Dr Ghulam Zahara Jahangir

(Plant Molecular Biologist)

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PERSONAL INFORMATION

Name:	**GHULAM ZAHARA JAHANGIR**
Nationality:	**Pakistani**
Languages:	**English, Urdu**
Marital Status:	**Married**
Major study areas:	**Biology and allied sciences**
Current Post:	**Assistant Professor**
Current Employer:	**CAMB, University of Punjab, Lahore**

CAREER OBJECTIVES

I want to execute research in the fields of Biotechnology and Molecular Biology, and in their unexplored areas. I want to apply professional and academic knowledge to address the challenging problems of low status of research in Pakistan. I want to go ahead in the field of science and want to develop research culture in society by introducing research from Montessori level and linking the research to the industry of Pakistan.

My ultimate goal in the fields of research and education is to serve humanity, foster research culture in Pakistan, and to bring her up on the list of countries abreast with modern Sciences and technology.

GLIMPSES FROM THE CV

1- PhD in Biotechnology (LCWU, Lahore) in 2019.
2- Currently working as Assistant Professor at Centre for Applied Molecular Biolgy (CAMB), University of Punjab, Lahore.
3- 13 years research and teaching experience of University of Punjab.
4- 3 years teaching experience of School and college.
5- Experience of Molecular Diagnosis in Corona and Hepatitis.
6- Successfully executed 02 research projects.
7- One patent filed as 1st author as 887/2018 patent application number
8- 10 publications as 1st author, 03 as 2nd author and 01 as 3rd author.
9- Current Impact factor is 4.183
10- Awarded by IRSIP scholarship for University of Guelph, Canada.
11- Awarded by ***Certificate Of Excellence*** from GCU LAHORE.
12- Winner of Research award 'Invention to Innovation Summit 2017'.

QUALIFICATION

- Ph.D. **Biotechnology** (2014-2019), from Department of Biotechnology, Lahore College for Women University (LCWU), Lahore, Pakistan.
- MS Forensic Chemistry, 2010-2012, from Department of Chemistry, Government College University (GCU), Lahore, Pakistan.
- M.Sc. in Botany, 2004-2006, from Department of Botany, Lahore College for Women University (LCWU), Lahore, Pakistan.
- B.Sc. (Botany, Chemistry, & Zoology), 2001-2003, from Bahauddin Zakariya University as regular student of Govt. College for Women, Sahiwal, Pakistan.
- F.Sc. (Pre-medical), 1999-2001, from Multan Board of Intermediate and Secondary Education, as regular student of Govt. College for Women, Sahiwal, Pakistan.
- Matric: (Science group), 1998-1999, from Lahore Board of Intermediate and Secondary Education, in, Pakistan.
- **GAT** General score 71
- **GAT** Subject (Botany) score 68

DISTINCTION/APPRECIATIONS

- **Academic Distinction** Started a newsletter (Ravian Forensic News-letter) as the Leader of RESEARCH & PUBLICATION GROUP of Ravian Forensic Society, GC University Lahore. Served as first editor of the newsletter. For the acknowledgement of the good work I was awarded with the **CERTIFICATE OF EXCELLENCE** BY GCU LAHORE.

- **Award of IRSIP Scholarship** for research at University of Guelph Canada.

- **Professional Distinction** For the EXCELLENT PRESENTATION and winning the Research Award in National Invention to Innovation Summit of University of Punjab Lahore I have been awarded with the **CERTIFICATE OF APPRECIATION** BY CAMB LAHORE (employer).

EXPERIENCES

I have the university level research and teaching experience of more than 12 years in the fields of Biotechnology and Molecular Biology and Forensic Sciences.

Teaching Experience

- Taught '**Plant Molecular Biology**', '**Risk Assessment and Biosafety**', '**Crime Scene Management**', and '**Law and Forensic Sciences**' courses to the M.Phil and Ph.D. classes of CAMB.
- Supervised and guided experimental techniques to Research students of CEMB and CAMB, and LCWU (Dept. of Biotechnology) of MS and M.Phil as part of my job responsibilities.
- Taught Research Methodology and experimental techniques to Research students of B.S (Hons.) as part of job duties at LCWU.

