

Curriculum vitae

Dr. Syed Zaigham Abbas Kazmi

Ph.D Biochemistry

University Institute of Biochemistry and Biotechnology

PMAS Arid Agriculture University Rawalpindi

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Academic Qualification

	Year of Passing	Division	Subjects	Board/University
P.hD	2019	1 st CGPA 3.70/4.00	Biochemistry	PMAS-AAUR
M. Phil	2013	1 st CGPA 3.35/4.00	Biochemistry	PMAS-AAUR
Masters	2010	1 st CGPA 3.42/4.00	Biochemistry	PMAS-AAUR
Bachelors	2008	2 nd	Bot., Zoo., Chem.	University of Punjab
Intermediate	2005	2 nd	Pre-medical	F.B.I.S.E
Matriculation	2003	1 st	Science	F.B.I.S.E

Doctor of Philosophy (Ph.D. Biochemistry)

Percentage marks obtained 75.75% (CGPA: 3.7/4.0)

Major subjects: Advances in Biotechnology, Project Monitoring and evaluation, Biological resources of Pakistan, Genetics of Plant Pathogens, and Advances in Plant pathology, Statistical designs

Research Title: Serological Characterization and Molecular diversity of *Citrus Tristeza virus* (CTV) from Khyber Pakhtunkhwa (KP) and Punjab Provinces of Pakistan

University Institute of Biochemistry and Biotechnology,
PMAS Arid Agriculture University Rawalpindi, Pakistan

Master of Philosophy (Biochemistry)

Percentage marks obtained: 71.5% (CGPA: 3.35/4.00)

Major Subject: **Advances in Biochemistry, Proteomics, numerical problems in biochemistry, Plant Molecular Biology**

University Institute of Biochemistry and Biotechnology,
PMAS Arid Agriculture University Rawalpindi, Pakistan

Master of Science (Biochemistry)

Percentage marks obtained: 72.04% (CGPA: 3.42/4.00)

Major subject: **Molecular biology, Biotechnology, Genetic Engineering, Protein Chemistry, Enzymology, Cellular Signaling and Mechanism, Microbiology, Tissue Culture etc**

Department of Biochemistry

PMAS Arid Agriculture University Rawalpindi, Pakistan

Scholarship/Distinction

- **International Research support initiative Programme (IRSIP) from Higher Education commission Pakistan**
- **Chief Minister Merit Laptop Award**

Job Experience

IPFP fellow for 1 year period from April 2022 to April 2023

April 2022 – to date

International Islamic University, Islamabad

Main responsibilities include teaching at bachelor and Masters Level. Demonstration of practicals related to the theoretical aspects. Courses I teach here are **Virology, Cell Biology, Basic Biology** and **Research Methodologies** at BS level whereas **Gene expression and Regulation** at Masters level. Along with teaching I am also involved in research activities and two Master students are doing research under my supervision.

Research Scientist

September 2019 – March 2022

DNA to Protein technologies Rawalpindi.

Main responsibilities were to conduct experiments related to research and development projects of the company related to Molecular Biology

Scientific marketing advisor

September 2018 – June 2019

World Wide Scientific, Muree road, Rawalpindi

Main responsibilities includes Marketing of the scientific instruments and products of the company especially related to Molecular Biology

Visiting Lecturer

March 2018 to January 2019

PMAS-Arid Agriculture University Rawalpindi

During this tenure I have been teaching courses of **Tissue culture technology, Plant Physiology** to BS students of Biochemistry and **Molecular Biology** to BS students of DVM

Product Specialist**Seico Scientific Services****May 2017 to August 2018**

Main responsibilities included application of molecular biology research and diagnostic reagents and instruments, QC of all products including qPCR kits and instruments, product evaluation and troubleshooting in esteemed pathology laboratories of government and private sector and provision of training to lab pathologists/technicians. Backing up the marketing staff for molecular biology kits and reagents and technical correspondence with international manufacturers of diagnostic products.

Teacher Assistant**March 2015 to July 2016**

PMAS-Arid Agriculture University Rawalpindi

Responsibilities included demonstrating Practical courses of **Molecular Biology** to the Master level students which involved DNA extractions, PCR, Agarose gel electrophoresis, SDS-PAGE, Protein isolation, DNA and protein quantifications etc.

Visiting Lecturer**October 2012-July 2016****ISRA Institute of Rehabilitation Sciences, ISRA University Islamabad Campus**

I have been a member of visiting faculty in IIRS, for four years and during the period i have been teaching **Biochemistry** to BS students and **Genetics and Molecular Biology** to Master students.

Research Experience

Research Supervisor**Department of Biological Sciences****International Islamic University Islamabad**

During the period of my employment on IPFP I am supervising two MS students for their research. These research works are entitled

- 1- Cloning and expression analysis of small heat shock protein in solanum lycopersicum** by Zubair Ahmed. This research is going on in collaboration with National institute of genomics and advanced Biotechnology (NIGAB) in National Agriculture research center (NARC). The objective of this research is to overexpress the tomato with Hsp20 gene and to analyze the upstream and downstream regulation of the transformed tomato by Real-time PCR. In future this research will be helpful in cultivation and management of tomato crops at higher temperatures
- 2- Development of CRISPR/cas12 expression construct for the prospective shelf life enhancement in tomato** by Zain Fareed. This research is also going on in collaboration with National institute of genomics and advanced Biotechnology (NIGAB) in National Agriculture research center (NARC). This research focuses on the construction of CRISPR/cas12 expression cassette through selection of target site and designing of guide RNA to knock out Hsp20 gene. This development will provide a way in future to increase the shelf life of the tomato.

