

Dr. Mazhar Iqbal

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Working Experience

From 8th February 2013 to 27th January 2014:

Worked as an Assistant Professor in Department of Environmental Sciences, Quaid-i-Azam University, Islamabad, Pakistan.

From 27th January 2014 to 28th May 2015:

Worked as an Assistant Professor in Department of Environmental Sciences, COMSATS Institute of Information Technology, Abbottabad, Pakistan.

From 29th May 2015 to 29th June 2020:

Worked as an Assistant Professor in Department of Environmental Sciences, Quaid-i-Azam University, Islamabad, Pakistan.

From 29th June 2020 to date:

Working as Associate Professor in Department of Environmental Sciences, Quaid-i-Azam University, Islamabad, Pakistan.

<http://www.qau.edu.pk/profile.php?id=931004>

Education

2007-2013 **PhD, Phytoremediation, Molecular mechanisms of metal tolerance**
Vrije Universiteit, Amsterdam, The Netherlands

PhD Thesis Title: “Molecular mechanisms of heavy metal tolerance and accumulation in hyperaccumulating and non-hyperaccumulating metallophytes”

Supervisor: Dr. Henk Schat

<http://dare.ubvu.vu.nl/handle/1871/39298?show=full>

- 2004-2006** **M.Sc. (Hons.), Soil and Environmental Sciences**
 University of Agriculture, Faisalabad, Pakistan
 Distinction percentage: 76% (CGPA = 3.56/4.00)
- M.Sc. (Hons.) Thesis Title:** “Screening of rice (*Oryza Sativa* L.) genotypes against salinity (a hydroponics study)”
 Supervisor: Dr. Javaid Akhtar
- 2000-2004** **B.Sc. (Hons.), Agriculture (Soil Sciences)**
 University of Agriculture, Faisalabad, Pakistan
 Distinction percentage: 72.29% (CGPA = 3.43/4.00)
- Internship Report Title:** “Extraction/separation of guar gum from different guar seed varieties/cultivars”
 2.5 - months Internship at AARI, Faisalabad, Pakistan
- 1998-2000** **F.Sc. (Pre-medical)**
 BISE Multan
 Distinction percentage: 70.45% (Marks obtained = 775/1100)
- 1996-1998** **Matriculation/SSC (Science)**
 BISE Multan
 Distinction percentage: 86.70% (Marks obtained = 737/850)

Supervision

	Completed	In Process
MS/MPhil	28	5
PhD	01	5

Analytical/Laboratory Skills

- I have good experience to work with different molecular and cellular biology laboratory equipments, including PCR machines (e.g. Gradient-PCR machine, Quantitative RT-PCR Detection System), DNA Sequencer System, Atomic Absorption Spectrometer (AAS), Nano-drop, Binocular microscope, Laser microscope, Gel Doc system.
- My expertise are in the following laboratory techniques;
 - DNA/RNA extraction, making 1st strand cDNA, mini-prep, midi-prep, DNA purification from agarose gel, chromosome walking

- Amplifying unknown sequences (promoters as well as coding region)
 - Polymerase Chain Reaction (PCR) e.g., Nested PCR, Quantitative RT-PCR, Step-down PCR, Gradient PCR, Colony PCR, Hot-start PCR, long PCR, Sequencing PCR
 - Agarose Gel Electrophoresis for DNA and mRNA
 - Sequencing of the different DNA and cloned plasmid fragments
 - Blast queries using NCBI and TAIR, and aligning sequences by ClustalW resources
 - Cloning e.g., GATEWAY cloning, pGEM-T Easy, cloning using restriction sites
 - Southern blotting, Western blotting
 - Genetic transformation of model plant *Arabidopsis thaliana* via floral dip method, followed by the screening of T₁ progeny using different antibiotics
 - Transient gene expression/protoplast transformations
 - Tissue culture (leaf disc method)
 - Acid digestions of plant material
- I have an extensive experience of working in the climate chambers, in addition to the laboratory work; designing and conducting experiments in the climate chamber as well as in the glasshouse.
 - I have good command on hydroponics culture for plants, most of my climate chambers experiments are conducted in hydroponics.

