University Academic Curriculum Vitae

Personal information

Humdah Qayyum
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Education

- Bachelor of Science in Botany
  Lahore College for Women University, Pakistan
  (2011-2015)

- Master of Science in Plant Biotechnology
  National University of Sciences and Technology, Pakistan
  (2015-2017)

Present appointment

- PhD Student / Assistant Researcher
- Free University of Bozen- Bolzano – Faculty of Agricultural, Food and Environmental Sciences, Italy
- Project: **Discovering apple quality markers for a sustainable conservation in dynamic controlled atmosphere (DAMaSCo) + Hyperspectral imaging for the detection of physiologically and parasitically induced damages on apple fruit at harvest and during postharvest (HIPPA)**
- The research project DAMaSCo relies on the functional characterization of fermentative pathway enzymes expressed by *Malus domestica* in low oxygen conditions and to identify quality markers to prevent decay of apples during storage. The research project HIPPA focuses on developing non-invasive inoculation methods for latent pathogens of apple and studying the molecular host-pathogen interaction during the early phase of disease development.
- PhD student (Since November 2022)
- Assistant Researcher (May 2023 – December 2025)

Professional research experience

Intern
Digianalix Tech. Institute & Research Solutions, Jharkhand, India
Advanced industrial internship based on comparative evaluation of non-coding RNAs in *Malus domestica* under biotic and abiotic stresses
(December 2022 – May 2023)

Worked on the comparative evaluation of non-coding RNAs in Arbuscular mycorrhizal fungi and host plants
(October 2021 – September 2022)

Graduate Research Assistant
Guangxi University – College of Agriculture, Nanning China
Involved in evaluating the potential of Plant growth promoting rhizobacteria (PGPR) in controlling the red rot disease of sugarcane
(September 2018 – January 2021)

Intern
National Agricultural Research Center, Islamabad Pakistan
Isolation of phytopathogenic fungi from infected plant tissues and their identification using morphological and molecular tools.
Partial fulfillment of master's thesis project
(October 2016 – April 2017)

Master's Thesis
National University of Sciences and Technology – Department of Plant Biotechnology, Islamabad Pakistan

Identification of the red rot pathogen '*Colletotrichum falcatum*' using morphological, molecular and phylogenetic tools following by its protein profiling
(September 2015 – August 2017)

Bachelor's Thesis
Lahore College for Women University – Department of Botany, Lahore Pakistan
Optimization of Microwave-Assisted Extraction to extract the phenolics from *Allium cepa*
(September 2014 – August 2015)

Intern
Worldwide Fund, Lahore Pakistan
Workshops and community action projects on natural resource conservation, sustainable resource consumption, waste minimization, recycling, climate change, and green energy.
(November 2013 – March 2014)

Teaching experience

Free University of Bozen-Bolzano, Italy
Teaching assistant for the course *Plant Protection Products and Residues* of the International Master in Horticulture Science
(Academic year 2023/2024)

Teaching assistant for the course *Plant Protection* for the Bachelor students
(Academic year 2023/2024)

Teaching assistant for the course *Protection of Stored Products* for the Bachelor students
(Academic year 2023/2024)

Beacon Tutors, Lahore Pakistan
Teaching contract to deliver lectures on "Principles of Botany" to Bachelor Students
(February 2022 –October 2022)

Bright Career Shad Public School & College, Narowal Pakistan
Lectures on *Basic concepts of Biology* and performed administrative tasks
(January 2021 – January 2022)

Achievements

Travel grant from European Molecular Biology Laboratory for attending a practical course on Membrane Protein Expression, Purification, and Characterization 3 (mPEPC3)

President's Gold Medal for excellent performance and for securing the first position in master's at National University of Sciences and Technology, Islamabad Pakistan
(January 2019)

Roll of Honor for Educational Excellence at Lahore College for Women University, Lahore Pakistan
(May 2016)

The Prime Minister's Excellency Award, at National University of Sciences and Technology, Islamabad Pakistan
(June 2017)

Merit Scholarship to study Bachelors in Botany at Lahore College for Women University, Lahore Pakistan,
(October 2011- August 2015)

Youth Initiative Award from Chief Minister Punjab, Lahore Pakistan (February 2012)

Outstanding performance as Class Coordinator at Superior Group of Colleges, Lahore Pakistan
(May 2011)

Publications

Qayyum H, Marandi S, Mahto KS, Beck P, Kumai N, Kumari P, Kumari D, Tirkey MP, Verma R, and Nitin M. (2022). Arbuscular mycorrhizal fungi induce molecular responses in citrus. *International Journal of Current Research*, 14(01): 20187-20199.

Rani SG, Kumari H, Pati P, Naaz S, Prasad T, Kumari R, ***Qayyum H***, and Nitin M. (2021). Recent approaches to systems biology and omics in plant research. *Journal of Current Opinion in Crop Science*, 2(2): 288-305.

Qayyum H, Ali M, Surekha KM, Kumar S, Gul A, Nitin M. (2024). Transcriptome-based prediction breeding. *Springer Nature*, Accepted, Expected date: December 2024.

Qayyum H, Ali M, Batcho AA, Gul A, Javaid A. (2024). Transcriptome application in plant breeding. *Springer Nature*, Accepted, Expected date: December 2024.

Conferences and Seminars

Qayyum H, Ranzi M and Baric S: 'A targeted approach for single lenticel inoculation of apple fruit'. European Horticulture Congress, Bucharest, Romania, 12-16 May 2024 (oral presentation)

Qayyum H, Bharti S and Baric S: 'Optimizing the protocol for precise inoculation of lenticels of apple fruit'. XXIX Conference of the Italian Society of Plant Pathology, Trento, Italy, 09-11 September 2024 (poster presentation)

Akhter I, ***Qayyum H***, Javad S, Tariq A: 'Microwave assisted extraction of Phenolics from *Allium cepa*'. International Conference of Biochemistry, Biotechnology and Biomaterials, Faisalabad, Pakistan, 22-24 February 2016 (poster presentation)

Professional Courses

Membrane Protein Expression, Purification, and Characterization 3 (mPEPC3)
European Molecular Biology Laboratory, Hamburg, Germany (September 2024)

Demystifying Multiomics with Data Science
Environmental Molecular Sciences Laboratory, Washington, United States (July 2023)

Plant Bioinformatics Methods
University of Toronto, Canada (2021)

Biology Meets Programming
UC San Diego, United States (2020)

Bioinformatics: Introduction and Methods
Peking University, China (2020)

Systemic Review and Meta-analysis
Johns Hopkins University, United States (2020)

Stanford Introduction to Food and Health
Stanford University, United States (2020)

Programming for Everybody
University of Michigan, United States (2020)

Skills and competencies

Fungal Isolation, In vitro Inhibition Assay, Plant-microbe interactions, Microscopic Analysis

DNA Extraction, PCR, Molecular Cloning, DNA Sequencing, Molecular cloning, Bacterial transformation, Agrobacterium-mediated Plant Transformation, Phenolic Extraction and Quantification, Spectrophotometric Analysis

Protein extraction, Protein expression and purification, SDS-PAGE, Reconstitution technologies of membrane proteins, Cryo-EM grid preparation, Protein modeling

Sanger sequencing analysis, Phylogenetic analysis, Mega, Geneious, AphaFold, PyMOL, Linux server, Shell script, ANOVA

Language competence

English: C1
Urdu: C2
Punjabi: C1
Arabic: B1
Chinese: HSK1