

Professional Profile of Dr. Zakia Latif

Name: Dr. Zakia Latif
Father Name: Muhammad Latif Bajwa
Designation: Associate Professor
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Mailing Address: Institute of Microbiology and Molecular Genetics (MMG) University of the Punjab Lahore-Pakistan
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Marital Status: Married (Three Children)

EDUCATION:

Post Doc (Molecular Biology) (One year)	The University of Manchester, UK	2008-2009
Ph.D (Molecular Biology)	CEMB, University of the Punjab, Lahore	2002
M.Sc (Botany)	Govt. College University, Lahore	1985

M.Sc Thesis:

Isolation and screening of carboxymethyl-cellulase producing mould cultures from the soil.

Ph.D Thesis:

Role of virulence factors in breeding resistance to *Ascochyta rabiei*.

Post Doc Research Work:

Interactions between subunits of eIF2 and eIF2B critical for protein synthesis control by eIF2 α .

Honours and Awards:

- Pride of Performance (Talent Award) by Pakistan Youth Talent Council Lahore for the best services renderer to the Council activities in 1985-1986.
- First Position in M.Sc (Botany) and Role of Honour from Govt. College University Lahore in 1987.
- Post Doc Fellowship award awarded by Higher Education Commission, Islamabad Pakistan in 2008
- Approved HEC Ph.D supervisor
- Achievement award for excellence performance in overall incharge for girls event ‘SPORTS GALA 2015’ by Department of Microbiology and Molecular Genetics, University of the Punjab.
- **Performance Evaluation Award by University of the Punjab, Lahore Pakistan:**
 - 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
- **Incentive Award on Research Publications by University of the Punjab, Lahore Pakistan:**

- 2010, 2012, 2013, 2014, 2015, 2016, 2017, 2018,2019

Employment Record:

University of the Punjab, Lahore, Pakistan
(Department of Microbiology and Molecular Genetics)

Associate Professor

(7 April, 2008 to update)

Duties and responsibilities:

- Teaching to BS, M.Sc, MS/M.Phil and Ph.D students
- Research to BS, M.Sc, MS/M.Phil and Ph.D students
- Eleven research projects completed successfully and submitted completion reports to University of the Punjab, Lahore
- Maintenance and up gradation of Research Lab 1 since 2010.
- Member Board of studied since 2009
- Member Board of Faculty of Life Sciences since 2009
- Member Departmental Doctoral Programme Committee
- Member Departmental Selection Committee since 2010
- Member Departmental Scholarship Committee since 2010
- Member admission committee M.Sc since 2008
- Member admission committee MS, M.Phil and Ph.D since 2010
- Member Study Tour Committee
- Member Student Advisory Committee since 2013
- Incharge annual repairing of Instrument since 2009
- Incharge Media Preparation Lab since 2010

As Research Officer/Lecturer

(1st.August, 2003 to 6th. April, 2008)

(Institute of Mycology and Plant Pathology)

Duties and responsibilities:

- To teach graduate, post-graduate and M.Phil/Ph.D students
- To teach graduate, post-graduate and Ph.D students in different techniques and instrumentation.
- To run research projects.
- To maintain and upgrade the labs.
- Member of purchase committee (for equipments and chemicals for labs.)

University of Manchester, UK

Faculty of Life Sciences, University of Manchester, UK

I worked on the project “Kinases that phosphorylate eIF2 and eIF2B” Funded by Biotechnology and Biological Research Council (BBSRC), UK

Duties and responsibilities:

(Jan.2007 to May 2007)

- Site Directed mutagenesis using the “Quickchange” method targeting residue Ser51 of the yeast *Saccharomyces SUI 2* gene
- Transformation of plasmid DNA in Bacteria (*E.coli*) and yeast (*Saccharomyces cerevisiae*)
- Restriction endonuclease mapping of plasmids.
- DNA sequencing determination
- Expression and purification of proteins from *E.coli* using nickel affinity chromatography
- SDS PAGE gel and western blotting detection of proteins.
- Set up of a novel *in vitro* kinase reaction to crosslink kinase and substrates together using peptide and full length protein substrates and protein kinase

Research Officer

(Aug, 1990 to July 2003)

(Center of Excellence in Molecular Biology) (CEMB)

I worked as a Research Officer at Centre of Excellence in Molecular Biology (CEMB).

