UNIVERSITÀ DEGLI STUDI DI MILANO

Curriculum vitae

AL MAGNIFICO RETTORE
DELL'UNIVERSITA' DEGLI STUDI DI MILANO **COD. ID: 6478**

Il sottoscritto chiede di essere ammesso a partecipare alla selezione pubblica, per titoli ed esami, per il conferimento di un assegno di ricerca presso il Dipartimento di Bioscienze

Responsabile scientifico: Prof. Lucio Conti

MUHAMMAD NOMAN

CURRICULUM VITAE

INFORMAZIONI PERSONALI

Cognome	Noman
Nome	Muhammad

OCCUPAZIONE ATTUALE

Incarico	**Struttura**
Postdoctoral Research Fellow	Federal University of Lavras

ISTRUZIONE E FORMAZIONE

Titolo	**Corso di studi**	**Università**	**anno conseguimento titolo**
Laurea Magistrale o equivalente	Plant Genomics and Biotechnology	Quaid-i-Azam University, Islamabad	2015
Specializzazione			
Dottorato Di Ricerca	Crop Biotechnology	Jilin Agricultural University	2019
Master			
Diploma Di Specializzazione Medica			
Diploma Di Specializzazione Europea			
Altro			

ISCRIZIONE AD ORDINI PROFESSIONALI

Data iscrizione	**Ordine**	**Città**

LINGUE STRANIERE CONOSCIUTE

lingue	**livello di conoscenza**
English	C1
Chinese	B1
Portugues	B1
Arabic	B1
Urdu	C2
Pashto	C2
Hindi	C1

PREMI, RICONOSCIMENTI E BORSE DI STUDIO

anno	**Descrizione premio**
2022	Won Postdoctoral Fellowship for the project on IoT, AI and ML-based image analysis for quantification of flowers and fruit to predict yield in Coffee by FAPESP, Sao Paulo, Brazil
2022	Won first prize in poster competition in the 7th International Conference on Climate Smart Agriculture, Innovations and Adaptations, University of Poonch, Rawalakot, AJK
2022	Won MGI-China Agriculture Genomics Grant of USD 10000 for designing customized NGS-based wheat genotyping kit
2022	Awarded the membership of Botanical Society of America, and selected as review editor for its journal "Applications in Plant Sciences" for 2 years
2020	Awarded American Society for Plant Biologists (ASPB) membership for 1 year
2015	Awarded 4-year fully funded PhD Scholarship by China Scholarship Council
2003-2005	Passed the 8th, 9th and 10th grades (in School) with distinction

ATTIVITÀ DI FORMAZIONE O DI RICERCA

descrizione dell'attività

I have an academic as well as professional background in plant biotechnology, and I'm presently working as postdoc research fellow in the plant molecular physiology lab, department of biology, Federal University of Lavras, Brazil, under FAPESP fellowship program, a prestigious postdoc fellowship of Brazil. Earlier, I was working as scientific officer in the plant genome editing and next generation sequencing lab at the National Institute for Genomics and Advanced Biotechnology (NIGAB), National Agricultural Research Center (NARC), Islamabad, Pakistan. My interest in biotechnology was developed the first time I read a chapter on biotechnology and genetic engineering in our high school biology book and I decided to pursue a career in biotechnology. That's the reason of studying biotechnology consistently in my BS, MPhil and PhD degrees.

The excitement and obsession to learn and practice plant biotechnology increased with each successive

year during the 10 years (BS, MPhil and PhD) of theoretical and practical training. In the final year of BS Biotechnology & Genetic Engineering, Kohat University of Science & Technology (KUST), I worked on two short projects. One of the projects was about alleviation of heavy metal stress during rice germination using Plant Growth Promoting Rhizobacteria (PGPR). In the second project at the Plant Tissue Culture Lab, NARC, I worked on protocol optimization for *in vitro* multiplication of olive, and presented a poster on micropropagation of potato, in biotechnology exhibition at the Department of Biotechnology & Genetic Engineering, KUST, Pakistan. In the second year of my MPhil Plant Genomics & Biotechnology from the prestigious Quaid-i-Azam University (QAU) (top ranking university of Pakistan), I analyzed and identified 2000 unknown olive plants through Plastome DNA markers at NIGAB. As research assistant for one year in this project of olive germplasm identification across Pakistan, I assisted my PI and teammates in field visits, sampling, wet and dry lab work, as well as writing project reports and publication. As first author, I published a part of the project in AJPS, and presented my poster at a workshop on "Advances in Bioinformatics in the Post-Genomic Era" at QAU.

