

Dr. Rana Khalid Iqbal

khalid.iqbal@bzu.edu.pk, ranakhalid.iqbal@unipd.it

+92-333-6146310, +93-389-0084084

Institute of Molecular Biology and Biotechnology, Bahauddin Zakariya University, Multan.



EDUCATION:

Ph.D. Aspects of Molecular and Cellular Biology / Plant Science (2017).

Thesis Title: “Biotechnological approaches of the expression and diversity of the plant mitochondrial genome”.

Institute of Plant and Molecular Biology, University of Strasbourg, France.

M.Phil. Plant Biotechnology (2011).

Thesis Title: “Analysis of genetic diversity in Mungbean (*Vigna radiata*) cultivars revealed by RAPD & SSR”.

Institute of Biotechnology, Bahauddin Zakariya University, Multan.

M.Sc. Biotechnology (2008).

WORK EXPERIENCE:

Assistant Professor

April-2023 – At Present

- Institute of Molecular Biology and Biotechnology, BZU, Multan.

Responsibilities

- Delivering lectures to graduate and undergraduate classes.
- Supervised Master and Ph.D. students.

Postdoc Researcher

Jan-2022 to April-2023

- Department of Biology, University of Padova, Italy.
- Project title: SOUP: SOUP: signaling the organelle-folded protein response in plants.

Responsibilities

- Characterized the mutants at the Molecular and Phenotypic levels.
- Result Analyses, Project report and Scientific writing, presentation of results

Assistant Professor

August-2017 to Jan-2022

- Institute of Molecular Biology and Biotechnology, BZU, Multan.

Responsibilities

- Delivering lectures to graduate and undergraduate classes.
- Supervised Master and Ph.D. students.

Lecturer

Oct-2012 to Jan-2013

- Institute of Molecular Biology and Biotechnology, BZU, Multan.

Responsibilities

- Delivering lectures to undergraduate class

TEACHING COURSES:

- Introduction to Life Sciences (Undergraduate).
- Experimental Techniques in Modern Botany (Undergraduate).
- Plant Physiology and Experiments (Undergraduate).
- Topics in Botany and Developmental Biology (Postgraduate - Ph.D.).

MENTORSHIP:

- 4 Doctoral students are preparing their thesis under my supervision.
- 1 student has completed his Ph.D. under my supervision.

- 13 Master students have completed their research under my supervision and currently 2 are working on their projects.

MAIN RESEARCH DIRECTION:

- Plant Mitochondrial Genetics.
- Cop Stress physiology and Molecular Biology.
- Plant Cell signal Transduction.

AWARDS:

- Won a fully funded Ph.D. scholarship for conducting research at the University of Strassburg, France.
- Postdoc fellowship at the Department of Biology, University of Padova, Italy.
- Higher Education Commission of Pakistan (HEC) approved doctoral supervisor.

BIOINFORMATIC SKILLS:

- Knowledge of computational, bioinformatics and statistical analysis of biological systems by using software's viz. SPSS-17, and GraphPad Prism 5, BLAST, programing using Python and R, Primer design using NCBI and other web-based bioinformatics tools.
- Experienced in Genome-wide association studies (GWAS) analysis.
- Analysis through Image-J software

LABORATORY SKILLS:

- Strong background in molecular biology and plant sciences.
- Experience with confocal microscopy and approaches for genetic manipulation, tissue culture, and organelle genetics, as well as managing a laboratory.
- Investigation of the rate of respiration in plants
- Isolation and estimation of genomic DNA/RNA, cDNA synthesis, PCR amplification, Restriction digestion, agarose, and quantitative real-time PCR (qPCR) analysis (SYBR green and TaqMan probes) for gene expression.
- Cloning, bacterial transformation, blue-white screening, and DNA sequencing
- Experienced in Immobilized metal ion affinity chromatography (IMAC)
- Experienced in sample preparation for transcriptome analysis by N.G.S
- Isolation and estimation of proteins, PAGE both SDS and Native.

