

Dr. Samina Hassan

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My goal is to utilize my expertise in Biotechnology and Molecular Biology, focusing on genetic engineering, plant and health sectors, to design and execute research projects that address critical issues in healthcare, agriculture, and environmental sustainability. By driving the development of novel biotechnological applications and collaborating with interdisciplinary teams, I aim to achieve breakthroughs that enhance human health, improve agricultural productivity, and promote bacteriophage therapy as biocontrol in both plants and healthcare.

Doctor of Philosophy (Ph.D.) in Molecular Biology from Centre of Excellence in Molecular Biology (CEMB), University of Punjab, Lahore in year 2021 and thesis title "Expression Study of Chitinase Genes in Cotton (*Gossypium hirsutum*)"

Master of Philosophy (MPhil) in Biotechnology from National Institute of Biotechnology and Genetic Engineering, Quaid-e-Azam University, Islamabad in year 2002 and Thesis title : "Incidence of Typhoid Markers in Hepatitis C Patients"

Publications and Research Expertise

1. Manzoor, Sadia, Asma Irshad, Saira Azam, Ijaz Ali, Ayesha Latif, Abdul Qayyum Rao, **Samina Hassan**, Ahmad Ali Shahid, Muhammad Danish Ali, and Ameni Brahmia. "Elucidating the mechanisms of *Fusarium oxysporum* f. sp. *tuberosi* inhibition using functionalized multi-walled carbon nanotubes: A comprehensive analysis of biophysical and molecular interactions1." *Journal of Integrative Agriculture* (2024).
2. Bashir, S., Yaqoob, A., Bashir, R., Bukhari, S., Shahid, N., Azam, S., ... & Rao, A. Q. (2024). Barley chitinase genes expression revamp resistance against whitefly (*Bemisia Tabaci*) in transgenic cotton (*Gossypium hirsutum* L.). *Journal of Cotton Research*, 7(1), 9.
3. Aslam, K., Saeed, A., Jamil, I., Saeed, H. I., Khan, R., Hassan, S., ... & Anjum, I. (2024). Investigating the effects of a single ASPM variant (c. 8508_8509) on brain architecture among siblings in a consanguineous Pakistani family. *Molecular Biology Reports*, 51(1), 104.
4. Aasim, M., Baloch, F. S., Nadeem, M. A., Habyarimana, E., Ahmed, S., & Chung, G. (Eds.). (2023). *Biotechnology and Omics Approaches for Bioenergy Crops*. Springer Nature. Chapter: Cotton Stalks: Potential Biofuel Recourses for Sustainable, Environment Sabeen Rehman Soomro, Salma Naimatullah Soomro, Shayan Syed, Samina Hassan, and Bushra Tabassum pg 203
5. Bashir, R., Ramzan, H. N., Mahmood, S., Awais, M., Hassan, S., Aqeel, M., ... & Noman, A. (2023). Lipoic Acid Positively Regulates Tomato Growth and Yield by Improving Organic Osmolytes and Antioxidant Defense System Under Saline Conditions. *Journal of Soil Science and Plant Nutrition*, 1-13.
6. Bukhari, S., Ahmed, S., Azhar, A., Sardar, R., Hassan, S., & Ahmad, M. N. (2023). Environmental Fluoride Exposure And Its Toxic Effects On Plants: A Review. *Fluoride*, 56.

