

ZAARA ISHAQ

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Date of Birth: Jan 05, 1997

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PROFESSIONAL SUMMARY

Dynamic and results-driven research professional with over 5 years of experience in higher education research, scientific management and collaborations. Holding an MS and currently pursuing a PhD in Applied Biosciences from NUST. Proven expertise in supporting research excellence, managing complex academic projects, facilitating scientific communication and managing research grants.

CORE COMPETENCIES

- **Research Management:** Project Lifecycle Management, Grant/Proposal Writing, Scientific Communication, Research Analytics.
- **Event & Team Management:** Academic Conferences Organization, Cross-functional Team Leadership, Administrative Operations.
- **Technical & Analytical:** Data Analysis, AI/ML Applications in Research, Bioinformatics, Wet-Lab Expertise.

EDUCATION

Duration	Degree	Institution
2021-2029*	PhD in Applied Biosciences (CGPA 3.50/4.0)	National University of Sciences Technology (NUST), Islamabad, Pakistan.
2018-2020	MS Industrial Biotechnology (CGPA 3.70/4.0)	National University of Sciences Technology (NUST), Islamabad, Pakistan.
2014-2018	BS Biotechnology (CGPA 3.69/4.0)	Bahauddin Zakariya University (BZU), Multan, Pakistan.
2012-2014	Intermediate Medical Group (Percentage 86%)	Punjab College for Girls, Mian Channu, Pakistan.
2010-2012	Matric Science Group (Percentage 93%)	Govt. Girls Model High School, Mian Channu, Pakistan.

PROFESSIONAL EXPERIENCE

Bioinformatics Specialist | *MGBIO (SMC Private) Ltd.* | March 2025 - Present

- Actively bridging the gap between academic research and commercial application within a private biotechnology startup.
- Managing bioinformatics projects and supporting the commercialization of software packages (e.g., B-vac for vaccine design).

Management Trainee Officer (MTO) | *NUST School of Health Sciences (NSHS)* | May 2025 - Dec 2025

- Managed critical research operations, oversaw daily administrative workflows and supported the faculty's academic ecosystem.
- Drafted grant proposals and facilitated institutional partnerships (MoUs/DoUs) to expand research collaborations.
- Served as a member of the Institutional Review Board (IRB), contributing to the ethical review and compliance of research protocols.
- Maintained central research repositories and departmental records.

Graduate Research Assistant | *Atta-Ur-Rahman School of Applied Biosciences (ASAB), NUST* | Sep 2021 - Present

- Conducted genomic analysis and wet-lab experiments for multidrug-resistant pathogens.
- Co-developed ML-based software and assisted principal investigators in research design and data analysis.
- Mentored MS and BS students, facilitating departmental research outputs that resulted in 10+ publications.
- Organized international conferences and facilitated hands-on workshops.

MEMBERSHIPS

1. International Society for Computational Biology (ISCB)
2. Global Burden of Disease (GBD) Collaborator Network
3. American Society of Microbiology (ASM)
4. BactiVac Network
5. Asian Federation of Biotechnology (AFOB)

AWARDS

1. “Indigenous PhD Fellowship for 5000 Scholars, Phase II, Batch VI” in MS enrolled category by Higher Education Commission of Pakistan. (2021)
2. Prime Minister’s Programme for Provision of Laptops to Talented Students. (2017)
3. Chief Minister’s Punjab Educational Endowment Fund Merit Scholarship. (2012)

