

MUHAMMAD WAQAS

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Research Profile

Early-career researcher with experience in molecular and cancer biology, bioinformatics, and biotechnology. Skilled in genetic analysis, computational modeling, and therapeutic discovery. Focused on translational applications in cancer immunotherapy and hematological disorders. Published author with interdisciplinary research spanning oncology, immunology and sustainable energy.

Education

- **Bachelors of Science in Zoology** | CGPA 3.7/4.0 | 2024
University of Education, Lahore (2022-2024)
Bahauddin Zakariya University, Multan (2019-2022)
- **Undergraduate Thesis:** “Exploring the Potential of Microalgae *Spirogyra* for Green Energy Production”

Research Interests

- Molecular & Cell biology
- Cancer biology, immunology and hematological disorders
- Bioinformatics for Disease Modeling and Drug Discovery
- Microalgal Biotechnology and Sustainable Biofuels

Research Publications

- **Peer-reviewed Articles** (* corresponding author)
 - a) **Waqas, M.***, Bashir, R. et al. (2024). Impact of SARS-CoV-2 on Oncogenesis: A Deep Dive into the COVID-19 and Cancer Nexus. *Iran J Blood Cancer*, 16(3), 55-62. [10.61186/ijbc.16.3.55](https://doi.org/10.61186/ijbc.16.3.55)
 - b) **Waqas, M.***, Bashir, R. et al. Sex differences in breast cancer: Implications for immunotherapy and combination treatments. *American Journal of Case Reports and Clinical Imaging*. 2025; 1(1), 1–4. <http://dx.doi.org/10.51521/AJCRCI.2025.11-103>
 - c) **Waqas, M.***, & Bashir, R. P53 reprogramming in cancer therapy: Challenges, innovations, and future prospect. *Cancer Therapy & Oncology International Journal*. 2024; 28(1), 556230. <https://doi.org/10.19080/CTOIJ.2024.28.556230>
 - d) Akram, I., **Waqas, M.*** et al. (2025). Enhancing Contact Lens Care: Harnessing the Power of Hydrogen Peroxide for Dynamic Disinfection and Visibility Optimization. *J Comm Med and Pub Health Rep*, 6(03). <https://doi.org/10.38207/JCMPHR/2025/MAR06030115>
 - e) **Waqas, M.***, Ur Rahman, S. et al. (2025). Assessing Acute Ammonia Stress on Grass Carp (*Ctenopharyngodon Idella*): Impacts on Growth Performance, Hematology, Serology, and Histopathology. *Agriculture, Forestry and Fisheries*, 14(3), 118-125. <https://doi.org/10.11648/j.aff.20251403.15>
 - f) Anwar, M., **Waqas, M.*** (2025). Exploring the Distribution of ABO and Rhesus Blood Groups among Beta Thalassemia Patients in Punjab, Pakistan: A Cross-Sectional Study. (Accepted – *Kashmir Journal of Science*)
 - g) Bashir, R., **Waqas, M.*** et al. Characterizing p53 Isoform Variability: In Silico Insights into Physico-Chemical Parameters for Targeted Cancer Therapies. (Submitted in *Futuristic Biotechnology – under review*)
 - h) Arshad, M.*, Bashir, R., & **Waqas, M.** From Genes to Joints: Exploring the Intricate Role of TRAF1/C5 rs3761847 in the Enigma of Rheumatoid Arthritis among Locals in Pakistan. (Submitted in *Journal of Clinical Biochemistry – under review*)
- **Conference Proceedings**
 - i) **Waqas, M.***, Bashir, R. et al. (2024). Unraveling Renal Complexities in Thalassemia Major: A Comprehensive Nephrological Inquiry in Central Punjab, Pakistan. *Proceedings of the Pakistan Congress of Zoology*, vol. 42, pp. 45-50. <https://dx.doi.org/10.17582/ppcz/42.45.50>
 - j) **Waqas, M.***, Bashir, R. et al. (2024). Comparative Evaluation of RF and Anti-CCP Tests for Rheumatoid Arthritis Diagnosis: Insights from a Pakistani Population. *Proceedings of the Pakistan Congress of Zoology*, vol. 42, pp. 31-36. <https://doi.org/10.17582/ppcz/42.31.36>
 - k) **Waqas, M.***, Bashir, R. et al. (2024). Optimizing biofuel yields from *Spirogyra* microalgae: The role of extraction techniques and environmental factors. *Proceedings of the Pakistan Congress of Zoology*, vol. 42, pp. 9-16. <https://dx.doi.org/10.17582/ppcz/42.09.16>
- **Ongoing Research Projects**
 - a. Evaluating Anti-Inflammatory Effects of *Peganum harmala* Extracts: A Comparative Analysis with Acetylsalicylic Acid (ASA)

