



TO MAGNIFICO RETTORE OF UNIVERSITA' DEGLI STUDI DI MILANO

ID CODE 6658

I the undersigned asks to participate in the public selection, for qualifications and examinations, for the awarding of a type B fellowship at **Dipartimento di Biosciences** _____

Scientist- in - charge: Prof. Lazzaro Federico

[Rana Khalid Iqbal]

CURRICULUM VITAE

PERSONAL INFORMATION

Surname	IQBAL
Name	Rana Khalid

PRESENT OCCUPATION

Appointment	Structure
Assistant Professor	Institute of Molecular Biology and Biotechnology, BZU, Multan (April-2023 – At Present)
Postdoc	Department of Biology, University of Padova, Italy (Jan-2022 to April-2023)
Assistant Professor	Institute of Molecular Biology and Biotechnology, BZU, Multan (August-2017 to Jan-2022)
Lecturer	Institute of Molecular Biology and Biotechnology, BZU, Multan (Oct-2012 to Jan-2013)

EDUCATION AND TRAINING

Degree	Course of studies	University	year of achievement of the degree
Degree			
Specialization			
PhD	Aspects of Molecular and Cellular Biology/Plant Science	Institute of Plant and Molecular Biology, University of Strasbourg, France	2017
Master of Philosophy	Biotechnnology	Institute of Biotechnology, BZU, Multan	2011



Master of Science	Biotechnology	Institute of Biotechnology, BZU, Multan	2008
Degree of specialization			
B.Sc	Bachelor of Science	BZU, Multan	2006
HSSC	Higher Secondary School certificate	BISE Multan	2004
HSC	High School Certificate	BISE Multan	2002

REGISTRATION IN PROFESSIONAL ASSOCIATIONS

Date of registration	Association	City

FOREIGN LANGUAGES

Languages	level of knowledge
Englisg	C2

AWARDS, ACKNOWLEDGEMENTS, SCHOLARSHIPS

Year	Description of award
2012	Won a fully funded Ph.D. scholarship for conducting research at the University of Strassburg, France.
2022	Postdoc fellowship at the Department of Biology, University of Padova, Italy

TRAINING OR RESEARCH ACTIVITY

I did my Ph.D. at the University of Strasbourg, France, in the discipline of Molecular and Cellular Biology in plant sciences where I was involved in different projects related to plants physiology. In the first part of my Ph.D. research, I studied the influence of import of different inducible potential open reading frames (ORF) as cargo RNA into mitochondria using the PKTLS shuttle on the growth pattern of different mutant versions of plants. The molecular changes associated with the introduction of potential ORF into mitochondria were identified at the transcriptome level by performing RT-PCR and Next Generation Sequencing. The findings of this project were published



in a peer-reviewed journal, *Cells*, as the first author. During the second part of my Ph.D. research, I focused on understanding the mechanisms of mitochondrial DNA repair and recombination, in particular, identifying the functional significance of 5'-3' exonucleases (OEX) in mitochondria of *Arabidopsis thaliana* and studying their influence on mt DNA replication and repair. I cloned the OEX genes in fusion with the GFP protein. The fusion proteins were transiently expressed in tobacco leaves after transfection by particle bombardment. GFP fluorescence was observed with a confocal microscope. Subsequently, the mitochondrial OEX protein fused to a N-terminal His tag was expressed in bacteria and after purification with Immobilised Metal Ion Affinity chromatography (IMAC) and gel filtration, its exonuclease activity was tested on different DNA substrates. The manuscript of this part of the project is in preparation.

During my Ph.D., I realized that I am strongly motivated by the wide variety of tasks and responsibilities that come with the profession of a scientist. To extend my research experience and gain insights into plant cell signaling, in January 2022, I joined the lab of Professor Micheal Zottini, as a postdoc researcher at the Department of Biology, University of Padova, Italy. As a postdoc, I studied SOUP: signaling the organelle-folded protein response in plants by analysing the transcriptome response in particular the expression of genes (including alternative oxidase and mitochondrial heat shock proteins mtHSC70-1 and mtHSC70.5) that are associated with the mitochondrial stress response. During the stress response, the interaction between different mitochondrial complexes were studied by RT-PCR. Furthermore, it was revealed that the mutual interaction between mitochondrial complexes is related to the retardation of growth in terms of inhibition of the primary root, and elongation of the root hairs. A manuscript from this part of my research is in preparation.