Duties and responsibilities

- Established Fungal Biotechnology Lab in the Centre
- Genetic diversity of nine different isolates of *Ascochyta rabiei* varying in virulence and RAPD analysis of mutated potato cultivars.
- Microsatellite Fingerprinting
- Worked in rice and cotton biotechnology labs. and established protocols and techniques for the” molecular characterization of transgenic crops (cotton, rice and tobacco) transformed with different Bt genes.
- In-charge of research and training program of the students enrolled in M.Phil and Ph.D in the field of biochemical and molecular Biological techniques.
- Developed protocols for the production of synthetic seeds of commercially important hybrid crops first time in Pakistan
- Standardized protocols for the detection of six potato viruses
- Performed duties as a co supervisor for the project “detection of HCV in blood samples by RT-PCR”

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- Established commercially important enzymes production lab (alpha Amylase and Proteinase K)
- Maintained and upgradation of Laboratories.
- Taught graduate, post graduate, M.Phil and Ph.D students.

University College London, Gower street, London WC1E 6BT ***(Department of Biology)***

Research Assistant

(Nov.1989 to Aug.1990)

I worked as a research assistant at Department of Biology at University College London.

Duties and responsibilities

- Worked on the project "Chemical and molecular basis of chickpea resistance against *Ascochyta rabiei*".
- Training on HPLC, TLC and microscopy (light and fluorescent)
- Isolated, purified and discovered new phytotoxic compound "Cytochalasin D" that was new for the species, *Ascochyta rabiei* and conformed by NMR and mass spectrophotometry
- Received training in other different techniques

Research Fellow

(30 May, 1988 to Nov.1989)

(Center of Excellence in Molecular Biology) (CEMB)

I worked as a Research Fellow at Centre of Excellence in Molecular Biology (CEMB).

Duties and responsibilities

- Research/ training in the general laboratory techniques, use and maintenance of instruments, microbiological techniques and in the bacterial, fungal and plant biotechnology lab.

SUMMARY OF EXPERIENCES/SKILLS:

I have expertise and command over the following techniques, methods and procedures:

- All general laboratory techniques, protocols and instrumentation.
- Microbiological techniques including isolation, purification and preservation of microbes (Fungi & bacteria)
- DNA, RNA and protein extraction and purification
- Screening of recombinant plasmid
- Mini and large scale plasmid preparation

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- Expression of foreign gene through transformation in bacteria and yeast,
- Microsatellite fingerprinting
- Gene cloning.
- vector construction
- Site directed mutagenesis in SUI 2 gene at S51 site in yeast.
- Restriction enzyme analysis.
- Agarose and polyacrylamide gel electrophoresis (PAGE)
- Hybridization techniques, Southern blot analysis, Western blot analysis, Dot blot analysis, ELISA (Enzyme-Linked ImmunoSorbent Assay), DNA finger printing, Genetic diversity analysis of DNA by the use of PCR / RAPD-PCR), RT-PCR etc,
- Transformation of bacterial gene in plants by *Agrobacterium*- mediated and biolistic gun method and its expression
- Protein expression and purification.
- Experience of biotechnological techniques used for the improvement of strains (by mutation) to enhance the production of commercial important enzyme like Polygalacturonase from *Bacillus* sp.
- Characterization of toxic compounds by different bioassays, Organic and solid phase extraction of toxic compounds, Kinetic studies of toxic compounds.
- TLC, HPLC, Spectrophotometry, microscopy (light and fluorescent).
- Established protocols for the detection of six potato viruses by ELISA.
- RAPD analysis of mutated crop of potato cultivars.
- Established protocols for the” molecular characterization of transgenic crops (cotton, rice and tobacco) transformed with different Bt genes.
- Supervised the research and training program of the students enrolled in M.Phil and Ph.D in the field of biochemical, molecular biological techniques and instrumentation.
- Basic and applied plant tissue culture techniques including cell suspension, isolation of meristem, acclimatization of regenerates etc. and other plant tissue culture techniques.
- Isolation of cells/protoplasts and their viability tests
- Developed protocols for the production of synthetic seeds in carrot. for the “Production of synthetic seeds of commercially important hybrid vegetables”
- Worked on the project “detection of HCV in blood samples by RT-PCR”