List of Publications

- 1) Rehman H, Rehman W, Qu Z, Ahmad M, Yousaf S, Jamal A, **Iqbal M***. 2023. Electromagnetic biochar: a novel material for cadmium adsorption from industrial wastewater. *International Journal of Environmental Science and Technology*. <https://doi.org/10.1007/s13762-023-05006-4> (**IF = 3.519**)
- 2) Khan AHA, Tanveer S, Kiyani A, Barros R, **Iqbal M**, Yousaf S. 2023. Biosurfactant producing *Aspergillus*, *Penicillium*, and *Candida* performed higher biodegradation of diesel oil than a non-producing fungal strain. *Applied Biochemistry and Microbiology*. (**Accepted**) (**IF = 1.065 Q4**)
- 3) Saleem K, Zaman A, Butt TA, Mirza CR, Iqbal A, Khan AHA, Yousaf S, **Iqbal M***. 2023. Uptake and distribution of cadmium and copper by *Solanum lycopersicum* L. and changes in the metabolite production. *Biology Bulletin*. 50(3). 390-399 (**IF = 0.492 Q4**)
- 4) Khan AHA, Kiyani A, Santiago-Herrera M, Ibáñez J, Yousaf S, **Iqbal M**, Martel-Martín S, Barros R*. 2023. Sustainability of phytoremediation: post-harvest stratagems and economic

- opportunities for the produced metals contaminated biomass. *Journal of Environmental Management*. 326, 116700 (IF = 8.91 Q1)
- 5) Khan AHA, Kazmi SZ, Mirza CR, Butt TA, Gul N, Barros R, Yousaf Y, **Iqbal M***. 2023. Effect of soil amendments on the enzymatic profile of soil when *Nicotiana alata* L. and *Petunia hybrida* L. were irrigated with synthetic heavy metal-contaminated wastewater. *Chiang Mai Journal of Science*. 50(1): e2023008 (IF = 0.507 Q4)
 - 6) Javed S, Mirza CR, Khan AHA, Khalifa W, Achour B, Barros R, Yousaf S, Butt TA*, **Iqbal M***. 2022. Limited phosphorous supply improved lipid content of *Chlorella vulgaris* that increased phenol and 2-chlorophenol adsorption from contaminated water with acid treatment. *Processes*. 10(11), 2435. <https://doi.org/10.3390/pr10112435> (IF = 3.352 Q2)
 - 7) Zhang X, Qu Z*, Wang Q, **Iqbal M**. 2022. Geometry design and mechanism analysis of artificial nanoroughness for enhanced osmotic energy conversion. *Energy Conversion and Management*. 273, 116373 <https://doi.org/10.1016/j.enconman.2022.116373> (IF = 11.533 Q1)
 - 8) Malik JA, Musharraf S, Safdar R, **Iqbal M***. 2022. Myths and misconception of COVID-19 among hospital sanitary workers in Pakistan: Efficacy of a training program intervention. *BMC Health Services Research*. 22, 818. <https://doi.org/10.1186/s12913-022-08217-6> (IF = 2.908 Q1)
 - 9) Yousaf U, Khan AHA, Farooqi A, Muhammad YS, Barros R, Tamayo-Ramos JA, **Iqbal M**, Yousaf S. 2022. Interactive effect of biochar and compost with Poaceae and Fabaceae plants on remediation of total petroleum hydrocarbons in crude oil contaminated soil. *Chemosphere*. 286, 131782. <https://doi.org/10.1016/j.chemosphere.2021.131782> (IF = 8.943 Q1)
 - 10) Hussain F, Khan AHA, Hussain I, Farooqi A, Muhammad YS, **Iqbal M**, Arslan M, Yousaf S. 2022. Soil conditioners improve rhizodegradation of aged petroleum hydrocarbons and enhance the growth of *Lolium multiflorum*. *Environmental Science and Pollution Research*. 29, 9097-9109 <https://doi.org/10.1007/s11356-021-16149-7> (IF = 5.19 Q2)
 - 11) Mustafa G, Ali MA, Amith DL, Masood S, Qayyum MF, Ahmed N, Rehman AU, Ahmad S, Hussain S, Arshad M, Muneer S, Khan AHA, Fahad S, Datta R, **Iqbal M**, Schwingamer TD. 2021. Formalin fumigation and steaming of various composts differentially influence the nutrient release, growth and yield of muskmelon (*Cucumis melo* L.). *Scientific Reports*. 11, 21057 <https://doi.org/10.1038/s41598-021-99692-0> (IF = 4.996 Q1)
 - 12) Saleem K, Iqbal A, Mirza CR, Butt TA, Toqeer M, Yousaf S, Zafar MI, **Iqbal M***. 2021. Role of *Trametes hirsuta* on *Petunia hybrida* Vilm. in the presence of cadmium and lead. *Russian Journal of Plant Physiology*. 68, S116-S130. (IF = 1.419 Q3)

