Musrat Ali (PhD)
Trained IPFP Fellow under NFDP-NAHE-HEC Islamabad
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Statement of Purpose

I am a Plant Scientist and working on the diseases and physiology of plants. I have experience of working as "Research Associate" in HEC funded NRPU project. This project also supported my PhD research, and I synthesized nano-fungicides to control fruit rot diseases of citrus and drupes. I want to explore new areas of nanotechnology and implement them on different plants to improve their vigor. I have authored more than 18 research articles.

During my placement, I will execute nanotechnology-based research. I will leave no stone unturned to discharge my duties and deliver lectures with full faith and honesty. I am confident of using my experience and publish 1-2 research articles, at least, from the start-up research Plan.

Education

2017.08.27-2021.11.11 PhD in Molecular Plant Pathology

Quaid-i-Azam University Islamabad, Pakistan.

2015.09.03-2017.11.11 M.Phil. in Molecular Plant Pathology

Quaid-i-Azam University Islamabad, Pakistan.

2012.09.03-2014.08.06 M.Sc. in Department of Plant Sciences

Quaid-i-Azam University Islamabad, Pakistan.

2006.05.10-2009.04.21 B.Sc. Botany

Shah Abdul Latif University Khairpur, Sindh Pakistan

PhD Dissertation Title: GREEN SYNTHESIS OF NANOPARTICLES AND STUDY OF THEIR ANTIMICROBIAL POTENTIAL IN CITRUS

M.Phil. / master's Dissertation Title: GENETIC DIVERSITY OF *FUSARIUM OXYSPORUM* STRAINS FROM CHICKPEA FIELDS IN PAKISTA

Publications

Niazi, Faryal, **Musrat Ali**, Urooj Haroon, Asif Kamal, Taskeen Rashid, Fareeha Anwar, Rabia Nawab, Hassan Javed Chaudhary, and Muhammad Farooq Hussain Munis. "Effect of green Fe2O3 nanoparticles in controlling Fusarium fruit rot disease of loquat in Pakistan." *Brazilian Journal of Microbiology* (2023): 1-10. **(IF=2.214)**

Ali, Musrat, Mahnoor Akbar, Hassan Javed Chaudhary, and Muhammad Farooq Hussain Munis. "Concurrent application of bacterial-mediated and mycosynthesized ZnO nanofungicides to maintain high ascorbic acid and delay postharvest decay of apricot." *Microbial Pathogenesis* (2023): 106207. **(IF=3.484)**

Kamal, Asif, **Musrat Ali**, Dunia A. Al Farraj, Enshad M. Al-Zaidi, Maria Khizar, Reem Amer Aljaaidi, Mohmed S. Elshikh, and Muhammad Farooq Hussain Munis. "Diagnosis and Control of Brown Leaf Spot of Kiwi (Actinidia deliciosa) Using Biochar-Zinc Oxide Nanocomposite (MB-ZnO) as a Non-Toxic Bio-Fungicides." *Crystals* 13, no. 1 (2023): 98. **(IF= 2.67)**

Khoso, M.A., Hussain, A., Ritonga, F.N., Ali, Q., Channa, M.M., Alshegaihi, R.M., Meng, Q., **Ali, Musrat.,** Zaman, W., Brohi, R.D. and Liu, F., 2022. WRKY transcription factors (TFs): Molecular switches to regulate drought, temperature, and salinity stresses in plants. *Frontiers in Plant Science*, *13*. **(IF=6.627)**

Ahmed, Junaid, **Musrat Ali**, Huda M. Sheikh, Manal O. Al-Kattan, Urooj Haroon, Masoumeh Safaeishakib, Mahnoor Akbar, Asif Kamal, Mohammad Sameer Zubair, and Muhammad Farooq Hussain Munis. "Biocontrol of Fruit Rot of Litchi chinensis Using Zinc Oxide Nanoparticles Synthesized in Azadirachta indica." *Micromachines* 13, no. 9 (2022): 1461. **(IF=3.523)**

Zubair, Mohammad Sameer, Muhammad Farooq Hussain Munis, Ibtisam M. Alsudays, Khalid H. Alamer, Urooj Haroon, Asif Kamal, **Musrat Ali**, Junaid Ahmed, Zimen Ahmad, and Houneida Attia. "First Report of Fruit Rot of Cherry and Its Control Using Fe2O3 Nanoparticles Synthesized in Calotropis procera." *Molecules* 27, no. 14 (2022): 4461. **(IF= 4.927)**