Field of specialization:

- Microbiology
- Molecular Biology
- Enzymology
- Bioremediation
- Plant microbe interaction

Training:

PLANT PATHOLOGY:

Department of Biology, University College, London.

I have attended the nine months training at Department of Biology, University College, London for Plant Pathology from November 1989 to August 1990.

MOLECULAR BIOLOGY:

Jawaharlal Nehru University. New Delhi, India

Training in Molecular Biology field at Jawaharlal Nehru University. New Delhi, India from 14th January to 1st February 1994.

MOLECULAR BIOLOGY:

Faculty of Life Sciences, The University of Manchester, UK

Worked from Jan. to May, 2007, in the University of Manchester, on the project “ Kinases that phosphorylate eIF2 and eIF2B” Funded by Biotechnology and Biological Research Council (BBSRC), UK.

Other Training

- Training course on "Expression of bacterial genes in Plants" held at National Centre of Excellence in Molecular Biology, Lahore, Pakistan from 10th-24th Oct, 1992.
- COMSTECH course on "Plant Tissue Culture Techniques" at National Centre of Excellence in Molecular Biology, Lahore, Pakistan from 10th Oct. to 10th Dec.. 1992.
- SAARC training workshop on Gene Cloning held at CEMB, University of the Punjab, Lahore, Pakistan from 29th April to 12th May 1994.
- Training course on “Maintenance of eukaryotic cell lines, transfection of eukaryote cells and its expression” held at Center of Excellence in Molecular Biology, University of the Punjab, Lahore Pakistan from 26th Aug.1998 to 10th Sep.1998.
- Training course on “Awareness workshop for familiarization of teachers on farmer field school approach and training of facilitators “organized by Pakistan Agricultural Research Council, National IPM Programme NARC Islamabad from Feb. 7-9 2005 in Lahore.
- Training course on “Radiation safety awareness“ on 21st. Feb. 2007 at University of Manchester, Uk.
- Governance and management training on “Managing Human Resources in Universities” held at Institute of Administrative Sciences, University of the Punjab, Lahore on 22nd. Jan. 2011.
- Attended training course “ Punjab Employees Efficiency, Discipline and Accountability Act PEEDA Act 2006” on 8-9 Feb. 2012 held at Punjab Institute of Management and Professional Development, Government of the Punjab.
- Attended one week training course “ Office Management for Officers“ held at Punjab Institute of Management and Professional Development, Government of the Punjab from 12th. March to 16th. March 2012.

Post Doc: (One year, 2008-2009)