- 13) Rehman R, Ali MI, Ali N, Badshah M, **Iqbal M**, Jamal A, Huang Z. 2021. Crude oil biodegradation potential of biosurfactant-producing *Pseudomonas aeruginosa* and *Meyerozyma* sp. *Journal of Hazardous Materials*. 418, 126276. (IF = 14.224 Q1)
- 14) Qurban M, Mirza CR, Khan AHA, Khalifa W, Boukendakdji M, Achour B, Yousaf S, Nawaz I, Butt TA, **Iqbal M***. 2021. Metal accumulation profile of *Catharanthus roseus* (L.) G.Don and *Celosia argentea* L. with EDTA Co-Application. *Processes*. 9, 598. (IF = 3.352 Q2) <https://doi.org/10.3390/pr9040598>
- 15) Khan AHA, Kiyani A, Mirza CR, Butt TA, Barros R, Ali B, **Iqbal M***, Yousaf S*. 2021. Ornamental plants for the phytoremediation of heavy metals: Present knowledge and future perspectives. *Environmental Research*. 195, 110780 (IF = 8.431 Q1)
- 16) Khan AHA, Kiyani A, Cheema AS, Tareen U, Nawaz I, **Iqbal M***, Yousaf S. 2021. Integrative application of soil conditioners and bio-augmentation for enhanced heavy metal stabilization from wastewater and improved growth of *Nicotiana glauca* L. and *Petunia hybrida* L. *Journal of Plant Growth Regulation*. 40, 240-253. <https://doi.org/10.1007/s00344-020-10094-4> (IF = 4.64 Q1)
- 17) Aftab N, Saleem K, Khan AHA, Butt TA, Mirza CR, Hussain J, Farooq G, Tahir A, Yousaf S, Zafar MI, Nawaz I, **Iqbal M***. 2021. *Cosmos sulphureus* Cav. is more tolerant to lead than copper and chromium in hydroponics system. *International Journal of Environmental Science and Technology*. 18, 2325-2334 doi:10.1007/s13762-020-02981-w (IF = 3.519 Q1)
- 18) Haroon H, Shah JA, Khan MS, Alam T, Khan R, Asad SA, Ali MA, Farooq G, **Iqbal M***, Bilal M**. 2020. Activated carbon from a specific plant precursor biomass for hazardous Cr(VI) adsorption and recovery studies in batch and column reactors: Isotherm and kinetic modeling. *Journal of Water Process Engineering*. 38, 101577 (IF = 7.34 Q1)
- 19) Jabbar A, Rehman B, **Iqbal M**, Ahmed R, Mahmood S, Baig MA. 2020. Elemental analysis of plants cultivated in saline soil by Laser-Induced Breakdown Spectroscopy (LIBS). *Analytical Letters*. <https://doi.org/10.1080/00032719.2020.1802738> (IF = 2.267 Q3)
- 20) Malik A, Butt TA, Naqvi STA, Yousaf S, Qureshi MK, Zafar MI, Farooq G, Nawaz I, **Iqbal M***. 2020. Lead tolerant endophyte *Trametes hirsuta* improved the growth and lead accumulation in the vegetative parts of *Triticum aestivum* L. *Heliyon*. 6, e04188 (IF = 3.776 Q1)
- 21) Mushtaq MU, Iqbal A, Nawaz I, Mirza CR, Yousaf S, Farooq G, Ali MA, Aqib Khan AHA, **Iqbal M***. 2020. Enhanced uptake of Cd, Cr, and Cu in *Catharanthus roseus* (L.) G.Don by *Bacillus cereus*: application of moss and compost to reduce metal availability. *Environmental Science and Pollution Research*. 27: 39807-39818 doi:10.1007/s11356-020-08839-5 (IF =