- b. Unlocking the Antibacterial Potential of *Pongamia pinnata* Leaf Extracts: An Exploration of Bioactive Compounds

Technical & Research Skills

 **Wet Lab Techniques:** Mammalian Cell Culture | DNA/RNA Extraction & Quantification | Real-time & Conventional PCR | SDS-PAGE & Gel Electrophoresis | Western Blotting | Immunocytochemistry (ICC), Immunohistochemistry (IHC) | Immunofluorescence | Flow Cytometry (FACS) | Immune Cell Isolation (Human/Mouse) | Mass Spectrometry & Proteomics | Microscopy

 **Computational & Bioinformatics Skills:** NCBI, BLAST, Expasy, EMBOSS | Single-cell RNA-seq Data Analysis | Bioconductor, Galaxy, SAMtools, BEDtools

 **Data Analysis & Statistical Tools:** SPSS, STATA, SAS, JMP, MATLAB | GraphPad Prism for Biomedical Graphing | Microsoft Excel (Data Analysis & Visualization)

Conferences & Workshops

- **43rd Pakistan Congress of Zoology (International)** at University of Okara, Okara as a **Presenter** (23rd – 25th June 2025).
(Abstract). **Waqas, M.***, Bashir, R., Tayyab, M., Mustafavi, H. T., Hassan, M., Ambreen, H. (2025). AI-Enhanced Bioinformatics for Cancer Research: Uncovering Novel Pharmacogenomics Biomarker (Oral Presentation). *Abstract Book of the 43rd Pakistan Congress of Zoology (International)*, held in University of Okara, Okara from June 23-25, 2025. CBGP-21 (pp. 28).
- **2nd International One Health Conference** on One Target: Long Term Survival of Human Being Through National Ecoscurity System at Abdul Wali Khan University, Mardan as a **Presenter** (7-8th November 2024).
(Abstract). **Waqas, M.***, Bashir, R., Saddique, T., Tayyab, M. (2024). Design and Optimization of Bio-Inspired Nano Catalysts for Efficient CO₂ Reduction: A Biophysical Chemistry Perspective (Oral Presentation). *Abstract Book of the 2nd International One Health Conference*, held in Abdul Wali Khan University, Mardan from November 7-8, 2024.
- **42nd Pakistan Congress of Zoology (International)** at University of Azad Jammu & Kashmir, Muzaffarabad as a **Presenter** (23rd – 25th April 2024).
(Abstract). **Waqas, M.***, Bashir, R., Saddique, T., Ali, H., Shahzad A. (2024). Spirogyra Powerhouse: A 360-Degree Approach to Transforming Pakistan's Energy and Water Landscape (Oral Presentation). *Abstract Book of the 42nd Pakistan Congress of Zoology (International)*, held in University of Azad Jammu & Kashmir, Muzaffarabad from April 23-25, 2024. FEWFM-96 (pp. 234-235).
- **One Day Training on Sericulture** at University of Education, Lahore as an Organizing Team Member (11th October 2023).
- **Living Beyond Cancer: Tumor and Cell Death** at University of Education, Lahore as an Organizing Team Member (18th October 2022).
- **Consumer Awareness; Quality Assessment & Buying Behavior of Dairy Products** at University of Veterinary and Animal Sciences, Lahore as a participant (4th October 2022).

Certificates & Short Courses

- Aspire Leaders Program 2024 (Cohort-1) Sponsored by Harvard University, USA
- Certificate in Computer Applications by Govt. of Punjab Pakistan
- Chinese Bridge a project of Hebei Academy of Fine Arts, China
- Creativity Skills by US Mission in Pakistan
- Mental & Physical Self-Care by University of California, Irvine, USA
- Communication Skills by STEM Education in Pakistan

Awards & Memberships

1. Awards

- Young Environmental Activist Award by Government of Punjab, Pakistan
- PEEF Open-Merit Scholarship by Government of Punjab, Pakistan

2. Professional Memberships

- Membership by American Society for Microbiology
- Lifetime Membership by United People Global (Switzerland)
- Lifetime Membership by Global Youth Biodiversity Network (Japan)