmacology, Elsevier (2026) **[Published]**
- ▶ Adult-Onset Bartter Syndrome Presenting as Refractory Hypokalemia and Metabolic Alkalosis: A Case Report — Clinical Case Reports (2026) **[Published]**
- ▶ In Silico Vaccine Design Targeting BoxA: A Novel Approach to Combat Burkholderia pseudomallei Adhesion and Virulence — In Silico Pharmacology, Elsevier (2025) **[Published]**
- ▶ Association of Atherogenic Index of Plasma with GFR and Albuminuria — JRMC, 2026 **[Accepted]**
- ▶ TiO₂/MnO₂/V₂O₅ Nanostructures for Photocatalytic H₂ Production and Advanced Electrode Material for Supercapacitor Applications—Frontiers in Chemistry, 2026 **[Under Review]**
- ▶ Distinct Phenotype of Diabetic Nephropathy in Pakistan: Male Predominance and Stable BMI Amid Progressive Renal Marker Dysfunction — KMUJ, 2026 **[Under Review]**

PROFESSIONAL DEVELOPMENT & CERTIFICATIONS

- ▶ OIC-COMSTECH Certificate Course on NMR Spectroscopy — OIC-COMSTECH (March 2026)
- ▶ Vaccines and the Immune System — Alison (2026)
- ▶ DIABESITY & T2DM Intricacies — Army Medical College, NUMS (2026)
- ▶ Genetics, Cousin Marriages & Inherited Disorders — Combine Foundation (2026)
- ▶ Hands-on Workshop: Basic Molecular Techniques — CREAM Lab (2025)
- ▶ Clinical Trials Summit of Pakistan — Army Medical College, NUMS (2025)
- ▶ Research Methodology & Statistics Workshop — Army Medical College, NUMS (2024)

LANGUAGES

- ▶ English — C1 Professional (Academic & Scientific Communication)
- ▶ Urdu — Native
- ▶ Pashto — Native