Akbar, M., El-Sabrout, A.M., Shokralla, S., Mahmoud, E.A., Elansary, H.O., Akbar, F., Din, B.U., Haroon, U., **Ali, Musrat**., Saleem, H. and Anar, M., 2022. Preservation and Recovery of Metal-Tolerant Fungi from Industrial Soil and Their Application to Improve Germination and Growth of Wheat. *Sustainability*, *14*(9), p.5531. **(IF= 4.089)**

Musrat Ali, Xiukang Wang, Urooj Haroon, Hassan Javed Chaudhary, Asif Kamal, Qurban Ali, Muhammad Hamzah Saleem et al. "Antifungal activity of Zinc nitrate derived nano Zno fungicide synthesized from Trachyspermum ammi to control fruit rot disease of grapefruit." *Ecotoxicology and Environmental Safety* 233 (2022): 113311. **(IF= 7.129)**

Akbar, Mahnoor, Urooj Haroon, **Musrat Ali**, Kinza Tahir, Hassan Javed Chaudhary, and Muhammad Farooq Hussain Munis. "Mycosynthesized Fe2O3 nanoparticles diminish brown rot of apple whilst maintaining composition and pertinent organoleptic properties." *Journal of Applied Microbiology* 132, no. 5 (2022): 3735-3745. **(IF= 4.061)**

Musrat Ali, Urooj Haroon, Maria Khizar, Chaudhary, H. J., & Hussain Munis, M. F. (2020). Scanning electron microscopy of bio-fabricated Fe2O3 nanoparticles and their application to control brown rot of citrus. *Microscopy Research and Technique*. *Microscopy Research and Technique*, *84*(1), 101-110. **(IF= 2.893)**

Musrat Ali, Haroon, U., Khizar, M., Chaudhary, H. J., & Munis, M. F. H. (2020). Facile single step preparations of phyto-nanoparticles of iron in Calotropis procera leaf extract to evaluate their antifungal potential against Alternaria alternata. *Current Plant Biology*, *23*, 100157. **(IF= 3.26)**

Haroon, U., Khizar, M., Liaquat, F., **Musrat, Ali.,** Akbar, M., Tahir, K., ... & Munis, M. F. H. (2021). Halotolerant plant growth-promoting rhizobacteria induce salinity tolerance in wheat by enhancing the expression of SOS genes. *Journal of Plant Growth Regulation*, 1-14. **(IF= 3.412)**

Uddin, S., Safdar, L. B., Anwar, S., Iqbal, J., Laila, S., Abbasi, B. A., ... & Quraishi, U. M. (2021). Green synthesis of nickel oxide nanoparticles from Berberis balochistanica stem for investigating bioactivities. *Molecules*, *26*(6), 1548. **(IF= 4.927)**

Khizar, M., Shi, J., Haroon, U., **Musrat, Ali.,** Liaquat, F., Akbar, M., ... & Munis, M. F. H. (2021). RNA-Seq based exploration of differentially expressed genes (DEGs) in cotton (Gossypium hirsutum. L) upon infection with Aspergillus tubingensis. https://assets.researchsquare.com/files/rs-770815/v1_covered.pdf?c=1631875524

Maria Khizar, Urooj Haroon, **Musrat Ali**, Samiah Arif, Iftikhar Hussain Shah, Hassan Javed Chaudhary and Muhammad Farooq Hussain Munis, (2020). *Aspergillus tubingensis* Causes Leaf Spot of Cotton (*Gossypium hirsutum* L.) in Pakistan. Phyton-International Journal of Experimental Botany, DOI: 10.32604/phyton.2020.08010. **(IF= 1.039)**

Hussain, A., Kamran, M. A., Javed, M. T., Hayat, K., Farooq, **Musrat. Ali**., Ali, N., Chaudhary, H. J. (2019). Individual and combinatorial application of Kocuria rhizophila and citric acid on phytoextraction of multi-metal contaminated soils by Glycine max L. Env. and Expe. Botany, 159, 23-33. **(IF= 5.545)**

Faisal, Muhammad, Fayaz A. Larik, Aamer Saeed, Azhar Hussain Shah, Pervaiz Ali Channar, Dost Muhammad Khan, **Musrat Ali**, and Raj Kumar. (2018) Oxidative Semisynthesis of Natural Products with DMDO." Current Organic Chemistry 22, no. 18: 1836-1846. **(IF= 2.18)**