University of Manchester, UK

Faculty of Life Sciences, University of Manchester, UK

1. Protein eIF2 α from wild type and three mutated forms were over expressed as a His-tagged fusion protein in *E. coli* cells and purified by His-affinity column chromatography. Purified proteins were confirmed by using specific antibodies.
2. A standardized procedure for the phosphorylation of purified eIF2 α protein from wild type with purified kinase PKR has been developed. Phosphorylation at Ser 51 was confirmed by western blot analysis by reacting with phospho-specific antibodies.
3. Cloning and expression studies of Sui2 gene with mutation at I62N were completed. After cloning, mutated gene was induced, purified protein and confirmed by using specific antibodies.
4. Phosphorylation of Sui2 (eIF2 α) examined *in vivo* to determine that mutant Sui2p was efficiently phosphorylated by Gcn2p following amino acid starvation.
5. Phenotypic analysis of yeast strains containing different combination of *GCD2/GCN3* and Sui2 mutations performed by serial dilution and spotting on selective solid media including both non starvation and starvation conditions.
6. Yeast strains were constructed by plasmid transformation to overexpress trimeric complex of eIF2B (*GCD2* (δ), *GCD7* (β) and *GCN3* (α) genes), where *GCD2* has either wild type or specific point mutations that are hypothesized to interfere with recognition of phosphorylated eIF2 α . Transformed yeast strains screened by plasmid shuffling were subjected to western blot analysis which confirmed overexpression of each subunit. These strains are used in a protein-protein interaction assay.
7. Allele specific interaction between missense mutation for genetic suppressor studies was completed by growth of serial diluted cultures of indicated mutation in eIF2B δ (*GCD2*) and eIF2B α (*GCN3*) with eIF2 α mutants (D68N and I62N) under starvation conditions (3AT).
8. An assay was done to assess the interaction of phosphorylated eIF2 α with eIF2B complexes and phosphorylation of mutant forms of eIF2 α *in vitro* by PKR.
9. **Following bacterial and yeast constructs were constructed and deposited in the repository of the Dr. Graham Pavitt. Faculty of Life Sciences, University of Manchester, UK.**

List of Eight Bacterial Constructs:

pAV1916: *sui2-S51C LEU2 CEN*, Site-directed mutagenesis of pAV1226

pAV1917: His6-Sui2-S51C, site-directed mutagenesis of pAV1785

pAV1921: His6-SUI2-S51C, pAV1917 transformed into BL21 DE3 RIL (pAV1718 strain)

pAV1923: His6-SUI2-D68N, pAV1881 transformed into BL21 DE3 RIL (pAV1718 strain).

pAV1923: His6-SUI2-D68N, pAV1881 transformed into BL21 DE3 RIL (pAV1718 strain).

pAV2081: His-sui2-D68N, pAV1881 transformed in Arctic Express (DE3) RIL Competent Cells.

pAV2110: His6-SUI2-I62N, sui2 mutant cloned into pAV1867.

pAV2111: His6-SUI2-I62N, pAV2110 transformed into BL21 DE3 RIL (pAV1718 strain)

List of Eight Yeast Constructs:

GP5101: (pAV 1226 transformed in yeast), MATa ura3-52 leu2-3 leu2-112 trp1Δ63 sui2Δ[p922] [GCN4-lacZ@TRP1] [SUI2, LEU2]

GP5102: (pAV 1916 transformed in yeast), MATa ura3-52 leu2-3 leu2-112 trp1Δ63 sui2Δ[p922] [GCN4-lacZ@TRP1] [SUI2-S51C, LEU2]

GP5103: (pAV 1256 transformed in yeast), MATa ura3-52 leu2-3 leu2-112 trp1Δ63 sui2Δ[p922] [GCN4-lacZ@TRP1] [SUI2-S51A, LEU2]

GP5104: (pAV 1257 transformed in yeast), MATa ura3-52 leu2-3 leu2-112 trp1Δ63 sui2Δ[p922] [GCN4-lacZ@TRP1] [SUI2-S51D, LEU2]

GP5578: (pAV1353-Plasmid Shuffling GCD2-TRP), MATa ura3-52 trp1Δ63 leu2-3 leu2-112 gcd2Δ gcn2Δ (p1144) [GCD2 GCN3 GCD7 URA (pAV1353)]

GP5579: (pAV1858-Plasmid Shuffling GCD2-TRP), MATa ura3-52 trp1Δ63 leu2-3 leu2-112 gcd2Δ gcn2Δ (p1144) [GCD2-E377K GCN3 GCD7 URA (pAV1353)]

GP5580: (pAV 1859-Plasmid Shuffling GCD2-TRP), MATa ura3-52 trp1Δ63 leu2-3 leu2-112 gcd2Δ gcn2Δ (p1144) [GCD2-L381Q GCN3 GCD7 URA (pAV1353)]

