

Dr. Irfan Safdar Durrani

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Education

PHD | MARCH 2015 | INSTITUTE OF BIOTECHNOLOGY AND GENETIC ENGINEERING, THE UNIVERSITY OF AGRICULTURE PESHAWAR

- Biotechnology and Genetic Engineering, Plant Genetic Engineering.
- Thesis Titled: CLONING AND OVER EXPRESSION OF OSRGPL9 GENE IN NICOTIANA TABACUM FOR ITS FUNCTIONAL ANALYSIS

M.Phil. | JULY 2003 | INSTITUTE OF BIOTECHNOLOGY AND GENETIC ENGINEERING, THE UNIVERSITY OF AGRICULTURE PESHAWAR (DISDISTINCTION HOLDER)

- Biotechnology and Genetic Engineering.
- Thesis Titled: CLONING OF NATURAL PCR COMPETITORS AND OPTIMIZATION OF QC-RT-PCR FOR DETECTION OF MINIMAL RESIDUAL DISEASE (MRD) IN CHRONIC MYELOID LEUKEMIA (CML) PATIENTS

MSC | DECEMBER 1995 | UNIVERSITY OF AGRICULTURE FAISALABAD

Biochemistry

BSC | AUGUST 1990 | THE UNIVERSITY OF AZAD JAMMU AND KASHMIR

Botany, Zoology, Chemistry

FSC | AUGUST 1988 | EDWADRDES COLLAGE PESHAWAR

Higher Secondary School Certificate, Premedical.

SSC| AUGUST 1986 | GOVERNMENT HIGHER SECONDARY SCHOOL NO. 1 PESHAWAR CANTT

High School, Science Group.

Experience

ASSISTANT PROFESSOR. |INSTITUTE OF BIOTECHNOLOGY AND GENETIC ENGINEERING THE UNIVERSITY OF AGRICULTURE PESHAWAR | JUNE 2014 - TILL DATE

My responsibilities in the position include

- Teaching Biotechnology and Molecular Biology courses (Theory and Lab).
- Designing independent research projects in the fields of Plant Genetic Engineering.
- Supervise postgraduate research projects and theses. (M.Phil.)
- Supervision of undergraduate students' internships, and internship reports.

LECTURER | INSTITUTE OF BIOTECHNOLOGY AND GENETIC ENGINEERING THE UNIVERSITY OF AGRICULTURE PESHAWAR | DEC 2003 -JUNE 2014:

My responsibilities on the position included

- Teaching biotechnology and molecular biology theory and laboratory courses at undergraduate and postgraduate levels.
- Supervision of Post graduates research projects.
- Active involvement in arranging seminars and conferences at the host Institute.

Research Skills & Abilities

Plant Genetic Engineering -

Research training from **Iowa State University USA**.

- PCR methods; Conventional PCR, Reverse Transcription PCR, LA PCR for gene isolation and making full length gene assemblies.
- Gene cloning; TA cloning of PCR products, Topo TA cloning, and Gateway cloning technology to create entry and destination clones of desired nucleotide stretches in *E coli* and *Agrobacterium*.
- Bacterial Transformation of *E coli* by heat shock method and by electroporation.
- Bacterial transformation of *Agrobacterium* by Freeze thaw method and by electroporation.
- *Agrobacterium* mediated Plant transformations.
- Tissue culture methods for plant propagation, regeneration and transgenic plant selection on antibiotic selective regeneration media.
- Plant handling in greenhouse.
- Analytical methods for evaluation of transgene effect in transgenic plants;
- Reverse transcription PCR to confirm transgenic nature of plants using gene specific oligonucleotides.
- Detection of Hydrogen peroxide in transgenic leaf tissues through DAB staining.
- Detection of oxalate oxidase activity by Histo-chemical methods.
- Spectrophotometric detection of Superoxide dismutase activity.
- In Vitro Gene Expression Analysis using semi quantitative PCR and real time PCR.

Bioinformatics

- In Silico promoter analysis
- Phylogenetic analysis
- Gene Expression analysis
- Sequence (DNA and Protein) Analysis
- Bio conductor Annotation
- Genome Analysis
- DNA Sequence Alignment and Analysis.