PhD Biochemistry Research Project:**2014 to 2019****“Serological Characterization and Molecular diversity of *Citrus Tristeza virus* (CTV) from Khyber Pakhtunkhwa (KP) and Punjab Provinces of Pakistan”**

Ph.D. research work was focused on management of Citrus disease due to a pathogen named *Citrus tristeza virus* (CTV) which is a plant pathogenic virus belonging to the genus *Closterovirus* and family *Closteroviridae*. It is transmitted by vegetative propagation and by several aphid species. It has been reported that CTV has killed millions of citrus trees worldwide. CTV has previously been reported in Pakistan. I have carried out a survey in the year 2014 and 1260 random samples were tested from six districts of Punjab and seven districts of Khyber Pakhtunkhwa (KP). Results from DAS-ELISA revealed incidence of 28.3 percent in Punjab and 30.8 percent in KP. Seventy symptomatic samples from both the provinces were collected and tested through DAS-ELISA. The major coat protein coding gene of CTV from forty-eight ELISA positive samples were amplified, cloned into pGEM[®]-T Easy vector, sequenced and phylogenetic analysis was carried out. Nucleotide sequence analysis revealed 90-100% similarity within indigenous forty-eight isolates, 91.1 to 100 percent similarity with six isolates previously reported from Pakistan and 97.7 to 99.7 percent similarity with T₃ USA, VT USA, VT Israel, RB New Zealand, VT India and an Indian isolate of unknown genotype. A maximum likelihood phylogenetic tree indicated that CTV population is diverse in Pakistan with different isolates consisting of one major isolate, T₃, and three minor isolates, VT, RB, and VT IND. The most common group (T₃ like) is comprised of 42 Pakistani isolates including 36 of our samples and is dispersed all over the country irrespective of the region and province. The remaining three groups are related to VT Israel, VT India and RB New Zealand confined to specific regions. Lab scale antibodies were also raised against coat protein of the virus and were evaluated which gives marvelous results as compared to the other imported diagnostic tools. One coat protein gene sequence from the major clade were selected and expressed in *E. coli* Expression system. The expressed protein was purified and used to raise antibodies in rabbits. Our own produced antisera was tested by DAC-ELISA with the infected and healthy plant tissues. The ELISA readings showed positive results with the infected tissues from Pakistan and USA and negative results with the healthy tissues which confirmed the authenticity of antiserum. Results indicated that our prepared antiserum is more specific and sensitive against Pakistani CTV isolates as compare to commercially available kit.. Antisera was also tested against four different dilutions of plant extracts and results showed the sensitivity of antiserum up to 1/100 of the plant extract.

Future prospects

We can develop the antisera at commercial scale to provide farmers and researcher a cheap diagnostic tool to test the citrus trees in Pakistan and certification schemes could be introduced to generate virus free nurseries which ultimately reduce spread of the virus.

Visiting Scholar at University of Minnesota USA:

From October 2016 to April 2017 I visited department of Plant Pathology, University of Minnesota, USA where under the supervision of Prof Benham Lockhart and Prof Neil Olszowski I carried out Part of my Ph.D. research where I have learned lot of techniques related to molecular biology and plant diagnostic virology .

M.Phil. Biochemistry Research Project:

October 2010 – July 2013

“Association of Molecular Markers with Polyphenol Oxidase activity in selected Wheat genotypes”

Research work focused in improving the wheat quality which is staple food for the people of Pakistan and other Asian countries. It is established that color quality of wheat products largely depends upon Polyphenol oxidases which are copper containing enzymes induce browning in wheat based products. In our research we have made an attempt to establish the association of molecular markers with polyphenol oxidase activity in selected wheat genotypes having very high and very low PPO activities. Twelve pairs of markers were used out of which only three primer pairs viz. PPO43, PPO30 and WP2-2 yielded specific pattern discriminating high and low PPO genotypes. Cluster analysis for all 12 markers revealed that all the low PPO line share the same sub cluster, but high PPO lines were dispersed in different clusters.

Techniques Learned/Expertise

Diagnostic Virology:

Management of Plant Viral diseases through diagnosis including Immunoassays and molecular Biology based methods

Plant tissue culture and transformations

Methods in plant tissue culture and transformations including gene gun method and Agrobacterium mediated transformations

Bioinformatics

Sequence manipulations, alignments, phylogenetic analysis, PCR and primer designing, restriction digestion and analysis.

Nucleic acid extractions

DNA/RNA extractions from different samples like human blood and serum, Different Plant tissues, Algae and Fungi material.

