



## Personal Information

Born: 12/04 1982

Nationality: Pakistani

Address (work): Department of Biotechnology, University of Malakand, Dir (Lower), KPK, Pakistan.

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## Education

- 2013 PhD in plant molecular biology from the Department of Biological and Environmental Sciences, University of Gothenburg, Sweden. Thesis on “Vesicle transport with emphasis on chloroplasts”. ISBN: 978-91-85529-52-0. <http://hdl.handle.net/2077/32126>.
- 2007 M.Phil degree in Biotechnology and Genetic Engineering from Institute of Biotechnology and Genetic Engineering (IBGE), University of Agriculture Peshawar, Pakistan. Thesis on “To Study Ionic Specificity in Rice Response to Salt Stress”.
- 2005 B.Sc (Hons) degree in agriculture (specialization in Plant Breeding and Genetics) from NWFP University of Agriculture Peshawar, Pakistan. Special problem on “Performance of Maize hybrids for yield and yield components”.
- 2000 Higher Secondary School Certificate (Biology, Physics, Chemistry) from Board of Intermediate and Secondary Education (BISE) Peshawar Pakistan.
- 1998 Secondary School Certificate (Science) from Board of Intermediate and Secondary Education (BISE) Peshawar Pakistan.

## Work Experience

- 26/08/2019 till Present Working as Tenured Associate professor at the Department of Biotechnology, University of Malakand.
- 27/05/2013 till 25/08/2019 Working as Assistant professor (TTS) at the Department of Biotechnology, University of Malakand.
- 03/04/2013 Worked as Assistant professor on contract at the



till  
26/05/26 Department of Biotechnology, University of Malakand.

01/01/2006  
till  
31/12/2006 Worked in a project on “Cross Adaptation and Invitro Development of Salt Tolerant Lines of Rice” at Institute of Biotechnology and Genetic Engineering (IBGE), NWFP Agricultural University Peshawar, Pakistan.

16/01/2019 Selected as ”approved PhD supervisor” by Higher Education Commission for three years

## Language

Pashto, Urdu, English, Swedish (Limited understanding)

## Research interest

Plant cell and molecular biology, Chloroplast import , vesicular transport, Plant Stress Physiology, Bioinformatics etc.

## Technical Proficiency

Electroporation of cDNA into bacteria, growth of bacterial cell cultures, Cloning, Agrobacterium mediated transformation, Gel electrophoreses, western blot, PCR, protein purification, protein over expression, plasmid DNA Isolation and purification, chloroplast isolation and fractionation, in vitro transcription/translation, protein import into chloroplasts, determination of protein localization, protein-protein interaction, bioinformatics (Phylogeny, Sequence alignment, BLAST, Protein structure prediction and docking etc.).

## Other skills

Practical knowledge of various computer software programs such as word processing, data analysis, graphical presentation of data, preparation of images for publications and home page productions.

## Conferences and workshop attended

6-9 May 2009 Poster Presentation in EMBO international conference on Plant Molecular Biology, Cadiz, Spain

9-12 June 2009 Poster Presentation in workshop on “Chloroplasts- its interaction with environment” in Gothenburg University, Sweden.

26 June-July 2010 Poster presentation in international research conference on Molecular of life arranged by FEBS in Gothenburg, Sweden.

6-9 June 2012 Poster Presentation in workshop on “Interaction, modulation and analysis” at Roscoff, France.



- 29-31 August 2012 Poster Presentation in workshop attended arranged by ENPER
- 7 May 2014 Participated in one day Seminar on 'Raising Awareness on Zoonotic and Environmentally transmitted diseases', University of Malakand, Pakistan.
- 19-22 August 2014 Participated in National Conference on 'Innovative Technologies and Sustainable Development in Agriculture', Summer Campus, Bara Gali, University of Peshawar, Pakistan.
- 25 April 2016 Participated in one day seminar on 'International DNA Day Celebrations' at University of Malakand, Pakistan.
- 23-27 May 2016 Participated in workshop on 'Teaching and Research' at University of Malakand.
- 22-25 August 2016 Participated in 15<sup>th</sup> international Chemistry Conference at University of Malakand, Pakistan.
- 28-30 November 2016 Participated in National Conference 'THINK-ADAPT' at the University of Agriculture Peshawar
- 16-17 November 2016 Participated in 2<sup>nd</sup> Invention to innovation Summit, KPK, Organized by University of Engineering and Technology, Peshawar, Pakistan
- 17<sup>th</sup> December 2016 Participated in 4th International Conference on Biological and computer Sciences at Capital University of Science and Technology, Islamabad, Pakistan
- 03-07 April 2017 Participated in training Workshop on English for Academic Purposes at university of Malakand, Pakistan.
- 5-6 April 2017 Organizing an International Conference on 'Causes and Consequences of HIV/AIDS in Rural and Urban Communities in Pakistan' at university of Malakand, Pakistan
- 27-29 September 2017 Participated in 4th National Conference on 'Computational Biology and Genomics' at Hazara University Mansehra, Pakistan.
- 01-02 November Participated in training workshop on 'Quantitative data analysis using SPSS, AMOS and EVIEWS'