Molecular Cancer Genetics

Research Work and training from **NIBGE Faisalabad** in Cancer Molecular Genetics of Chronic Myeloid Leukemia (CML) included

- Isolation of Genomic DNA & Total RNA from Whole Blood.
- Primer Design for PCR amplification of CML break points on Chromosome 9.
- Reverse Transcription for cDNA synthesis of fusion point of bcr-abl mRNA fusion transcripts.
- Optimization of Nested PCR for Detection of bcr-abl Chimeric Transcripts in CML patients and PCR amplification of cDNA.
- Agarose gel electrophoresis.
- T/A vector based Cloning of amplicons
- Clone Analysis by Restriction digestion and PCR.
- Optimization of Quantitative Competitive Reverse transcription PCR. (Qc-RT-PCR) for Detection of MRD in CML patients.
- **Enzyme (Protein) Purification and Characterization** - Research Work and Training from **NIBGE Faisalabad** in **Enzymology** included
 - Maintenance of axenic bacterial cultures.
 - Fermentation for β -glucosidase production from microbial sources.
 - Optimization of membrane bound enzyme solubilization.
 - Enzyme purification procedures; ammonium sulfate precipitation, dialysis, fast protein liquid chromatographic fractionations including ion exchange chromatography and gel filtration.
 - Enzyme Characterization for optimal pH, thermal stability, and substrate affinity.
 - Electrophoresis resolution of native and SDS denatured proteins on polyacrylamide gels.
 - Evaluation of enzyme inhibitors and co-factors characterization.
 - Zymography of native-proteins separated by FPLC fractionation.

Achievements

2018 Currently supervising one M.Phil. Research and Thesis and Two Internship Reports

2018 **NCBI Submission:** Durrani,I.S., Jan,A. and Butt,F.I. Sequencing and *Insilco* Analysis Of OsGLP-12-3 Promoter Region In Different Varieties Of Oryza Sativa Released To Public Database. (Accession Number: MF144186)

2019 **NCBI Submission:** Irfan Safdar Durrani^{1*}, Farwa Iqbal Butt¹. Asad Jan, Noreen Asim and S.M. Saqlan Naqvi. In silico Analysis Tools Prove Basmati 2008 (Indica Rice) to be More Meaningful for Crop Improvement as Compared to Nipponbare (Japonica Rice). E-ISSN: 2221-7630;P-ISSN: 1727-4915. Released To Public Database (Accession Number: MK946667)

2017 Success Supervision of two M.Phil. Research and Theses and one Internship Report

2004 Centre of Biotechnology University of Peshawar: External Examiner for Practical examination of Genetic Engineering.

2004 Centre of Biotechnology University of Peshawar: Paper Setter and Paper Checker for Genetic Engineering.

2003 Academic Distinction M, Phil. (CGPA 3.92).

1994 Merit Certificate of Excellent Performance as Member Executive Council: Social Educational and Scientific Council of Biochemists, Biochemistry Department, University of Agriculture Faisalabad.

Workshops, Conferences and Symposia

1. Workshop on Implementation of Bio Safety Guidelines (NIBGE) 1st September 2005. NIBGE, Faisalabad, Pakistan.
2. International Symposium on Characterization and Management of Emerging Viral Diseases in the Developing World 20-22, Nov 2006, NIBGE Faisalabad, Pakistan.
3. Workshop on web based tools for genomic and post genomic research Agricultural University Peshawar. 16-19, April 2007.
4. Training workshop on Real Time PCR 8-11 June 2010, PMAS Arid Agriculture University Rawalpindi.
5. 3RD Biosafety Training workshop for Young scientists January 28, 2014, The University of Agriculture Peshawar.
6. 4th International and 13th National Conference of Botany 27– 30 August 2014. Shaheed Benazir Bhutto University, Sheringal, Dir Upper, Khyber Pakhtunkhwa Pakistan.
7. Five days course on Biorisk Management, February 22, 2016 to February 26, 2016, organized by RELIEF International, IBGE the University of Agriculture Peshawar.

8. Project formulation workshop April 27-28 2016. The University of Agriculture Peshawar, Organized by Pakistan Science Foundation.