5.19 Q2)

- 22) Neelab, Asi MR, Kali S, Riaz MA, Waseem A, Iqbal MM, Ahmad N, **Iqbal M**, Masood N, Zafar MI. 2020. Comparative efficacy of mitigation techniques for the detoxification of *Prunus persica* (L.) from selected pesticide residues. *Environmental Science and Pollution Research*. 27: 39786-39794 doi:10.1007/s11356-020-08720-5 (**IF = 5.19 Q2**)
- 23) Hanif H, Waseem A, Kali S, Qureshi NA, Majid M, **Iqbal M**, Rehman T-U, Tahir M, Yousaf S, Iqbal MM, Khan IA, Zafar MI. 2020. Environmental risk assessment of diclofenac residues in surface waters and wastewater: a hidden global threat to aquatic ecosystem. *Environmental Monitoring and Assessment*. 192, 204 (**IF = 3.307 Q2**)
- 24) Khan AHA, Nawaz I, Qu Z, Butt TA, Yousaf S, **Iqbal M***. 2020. Reduced growth response of ornamental plant *Nicotiana glauca* L. upon selected heavy metals uptake, with co-application of ethylenediaminetetraacetic acid. *Chemosphere*. 241: 125006 (**IF = 8.943 Q1**)
- 25) Iqbal A, Mushtaq MU, Khan AHA, Nawaz I, Yousaf S, Zeshan, **Iqbal M***. 2020. Influence of *Pseudomonas japonica* and organic amendments on the growth and metal tolerance of *Celosia argentea* L. *Environmental Science and Pollution Research*. 27: 24671-24685 <https://doi.org/10.1007/s11356-019-06181-z> (**IF = 5.19 Q2**)
- 26) Jabbar A, Akhtar M, Mehmood S, **Iqbal M**, Ahmed R, Baig MA. 2019. Quantification of copper remediation in the *Allium cepa* L. leaves using electric field assisted laser induced breakdown spectroscopy. *Spectrochimica Acta Part B: Atomic Spectroscopy (Netherlands)*. 162, 105719 (**IF = 3.662 Q1**).
- 27) Fareed A, Riaz S, Nawaz I, **Iqbal M**, Ahmed R, Hussain J, Hussain A, Rashid A, Naqvi TA. 2019. Immobilized cells of a novel bacterium increased the degradation of *N*-methylated carbamates under low temperature conditions. *Heliyon* 5, e02740. <https://doi.org/10.1016/j.heliyon.2019.e02740> (**IF = 3.776 Q1**)
- 28) Raza A, Khan AHA, Nawaz I, Qu Z, Yousaf S, Ali MA, Sayal AU, **Iqbal M***. 2019. Evaluation of Arsenic-induced stress in *Dahlia pinnata* Cav.: Morphological and physiological response. *Soil and Sediment Contamination: An International Journal*. 28: 716-728 (**IF = 3.057 Q3**)
- 29) Muazzam B, Munawar K, Khan IA, Jahan S, **Iqbal M**, Asi MR, Farooqi A, Nazli A, Hussain I, Zafar MI. 2019. Stress response and toxicity studies on zebrafish exposed to endosulfan and imidacloprid present in water. *Journal of Water Supply Research and Technology-AQUA*. 68 (8): 718-730 (**IF = 3.007 Q2**)
- 30) Hayat A, Hussain I, Soja G, **Iqbal M**, Shahid N, Syed JH, Yousaf S. 2019. Organic and chemical amendments positively modulate the bacterial proliferation for effective