In the pursuit of further explorations, I enrolled PhD in Crop Biotechnology at Jilin Agricultural University, China, under the Chinese Government Scholarship Program. My doctoral research projects lied under the research direction of Plant Abiotic Stress Molecular Biology and Genetic Engineering. In doctoral tenure, I had an amazing experience of working on nucleic acids as well as amino acids, RT-qPCR, gene cloning, transformation/transgenesis and gene editing via CRISPR/Cas9 in plants. Along with bioinformatics and statistical analyses, my writing/editing skills were also developed and refined while writing my own articles, and reviewing as well as revising articles for my colleagues and journals. The principal research project of my PhD was about characterizing soybean calmodulin-binding transcription activators under drought stress. In addition to *in silico* analyses, the project spanned a number of experimental techniques such as soybean cultivation and tissue culture, Arabidopsis cultivation and tissue culture, RNA and DNA Extraction, qPCR, Gene Cloning, Vector Construction, Gene Transformation, Transformation of *E. coli* (DH5α and BL21), Transformation of *Agrobacterium tumefacians* and *Agrobacterium rhizogenes* (EHA105), Agrobacterium-mediated Stable Transformation of Arabidopsis (Floral Dip Method), Tissue Culture-Based Agrobacterium-mediated Stable Transformation of Soybean, Agrobacterium-mediated Soybean Hairy Roots Transformation, Design of gRNA and Construction of CRISPR/Cas9 vector, CRISPR/Cas9-Mediated Site-Directed Gene Mutagenesis, Protein-Protein Interaction Analysis (*in silico* and *in vitro*) and Plant Physiological Assays. The second project during PhD was related to synthetic biology where we designed and tested drought-inducible synthetic promoters in soybean by employing various bioinformatics and wet lab approaches. Thus, the project trained me in various bioinformatics software for promoter and *cis* motif analyses, vector construction as well as protein extraction and quantification, and also added synthetic biology to my research interests. The publications as first, co-first and corresponding author, from both the projects are detailed in my CV.

As Scientific Officer for ~2 years at the Plant Biotechnology Department of NIGAB, Islamabad, Pakistan, I was engaged in crop improvement research project, including wheat, rice and sugarcane by integrating NGS, Functional Genomics, Genome Editing and Speed Breeding. I extensively worked on sugarcane, including CRISPR/Cas-mediated genome editing for engineering of sucrose metabolism. Without having a background of sugarcane, I studied literature, designed the experiment after selecting the candidate genes, and discussed with my PI prior to execution. I have got expertise in simple as well as multiplex CRISPR vector construction for monocots (wheat, rice, sugarcane, corn) as well as dicots (soybean, tomato, potato), employing Gibson Assembly and Golden Gate Cloning. In July 2021, we established a new NGS Lab at NIGAB, where I worked as molecular biologist. It was equipped with DNBSEQ-T7 (the MGI's latest NGS machine). The NGS lab was formally inaugurated through a one-day seminar by the then minister of Food and Agriculture program, Pakistan, where I was the focal person among the organizers. At the NGS lab, I was engaged in preparing NGS assays (RNA-Seq and WGS assays, i.e., library preparation), operate the sequencer, and to some extent, in NGS data analysis, interpretation as well as visualization. During the role, I supervised several internees and co-supervised two master students of plant biotechnology/molecular biology. Besides, I assisted my PI in preparing progress reports of the project, budgeting, organizing meetings, seeking national and international collaborations, grant writing for funding acquisition, field trips and much more. Our project proposal on designing customized NGS-based genotyping kit for Pakistani wheat varieties, won a grant of USD 10k from the MGI company.