- Taught Biotechnology (Optional subject) to B.S (Hons) at LCWU.
- Taught Biology to F.Sc. at Royal Science Academy (Shadman Branch), Lahore.
- Taught Biology to Matriculation at District Public School, Depalpur.
- Taught Science subjects to Matriculation at Manzoor Islamia Girls Higher Secondary School, Depalpur.

Theses and Internship Reports supervised	M.Phil theses	03
	B.Sc theses	12
	Internship students	38

Research experience

Research experience of eleven years as 'Research Officer' at National Centre of Excellence in Molecular Biology (CEMB), University of Punjab and Centre for Applied Molecular Biology (CAMB), University of Punjab Lahore; and of more than one year as Research Associate at Biotechnology Lab of Lahore College for Women University, Lahore. As part of my job duties, I have been working on different research projects in the areas of **Microbiology, Biotechnology, Molecular Biology, and Biochemistry.**

- Worked on isolation, purification, identification, and characterization of **phosphate solubilizing bacteria** (PSBs), and the findings are reported in the Journal of Biotechnology & Biotechnological Equipment, jornal of animal and plant sciences, and Pakistan journal of agricultural sciences.

- I have worked for molecular characterization of potassium solubilizing bacteria, and nitrogen fixing bacteria for organic acid production of local **Bio-fertilizers**, and evaluation of their efficiency as **Bio-control** agents and for the production of plant hormones. And, applied on potato trial field to test the success of application of prepared bio-fertilizer in natural environment for improved potato crop yield: a step towards the development of CAMB biofertilizer.
- Worked for development of improved varieties of Sugarcane (SCMV resistant) using siRNA technique in the project named as **Disease Resistance Through siRNA Gene Silencing in Sugarcane.**

- **Developed Abiotic Stress Tolerant potato lines through transforming Eucalyptus dehydrin-10 gene** as my PhD product. Filed a patent on these varieties. And have submitted three publications on this work.

- In the research project of my MS thesis (entitled as '**Anti-mutagenic effect of spice plants**'), I have established anti-mutagenic potential of spice plants (*Piper nigrum, Cinnamomum zeylanicum, Nigella sativa, Syzygium aromaticum, Ptychotisajowan,* and

Cuminum cyminum) against mutagenic effect of hydrogen peroxide (H_2O_2) and mouthwashes on human cheek cells; using different techniques of Molecular Biology and Biochemistry.

- Practiced different techniques of Biotechnology and Biochemistry for the accomplishment of objectives of the project entitled **'Development of Turmeric Seed Protection technology for enhancement of yield, curcumin and obqesin content using tissue culture technology';** as 'Research Associate' at Biotechnology Lab of Lahore College for Women University, Lahore.

- Experience of producing disease free stock of several plant species like Sugarcane, Dendrobium, Stevia, Carnation, Gerbera, Banana, Potato, Melia, and Mentha through Plant Tissue Culture at Biotechnology Lab of Lahore College for Women University, Lahore.
- Research work in **Plant Tissue Culture** for M.Sc. thesis titled as: "In vitro callogenesis, somatic embryogenesis and micropropagation in three varieties: S-2002-US-302, HSF-240 and HSF-242 of *Saccharum officinarum* (Sugarcane)".

Currently Working On:

- Pot trials of stress on Abiotic Stress Tolerant Potato Cultivars to quantify the transgene expression through qPCR.
- Isolation and characterization of more effective Abiotic Stress responsive genes from different sources.