- 2017 at University of malakand, pakistan
- 15 November 2017 Participated and organized training workshop on " Biosafety and Biosecurity for Scientists" at University of Malakand, Pakistan.
- 3-5 January 2018 Participated in 1<sup>st</sup> International Conference on Advances in Drug Discovery and Development at Abdul Wali Khan University, Marden, from 3-5<sup>th</sup> January 2018.
- 1-2 March 2018 Participated in 1<sup>st</sup> International Conference on Strategies for Therapeutic Control and prevention of Dengue and Other Infectious Diseases in Pakistan, at University of Swabi, from 1<sup>st</sup> to 2<sup>nd</sup> March 2018.
- 25 April 2018 Participated in workshop on DNA day at University of Malakand, on 25<sup>th</sup> April 2018.
- 3-4 May 2018 Organized a National Conference on Plants from Food to Phytomedicine at university of Malakand, Pakistan from 3-4<sup>th</sup> May 2018
- 13 December 2018 Participated in 4th International Conference on Biological and computer Sciences at Capital University of Science and Technology, islamabad, Pakistan
- 18-19 April 2019 Participated in National Seminar on Healthy Food: A Tool for Quality Life at Shaheed Benazir Bhutto Women University, Peshawar from 18<sup>th</sup> to 19<sup>th</sup> April 2019.
- 25-26 April 2019 Organized in National conference on Applied Management Research for Solving Indigenous Problems at University of Malakand.
- 11-12 December 2019 Poster presented on Bacterial dehydrins, a potential source for the development of stress tolerant plants at COMSTECH, Islamabad, organized by Pakistan Biotechnology Information Center (Lahore Chapter)

## Research Projects

Received Competitive research grant of 4,5 million under the Scheme of National research program for universities (NRPU) from Higher Education Commission in 2017 (Completed)

## MPhil Student Supervised

- 1) **Ms. Shabana (2017)**, thesis title: in silico analysis of stress related dehydrin proteins in animal kingdom.
- 2) **Ms. Shahzadi (2017)** thesis title: A predicted Interactome of



Plant dehydrins and their expression profile under draught stress.

- 3) **Mr. Adnan Khan (2018)**, thesis title, Relative Expression of Dehydrin genes under Cadmium Stress in Rice Genotype.
- 4) **Mr. Anwar Said (2020)** thesis title, Heterologous Expression of Bacterial dehydrin genes in *Arabidopsis thaliana* for Stress Tolerance.
- 5) **Ms. Shehnaz Akbar (2022)** thesis title, Genome-wide Analysis of RCI2 Gene Family in Potato.
- 6) **Ms. Kainat Qayum (2022)** thesis title, Genome-wide Characterization of the Rab Gene Family in Rice by Comparative In-Silico Analysis.
- 7) **Mr. Muhammad Usman (2022)** thesis title, Evaluation of Bacterial Dehydrin gene expression in *Arabidopsis thaliana* for Arsenic Tolerance.

## Academic Responsibilities

- 1) BS semester Coordinator at Department of Biotechnology, University of Malakand, since 2022
- 2) Departmental Focal person for the Prime Minister Youth Laptop Scheme
- 3) Member of the Scrutiny Committee of BS Biotechnology Semester System, University of Malakand, Since 2013.
- 4) Member of the QEC online course evaluation Survey, Department of Biotechnology, University of Malakand, from 2014-2020.
- 5) Member of the Departmental Semester Committee, Department of Biotechnology, University of Malakand, from 2014-2020.
- 6) Member of the Selection/Purchase committee of HEC funded project, Department of Biotechnology, University of Malakand, from 2015 to 2017.
- 7) Member of the Bioethics Committee, Department of Biotechnology, University of Malakand, Since 2016.
- 8) Focal person for Anti-Plagiarism at Department of Biotechnology, University of Malakand, from 2017 to 2020.
- 9) Member of the Self-Assessment team for the Academic program of MPhil in the Department of Botany for the year 2017
- 10) Member of the Self-Assessment team for the PhD in the Department of Biotechnology for the year 2018.
- 11) Member of the GSC Committee, Department of Biotechnology, University of Malakand, from 2014-16 and 2018-24.
- 12) Member (2015) and Convener (2018, 2019, 2020, 2021, 2022) for the