With extensive experience in scientific writing and review-editing, I'm serving as volunteer reviewer for the journals of several publishers including Elsevier, Springer, and Frontiers. Earlier, I was granted free membership of the American Society of Plant Biologists (ASPB) for the year 2020. I recently completed the

eLife community ambassadors program for 2022/2023. I've been appointed as Reviewing Editor of the Botanical Society of America's journal, *Applications in Plant Sciences,* for 2022-2024 session. I have also recently joined Modern Agriculture, Beverage Plant Research and Forestry Research journals as Early Career Editorial Board member for 2022-2024.

Realizing the potential of AI, specifically in agriculture and biotechnology, I moved to Brazil to join my current postdoc position. The principal project of my postdoc is titled as, "From Seed to Cup: IoT Technology in the Quality Coffee Production Chain", where the task of my group is to build ML and AI-based intelligent monitoring system to predict coffee fruit yield based on the number of flowers. In addition, I'm guiding BS, MS and PhD students in designing and discussing the problems they face during experimentation, especially regarding bioinformatics and molecular biology work. With a couple of students here, I'm also engaged in the overexpression/CRISPR-based knockout study of sugarcane and Arabidopsis *FT6* and *TPS* genes to study their role in flowering/photoperiod. Meanwhile, I'm also engaged in RNA-Seq as well as metabolomics experiments and data analyses of coffee and sugarcane along with my colleagues.

ATTIVITÀ PROGETTUALE

Anno	**Progetto**
2022	Working as Postdoc Research Fellow in the project, "From Seed to Cup: IoT Technology in the Quality Coffee Production Chain", Brazil
2021	Worked for ~2 years as Scientific Officer in "Sino-Pak Agricultural Breeding Innovations Project for Rapid Yield Enhancement", Pakistan
2016	Worked as Doctoral Assistant Researcher in the project, "Role of Soybean Camodulin-Binding Transcription Activators under Drought Stress", China
2013	Worked as Research Assistant in the project, "Rapid Varietal Identification of Unknown Olive Plants Using DNA Fingerprinting", Pakistan

TITOLARITÀ DI BREVETTI

Brevetto

CONGRESSI, CONVEGNI E SEMINARI

Data	**Titolo**	**Sede**
Sep 13-15, 2022	Kazakhstan – Pakistan - Turkiye Youth Forum on Biotechnology (Agriculture)	COMSTECH, Islamabad, Pakistan
Jan 15-17, 2022	Poster Presentation at the 7th International Conference on Climate Smart Agriculture, Innovations and Adaptations	University of Poonch, Rawalakot, Azad Jammu and Kashmir
Mar 15, 2022	Attended one-day workshop on Bacterial Identification and Metagenomics	National Institute for Biotechnology and Genetic Engineering (NIBGE), Faisalabad, Pakistan

Nov 21-23, 2019	Poster presentation in the 5th International Conference on Agricultural Genomics 2019 – Big Data for Better Agriculture	Shenzhen, China
Aug 14-19, 2016	7th International Crop Science Congress	Beijing, China
Nov 6, 2014	Poster presentation in the workshop on "Advances in Bioinformatics in Post Genomic Era	Quaid-i-Azam University, Islamabad, Pakistan

PUBBLICAZIONI

Libri

Saleem, B., Haider, Z., **Noman, M.**, Khan, M.R. (2023) High-Throughput Sequencing and SNP Markers-based Identification of Sugarcane Cultivars for Parentage Determination and Intellectual Property Protection. In Omics Approaches for Sugarcane Crop Improvement. *CRC Publishers*, DOI: 10.1201/9781003292425-12