GP5581: (pAV1860 Plasmid Shuffling GCD2-TRP), MATa ura3-52 trp1Δ63 leu2-3 leu2-112 gcd2Δ gcn2Δ (p1144) [GCD2-K627T GCN3 GCD7 URA (pAV1353)]

Research Project

(Conducted Research/ Completed)

- 1) Molecular basis of chickpea resistance against *Ascochyta rabiei* (granted by EEC)
- 2) Chemical & Molecular characterization of chickpea blight. (granted by NSRDB)
- 3) Improvement of *Tritirachium album* to enhance the proteinase K production. (**PI** granted by PU, 2005)
- 4) Molecular characterization of yeast strains (**PI** granted by University of the Punjab, 2007)
- 5) Detoxification of methylmercury pollutant by immobilized yeast (**PI** granted by the University of the Punjab, 2010).
- 6) Immobilization of Hydrogen sulfide producing strains for detoxification of methylmercury pollutants (**PI** granted by the University of the Punjab, 2011)
- 7) Isolation and characterization of mercury resistant nitrogen fixing bacteria and determination of their ability to detoxify mercury (**PI** granted by University of the Punjab, 2012).
- 8) Enhancement of Polygalacturonase production by mutation in *Bacillus* Strains. (**PI** granted by University of the Punjab, 2013).
- 9) GC-MS analysis of antibacterial activity of *Nigella sativa* against different strains of *Salmonella* causing gastro-intestinal problems and determination of their genetic diversity by microsatellite fingerprinting. (**PI** granted by University of the Punjab, 2014).

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- 10) To determine the antibacterial activity of natural plant extracts against highly drug resistant urinary tract infection (UTI) bacteria and their molecular characterization for their phylogenetic relationship. (PI granted by University of the Punjab, 2014-2015).
- 11) Isolation, characterization of common scab pathogens and effective antagonistic bacterial strains for biological control of the disease. (PI granted by University of the Punjab, 2015-2016).
- 12) Molecular characterization of MRSA isolated from tracheal tubes: their biofilm formation and control. (PI granted by University of the Punjab, 2017-2018).
- 13) Plant growth promoting bacteria from bovine manure to use as biofertilizer for sustainable vegetable farming (PI granted by University of the Punjab, 2019-2020)

Membership of the Learned Societies and Editorial Board

- Pakistan Botanical Society (life time member) since 2002
- Pakistan Society for Biochemistry and Molecular Biology.
- Mycopathological Society of Pakistan (life time member) since 2005
- Phytopathological Society of Pakistan (life time member) since 2005
- American Society of Microbiology (ASM) since 29 Jan. 2013
- Member Editorial Board of Journal “Advancements in Life Sciences” (ALS) Sep 1, 2013
- Permanent member of board evaluator of “Planta Daninha Journal” from July 11, 2016

External Examiner (BS, M.Sc, MS and M.Phil Thesis):

- Govt. College University, Lahore
- FC College University, Lahore
- CEMB/CAMB, Lahore
- Lahore College for women University, Lahore
- Govt. Degree College for Women, Cooper Road, Lahore

International Collaborations:

- **Dr. Richard N. Strang:** Department of Plant Pathology, University College London, Gower Street London, UK
- **Prof. Dr. Graham Pavitt:** Faculty of Life Sciences, University of Manchester, UK
- **Dr. Philip G. Kerr (Ph.D):** School of Biomedical Sciences, Boorooma Street, Locked Bag 588, Wagga Wagga NSW 2678, Australia.
- **Dr. Cabaleiro Sobrino Cristina:** Department of Crop Production, High Polytechnic School Lugo Campus University of Santiago de Compostela, 27002-Lugo, Spain.