JOURNAL REVIEWER:

- PLOS ONE
- Frontiers in Bioscience-Elite
- Pakistan Journal of Botany

PUBLICATIONS: (†for first author and *corresponding author)

1. Dietrich, André, Clémentine Wallet, **Rana Khalid Iqbal**, José M. Gualberto, and Frédérique Lotfi. "Organellar non-coding RNAs: emerging regulation mechanisms." *Biochimie* 117 (2015): 48-62. (impact factor 4.079)
2. Niazi, Adnan Khan†, Etienne Delannoy†, **Rana Khalid Iqbal**†, Daria Milesheva, Romain Val, Marta Gabryelska, Eliza Wyszko et al. "Mitochondrial transcriptome control and intercompartment cross-talk during plant development." *Cells* 8, no. 6 (2019): 583. (impact factor 6.00)
3. Gilani, Munaza, Subhan Danish, Niaz Ahmed, Ashfaq Ahmad Rahi, Ahmed Akrem, Uzma Younis, Inam Irshad, and **Rana Khalid Iqbal***. "Mitigation of drought stress in spinach using individual

and combined applications of salicylic acid and potassium." *Pak. J. Bot*" 52, no. 5 (2020): 1505-1513. **(impact factor 1.2)**

4. Aziz, Muhammad Naveed†, **Rana Khalid Iqbal†**, Muhammad Irfan, Asia Parveen, Muhammad Asif, Sezayi Ozubek, Munir Aktas, Mourad Ben Said, and Furhan Iqbal. "First report on molecular epidemiology, seasonality and phylogeny of *Toxoplasma gondii* infecting goats from Khanewal district in Punjab, Pakistan." *Acta Tropica* "228 (2022): 106304. **(Impact Factor 2.7)**
5. Aziz, Muhammad Naveed, Muhammad Irfan, Asia Parveen, Muhammad Asif, Maryam Ijaz, Sadia Mumtaz, Sezayi Ozubek, Munir Aktas, **Rana Khalid Iqbal***, and Furhan Iqbal. "Prevalence, epidemiology, seasonality, and phylogeny of *Anaplasma marginale* in blood samples of goats collected from Punjab, Pakistan." *Tropical Animal Health and Production*" 54, no. 1 (2022): 74. **(Impact Factor 1.893)**
6. Taalay, Iram†, **Rana Khalid Iqbal†**, Muhammad Asif, Aqib Ahmad, Muhammad Amjad, Farhana Naureen Anwar, Munir Aktas, Mourad Ben Said, and Furhan Iqbal. "Molecular survey of *Toxoplasma gondii* in cattle and buffaloes and phylogenetic position of Pakistani isolates based on ITS-1 gene." *Comparative Immunology, Microbiology and Infectious Diseases*" 84 (2022): 101782. **(impact factor 2.0)**
7. Khan, Rao Waqar Ahmad, Faisal Saeed Awan, and **Rana Khalid Iqbal***. "Evaluation and identification of salt tolerant wheat through in vitro salinity induction in seeds." *Pak J Bot*" 54 (2022): 1987-93. **(impact factor 1.2)**
8. Khan, Rao Waqar Ahmad, Rao Sohail Ahmad Khan, Faisal Saeed Awan*, Ahmed Akrem, Arslan Iftikhar, Farhana Naureen Anwar, Hind AS Alzahrani, Hameed Alsamadany, and **Rana Khalid Iqbal***. "Genome-wide association studies of seedling quantitative trait loci against salt tolerance in wheat." *Frontiers in Genetics* "13 (2022): 946869. **(Impact Factor 3.7)**
9. Naeem, Muhammad*, Muhammad Nadeem, Hira Iqbal, Faiza Marrium, Hafiz Muhammad **Rana Khalid Iqbal*** et al. New insights for exploring the bioactive nature and biomedical activities of *allium cepa*. " *Pak. J. Bot* 55, no. 6 (2023): 2203-2209. **(Impact Factor 1.2)**
10. Aslam, Jawaria, Mirza Imran Shahzad*, Hafiz Muhammad Ali, Mussarat Ramzan, Mohammad Zahid Mustafa, **Rana Khalid Iqbal***, Abdurahman Hajinur Hira, Abdullah A. Alarfaj, and Subhan Danish*. "Antioxidant and anti-inflammatory potentials of aerial and floral parts of *Neurada procumbens* extracts: *In-vitro* and *in-vivo* studies." *Journal of King Saud University-Science*" 35, no. 7 (2023): 102822. **(Impact Factor 3.8).**
11. Irfan, Muhammad†, Shun-Chung Chang†, **Rana Khalid Iqbal†**, Muhammad Tanveer, Muhammad Asif, Adil Khan, Nasreen Nasreen et al. "Seasonality, epidemiology and phylogeny of *Theileria ovis* with a note on hematological and biochemical changes in asymptomatic infected goats from Pakistan." *PLoS One*" 18, no. 8 (2023): e0290620. **(Impact Factor 3.7).**
12. Qian, Lisheng, Khadim Dawar, Israr Ullah, Muhammad Irfan, Zhiheng Zhang, Ishaq Ahmad Mian, Bushra Khan **Rana Khalid Iqbal** et al. "Zinc foliar application mitigates cadmium-induced growth inhibition and enhances wheat growth, chlorophyll contents, and yield." *ACS Omega* " 8, no. 36 (2023): 32372-32381. **(Impact Factor 4.1).**
13. Minhas Asif*, Malik Safdar, Malik Safdar Saeed, Abdullah Ehsan, **Rana Khalid Iqbal*** et al. (2024). Response of integrated use of humic acid and chemical fertilizer on growth and yield of rice crop (*Oryza sativa* L.) in calcareous soil. *Pak. J. Bot*, 56, 3. **(Impact Factor 1.2).**