Channar P Ali, Aamer Saeed, Fayaz A Larik, Bakhtawar Batool, Saima Kalsoom, M. M. Hasan, Mauricio F. Erben, Hesham R. El-Seedi, **Musrat Ali**, Zaman Ashraf. (2018) Synthesis of aryl pyrazole via Suzuki coupling reaction, in vitro mushroom tyrosinase enzyme inhibition assay and in silico comparative molecular docking analysis with Kojic acid." Bioorganic chemistry 79: 293-300. **(IF= 5.275)**

Manghwar, Hakim, Amjad Hussain, Abid Ullah, Summia Gul, Muhammad Shaban, Aamir Hamid Khan, **Musrat Ali**, Syed Gul Abbas Shah Sani, Hassan Javed Chaudhary, and Muhammad Farooq Hussain Munis. "Expression analysis of defense related genes in wheat and maize against Bipolaris sorokiniana." Physiological and Molecular Plant Pathology 103 (2018): 36-46. **(IF= 2.747)**

Work experience

During my PhD, I worked as a research fellow in national research project named “National Research Program for Universities” (NRPU) funded by Higher education commission (HEC), Pakistan. In that project, my PhD supervisor (Prof. Dr. M. Farooq Hussain Munis) was the principal investigator (PI) and I was the principal research fellow to execute all experiments and guide junior students. I published more than 18 research articles (both as first and co-author) from this project. Currently, I am working as a research associate in National Agricultural Research Centre (NARC), Islamabad. My main research is focused in creating fungal and viral resistance in economically important crops and disease management thorough green-technology approach.

Laboratory Experience

- ✓ Command on handling of Microbes.
- ✓ Command on laboratory equipment.
- ✓ Phytoremediation of contaminated soil assisted with bacteria.
- ✓ Isolation of Bacteria from different types of soil.
- ✓ Isolation of Fungi from different type of stone fruits and citrus fruits
- ✓ Command on filed survey of stone fruits symptoms diagnosis
- ✓ Isolation of Fungi from fusarium wilt diseased chickpea plants
- ✓ DNA and RNA extraction.
- ✓ Proficient in PCR and Gel electrophoresis.
- ✓ Extraction of total protein and other osmolytes.
- ✓ Plant disease management approaches
- ✓ Plant disease diagnostic technologies (ELISA and PCR/RT-PCR)
- ✓ Synthesis of Green Nanoparticles
- ✓ Characterization of prepared nanoparticles by (XRD, FTIR, UV, SEM and EDX)

- ✓ Proficient in Scientific Software like, Endnote, Coral Draw, Mega 6, Primer3, Blast, Primer designing, GraphPad Prism, Statistics, Turnitin etc.
- ✓ One year laboratory work in MPhil would be part of my experience.

- ✓ Worked as research Associate for two years in the Departments of Plant sciences In HEC Project on Green synthesis of Nanoparticles.

- ✓ Worked as research associate in National Agricultural Research Centre (NARC), Islamabad Pakistan

Trainings

1. IPFP Fellow Training National Faculty Development Program at National Academy of Higher Education (NAHE), Islamabad.
2. Wiley Research Training; Title "Accessing Wiley Journals and Publication Tips for Authors and Researcher (HEC)"

Achievements/Co-Curricular Activities

- During my B.Sc. I represented my college in study trips to different Universities of Sindh, Pakistan.
- During my B.Sc. I was elected as class representative.
- During M. Sc. worked as Second Head in admission campaign of Mehran Students' Council at Quaid-i-Azam University, Islamabad.
- Elected as a class representative in M. Sc.
- Elected as a class representative in B. Sc.
- During my M.Sc. presented Model on International Biodiversity Day
- Merit Scholarship during MPhil at Quaid-i-Azam University

Success Factors

- Excellent Planning Skills
- Good Interpersonal & Communication Skills.
- Ability To adjust & work in a Tough working Environment and learn quickly.
- Helping in implementation of institution Rules & Policies.
- On completion of PhD degree, my lab awarded me shield of honour for completing degree in minimum duration and excellent PhD thesis reports from foreign evaluators.
- Pride of Performance Certificate (Admission Campaign of Mehran Students' Council at QAU, Islamabad).
- One Year Diploma in Information Technology.

References

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