Departmental Admission Committee, Department of Biotechnology,  
University of Malakand.

- 13) Member of the departmental Purchase committee, Department of Biotechnology, University of Malakand Since 2018
- 14) Member of the Board of Studies, Department of Biotechnology, University of Malakand, Since January 2020

## Book Chapter

Shahzad Ali, **Nadir Zaman Khan**, Waqar Ali, Majid Khan, Muhammad Aasim, Asmat Ali, Muhammad Usman. Heterologous Expression of Genes in Plants for Abiotic Stresses Advances in Plant Defense Mechanisms. 2022. InTech. 10.5772/intechopen.105171

## Publications

- 1) Begum, Shabana, Tariq Khan, Mubarak Ali Khan, Muhammad Zahoor, **Nadir Zaman Khan**, and Waqar Ali. "Carbon nanotubes-mediated production of biomass and phenolic compounds in callus cultures of *Fagonia indica*." *Industrial Crops and Products* 195 (2023): 116408.
- 2) Rehman, Hina, Waqar Ali, Mohammad Ali, **Nadir Zaman Khan**, Muhammad Aasim, Ayaz Ali Khan, Tariq Khan et al. "Delpinium uncinatum mediated green synthesis of AgNPs and its antioxidant, enzyme inhibitory, cytotoxic and antimicrobial potentials." *Plos one* 18, no. 4 (2023): e0280553
- 3) Rehman, Hina, Waqar Ali, **Nadir Zaman Khan**, Muhammad Aasim, and Tariq Khan. "Delphinium uncinatum mediated biosynthesis of Zinc Oxide nanoparticles and in-vitro evaluation of their antioxidant, cytotoxic, antimicrobial, anti-diabetic, anti-inflammatory, and anti-aging activities." *Saudi Journal of Biological Sciences* (2022): 103485.
- 4) Syeed Asim Billah, **Nadir Zaman Khan**, Waqar Ali, Muhammad Aasim, Muhammad Usman, Mohammad Amar Allazawai, Habib Ullah. Genome-wide in silico identification and characterization of the stress associated protein (SAP) gene family encoding A20/AN1 zinc-finger proteins in Potato (*Solanum tuberosum* L.). *PloS one*. 2022. <https://doi.org/10.1371/journal.pone.0273416>.
- 5) Hina Rehman, Muzamil Shah, Zabta Khan Shinwari, Waqar Ali, **Nadir Zaman Khan**, Muhammad Aasim, Noor Shad Bibi and Muhammad Ayaz. Total phenolic-flavonoids contents, anti-leishmanial, antimicrobial and antioxidant potentials of Pakistani tea brands and tea plant *Camellia sinensis*. *Pakistan Journal of Botany*. 2022 54(2). 667-673,. [http://dx.doi.org/10.30848/PJB2022-2\(42\)](http://dx.doi.org/10.30848/PJB2022-2(42))
- 6) Wishal Khan, Sobia Yaseen, Abdul Waheed, Zuhair Hasnain, Zahra Jabeen, Humaira Yasmin, Syed Muhammad Usman Shah, Nadir Zaman Khan, Muhammad Nadeem Hassan, Saqib Mumtaz. Cultivable bacterial community at a fresh water nullah contaminated with household sewage and industrial waste is more diverse and populated compared to non-polluted water. 2021. *Canadian Journal of Soil Science* <https://doi.org/10.1139/CJSS-2021-0019>