1. <https://www.ncbi.nlm.nih.gov/nuccore/MW885251.1>
 - *Toxoplasma gondii* isolate 18 internal transcribed spacer 1, partial sequence
2. <https://www.ncbi.nlm.nih.gov/nuccore/MW885250.1>
 - *Toxoplasma gondii* isolate 67 internal transcribed spacer 1, partial sequence
3. <https://www.ncbi.nlm.nih.gov/nuccore/MW885249.1>
 - *Toxoplasma gondii* isolate 87 internal transcribed spacer 1, partial sequence
4. <https://www.ncbi.nlm.nih.gov/nuccore/MW374294.1>
 - *Toxoplasma gondii* isolate 197 internal transcribed spacer 1, partial sequence
5. <https://www.ncbi.nlm.nih.gov/nuccore/MW374293.1>
 - *Toxoplasma gondii* isolate 159 internal transcribed spacer 1, partial sequence
6. <https://www.ncbi.nlm.nih.gov/nuccore/MW374090.1>
 - *Toxoplasma gondii* isolate 05 internal transcribed spacer 1, partial sequence
7. <https://www.ncbi.nlm.nih.gov/nuccore/MW374089.1>
 - *Toxoplasma gondii* isolate 01 internal transcribed spacer 1, partial sequence
8. <https://www.ncbi.nlm.nih.gov/nuccore/OL461228.1>
 - *Toxoplasma gondii* isolate goat01 internal transcribed spacer 1, partial sequence
9. <https://www.ncbi.nlm.nih.gov/nuccore/OL461229.1>
 - *Toxoplasma gondii* isolate goat 05 internal transcribed spacer 1, partial sequence
10. <https://www.ncbi.nlm.nih.gov/nuccore/MW759702.1>
 - *Anaplasma marginale* clone 03 major surface protein 5-like (msp5) gene, partial sequence
11. <https://www.ncbi.nlm.nih.gov/nuccore/MW759703.1>
 - *Anaplasma marginale* clone 67 major surface protein 5-like (msp5) gene, partial sequences
12. <https://www.ncbi.nlm.nih.gov/nuccore/MW759704.1>
 - *Anaplasma marginale* clone 67 major surface protein 5-like (msp5) gene, partial sequences
13. <https://www.ncbi.nlm.nih.gov/nuccore/MW759701.1>
 - *Anaplasma marginale* clone 101 major surface protein 5-like (msp5) gene, partial sequence.
14. <https://www.ncbi.nlm.nih.gov/nuccore/PP719440>
 - *Theileria lestoquardi* isolate Pak-68 merozoite surface protein gene, partial cds.
15. <https://www.ncbi.nlm.nih.gov/nuccore/PP719441>
 - *Theileria lestoquardi* isolate Pak-DS3 merozoite surface protein gene, partial cds.
16. <https://www.ncbi.nlm.nih.gov/nuccore/PP719442>
 - *Theileria lestoquardi* isolate Pak-06 merozoite surface protein gene, partial cds.

REFERENCES:

Dr. Micheal Zottini

Professor

Department of Biology, University of Padova, Italy.

michela.zottini@unipd.it

Cell# +39 349 2938534

Dr. Ahmed Akrem

Professor

Division of Botany, Institute of Pure and Applied Biology, Bahauddin Zakariya University, Multan.

ahmedakrem@bzu.edu.pk

Cell# +92 312 4659831

Dr. Muhammad Asad Aslam

Assistant Professor

Institute of Molecular Biology and Biotechnology, Bahauddin Zakariya University, Multan.

m_asad_aslam786@yahoo.com