Raphael Ricon de Oliveira, **Muhammad Noman**, Lillian Magalhães Azevedo, Iasminy Silva Santos, Joyce Pereira Alvarenga, Antonio Chalfun-Junior. (2024) Regulation of flowering and fruit maturation in coffee by phytohormones. Submitted to Advances in Botanical Research Vol 93. **Equal Contribution**

Muhammad Siddique Afridi, **Muhammad Noman**, Abdul Sallam, Sumaira Khan. (2024) Latest Molecular and Biochemical Approaches in Mitigating Biotic Stress Submitted to Stress Tolerance in Horticultural Crops: Challenges and Mitigation Strategies. **Equal Contribution**

Articoli su riviste

Eron, F.*, **Noman, M.***, de Oliveira, R. R.*, & Chalfun-Junior, A. (2024). Computer Vision-Aided Intelligent Monitoring of Coffee: Towards Sustainable Coffee Production. *Scientia Horticulturae*, *327*, 112847. DOI: 10.1016/j.scienta.2024.112847 ***Equal Contribution**

Niazi, R., Parveen, G., **Noman, M.**, Mukhtar, N., Irfanullah, Hadayat, N., Sami, A., Shrestha, J., Khaliq, B. (2023) Comparative expression analysis of *sucrose phosphate synthase* gene family in a low and high sucrose Pakistani sugarcane cultivars. *PeerJ*, 11, e15832. DOI: 10.7717/peerj.15832

Saleem, B., Uzair, M., **Noman, M.**, Attia, K.A., Zhang, M., Alwahaibi, M.S., Zahra, N., Naeem, M.K., Mohammed, A.A., Fiaz, S., Kimiko, I., & Khan, M.R.†. (2023) Evaluation of sugarcane promising clones based on the morphophysiological traits developed from fuzz. *PeerJ*, *11*, e15646. DOI: 10.7717/peerj.15646

Noman, M.* †; Siddique I.*; Saleem B.; Ilyas, S.; Ali, S.; Khan, M.R. † (2022) *In silico* Dissection and Expression Analysis of Sucrose Synthase Gene Family in Sugarcane. *Sugar Tech*, DOI: 10.1007/s12355-022-01151-1

Noman, M.; Aysha, J.; Ketehouli, T.; Yang, J.; Du, L.; Wang, F.; Li, H. (2021) Calmodulin Binding Transcription Activators: An Interplay between Calcium Signalling and Plant Stress Tolerance. *J. Plant Physiol.*, 256, 153327. DOI: 10.1016/j.jplph.2020.153327

Noman, M.; Jameel, A.; Qiang, W.-D.; Ahmad, N.; Liu, W.-C.; Wang, F.-W.; Li, H.-Y. (2019) Overexpression of *GmCAMTA12* Enhanced Drought Tolerance in Arabidopsis and Soybean. *Int. J. Mol. Sci.*, *20*, 4849. DOI: 10.3390/ijms20194849

Jameel†, A.; **Noman†, M.**; Liu, W.; Ahmad, N.; Wang, F.; Li, X.; Li, H. (2020) Tinkering *Cis* Motifs Jigsaw Puzzle Led to Root-Specific Drought-Inducible Novel Synthetic Promoters. *Int. J. Mol. Sci.*, *21*, 1357. DOI: 10.3390/ijms21041357 __ †**Equal Contribution**

Noman, M., Ajmal, W., Khan, M., Shahzad, A. and Ali, G. (2015) Exploitation of Concatenated Olive Plastome DNA Markers for Reliable Varietal Identification for On-Farm Genetic Resource Conservation. American Journal of Plant Sciences, 6, 3045-3074. DOI: 10.4236/ajps.2015.619299

Ahmad, N.; Jianyu, L.; Xu, T.; **Noman, M.**; Jameel, A.; Na, Y.; Yuanyuan, D.; Nan, W.; Xiaowei, L.; Fawei, W.; Xiuming, L.; Haiyan, L. (2019) Overexpression of a Novel Cytochrome P450 Promotes Flavonoid Biosynthesis and Osmotic Stress Tolerance in Transgenic *Arabidopsis*. *Genes*, *10*, 756. DOI: 10.3390/genes10100756