National Collaborations:

- Center of Excellence in Molecular Biology, University of the Punjab, Lahore
- Department of Botany, University of the Punjab, Lahore

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- FC College University, Lahore Pakistan
- Lahore College for Women University, Lahore
- Govt. Degree College for Woman, Cooper Read Lahore
- Riphah Institute of Pharmaceutical Sciences, Riphah International University, Township, Lahore- Pakistan
- IMBB, The University of Lahore-Pakistan

Scientific Symposia/ Conferences Organized/Attended:

- 1) International Symposium-Workshop on DNA technology in the improvement of Oil Seed Crop. November, 07-08, 1989 at NARC, Islamabad
- 2) International Conference on Molecular aspects of Plant Microbial interactions, July 09-10, 1990 at University of Warwick, U.K.
- 3) International Tele-communication Symposium on Plant Biotechnology in August 16-19, 1990 at NARC, Islamabad.
- 4) SAARC Symposium workshop on the biological control of agriculturally important Plant Pests December 16-18, 1991 held at National Centre of Excellence in Molecular Biology, Lahore, Pakistan.
- 5) Third International Symposium/Workshop on the Application of DNA Technology to Agriculture and Health. 25th-28th Oct. 1992 held at CEMB.
- 6) Fourth International Symposium/Workshop on the Application of Molecular Biological Research in Agriculture, Health and Environment held in CEMB from 8-11 April 1995.
- 7) International Symposium workshop on Genomics and Computational Analysis organized by the National Centre of Excellence in Molecular Biology, Lahore, Pakistan. (Oct. 16-18, 1997)
- 8) Fifth International Symposium on the Application of Molecular Biological Research in Agriculture, Health and Environment held at the National Centre of Excellence in Molecular Biology, Lahore, Pakistan. (Oct. 14-15, 1997).
- 9) Third Biennial conference of Pakistan Society for Microbiology organized by Departmental of Microbiology, University of Karachi in collaboration with National Centre of Excellence in Molecular Biology, University of the Punjab, held in Lahore. (March 28-30, 2000).
- 10) Organized and attended and an HEC Symposium on “Awareness of Parthenium Weed”, held on 6th to 7th August 2004 at Department of Mycology & Plant Pathology, University of the Punjab, Lahore.
- 11) Member of organizing committee and attended HEC Workshop on “Identification and Conservation of Micromycetes”, held from 23rd to 28th August 2004 at the Department of Mycology & Plant Pathology, University of the Punjab, Lahore.
- 12) Member of organizing committee and attended international symposium on “Biofertilizer and Biocontrol Technology” at the Department of Mycology and Plant Pathology, University of the Punjab from 25th to 17th July, 2005.
- 13) Member of organizing committee of workshop “Identification and Conservation of Micromycetes” held from August 20-25, 2007 at the Department of Mycology & Plant Pathology, University of the Punjab, Lahore, sponsored by HEC –National Core Group Life Sciences and HEC.
- 14) Member of organizing committee of 3rd. International Conference on Plant Pathology & 7th