- rhizoremediation of PCBs-contaminated soil. *Ecological Engineering*.138: 412-419. (IF = **4.379 Q1**)
- 31) Khan AHA, Nawaz I, Yousaf S, Cheema AS, **Iqbal M***. 2019. Soil amendments enhanced the growth of *Nicotiana glauca* L. and *Petunia hybrida* L. by stabilizing heavy metals from wastewater. *Journal of Environmental Management*. 242: 46-55. (IF = **8.91 Q1**)
- 32) Nawaz I, **Iqbal M***, Hakvoort HWJ, de Boer AH, Schat H. 2019. Analysis of *Arabidopsis thaliana* *HKT1* and *Eutrema salsugineum/botschantzevii* *HKT1;2* promoters in response to salt stress in *Athkt1:1* mutant. *Molecular Biotechnology*. 61(6), 442-450. <https://doi.org/10.1007/s12033-019-00175-5> (IF = **2.86 Q2**)
- 33) Khan AHA, Butt TA, Mirza CR, Yousaf S, Nawaz I, **Iqbal M***. 2019. Combined application of selected heavy metals and EDTA reduced the growth of *Petunia hybrida* L. *Scientific Reports*. 9:4138. <https://doi.org/10.1038/s41598-019-40540-7> (IF = **4.996 Q1**)
- 34) Ali Z, Nawaz I, Yousaf S, Naqvi STA, Mahmood T, Khan N, **Iqbal M***. 2019. Wheat straw biochar promotes the growth and reduces the uptake of lead, cadmium and copper in *Allium cepa* L. *International Journal of Agriculture and Biology*. 21: 1173-1180.
- 35) Khan AHA, Ayaz M, Arshad M, Yousaf S, Khan MA, Anees M, Sultan A, Nawaz I, and **Iqbal M***. 2019. Biogeochemical cycle, occurrence and biological treatments of polycyclic aromatic hydrocarbons (PAHs). *Iranian Journal of Science and Technology, Transactions A: Science*. 43(3), 1393-1410 doi.org/10.1007/s40995-017-0393-8 (IF = **1.553 Q2**)
- 36) Hussain F, Hussain I, Khan AHA, Muhammad YS, **Iqbal M**, Soja G, Reichenauer TG, Sheikh, Yousaf S. 2018. Combined application of biochar, compost, and bacterial consortia with Italian ryegrass enhanced phytoremediation of petroleum hydrocarbon contaminated soil. *Environmental and Experimental Botany*. 153: 80-88. (IF = **6.028 Q1**)
- 37) Li Y, **Iqbal M**, Zhang Q, Spelt C, Bliet M, Hakvoort HWJ, Quattrocchio FM, Koes R and Schat H. 2017. Two *Silene vulgaris* copper transporters residing in different cellular compartments confer copper hyper-tolerance by distinct mechanisms when expressed in *Arabidopsis thaliana*. *New Phytologist*. 215:1102-1114 [doi: 10.1111/nph.14647](https://doi.org/10.1111/nph.14647) (IF = **10.323 Q1**)
- 38) Nawaz I, **Iqbal M**, Bliet M, and Schat H. 2017. Salt and heavy metal tolerance and expression levels of candidate tolerance genes among four extremophile *Cochlearia* species with contrasting habitat preferences. *Science of the Total Environment*. 584-585: 731-741 (IF = **10.753 Q1**)
- 39) Khan AHA, Tanveer S, Alia S, Anees M, Sultan A, **Iqbal M**, Yousaf S. 2017. Role of nutrients in bacterial biosurfactant production and effect of biosurfactant production on

- petroleum hydrocarbon biodegradation. *Ecological Engineering*. 104: 158-164 (**IF = 4.379 Q1**)
- 40) Arshad M, Khan AHA, Hussain I, Zaman B, Anees M, **Iqbal M**, Soja G, Lindef C, Yousaf S. 2017. The reduction of chromium (VI) phytotoxicity and phytoavailability to wheat (*Triticum aestivum* L.) using biochar and bacteria. *Applied Soil Ecology*. 114: 90-98 (**IF = 5.509 Q1**)
- 41) Khan AHA, Tanveer S, Anees M, Muhammad YS, **Iqbal M**, Yousaf S. 2016. Role of nutrients and illuminance in predicting the fate of fungal mediated petroleum hydrocarbon degradation and biomass production. *Journal of Environmental Management*. 176: 54-60. (**IF = 8.91 Q1**)
- 42) Khan AHA, Anees M, Arshad M, Muhammad YS, **Iqbal M**, Yousaf S. 2016. Effects of illuminance and nutrients on bacterial photo-physiology of hydrocarbon degradation. *Science of the Total Environment*. 557-558: 705-711. (**IF = 10.753 Q1**)
- 43) Ajmal A, Majeed I, Malik RN, **Iqbal M**, Nadeem MA, Hussain I, Yousuf S, Zeshan, Mustafa G, Zafar MI, Nadeem MA. 2016. Photocatalytic degradation of textile dyes on Cu₂O-CuO/TiO₂ anatase powders. *Journal of Environmental Chemical Engineering*. 4(2): 2138-2146 (**IF = 7.968 Q1**)
- 44) Khan S, Zaffar H, Irshad U, Ahmad R, Khan AR, Shah MM, Bilal M, **Iqbal M**, Naqvi T. 2016. Biodegradation of malathion by *Bacillus licheniformis* strain ML-1. *Archives of Biological Sciences*. 68(1), 51-59 (**IF = 0.856 Q3**)
- 45) Ahmad N, Ullah F, Hussain I, Ahmad K, Raza G, Sajjad Y, **Iqbal M**, Adil M, Ali M. 2016. Soybean (*Glycine max*) Extracts Impacts on Plant and Soil Biology. *Communications in Soil Science and Plant Analysis*. 47(15):1751-1763 DOI:10.1080/00103624.2016.1206920 (**IF = 1.58 Q2**)
- 46) Ali A, **Iqbal M**, Ali Q, Razzaq A, Nasir IA. 2016. Gene Profiling for Invertase Activity: Assessment of Potato Varieties for Resistance towards Cold Induced Sweetening. *Advancements in Life Sciences*. 3(2): 63-70. <http://www.alsjournal.com/articles/vol3issue2/325.16/325.16.pdf> (**Q4**)
- 47) Nawaz I, **Iqbal M**, Hakvoort HWJ, Bliet M, de Boer B, Schat H. 2014. Expression levels and promoter activities of candidate salt tolerance genes in halophytic and glycophytic Brassicaceae. *Environmental and Experimental Botany*. 99:59-66. <http://dx.doi.org/10.1016/j.envexpbot.2013.10.006> (**IF = 6.028 Q1**)
- 48) **Iqbal M**, Nawaz I, Hassan Z, Hakvoort HWJ, Bliet M, Aarts MGM, Schat H. 2013. Expression of *HMA4* cDNAs of the zinc hyperaccumulator *Noccaea caerulescens* from endogenous *NcHMA4* promoters does not complement the zinc-deficiency phenotype of the