- 7) Saeed Ahmad, Sanaullah Khan, Alam Zeb, Syed Wadood Ali Shah, Bashir Ahmad, Ayaz Ali Khan, Waqar Ali, **Nadir Zaman Khan**, Ghazala Yasmin Zamani. Evaluation of analgesic, anti-amnesic and anti-diarrheal potentials of *Medicago denticulata* extract using animal model. Saudi Journal of Biological Sciences. 2021 28 (11), 6352-6358.
- 8) Khan, Atta Ullah, Tariq Khan, Mubarak Ali Khan, Akhtar Nadhman, Muhammad Aasim, **Nadir Zaman Khan**, Waqar Ali, Nausheen Nazir, and Muhammad Zahoor. "Iron-doped zinc oxide nanoparticles-triggered elicitation of important phenolic compounds in cell cultures of *Fagonia indica*. Plant Cell, Tissue and Organ Culture. (2021): 1-10.
- 9) Bashir Ahmad, Ali Muhammad Yousafzai, Alam Zeb, Waqar Ali, **Nadir Zaman Khan**, Muhammad Aasim, Saeed Ahmad, Shariat Ullah, Ayaz Ali Khan, Farhat Naz, Sumayya Raziq. Therapeutic role of *Typha elephantina* leaves aqueous extract in paracetamol intoxicated rabbits. Pakistan Journal of Pharmaceutical Sciences. 2021. 34 (2), 737-745
- 10) **Nadir Zaman Khan**, Shahzadi Lal, Waqar Ali, Muhammad Aasim, Saqib Mumtaz, Atif Kamil, Noor Shad Bibi. Distribution and Classification of Dehydrins in Selected Plant Species Using Bioinformatics Approach. Iranian Journal of Biotechnology. 2020. 18 (04), 56-66.
- 11) Shabana Begum, Ayesha Zahid, Tariq Khan, **Nadir Zaman Khan**, Waqar Ali. Comparative analysis of the effects of chemically and biologically synthesized silver nanoparticles on biomass accumulation and secondary metabolism in callus cultures of *Fagonia indica*. Physiology and Molecular Biology of Plants. 2020. <https://doi.org/10.1007/s12298-020-00851-w>
- 12) Muhammad Saeed. Jan, Muhammad Shahid, Sajjad Ahmad, Fida Hussain 1,3, Ashfaq Ahmad, Fawad Mahmood, Umer Rashid, Farhat Ullah, **Nadir Zaman Khan**, Muhammad Aasim, Muhammad Ayaz, Jahangir Khan, Abdullah, Haroon Rahim & Abdul Sadiq. Synthesis of Pyrrolidine-2,5-dione Based Anti-inflammatory Drug: In Vitro COX-2, 5-LOX Inhibition and In Vivo Anti-inflammatory Studies: Latin American Journal of Pharmacy, 2019: 38(11): 2287-94
- 13) Atif Kamill, Mubarak Ali Khan, Muhammad Aasim, **Nadir Zaman Khan**; Raham Sher Khan, Muhsin Jamal, Waqar Ahmad; Mir Azam Khan, Fazal Jalil. Detection of ROS and translocation of ERP-57 in apoptotic induced human neuroblastoma (SH-SY5Y) cells. BIOCELL, 2019: 43-3, 167-174
- 14) Muhammad Aasim, Muhammad H Khan, Inam U Rahman, Noor Shad Bibi, Waqar Ali, **Nadir Zaman Khan**, Abid A Khan.



Comparative analysis of the methods used for finding surface energy to investigate protein interaction behavior on chromatographic supports. *Biotechnology Progress* 2019; 35:4, e2828.