Since the time I did my Ph.D. research focusing on OEX which is also involved in mitochondrial DNA repair, I became interested in exploring the factors that play key role in maintain genome stability. I am always intrigued by the complexity and interplay of different elements of DNA repair machinery. In this regard, this position offers me an ideal opportunity to explore the role of pol eta in the maintenance of genome stability. I strongly realize the potential of the project and the significance of exploring the role of pol eta, its interaction with other DNA repair factors and post translational modifications using latest techniques and genome wide high through put approaches. Furthermore, I am very impressed with your contribution to the field of genome maintenance and believe that joining your group would be the right decision to build my scientific career in the field of DNA damage and repair.



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PROJECT ACTIVITY

Year	Project

PATENTS

Patent

CONGRESSES AND SEMINARS

Date	Title	Place

PUBLICATIONS

Books
[title, place, publishing house, year ...]
[title, place, publishing house, year ...]
[title, place, publishing house, year ...]

Articles in reviews (**f**for first author and ***c**orresponding author) **Impact Factor: 75.56**

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 Mileshina, 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. Sabir, Ali, Arslan Iftikhar, Muhammad Umar Ijaz, Ghulam Hussain, Azhar Rasul, **Rana Khalid Iqbal**, Faiqa Sajid, and Haseeb Anwar. "Retrospective study of frequency of ABO and Rhesus blood group among population of Safdarabad and Faisalabad cities of Pakistan." *BMC Research Notes* 14 (2021): 1-5. **(impact factor 1.8)**



5. Amjad, Syeda Fasiha, Nida Mansoor, Israr Ud Din, **Rana Khalid Iqbal**, Ghulam Hussain Jatui, Ghulam Murtaza, Samia Yaseen et al. "Application of zinc fertilizer and mycorrhizal inoculation on physio-biochemical parameters of wheat grown under water-stressed environment." *"Sustainability"* 13, no. 19 (2021): 11007. **(impact factor 3.9)**
6. Iqbal, Javed, Sidra Kiran, Shabir Hussain, **Rana Khalid Iqbal**, Umber Ghafoor, Uzma Younis, Tayebbeh Zarei et al. "Acidified biochar confers improvement in quality and yield attributes of sufaid chaunsa mango in saline soil." *"Horticulturae"* 7, no. 11 (2021): 418. **(impact factor 2.923)**
7. Sardar, Rehana, Asma Zulfiqar, Shakil Ahmed, Anis Ali Shah, **Rana Khalid Iqbal**, Shabir Hussain, Subhan Danish et al. "Proteomic changes in various plant tissues associated with chromium stress in sunflower." *"Saudi Journal of Biological Sciences"* 29, no. 4 (2022): 2604-2612. **(Impact Factor 4.4)**
8. 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)**
9. 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)**
10. Iftikhar, Arslan, Rimsha Nausheen, Imran Mukhtar, **Rana Khalid Iqbal**, Ahmad Raza, Ayesha Yasin, and Haseeb Anwar. "The regenerative potential of honey: A comprehensive literature review." *"Journal of Apicultural Research"* 62, no. 1 (2023): 97-112. **(Impact Factor 1.9)**
11. Jamil, Hira, Adeela Awan, Atif Akbar, Muhammad Babar, Sana Akhtar, **Rana Khalid Iqbal**, and Furhan Iqbal. "A study of association between presence or absence of GSTT1 and GSTM1 and/or single nucleotide polymorphism in FABP2 and GSTP1 with incidence of diabetes type 2: A case-control study." *"Journal of Pakistan Medical Association"* 72, no. 4 (2022): 714-714. **(Impact Factor 1.002)**
12. 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)**
13. 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)**
14. Saeed, Ahsan, Zahra Rafiq, Muhammad Imran, Qamar Saeed, Muhammad Q. Saeed, Zahid Ali, **Rana K. Iqbal** et al. "In-silico studies calculated a new chitin oligomer binding site inside vicilin: A potent antifungal and insecticidal agent." *"Dose-Response"* 20, no. 2 (2022): 15593258221108280. **(Impact Factor 2.623)**