Lu, Y., Chi, M., Li, L., Li, H., **Noman, M.**, Yang, Y., Ji, K., Lan, X., Qiang, W, Du, L, Li, H., Yang, J. (2018) Genome-Wide Identification, Expression Profiling, and Functional Validation of *Oleosin* Gene Family in *Carthamus tinctorius* L. *Front. Plant Sci.* 9:1393. DOI: 10.3389/fpls.2018.01393

Ketehouli, T.; Idrice Carther, K.F.; **Noman, M.**; Wang, F.-W.; Li, X.-W.; Li, H.-Y. (2019) Adaptation of Plants to Salt Stress: Characterization of Na^+ and K^+ Transporters and Role of CBL Gene Family in Regulating Salt Stress Response. *Agronomy*, *9*, 687. DOI: 10.3390/agronomy9110687

Aysha, J., **Noman, M.**, Wang, F. et al. (2018) Synthetic Promoters: Designing the cis Regulatory Modules for Controlled Gene Expression. *Mol Biotechnol.* 60: 608. DOI: 10.1007/s12033-018-0089-0

I've a total of 28 publications. For complete list, please click **Google Scholar**.

Atti di convegni
[titolo, struttura, città, anno]

ALTRE INFORMAZIONI

2022-2023	Selected and Completed the **eLife Community Ambassadors** program organized b eLife
2023	Selected and Completed **10-day Third International Training Course on Industrial Synthetic Biotechnology (ITC-ISB)** online, organized by Tianjin Institute of Industrial Biotechnology, Chinese Academy of Sciences, China
2022	Completed training on **"MGI PCR Free Library Prep Automation on MGISP-100 and PE100 Sequencing on DNBSEQ-T7RS Platform"** from MGI Field Application Scientist, at the Next Generation Sequencing Laboratory, National Institute for Genomics and Advanced Biotechnology, National Agricultural Research Center, Islamabad, Pakistan
2020 - 2021	Offered Visiting Research Scholar position for 1 year at UF, Florida U.S
2019	Selected and Completed the **5-day 2nd International Training Course on Mouse Genetics and Phenotyping**, organized by the Chinese Society for Cell Biology at The Model Animal Research Center (MARC), Nanjing University, China
2012	Completed **3-month internship at the Plant Tissue Culture Lab**, National Agricultural Research Center, Islamabad, Pakistan
2013	Graduated in **(4 years BS) Biotechnology and Genetic Engineering** from Kohat University of Science and Technology, Kohat, Pakistan
2008	**Biology Teacher** for ~1 year to High School Students at Albadar Model School, Swabi, Pakistan
2008	Completed **Higher Secondary School Certificate in Pre-Medical**, Quaid-i-Azam College, Swabi, Pakistan
2005	Completed **Secondary School Certificate in Science** (Distinction), Albadar Model School,

	Swabi, Pakistan
2021-2022	Co-supervised two students of MS Biotechnology, and trained more than 10 internees of BS Biotechnology/Molecular Biology, NIGAB, Islamabad
2022	Supervising an MS student at the Plant Molecular Physiology Lab, Department of Biology, UFLA, Lavras

Le dichiarazioni rese nel presente curriculum sono da ritenersi rilasciate ai sensi degli artt. 46 e 47 del DPR n. 445/2000.

Il presente curriculum, non contiene dati sensibili e dati giudiziari di cui all'art. 4, comma 1, lettere d) ed e) del D.Lgs. 30.6.2003 n. 196.

RICORDIAMO che **i curricula SARANNO RESI PUBBLICI sul sito di Ateneo** e pertanto si prega di non inserire dati sensibili e personali. Il presente modello è già precostruito per soddisfare la necessità di pubblicazione senza dati sensibili.

Si prega pertanto di **NON FIRMARE** il presente modello.

Luogo e data: Lavras, MG, Brazil, 26 February 2024