PROJECTS AWARDED

Project Title	Duration with dates	Amount of grant	Funding agency	Project outcome
1- Study on the anti-mutagenic/ DNA protecting potential of food plant extracts	One year (March 2016 to March 2017)	PKR 200,000.	University of Punjab, Pakistan.	Continued
2- Application of phosphate solubilizing bacteria for improved potato crop yield: a step towards the development of CAMB biofertilizer	One year (March 2016 to March 2017)	PKR 200,000.	University of Punjab, Pakistan.	Completed

PROJECTS SUBMITTED

Project Title	Duration with dates	Amount of grant	Funding agency	Project outcome
3- Studies on abiotic stress tolerance potential of potato varieties for suggesting cropping preferences among available varieties (based on characterization of dehydrin genes)	Joint research projects between Pakistan Science Foundation and National Natural Science Foundation China	PKR 50.0 Million	PSF	-
4- Enhanced biosynthesis of DNA protective flavonoids in *Apocynum venetum*	National Research Program for Universities (NRPU)	PKR 54.0 Million	PSF	-

PATENTS

One patent filed as 1st author under 887/2018 patent application number on 20/12/2018 relating to **Genetically modified potato plants possessing Eucalyptus dehydrin-10 gene for improved tolerance against Abiotic Stresses.**

PUBLICATIONS **Impact factor: 3.183**

Theses published:

1- CLONING AND EXPRESSION STUDIES ON ABIOTIC STRESS TOLERANCE GENE(S) IN SOLANUM TUBEROSUM

For the award of degree of PhD from Department of Biotechnology, LCWU, Lahore in 2019.

2- ANTI-MUTAGENIC EFFECT OF SPICE PLANTS

For the award of degree of MS Forensic Chemistry from Department of Chemistry, GCU, Lahore in 2012.

3- IN VITRO CALLOGENESIS, SOMATIC EMBRYOGENESIS AND MICROPROPAGATION IN THREE VARIETIES: S-2002-US-302, HSF-240 AND HSF-242 OF *SACCHARUM OFFICINARUM* (SUGARCANE)

For the degree of M.Sc. Botany from Department of Botany, LCWU, Lahore in 2006.

Research articles published:

1. **Jahangir, G. Z.,** Naz, S., Khan, M. I. Saleem, M. Z. and Ali, Q. (2021). Molecular characterization and expression studies of *Eucalyptus globulus* stress responsive gene, Dehydrin-10, in bacterial expression system. Biologia of Plantarum (Accepted).

2. **Jahangir, G. Z.**, Shahwar, D., Nasir, I. A., Shehzad, S., and Iqbal, M. (**2020**). Essential oils of spice plants prevent DNA damage. The International Journal of Biological Research; 3(2): 25-32.

3. **Jahangir, G. Z.,** Arshad, Q. A., Shah, A., Younas, A. and Naz, S. (**2019**). Bio-fertilizing efficiency of phosphate solubilizing bacteria in natural environment: a trial field study on stress tolerant Potato. Applied Ecology and Environmental Research; 17(4): 10845-10859.

4. **Jahangir, G. Z.,** Naz, S., and Khan, M. I. (**2018**). Rapid RNA Extraction from Eucalyptus tree and its down processing for cloning of dehydrin genes. Journal of Advancements in Life Sciences; 5(4): 185-191.

5. **Jahangir, G. Z.**, Sadiq, H. M., Nasir, I. A., and Iqbal, M. (**2016**). The effectiveness of Phosphate solubilizing bacteria as bio-control agents. Journal of Animal & Plant Sciences**;** 26(5):1313-1319.

6. **Jahangir, G. Z.**, Shahwar, D., Nasir, I. A., Shehzad, S., Naz, F., and Iqbal, M. (**2016**). The myth of oral hygiene and mouthwashes. SpringerPlus 5:1481.

7. **Jahangir GZ,** Saleem F, Naz S, Munir N, Haq R, Sumrin A. (**2016**). Thyroid hormone dependent gene expression. Adv. Life Sci. 3(4): 119- 124.

8. **Jahangir, G. Z.**, Nasir, I. A. & Iqbal, M. (**2014**). Disease free and rapid mass production of sugarcane cultivars. Adv. life sci., 1(3): 171-180.

