

Dr. Qudsia Mushtaq

Lecturer, Zoology

Baba Guru Nanak University, Nankana Sahib, Pakistan

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Professional Biography

oologiZst with a PhD in Microbial Biotechnology, specializing in bioprocessing of potato peelings for bioethanol production and animal feed supplements. I have over five years of teaching and administrative experience, including serving as Assistant Director Fisheries and working in higher education institutions such as the University of Punjab. My research integrates biotechnological applications with environmental and industrial relevance, with a focus on sustainable resource utilization and microbiology.

Education

PhD in Zoology – University of the Punjab, Lahore, 2024. Thesis: Bioprocessing of potato peelings for ethanol and animal feed supplement. CGPA: 4/4

MS in Zoology – University of the Punjab, Lahore, 2015. Gold Medalist, CGPA: 3.91/4. Focus: Microbial Biotechnology and Enzyme Optimization

BS in Zoology – University of the Punjab, Lahore, 2013. Gold Medalist, CGPA: 3.85/4. Focus: Hepatotoxicity studies induced by CTC

Intermediate – Govt. Girls Higher Secondary School Chung, 2009

Matriculation – Forces Education System, 2006

B.Ed – Allama Iqbal Open University Islamabad, 2016. Majors: Biology and General Science

Work Experience

Lecturer, Baba Guru Nanak University, Nankana Sahib (2024–Present)

Assistant Director Fisheries, Fisheries Research and Training Institute, Manawan, Lahore (1 year)

Lecturer (Visiting), University of Education, Lahore (5 months)

Teaching Experience, School of Biochemistry and Biotechnology, University of Punjab, Lahore (2 years)

Publications

Irshad, A., Jawad, R., **Mushtaq, Q.**, Spalletta, A., Martin, P. and Ishtiaq, U., 2025. Determination of antibacterial and antioxidant potential of organic crude extracts from *Malus domestica*, *Cinnamomum verum* and *Trachyspermum ammi*. *Scientific Reports*, 15(1), p.976.

Iram, Z., Irshad, A., Spalletta, A., Jawad, R., **Mushtaq, Q.**, Joly, N., Martin, P. and Ishtiaq, U., 2024. Nature-Inspired Antimicrobial Agents: Cinnamon-Derived Copper Oxide Nanoparticles for Effective *Aspergillus Niger* Control. *Current Microbiology*, 82(1), pp.1-12.

Irshad A, Jawad R, Sharif S, Joly N, Ishtiaq I, Martin P, **Mushtaq Q.** Bioengineering of glucan coated silver nanoparticles as dynamic biomedical compound; in vitro and in vivo studies. *Microbial Pathogenesis*. 2024. 197. 107005.

Mushtaq Q, Ishtiaq U, Joly N, Spalletta A, Martin P. Harnessing Bacillus subtilis QY5 PP784163 for Bioethanol Production from Potato Peel Waste and Nutrient Recovery for Animal Feed: Maximizing Resource Efficiency. *Fermentation*. 2024 Oct 14;10(10):523.

Mushtaq Q, Uzair Ishtiaq, Nicolas Joly, Patrick Martin, and Javed Iqbal Qazi. "Investigation and characterization of changes in potato peels by thermochemical acidic pre-treatment for extraction of various compounds." *Scientific Reports* 14, no. 1 (2024): 12655.

Mushtaq Q, Ishtiaq U, Joly N, Qazi JI, Martin P. Amylase and Cellulase Production from Newly Isolated Bacillus subtilis Using Acid Treated Potato Peel Waste. *Microorganisms*. 2024; 12(6):1106. <https://doi.org/10.3390/microorganisms12061106>

Mushtaq Q, Joly N, Martin P, Qazi J.I. Optimization of Alkali Treatment for Production of Fermentable Sugars and Phenolic Compounds from Potato Peel Waste Using Topographical Characterization and FTIR Spectroscopy. *Molecules*. 2023. 28: 1-19.

Mushtaq Q, Irfan M, Tabssum F, Iqbal Qazi J. Potato peels: A potential food waste for amylase production. *Journal of Food Process Engineering*. 2017 Aug;40(4):e12512.

Irfan M, **Mushtaq Q**, Tabssum F, Shakir HA, Qazi JI. Carboxymethyl cellulase production optimization from newly isolated thermophilic Bacillus subtilis K-18 for saccharification using response surface methodology. *AMB Express*. 2017 Dec;7(1):1-9.