Arabidopsis thaliana hma2hma4 double mutant. *Frontiers in Plant Science*. 4:404. doi: 10.3389/fpls.2013.00404 (IF = 6.627 Q1)

- 49) **Iqbal M**, Akhtar J, Haq MA, Nasim M, Saeed A, Naveed M. 2007. Variation in growth and ion uptake in rice cultivars under NaCl stress in hydroponics. *Pakistan Journal of Agricultural Sciences*. 44:393-405. <http://pakjas.com.pk/papers%5C280.pdf> (IF = 0.856 Q3)

Total IF = 239.882

Book Chapters

1. Bushra Rehman, **Mazhar Iqbal***, and Ismat Nawaz (2019) Chapter 15: **Toxicity, Eco-toxicity, and Phytoremediation of e-Waste**. In: *Electronic Waste Pollution*: by Muhammad Zaffar Hashmi and Ajit Varma, pp 221-232, ISBN: 978-3-030-26614-1 (Print) 978-3-030-26615-8 (Online). Springer Nature Switzerland AG.
2. Muhammad Arif Ali, Fariha Ilyas, Muhammad Arshad, Sajjad Hussain, **Mazhar Iqbal**, Shakeel Ahmad, Abdul Saboor, Ghulam Mustafa, and Niaz Ahmed (2019) Chapter: **Microbial Inoculation of Seeds for Better Plant Growth and Productivity**. In: *Priming and Pretreatment of Seeds and Seedlings*; by Mirza Hasanuzzaman and Vasileios Fotopoulos, pp 523-550, ISBN: 978-981-13-8624-4 (Print) 978-981-13-8625-1 (Online). Springer Nature Singapore Pte Ltd.

Conferences/Workshops

- 1) Organized one day seminar on “Challenges, Opportunities and Trends in Biotechnology in Pakistan” on March 22, 2023, at Serena Hotel, Islamabad, Pakistan.
- 2) Organized “2nd International Conference on Climate Change & Environment” on January 11 - 13, 2023, at Quaid-i-Azam University, Islamabad, Pakistan.
- 3) Organized “1st International Conference on Climate Change & Environment” on February 2-3, 2022, at Quaid-i-Azam University, Islamabad, Pakistan.
- 4) Muhammad Umair Mushtaq, Ameena Iqbal, Aqib Hassan Ali Khan, Ismat Nawaz, Sohail Yousaf, **Mazhar Iqbal***. *Bacillus cereus* enhanced uptake of Cd, Cr and Cu in *Catharanthus roseus* L. while moss and compost improved plant growth by reducing metal uptake. International Conference on Environmental Toxicology and Health (ESCON, 2019), February 25-27, 2019, Vehari, Pakistan.
- 5) **Mazhar Iqbal**, Muhammad Umair Mushtaq, Ameena Iqbal, Ismat Nawaz. Influence of *Pseudomonas japonica* on growth and metal tolerance of *Celosia cristata* L. The 11th International Conference on the Challenges in Environmental Science and Engineering (CESE-2018), 4-8 November, Bangkok, Thailand.
- 6) **Mazhar Iqbal**, Amna Raja, Ismat Nawaz. Biochar mediated phytoremediation of heavy metal contaminated soil using *Nicotiana tabacum* expressing *NcHMA4*. 2nd International Congress & Expo on Biotechnology and Bioengineering, 25-27 September 2017, Valencia