PUBLICATIONS

1. **Ishaq, Z.**, Sami, A., Batool, TS., and Waheed, Y. Blood-borne and parasitic infections: role of phytoformulations, (eds) *Sustainable Healthcare. Advances in Science, Technology & Innovation. Springer, Cham.* 23/02/2026 ISBN 978-3-032-15493-4 https://doi.org/10.1007/978-3-032-15493-4_10.
2. **Ishaq, Z.**, Khalil, K., Faiz, F., Haider, U., Nasir, S., Qayyum, H., and Ali, A. Genomic characterization and comparative analysis of multidrug-resistant uropathogenic *Escherichia coli* strain U1 from Pakistan revealed ST131 as dominant clade, *Antonie van Leeuwenhoek* 119. 22 (2026). <https://doi.org/10.1007/s10482-025-02233-2>.
3. Ali, A., Hamid, MHB., Nasir, S., **Ishaq, Z.** and Anwer, F. B-vac a robust software package for bacterial vaccine design, *Scientific Reports.* 15, 31745 (2025). <https://doi.org/10.1038/s41598-025-01201-0>.
4. Qayyum, H., **Ishaq, Z.**, Ali, A., Kayani, MUR., and Huang, L. Genome-resolved metagenomics from short-read sequencing data in the era of artificial intelligence, *Functional & Integrative Genomics.* 2025; 25 (1): 1-21. <https://doi.org/10.1007/s10142-025-01625-x>.
5. **Ishaq, Z.**, Faiz, F., Haider, U., and Ali, A. Artificial intelligence and machine learning techniques applied to microbiology, *Microbiology in the Era of Artificial Intelligence, Nanotechnology, Quantum and Next Generation Sequencing, CRC Press, Taylor and Francis Group.* 1st Edition, 17/04/2025, ISBN 9781032712376. <http://doi.org/10.1201/9781003410164-15>.
6. Nasir, S., Anwer, F., **Ishaq, Z.**, Saeed, MT., and Ali, A. VacSol-ML(ESKAPE): machine learning empowering vaccine antigen prediction for ESKAPE pathogens, *Vaccine.* 2024; 42 (22): 1-10. <https://doi.org/10.1016/j.vaccine.2024.126204>.
7. Nasir, S., **Ishaq, Z.**, Fatima, S., Zaheer, T., Qayyum, H., and Ali, A. Screening of potential vaccine candidates through machine learning approach, *Reverse Vaccinology: Concept, Methods and Advancement, Elsevier.* 1st Edition, 30/05/2024, ISBN: 9780443133954. <https://doi.org/10.1016/B978-0-443-13395-4.00016-2>.
8. **Ishaq, Z.**, Zaheer, T., Waseem, M., Awan, HS., Ullah, N., AlAsmari, AF., AlAsmari, F., and Ali, A. Immunoinformatics aided designing of a next generation poly-epitope vaccine against uropathogenic *Escherichia coli* to combat urinary tract infections, *Journal of Biomolecular Structure and Dynamics.* 2023; 1-21, <https://doi.org/10.1080/07391102.2023.2266018>.
9. Fatima, S., Akbar, A., Irfan, M., Shafee, M., Ali, A., **Ishaq, Z.**, Raza, SK., Samad, A., MY., Alshammari and Hassan, SS. Virulence factors and antimicrobial resistance of Uropathogenic *Escherichia coli* EQ101 UPEC isolated from UTI patient in Quetta, Balochistan, Pakistan, *BioMed Research International.* 2023; <https://doi.org/10.1155/2023/7278070>.
10. Fatima, S., **Ishaq, Z.**, Irfan, M., AlAsmari, AF., Achakzai, AF., Zaheer, T., Ali, A. and Akbar, A. Whole-genome sequencing of multidrug resistance *Salmonella Typhi* clinical strains isolated from Balochistan, Pakistan, *Frontiers in Public Health.* 2023; <https://doi.org/10.3389/fpubh.2023.1151805>.
11. Ullah, N., Nasir, S., **Ishaq, Z.**, Anwer, F., Raza, T., Rahman, M., Alshammari, A., Alharbi, M., Bae, T., Rahman, A., Ali, A. Comparative genomic analysis of a panton-valentine leukocidin-positive ST22 community-acquired Methicillin-Resistant *Staphylococcus aureus* from Pakistan. *Antibiotics.* 2022; 11(4):496. <https://doi.org/10.3390/antibiotics11040496>.