9. Qamar Z, Nasir IA, **Jahangir GZ**, Husnain T. (**2014**). In-vitro Production of Cabbage and Cauliflower. Advancements in life sciences, 1(2): 112-118.

10. Sadiq, H. M., **Jahangir, G. Z.**, Nasir, I. A., and Iqbal, M. (**2013**). Isolation and characterization of phosphate solubilizing bacteria from rhizosphere soil. Journal of Biotechnology & Biotechnological Equipment**:** 27/2013/6 **(**4248).

11. **Jahangir, G. Z.** (**2012**). The need of research culture in Pakistan. The Scientific Ravi: 48-50.

12. Nasir, I. A., **Jahangir, G. Z.**, Qamar, Z., and Husnain, T. (**2011**). Maintaining regeneration potential of sugarcane callus for longer span. African Journal of Agricultural Research, 6(1), 113-119.

13. **Jahangir, G. Z.,** Nasir, I. A., Sial, R. A., Javid, M. A. and Husnain, T. (**2010**). Various Hormonal Supplementations Activate Sugarcane Regeneration *In-Vitro.* Journal of Agricultural Sciences, 2 (4), 231-237.
14. Naz, S. and **Jahangir, G. Z.** (**2008**). Effect of medium composition on Callogenesis and Somatic embryogenesis in different varieties of sugarcane (Saccharum officinarum L.) i-e. S-2002-US-302, HSF-240 and HSF-242. Pakistan Sugar Journal, 4, 11-20.

Number of publications as 1st author: 10
Number of publications as 2nd author: 03
Number of publications as 3rd author: 01

SKILLS AND EXPERTISE

Molecular Biological Techniques

DNA/ RNA Extraction
DNA/RNA quantification (using Nanodrop)
Gel Electrophoresis & Gel Documentation
Single cell gel-electrophoresis/Comet Assay

Cell counting (using heamocytometer)
PCR
Real Time PCR
cDNA Synthesis
Construct synthesis and cloning
Gene transformation by

- Gene Gold method
- Tungsten Bombardment

Plasmid Extraction by

- Mini Prep
- Midi Prep
- Co-cultivation method (with *Agrobacterium tumefacience)*

Plasmid transformation by

- Tungsten Bombardment
- Electroporation method
- Heat shock method

- Maxi Prep

Gene Cloning

- (for the development of SCMV resistance in Sugarcane)

Microbiological Techniques

Isolation of soil bacteria

- Soil sampling from field for isolation of soil bacteria
- Isolation of Phosphorus solubilizing/reactivating bacteria
- Isolation of nitrogen fixing bacteria

Identification of phosphorus solubilizing/reactivating bacteria

- Colony study
- Cell morphological study
- Identification by biochemical tests (using QTS-24 Miniaturized identification system)

Biotechnological skills

Plant Tissue Culture

Experienced a variety of explants from different parts of plant body practiced Callogenesis, Somatic Embryogenesis, Direct Regeneration, and Micropropagation for *in vitro* production and multiplication of following plants.

- 26 varieties of Sugarcane
- 10 varieties of potato
- 4 varieties of Turmeric
- Maiz
- Melia
- Mentha
- Orchids
- Cabbage
- Cauliflower
- Stevia
- Banana
- Gerbera

Cell Suspension Culture

- Gladiolus

Biochemical Laboratory Techniques

- ELISA
- RAPD
- Thin layer chromatography (TLC)
- Gas chromatography (GCMS)
- Spectrophotometery

Computer Skills

- Microsoft Word.
- Microsoft Excel.
- Power point
- Paint and Corel Draw (Poster and Pamphlet preparation)
- Internet
- Software installation
- SPSS

TRAININGS, INTERNSHIPS AND WORKSHOPS

- Bringing Innovation into Agriculture through Robotics and ICT. Full Day Workshop WREA (October 14th, 2016) at PC Lahore.