Conventional PCR and Real time PCR

PCR optimization and trouble shooting. Absolute quantification, Relative quantification

Gene Cloning

Construct preparations via different methods and transformations in Bacterial cells

Protein expression and Purification

Induction of expression of recombinant proteins and its optimization in Bacterial cells. Protein purification by column based method and its quantification

Agarose Gel electrophoresis

Gel preparations electrophoresis of genomic DNA, RNA, PCR product and analysis of results

SDS-PAGE

Gel preparations, electrophoresis of Proteins and low molecular weight nucleic acids. Analysis of the Results

Western Blotting

Preparation, Processing and Result Analysis

Antibodies Production in model animals and evaluation

Induction of antigen in model animals especially rabbits, Antibodies production, purifications and titer analysis.

Conferences/Workshops

Organized 2 Day Real-time PCR workshop

February 23rd and 24th

Held at Department of Microbiology, Quaid-i-Azam University Islamabad

Organized a workshop on techniques in Molecular Biology

February, 2020

Held at Department of Plant Pathology, University of Sawabi, Khyber Pakhtunkhwa

One day scientific writing workshop

January 20, 2016

Held at PMAS-AAUR

2nd Realtime PCR workshop

September 4-7, 2012

Held at University Institute of Biochemistry & Biotechnology, PMAS AAUR

3-Days International Bioenergy Conference

April 18-20, 2012

Held at University Institute of Biochemistry & Biotechnology, PMAS AAUR

National Conference on trends in Biochemistry and Molecular Biology

February 21, 2012

Held at Department of Biochemistry, Quaid-i-Azam University , Islamabad

National Science Conference: Roadmap of Cutting Edge Technologies

Held at PMAS-Arid Agriculture University Rawalpindi

January 10-12, 2012

Professional Training and Certification

Attended One month academic and research training under National Faculty Development Program (15 Sep to 20 October 2021)

The training was organized by **Higher Education commission Pakistan** via online under the guidance of international Academic and research trainers' mandatory for IPFP placement. Activities included teaching methodologies, Research methodologies, Project writing, submission and conduction of impactful research

Publications

- Ahmed Zada, Ahmed Ali, Dala Naser Binjawhar, Usama K Abdel hameed, Azher Hussain shah, Shahid Maqsood gill, Irtiza Hussain, **Zaigham Abbas**, Zahidullah, Hassan Sher, and Iftikhar Ali. Molecular and physiological evaluation of bread wheat (*Triticum Aestivum L.*) genotypes for stay green under drought stress characterization of bread wheat (*Triticum Aestivum L.*) for drought resistance. *Genes* 2022, 13, 2261
- **Zaigham Abbas**, Benham Lockhart, Sara Brastch, Neil Olszewski, Dure shahwar, Malik Abdul rehman and S. M. Saqlan Naqvi. 2020. Production and evaluation of Polyclonal antibodies against homologous citrus tristeza virus isolates from Pakistan. *Journal of Animal and Plant Sciences (JAPS)* 31(4) 1052-1059
- Irtiza Hussain, Dur-e-Shawar, **Zaigham Abbas** and S.M. Saqlan Naqvi 2020. Gene cloning, recombinant expression, and purification of a rice germin like protein *OsRGLP1*. *Pak. J. Bot* 52(2), 515-518
- **Zaigham Abbas**, Shahid Hameed, Sara Bratsch, Benham Lockhart, Yusuf Zafar and S. M. Saqlan Naqvi. 2019. Variation in the coat protein gene among *citrus tristeza virus* isolates from Khyber Pakhtunkhwa (KP) and Punjab provinces, and Islamabad capital territory of Pakistan. *International journal of Agriculture and Biology*, Vol 21(6), 1221-1227
- Samina Yasmeen, Naveed Iqbal Raja, Shahid Hameed and **Zaigham Abbas**. 2018. Detection and molecular characterization of begomoviruses infecting chilli pepper. *International journal of Biosciences*, Vol 13(1), 267-271
- Nadia Majeed, Iqbal Hussain, **Zaigham Abbas**, Umar Iqbal, Tasawar. Sultana and S.M. S. Naqvi. 2016. Hetrologous expression of *OsRGLP1* gene induces resistance against Fusarium Infection in Transgenic Potato. *Pak. J. Phytopathol.*, Vol. 28 (01) 2016. 45-55
- **Zaigham Abbas** , Bushra Javaid, Nadia Majeed, Ata Ur Rehman and S. M. Saqlan Naqvi. 2016. Association of Molecular Markers with Polyphenol oxidase activity in selected Wheat Genotypes. *Pak. J. Bot.*, 48(2): 689-692

Submitted Articles

1-Ahmed Ali, Zahidullah, Hassan Sher, **Zaigham Abbas**, Awais Rasheed. Drought stress effect on stay green and chlorophyll fluorescence with focus on yield characteristics of diverse bread wheats. Submitted in **Planta. Submission # PLAA-D-22-00313**

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References

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Ex Dean Faculty of Sciences, PMAS-AAUR

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Ex Principal Scientific Officer, Crop Disease Research Institute (CDRI) National Agriculture
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Further References can be furnished on demand.