15. 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)**
16. Ali, Yasir, Sidra Iqbal, Hafiz Muhammad Aatif, Khalid Naveed, Azhar Abbas Khan, Muhammad Ijaz, Muhammad Murtaza Magsi **Rana Khalid Iqbal** et al. "Predicting stripe rust severity in wheat using meteorological data with environmental response modeling." *Journal of King Saud University-Science* 35, no. 4 (2023): 102591. **(Impact Factor 3.8)**
17. Syed, Asad, Abdallah M. Elgorban, Ali H. Bahkali, Rajalakshmanan Eswaramoorthy, **Rana Khalid Iqbal**, and Subhan Danish. "Metal-tolerant and siderophore producing Pseudomonas fluorescence and Trichoderma spp. improved the growth, biochemical features and yield attributes of chickpea by lowering Cd uptake." *Scientific Reports* 13, no. 1 (2023): 4471. **(Impact Factor 4.6)**
18. Kainat, Nermeen, Ahsan Saeed, Arslan Ali, Binish Khaliq, Sohaib Mehmood, Muhammad Qamar Saeed, **Rana Khalid Iqbal**, Sobia Khalid, and Ahmed Akrem. "In silico modeling and docking of salicylic acid revealing the sod like activity of an antimicrobial seed vicilin of capsicum annum L. VAR. grossum." *Pak. J. Bot* 55, no. 5 (2023): 1941-1949. **(Impact Factor 1.2)**
19. Zerlasht, Mehwish, Sadaf Javaria, Mian Anjum Murtaza, **Rana Khalid Iqbal**, Muhammad Yousaf Quddoos, Sajida Azhar, Asad Syed, and Abdallah M. Elgorban. "Antimicrobial potential and phyto-physio-chemical characterization of brans from wheat, oat, and rice." *Journal of King Saud University-Science* 35, no. 5 (2023): 102709. **(Impact Factor 3.8)**
20. Iqbal, Muhammad, Naveed Iqbal Raja, Said Akbar Khan, Aamir Ali, Asma Hanif, Mubashir Hussain, Tauseef Anwar **Rana Khalid Iqbal** et al. "Evaluation of Green Synthesized Silver Nanoparticles against Bacterial Pathogenic Strains of Plants." *Pak. J. Bot* 55, no. 5 (2023): 1967-1972. **(Impact Factor 1.2)**
21. Naeem, Muhammad*, Muhammad Nadeem, Hira Iqbal, Faiza Marriam, 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)**
22. Kumar, Sachin, Surinder Singh Rana, Neelam Sharma, **Rana Khalid Iqbal**, Huma Qureshi, Tauseef Anwar, Asad Syed, Abdallah M. Elgorban, and Rajalakshmanan Eswaramoorthy. "Weed phyto-sociology and diversity in relation to conservation agriculture and weed management strategies in Northwestern Himalayas of India." *Journal of King Saud University-Science* 35, no. 6 (2023): 102728. **(Impact Factor 3.8)**
23. Iftikhar, Arslan, Rimsha Nausheen, Mohsin Khurshid, **Rana Khalid Iqbal**, Humaira Muzaffar, Abdul Malik, Azmat Ali Khan et al. "Pancreatic regenerative potential of manuka honey evidenced through pancreatic histology and levels of transcription factors in diabetic rat model." *Heliyon* 9, no. 9 (2023). **(Impact Factor 4.0).**
24. Aslam, Jawaria, Mirza Imran Shahzad*, Hafiz Muhammad Ali, Mussarat Ramzan, Mohammad Zahid Mustafa, **Rana Khalid Iqbal***, Abdurahman Hajinur Hired, 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).**

25. 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).**

26. 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).**

27. 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).**

Congress proceedings

[title, structure, place, year]

[title, structure, place, year]

[title, structure, place, year]

OTHER INFORMATION

GENE BANK SUBMISSION:

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.

Declarations given in the present curriculum must be considered released according to art. 46 and 47 of DPR n. 445/2000.

The present curriculum does not contain confidential and legal information according to art. 4, paragraph 1, points d) and e) of D.Lgs. 30.06.2003 n. 196.

Please note that CV WILL BE PUBLISHED on the University website and It is recommended that personal and sensitive data should not be included. This template is realized to satisfy the need of publication without personal and sensitive data.

Please DO NOT SIGN this form.

Place and date: Multan-Pakistan , 29/05/2024