- 15) Said Nawab, Muhammad Aasim, Haris Saddique, Fazal Rabi, Waqar Ali, **Nadir Zaman Khan**. Utilization of Integrative Technique for Partial Recovery of Proteases from Soil Microbes, *Periodica Polytechnica Chemical Engineering*, 2019; 63:3, 469-477.
- 16) Fawad Mamood, Rahmat Ali, Muhammad S. Jan, Kamran A. Chishti, Sajjad Ahmad, Anwar Zeb, Sajjad Ahmad, Muhammad Ayaz, Farhat Ullah, Muhammad Aasim, **Nadir Zaman Khan**, Haroon Rahim, Muafia Jabeen. Abu N. Siddique & Abdul Sadiq Chemical Characterization and Analgesic Potential of *Notholirion thomsonianum* Extract *Latin American Journal of Pharmacy*. 2019; 38:4:807-12.
- 17) Muhammad Ayaz, Abdul Sadiq, Abdul Wadood, Muhammad Junaid, Farhat Ullah, **Nadir Zaman Khan**. Cytotoxicity and molecular docking studies on phytosterols isolated from *Polygonum hydropiper* L. *Steroids*. 2019; 141:30-35.
- 18) Haroon Rahim, Sardar Ahmad, Kamran A. Chishti, Abdul Sadique, Shahzeb Khan, Naeem U. Jan, Muhammad Kifayatullah, Fazli Amin, Nasir Ali, Sudhair Abbas & **Nadir. Zaman Khan**. Comparative Bioequivalence Studies of Various Brands of Ofloxacin Available in the Local Market of Peshawar, Khyber Pakhtunkhwa, Pakistan. *Latin American Journal of Pharmacy*. 2019; 38:1: 157-62.
- 19) Haroon Rahim, Abdul Sadiq, Shahzeb Khan, Mir A Khan, Fazli Amin, Naeem U Jan, Muhammad Shahid, Muhammad Kifayatullah, Nasir Ali, Kamran A Chishti, **Nadir Zaman Khan**. *Prunus armeniaca* and *Prunus domestica* Gums: Exploring their Synergistic Binding Potential in Tablets. *Latin American Journal of Pharmacy*. 2018; 37:8:1672-83.
- 20) Mohammad Aasim, Muhammad Hidayatullah Khan, Noor Shad Bibi, **Nadir Zaman Khan**. Protein adsorption onto Monoliths- A surface energetic study. *Engineering in Life Sciences*. 2018, 18:3: 179-186.
- 21) Ruven Jilly, **Nadir Zaman Khan**, Henrik Aronsson and Dirk Schneider. Dynamin-like proteins are potentially involved in inner membrane dynamics in Chloroplasts and Cyanobacteria. *Frontiers in Life Sciences* 2018, 206:9. 1-13.
- 22) **Nadir Zaman Khan**, Emelie Lindquist, Mohamed Alezzawi, and Henrik Aronsson. "Understanding Plastid Vesicle Transport—Could it Provide Benefit for Human Medicine? Mini reviews in medicinal





- chemistry. 2017.17:13: 1128-1139.
- 23) Karim, Sazzad, Mohamed Alezzawi, Christel Garcia-Petit, Katalin Solymosi, **Nadir Zaman Khan**, Emelie Lindquist, Peter Dahl, Stefan Hohmann, and Henrik Aronsson. A novel chloroplast localized Rab GTPase protein CPRabA5e is involved in stress, development, thylakoid biogenesis and vesicle transport in Arabidopsis. *Plant molecular biology*. 2014.84: 6. 675-692.
  - 24) Sjögren, Lars LE, Noriaki Tanabe, Panagiotis Lympereopoulos, **Nadir Zaman Khan**, Steven R. Rodermeil, Henrik Aronsson, and Adrian K. Clarke. Quantitative analysis of the chloroplast molecular chaperone ClpC/Hsp93 in Arabidopsis reveals new insights into its localization, interaction with the Clp proteolytic core, and functional importance. *Journal of Biological Chemistry*. 2014: 289:16. 11318-11330.
  - 25) Alezzawi, Mohamed, Sazzad Karim, **Nadir Zaman Khan**, and Henrik Aronsson. Gene expression pattern for putative chloroplast localized COPII related proteins with emphasis on Rab related proteins. *Plant signaling & behavior*. 2014. 9:3: e59898.
  - 26) Kasmati, Ali Reza, Mats Töpel, **Nadir Zaman Khan**, Ramesh Patel, Qihua Ling, Sazzad Karim, Henrik Aronsson, and Paul Jarvis. Evolutionary, molecular and genetic analyses of Tic22 homologues in Arabidopsis thaliana chloroplasts. 2013 *PloS one*. 8:5: e63863.
  - 27) **Nadir Zaman Khan**, Emelie Lindquist, and Henrik Aronsson. New putative chloroplast vesicle transport components and cargo proteins revealed using a bioinformatics approach: an Arabidopsis model. 2013. *PLoS One*. 8:4: e59898.
  - 28) **Nadir Zaman Khan**, Christel Garcia, and Henrik Aronsson. Genes co-expressed with CPSAR1 identified using ATTED-II. 2010. *Plant signaling & behavior*. 5:1141-1143.
  - 29) Garcia, Christel, **Nadir Zaman Khan**, Ulf Nannmark, and Henrik Aronsson. The chloroplast protein CPSAR1, dually localized in the stroma and the inner envelope membrane, is involved in thylakoid biogenesis. 2010. *The Plant Journal*. 63:1: 73-85.