Spain (Oral)

- 7) Preparing Biological Laboratories for Certification in Biorisk Management. December 10-13, 2016, Marriot Hotel, Karachi
- 8) Hands on Training Workshop on Agriculture Production System Simulator (APSIM) Modeling. August 30-September 01, 2016, University of Agriculture, Faisalabad
- 9) **Mazhar Iqbal**, Henk WJ Hakvoort, Henk Schat. Expression of *HMA4* cDNAs under the *HMA4* promoter from a zinc hyperaccumulator (*Noccaea caerulescens*) does not fully restore Zn translocation in the *Arabidopsis thaliana hma2hma4* double mutant. 4th and 5th April 2011 in Lunteren, The Netherlands (Oral and poster).
- 10) **Mazhar Iqbal**, Miluscia Arnetoli, Henk WJ Hakvoort, Henk Schat. The Role of the 1b P-type Heavy Metal Transporting ATPase HMA4 in heavy metal hypertolerance and translocation in non-hyperaccumulator metallophytes. 11th International Conference on the Biogeochemistry Trace Elements (ICOBTE-2011). 3-7 July 2011 in Conference Center-Florence Italy (Oral).
- 11) Ilaria Colzi, Sara Pignattelli, **Mazhar Iqbal**, Miluscia Arnetoli, Cristina Gonnelli, Henk Schat. *HMA2* expression in metallicolous and nonmetallicolous non-hyperaccumulator metallophytes. COST Action FA0905 Mineral Improved Crop Production for Healthy Food and Feed. 23-26 November 2011, Istituto Veneto di Scienze, Lettere ed Arti Palazzo Cavalli Franchetti - Venice, Italy (Poster).
- 12) Sara Pignattelli, Ilaria Colzi, **Mazhar Iqbal**, Miluscia Arnetoli, Cristina Gonnelli, Henk Schat. The role for HMA5 in copper hypertolerance in the metallophyte *Silene paradoxa*. COST Action FA0905 Mineral Improved Crop Production for Healthy Food and Feed. 23-26 November 2011, Istituto Veneto di Scienze, Lettere ed Arti Palazzo Cavalli Franchetti - Venice, Italy (Poster).

Research Grants

- 1) Transgenic expression of *Noccaea caerulescens* heavy metal tolerant gene (*HMA4*) in tobacco (PKR 0.425 M, from HEC). (**Completed, 2015**)
- 2) Risk assessment of transgenic potato on microbial community, enzymatic activity and physical/chemical properties of soils from major potato growing areas of Pakistan (USD 15,855 from CERA under The Biosafety Research in Pakistan Grants Program). (**Completed, 2020**)
- 3) Assessment and Training of occupational safety measures for sanitary staff working at COVID-19 health care facilities, funded by WHO, Project No. RPPH 20-23. US\$ 15,000. (**Completed 2022**)

- 4) Combined effect of biochar as inoculant carrier of GFP tagged metal remediating bacteria and expression of metal tolerance proteins, to reduce phytoavailability of heavy metals (NRPU by HEC 2016-17, Project No. 6208, PKR 3.6 M). (**Completed 2023**)

Courses Taught

BS/MSc Level	MPhil/MS/PhD Level
<ul style="list-style-type: none">➤ Environmental Biotechnology➤ Environmental Toxicology➤ Biological Diversity and Conservation➤ Natural Resource Management➤ Energy Resources➤ Climatology➤ Recombinant DNA Technology➤ Research Methodology in Environmental Sciences➤ Introduction to Environmental Science	<ul style="list-style-type: none">➤ Bioinformatics Tools in Environmental Science➤ Heavy Metal Toxicology➤ Water & wastewater treatment processes➤ Environmental Contaminants and Genetic Engineering➤ Gene Expression and Regulation