- 2nd one day workshop on YOUNG RESEARCHERS' SKILL DEVELOPMENT (January 07, 2012) organized by National Academy of Young Scientists at University of Punjab, Lahore.

- One month Internship at ANTI NARCOTICS FORCE LAHORE (16 October 2011 to 18 November **2011**). During this internship I surveyed meet drug addicts of Addiction Wards of different mental hospitals and rehabilitation centers. There I found the chance to attain the insight into bitter realities of Pakistan's society.

- National training course on "MOLECULAR DIAGNOSIS OF ANIMAL PATHOGENS" October 17-21, **2011**) arranged by National Institute of Biotechnology and Genetic Engineering (NIBGE) Faisalabad, Pakistan.

- Workshop on 'CV WRITING AND INTERWEING SKILLS' arranged by NUML, Lahore (April 15, **2011**).

- Workshop on 'FORENSIC SCIENCES' (January 24, **2011**) arranged by Speers Chemical Society (Pk) & Royal Society of Chemistry (UK) at Forman Christian College, Lahore.

- Workshop on 'HOW TO GET PUBLISHED IN HIGH IMPACT RESEARCH JOURNAL AND CONFRENCES' (1-2 October, **2010**) arranged by Institute of Business & Management, UET, Lahore.

- Workshop on 'ASSAY TECHNIQUES FOR THE ISOLATION OF BIOACTIVE COMPOUNDS' (12-13 December, **2007**) arranged by British Council at LCWU, Lahore.

CONFERENCES & SEMINARS

- One day seminar on "Advances in PCR Technology: Power to detect single copy without standard curves" (April 05 **2017**) organized by BioRad and Chemical House in Collaboration with Centre for Applied Molecular Biology, University of Punjab, at CAMB Lahore.

- 11th B9iennial Conference: MOLECULAR BIOSCIENCES-CHALLENGES AND OPPORTUNITIES (November 25-28, **2013**) organized by Pakistan Society for Biochemistry and Molecular Biology at University of Punjab, Lahore.

- NAYS EMERGING IDEAS CONFERENCE (January 07, **2012**) organized by National Academy of Young Scientists at University of Punjab, Lahore.

- Represented CAMB & CEMB at 'NATIONAL BIOTECHNOLOGY EXHIBITION AND SEMINAR **2010**' arranged by UVAS, Lahore.

- Attended all of the annual Symposia and Seminars, monthly presentations and Invited lectures at CAMB, CEMB, LCWU (since April 2008), and GCU (since October **2010**).

- Where ever the task was assigned, actively represented CAMB & CEMB.

ACTIVITIES

- Played central role in the creation of RAVIAN FORENSIC SOCIETY and efficiently managed the office of its first '**Press Secretary**' (GCU) Lahore.

- Started a newsletter (**Ravian Forensic News-letter**) as the Leader of RESEARCH & PUBLICATION GROUP of Ravian Forensic Society, GC University Lahore. I am currently serving as editor of the newsletter.

- As **Girl Representative** of MS Forensic Chemistry, arranged several valuable events at Department of Chemistry, GC University Lahore.

- Actively arranged and participated in all the seminars and conferences arranged by Ravian Forensic Society, GC University Lahore.

PARTICIPATION

- Participated in '**National Biotechnology Exhibition and Seminar 2010**' arranged by UVAS, Lahore via a Stall of products by CAMB and CEMB.

- Represented CAMB by participating in '**Biotechnology Exhibition of MoST and Seminar 2011**' arranged by PCSIR, Lahore.

- Participated in '**Inter-Departmental Quiz Competition** (**2011**)' arranged arranged at Department of Chemistry, GC University Lahore.
- Participated in '**2nd Annual Poster Competition** (**2012**)' arranged at Department of Chemistry, GC University Lahore.

INTERESTS & HOBBIES

- Reading
- Creative and analytical writing
- Walk
- Watching news and talk shows
- Watching cricket, football, and hockey