Publications

1. Siddiqui, K.S., Rashid, M.H., Ghauri, T.M., **Durrani, S.I.**, Rajoka, M.I 1997. Short Communication: Purification and Characterization of an Intracellular β - Glucosidase from *Cellulomonas biazotea*. World Journal of Microbiology And Biotechnology. 13, 245-247.
2. M. I. Rajoka, **I.S. Durrani**, A.M. Khalid (2004) Kinetics of improved production and thermostability of an intracellular β glucosidase from a mutant derivative of *Cellulomonas biazotea*. Biotechnology Letters 26: 281-285.
3. M. I. Rajoka, **I.S. Durrani**, A.M. Khalid (2005) Kinetic studies of Native and mutated intracellular β Glucosidases from *Cellulomonas biazotea*. Protein and peptide letters, 12, 283-288.
4. **Ahmad D.**, Khan M.S., **Durrani I.S.**, Swati Z.A., Hussain M. (2004) RNAi based resistance against tomato leaf curl virus. Sarhad Journal of Agriculture vol. 20, 22-25.
5. Khan M.S., **Ahmad D.**, **Durrani I.S.**, Swati Z.A., Hussain M. (2004) Prevalence of different begomoviruses infecting chillies in NWFP and Punjab. Sarhad Journal of Agriculture vol. 20, 30-33.
6. **Irfan Safdar Durrani**, Jehan Bakht, Zahoor Ahmad Swati, S.M. Saqlan Naqvi and Mohammad Shafi. 2015. Cloning Of OsRGLP9 Gene Obtained From *Oryza Sativa* in *Nicotiana Tabaccum*. Pak. J. Weed Sci. Res., 21(1): 123-136.
7. Azhar Hussain Shah, Safdar Hussain Shah, Habib Ahmad, **Irfan Safdar Durrani** and Saad Hussain Shah. (2017) Cross Adaptation: an alternative approach of genetic engineering for salinity tolerance in rice cell line. Plant Cell Biotechnology and Molecular Biology. 18 (1&2): 39-48.
8. Muhammad Ibrahim, Sohail Ahmad, **Irfan Safdar Durrani**, Aqib Iqbal, Iqbal Munir & Zahoor Ahmad Swati (2017): Genetic Polymorphism and Bottleneck Analysis of Balkhi, Hashtnagri, and Michni Sheep Populations Using Microsatellite Markers, Animal Biotechnology, DOI: 10.1080/10495398.2017.1366340.

9. **Durrani IS**, Butt FI, Jan A, Asim N, Naqvi SM. In silico Analysis Tools Prove Basmati 2008 (Indica Rice) to be More Meaningful for Crop Improvement as Compared to Nipponbare (Japonica Rice). *Pakistan Journal of Life & Social Sciences*. 2019 Jan 1;17(1).
10. **Durrani IS**, Jan A, Shah S, Iqbal A, Ahmad D, Khan H, Naqvi SM. Bioinformatics studies of *OsGLP8-12* gene from *Oryza sativa* (japonica) reveal its role in conferring resistance against disease and stresses. *Pak. J. Bot.* 2020 Apr 1;52(2):461-7.
11. **Durrani IS**, Asim N, Sohail A. Isolation and in silico analysis of *Os GLP12-3* gene's promoter from rice cultivar Dilrosh-97. *Sarhad Journal of Agriculture*. 2023;39(4):883-97.
12. **Durrani IS**, Ahmad D, Shah SA, Ihsan J. Protective effects of vitamin B12 against cisplatin-induced nephrotoxicity in adult mice. *Kuwait Journal of Science*. 2024 Jan 1;51(1):100169.
13. Ahmad R, Ullah I, Ullah Z, Alam S, Rady A, Khan SS, **Durrani IS**. Genomic Exploration: Unraveling the Intricacies of Indica Rice *Oryza sativa* L. Germin-Like Protein Gene 12-3 (*Os GLP12-3*) Promoter via Cloning, Sequencing, and In Silico Analysis. *ACS omega*. 2024 Mar 19;9(13):15271-81.
14. Malik, S., D. Ahmad, **I.S. Durrani** and M.S. Khan. 2025. Determination of antimicrobial potential of economically important persimmon (*Diospyros kaki*) and date plum (*Diospyros lotus*). *Sarhad Journal of Agriculture*, 41(1): 457-465.
15. Irfan Safdar Durrani., Noreen Asim, Asad Jan, Iffat U. Nissa, Syed Tanveer Shah, Syed Jehangir Shah, Abdul Basit, and Heba I. Mohamed. 2025. In silico expression analysis of germin-like protein genes from rice cultivar Nipponbare. *Molecular Biology Reports*. 52:840
16. Irfan Safdar Durrani, Dawood Ahmad, Asad Jan. 2026. Neuroprotective Effects of Thiamine Against LPS-Induced Neuroinflammation, Synaptic Dysfunction, and Memory Impairment in Mice. *World Journal of Biology and Biotechnology*. 11 (2): 5

Certificates

2009 Certificate of Research Training Iowa State University USA.

2003: Certificate of training NIBGE Faisalabad.

Professional Memberships

Member Pakistan Society of Biochemistry and Molecular Biology.

Member Scientific Educational and Social Council of Biochemists.