Basharat MH, Tariq M, Mustafa R, Akash A, Talib HH, Aziz MN, Noel A, Zeb A, Khalid MF, Soomro F, **Mushtaq Q**. Biologically Synthesized Zinc Oxide Nanoparticles and Carbon Tetrachloride as an Anti Cancer Drug: A Review. *Pakistan Journal of Medical & Health Sciences*. 2022 Sep 10;16(06):1046

Khan B, Shahid MW, Saeed S, **Mushtaq Q**, Ishtiaq U, Farooq S, Arif T, Maqsood A, Raza H, Arif S, Khalid F. Gold Nanoparticles and its use to Treat Cancer in Liver Cirrhosis: A Review. *Pakistan Journal of Medical & Health Sciences*. 2022 Aug 18;16(06):730.

Amir A, Azhar N, Shahbaz U, Ali SA, Aslam M, **Mushtaq Q**, Shah SN, Aziz MN, Fatima M. Prevalence Of HBV, HCV, And Its Co-Infection During Pregnancy In Lahore Pakistan. *Journal of Pharmaceutical Negative Results*. 2022 Dec 31:9003-10.

Irshad A, **Mushtaq Q**, Naz A, Hameed SA, Farooq Z, Qazi AA, Ameen A, Amir A. Identification and Evaluation of Most Prevalent Thermophilic Fungi from Composting Process. *International journal of special education*. 2022: 37(3).

Mushtaq Q, Sabir S, Kashif HM, Ameen A, Imran S, Khalid M, Hameed SA, Qaiser M, Hussain A, Raza H, Arif T. Analysis of compost physical and chemical characteristics by evaluating a bacterial inoculum on MSW. *Journal of Survey in Fisheries Sciences*. 2023 May 19;10(3S):5906-15.

Fatima, M., Noel, A., Abdullah, Z., Bibi, K., Yousaf, S., Aziz, M.N., Chaudhry, M.F.Z., Lodhi, M.S., Khalid, F., Ameen, A. Farooq, S. and **Mushtaq Q**. 2022. Therapeutic and Diagnostic Analysis of Cadmium Sulfide Quantum Dots Conjugated with Cysteine, Anticancer Drug and

Folate. *Pakistan Journal of Medical & Health Sciences*, 16(09), pp.408-408.

Projects / Research Work

Bioprocessing of potato peelings for ethanol and animal feed
Optimization of microbial amylase and cellulase production
Histopathological and hematological studies on CTC-induced hepatotoxicity
Statistical design for enzyme production enhancement
The Impact of Microplastics on Human Health: Exploring Pathways of Exposure and Potential Risks Through Medical Devices and Other Routes
Use of Earthworm Meal as a Protein-Rich Supplement in Fish Feed
Isolation and Characterization of Acetone-Producing Bacteria for Biotechnological Applications

Teaching Interests

Animal Biotechnology, Microbial Biotechnology, Environmental and Fisheries Biology, Bioprocessing and Applied Zoology

Research Interests

Bioprocessing of agricultural wastes, Microbial enzyme optimization, Sustainable bioenergy production, Fish feed supplement, Nanobiotechnology for antimicrobial applications, Environmental and sustainable biotechnology

Distinctions / Awards

Gold Medalist (BS), First Position (MS)
Merit scholarship holder during BS (4 years)
DPCC Scholarship holder (MS)
Invited to 125th Convocation of Punjab University

Computer Skills

Microsoft Office (Word, Excel, PowerPoint), EndNote, Reference Manager, Statistica, Minitab

Conferences / Workshops / Seminars

Organized World Fisheries Day Seminar, Baba Guru Nanak University, 2024 & 2025
Organized International Breast Cancer Day Seminar, Baba Guru Nanak University, 2025
Organizer, 7th International Conference on Applied Zoology, University of Sargodha, 2024
Organizer, 8th International Conference on Applied Zoology, University of Punjab, 2025

Organizer, 1st International Conference on Applied Science & Technology, Baba Guru Nanak University, 2024

Organizer, 2nd International Conference on Applied Science & Technology, Baba Guru Nanak University, 2024

Participated in multiple national and international conferences from 2014–2018

Laboratory / Wet Lab Skills

Microbial culturing, characterization, microscopy, slide preparation, microtomy, animal handling, XRD, FTIR, HPLC, spectrophotometry, molecular biology techniques

Languages

English, Urdu, Punjabi

Professional Memberships / Social Activities

Member, American Society for Microbiology (ASM)