12. Ullah, N., Anwer, F., **Ishaq, Z.**, Siddique, A., Shah, MA., Rahman, M., Rahman, A., Mao, X., Jiang, T., Lee, BL., Bae, T., Ali, A. In silico designed *Staphylococcus aureus* B-cell multi-epitope vaccine did not elicit antibodies against target antigens suggesting multi-domain approach. *Journal of Immunological Methods*. 2022; 504, 113264. <https://doi.org/10.1016/j.jim.2022.113264>.
13. Zaheer, T., Waseem, M., Waqar, W., Dar, H. A., Shehroz, M., Naz, K., **Ishaq, Z.**, Ahmad, T., Ullah, N., Bakhtiar, S. M., Muhammad, S. A., & Ali, A. Anti-COVID-19 multi-epitope vaccine designs employing global viral genome sequences. *PeerJ*. 2020; 8, e9541. <https://doi.org/10.7717/peerj.9541>.

PROJECTS

- Immunoinformatics and machine learning based strategies to combat uropathogenic *Escherichia coli* infections. (Ongoing)
- Review on AI/ML advancement in the field of vaccine development and antimicrobial peptides prediction. (Ongoing)

PRESENTATIONS

1. Poster presentation at 15th Biennial International Conference of the Pakistan Society for Biochemistry and Molecular Biology “Trends in Molecular Sciences” at School of Biological Sciences, The University of Punjab, Lahore, Pakistan. (2025)
2. Poster presentation at “International Conference on Integrative Life Sciences (ICiLS 2024)” at ASAB, NUST, Islamabad, Pakistan. (2024)
3. Poster presentation at “International Conference on Current Trends, Prospects & Opportunities in Vaccine Research” at Centre of Excellence in Molecular Biology, Lahore, Pakistan. (2024)
4. Poster presentation at 13th International Public Health Conference “Shaping Healthcare Through Evidence: Pioneering Solutions for Disease Prevention and Control” at Health Services Academy, Islamabad, Pakistan. (2023)

PROFESSIONAL DEVELOPMENT

1. Online Course “Introduction to GBD” by The Institute of Health Metrics and Evaluation, University of Washington, USA. (2026)
2. 2-Days Hand-on Workshop “RNA Sequencing Analysis in Health and Disease” by Metagenomic Discovery Lab, School of Interdisciplinary Engineering and Sciences, NUST, Islamabad, Pakistan. (2026)
3. 2-Days Online Training “Statistical Analysis using SPSS” by RSG Pakistan, International Society for Computational Biology. (2025)
4. Basic Life Support (CPR and AED) Provider Program by American Heart Association. (2025)
5. 6 Weeks NCEAC-HEC Generative AI and Application Development Training Program Cohort 1 offered by Pak Angels and its partners. (2025)
6. 5-Days Hands-on National Workshop on “Production & Purification of Recombinant Proteins” organized by School of Biological Sciences, University of the Punjab, Lahore, Pakistan. (2025)
7. 4-Days Online Non-credit Course offered through Coursera “How to write a research paper” by Higher Education Commission, Pakistan. (2025)
8. 2-Days Hands-on Training “Microbiology: From Basics to Practical Applications” organized by Microbiology Lab & API Research Group, PCSIR Labs, Islamabad, Pakistan. (2025)
9. 2-Days Participation in the Global Health Systems & AI Hackathon 2025, the Pakistan Hub at National Science & Technology Park (NSTP), Islamabad, Pakistan. (2025)
10. 2-Days Online Training by BactiVac: Journal Article Writing Course - BactiVac Network, University of Birmingham, UK. (2025)
11. 2-Days Online Training by BactiVac: Communicating Research to Non-Specialist Audiences Course - BactiVac Network, University of Birmingham, UK. (2025)
12. 10 Weeks Online Training in UI/UX Design under e-Rozgaar Programme Powered by Punjab Information Technology Board, Pakistan. (2023)
13. 5 Weeks Online Non-credit Course offered through Coursera “Foundations: Data, Data, Everywhere” by Google. (2023)
14. 4 Weeks Online Non-credit Course offered through Coursera “Python For Genomic Data Science” by Johns Hopkins University. (2022)
15. 12 Weeks Online Training in Communication and Soft Skills under DigiSkills Training Program DSTP2.0, Batch-02 offered by Ministry of Information Technology and Telecom, Pakistan. (2022)