7. Bukhari, S., Ahmed, S., Ali, Z., Sardar, R., Hassan, S., & Ahmad, M. N. (2023). Fluoride Contamination In Foods And Drinking Water: A Review On Its Toxic Effects And Mitigation Strategies. *Fluoride*, 56.
 8. Tanveer, S., Malik, H. A., Shahid, N., Salis, I. B., Ahmed, N., Latif, Hassan, S, ... & Rao, A. Q. (2023). Production of proinflammatory cytokines by expressing Newcastle disease vaccine candidates in corn. *Journal of King Saud University-Science*, 102537.
 9. Alyas, J., Khalid, N., Ishaque, S., Fatima, H., Hashim, M., Hassan, S., ... & Anjum, S. (2023). Light (High Light/UV Radiation) Modulates Adaptation Mechanisms and Secondary Metabolite Production in Medicinal Plants. In *Medicinal Plants: Their Response to Abiotic Stress* (pp. 363-390). Singapore: Springer Nature Singapore.
 10. Iqbal, A., Ali, M. A., Ahmed, S., Hassan, S., Shahid, N., Azam, S., ... & Shahid, A. A. (2022). Engineered resistance and risk assessment associated with insecticidal and weeds resistant transgenic cotton using wister rat model. *Scientific reports*, 12(1), 1-8.
 11. Hashim, M., Mujahid, H., Hassan, S., Bukhari, S., Anjum, I., Hano, C., ... & Anjum, S. (2022). Implication of Nanoparticles to Combat Chronic Liver and Kidney Diseases: Progress and Perspectives. *Biomolecules*, 12(10), 1337.
 12. Sufyan Tahir, M., Latif, A., Bashir, S., Shad, M., Khan, M. A. U., Gul, A., ... & Ali Shahid, A. (2021). Transformation and evaluation of Broad-Spectrum insect and weedicide resistant genes in *Gossypium arboreum* (Desi Cotton). *GM Crops & Food*, 12(1), 292-302.
 13. Bashir, R., Hussain, I., Rasheed, R., Anwar, S., Awais, M., & Hassan, S. (2021) Seed Invigoration with Paclobutrazol Improves Seedling Growth, Physiological, Biochemical Attributes and Fruit Yield in Okra. *International journal of agriculture & biology. Int J Agric Biol*, Vol 26 (2).
 14. Yaqoob, A., Bashir, S., Rao, A. Q., & Shahid, A. A. (2020). Transformation of α -EXPA1 gene leads to an improved fiber quality in *Gossypium hirsutum*. *Plant Breeding*, 139(6), 1213-1220.
 15. Gul, A., Hussain, G., Iqbal, A., Rao, A. Q., Din, S. U., Yasmeen, A., ... & Husnain, T. (2020). Constitutive expression of Asparaginase in *Gossypium hirsutum* triggers insecticidal activity against *Bemisia tabaci*. *Scientific reports*, 10(1), 8958. | <https://doi.org/10.1038/s41598-020-65249-w>
 16. Hussain, T. Baksh, A. Hassan.S., Mendelian Segregation Pattern and expression studies of an insecticidal gene (cry1Ac) in insect resistant cotton progeny, *Emir. J. Food Agric*. 2014. 26 (8): 706-715.
 17. Bashir, A., Haque, A., Bashir, S., Ali, A., Sarwar, Y., & Haque, A. (2009). Molecular analysis of drug resistance in clinical isolates of MDR *Salmonella enterica* Seroovar *typhi* in Faisalabad, Pakistan. *Pakistan Journal of Zoology*, 41(5).
 18. Bashir, S., HAQUE, A., AHMED, N., Raza, A., Haque, A., Sarwar, Y.& Ahmed, J. (2005). Significant incidence of typhoid in hepatitis C patients. *The Professional Medical Journal*, 12(03), 287-294.161
 19. Haque, A., Ahmed, N., Peerzada, A., Raza, A., Bashir, S., & Abbas, G. (2001). Utility of PCR in diagnosis of problematic cases of typhoid. *Japanese Journal of infectious diseases*, 54(6), 237-239.
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Research Interests and Techniques

Research interests includes Preparation of tissue culture media, Seed culture, Meristem culture, Embryo culture, Callus culture, Anther culture, Somatic embryogenesis, Protoplast culture and Bacteriophages. Molecular techniques includes: Bacteriophage culture and DNA isolation, DNA Cloning (Vector Construction, Restriction Nucleases, Ligation, Competent Cell Formation, Agrobacterium-mediated Transformation), Polymerase Chain Reaction (PCR, Quantitative PCR, Reverse Transcriptase PCR), Electrophoresis (Vertical Gel Electrophoresis, Horizontal Gel Electrophoresis), Hybridization (Southern Blot, Northern Blot, Western Blot, ELISA) and Array-based Expression Profiling.