16. 12 Weeks Online Training in Creative Writing under DigiSkills Training Program DSTP2.0, Batch-02 offered by Virtual University and Ministry of Information Technology and Telecom, Pakistan. (2022)
17. 6 Weeks Online Non-credit Course offered through Coursera “Crash Course on Python” by Google. (2022)
18. 5 Weeks Online Non-credit Course offered through Coursera “Whole Genome Sequencing of Bacterial Genomes-Tools and Application” by Technical University of Denmark (DTU). (2021)
19. 12 Weeks Online Training in Online Content Marketing and Advertising (Non-Technical Group) under e-Rozgaar Programme Powered by Punjab Information Technology Board (PITB), Pakistan. (2021)
20. 12 Weeks Online Training in Graphic Design under DigiSkills Training Program Batch-10 offered by Virtual University and Ministry of Information Technology and Telecom, Pakistan. (2021)
21. 12 Weeks Online Training in Course Freelancing under DigiSkills Training Program Batch-10 offered by Virtual University and Ministry of Information Technology and Telecom, Pakistan. (2021)
22. 3-day online training “Entrepreneur Growth and Fundraising Trainings for Women Entrepreneurs” organized by Takhleeq Business Incubator-University of Central Punjab (UCP), Lahore, Pakistan. (2021)
23. Online training “HEC Digital Library Collections for Your Next Scholarly Research” organized by ProQuest Education in partnership with Higher Education Commission (HEC), Pakistan. (2020)
24. Online training session “How to Utilize ProQuest Journals, Dissertations and Varied Content Types in Training and Research” organized by ProQuest Education in partnership with HEC, Pakistan. (2020)
25. Online training session “How to Utilize ProQuest Ebooks Collection in Teaching and Research” organized by ProQuest Education in partnership with HEC, Pakistan. (2020)
26. Online training session “How to Manage Your Reference Using RefWorks” organized by ProQuest Education in partnership with HEC, Pakistan. (2020)
27. Online training session “5 Tips for Getting Published: Maximize your Chances to Get Your Paper Accepted in Academic Journal!” organized by ProQuest Education in partnership with HEC, Pakistan. (2020)

SKILLS

- **Graphic Design:** Logo design, infographics, social media graphics; Adobe Illustrator, Canva Pro, PowerPoint.
- **Photography:** Landscape and portrait photography; Adobe Lightroom and Photoshop editing.
- **Digital Marketing:** Social media content creation, engagement, and strategy.
- **Soft Skills:** Communication, project management, attention to detail.

NON-EDITORIAL CONTRIBUTIONS

1. Reviewer for Frontiers in Bioinformatics, Frontiers. (2026)
2. Reviewer for Current Research in Biotechnology, Elsevier. (2025)
3. Reviewer for Journal of Molecular Recognition, Wiley. (2025)
4. Reviewer for Biochemical and Biophysical Research Communications, Elsevier. (2025)

ACADEMIC LEADERSHIP & EVENT MANAGEMENT

- **Team Lead:** International Conference on Integrative Life Sciences (ICiLS 2024) and National Conference on Precision Medicine (2026). Managed promotional strategies and conference branding.
- **Facilitator & Volunteer:** Organized and facilitated hands-on workshops for “Coding for Biologists” (NUST 2024) and “Bacterial Identification” (Kinnaird College 2025).
- **Guest Speaker:** Led an initiative awareness webinar on Environmental Conservation funded by the United States (IREX/UGRAD 2023).

REFERENCE

- 1) **Dr. Amjad Ali** (Professor & CEO of MGBIO SMC Ltd) ASAB, NUST, Islamabad | amjad.ali@asab.nust.edu.pk | (+92) 51-90856138
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- 3) **Dr. Sara Ishaq** (Senior Assistant Director) RIC, NUST, Islamabad | seniorad.projects@nust.edu.pk | (+92) 51-90856259