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- Biennial meeting of Phytopathological Society held from 19-21 November 2007 at Department of Mycology and Plant Pathology, University of the Punjab, Lahore Pakistan.
- 15) Attended Translation UK 2009 conference held at University of Warwick UK on 26-27 March 2009.
 - 16) Attended Pre-conference workshop on “Molecular haematology” venue and organized by the department of Microbiology and Molecular Genetics, Lahore on Feb., 2010.
 - 17) Member of organizing committee of symposium on “Current Agro Biotechnology and Transgenic Plants” held on 21st. June 2010 at pearl Continental Hotel organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore in collaboration with Monsanto, Pakistan.
 - 18) Attended one day interactive workshop on “Managing human resources in Universities organized by the Human Resources Development Centre (HRDC) at the Institute of Administrative Sciences (IAS), University of the Punjab, Lahore on 12th. January, 2011.
 - 19) Attended 12th. National and 3rd. International Conference of Botany organized by Pakistan Botanical Society at Quaid-e-Azam University, Islamabad-Pakistan from 1-3 Sep. 2012.
 - 20) Attended seminar on “Recent trends in diagnosis of tuberculosis” on 4th Sep. 2012 at Microbiology and Molecular Genetics, University of the Punjab, Lahore-Pakistan.
 - 21) Attended seminar on “Genomic application in dissecting soybean resistance to SDS” delivered by Dr. M.Javed Iqbal, Department of Plant Sciences, North Dakota State University, USA. On 23rd. Nov. 2012 at Microbiology and Molecular Genetics, University of the Punjab, Lahore-Pakistan.
 - 22) Attended ninth international biennial conference of Pakistan Society for Microbiology at University of Karachi, Pakistan from Jan.28-31, 2013.
 - 23) Member of organizing committee of symposium “Bio-physicochemical basis for technopreneurship” organized by department of Microbiology and Molecular Genetics and Institute of Business administration, University of the Punjab, Lahore Pakistan.
 - 24) Attended International Conference on application of molecular biology in medicine and agriculture at Quaid-e-Azam University, Islamabad, Pakistan from Aug. 20-22, 2013.
 - 25) Attended 11th Biennial Conference on Molecular Biosciences-challenges and opportunities held during Nov.25-28, 2013 at the University of the Punjab, Lahore, Pakistan organized by Pakistan society of Biochemistry and Molecular Biology.
 - 26) Attended workshop on Biosafety and risk assessment on 19th April, 2014 organized by Biosafety and Bio-resource committee at Microbiology and Molecular Genetics, University of the Punjab, Lahore-Pakistan.
 - 27) Attended International Conference on innovative biological and public health research (IBPHR) at Department of Zoology, Govt College University Lahore from May, 06-08, 2014.
 - 28) Attended 1st. International seminar on soil health reclamation approaches on June 11, 2014, organized by College of Earth and Environmental Sciences, University of the Punjab, Lahore.
 - 29) Organized and attended one day seminar on recent trends in molecular therapeutics on 19th August, 2014 at Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore.
 - 30) Organized and attended one day seminar on emerging issues of multidrug resistance: A threat to the globe on 2nd. October, 2014 at Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore.
 - 31) Attended Indigenous on-campus training program for management team from 17-21 November, 2014, organized by the University of the Punjab in collaboration with HEC at University of the Punjab, Lahore.

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- 32) Attended 2nd. International conference on biotechnology for sustainable development from November 26 to 28, 2014, on 150 years of Excellence organized by Institute of Industrial Biotechnology, GC University Lahore.
- 33) Lecture on “An Introduction to Fire Drill” organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore, January 21, 2015.
- 34) Attended two days pre-conference workshop “Parasitology and its immunological Aspects” on 13-14 February, 2015 in the Department of Microbiology & Molecular Genetics, University of the Punjab, Lahore, Pakistan.
- 35) Member organizing committee of the 10th Biannual International Conference of Pakistan Society for Microbiology, organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore on 25th to 28th March, 2015.
- 36) Participated and presented research work in the 10th Biannual International Conference of Pakistan Society for Microbiology, organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore on 25th to 28th March, 2015
- 37) Attended one day Post Conference seminar on “Beyond the Fringe: when Science moves from innovative to nonsense” by Prof. Dr. Simon Silver, University of Illinois, USA organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore, March 30, 2015.
- 38) Attended one day Post Conference seminar on “Out of Africa: Human genome diversity and Migration over the last 70,000 years” by Prof. Dr. Simon Silver, University of Illinois, USA organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore, March 31, 2015.
- 39) Attended one day Post Conference seminar on “Writing and Publishing a Scientific Manuscript: Radical Changes are now happening” by Prof. Dr. Simon Silver, University of Illinois, USA organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore, April 01, 2015.
- 40) Attended one day Post Conference seminar on “Mega viruses” by Prof. Dr. Simon Silver, University of Illinois, USA organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore, April 02, 2015.
- 41) Co-Chair a Keynote Session at Khorana Hall, Institute of Chemistry in the 10th Biannual International Conference of Pakistan Society for Microbiology, organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore on 25th to 28th March, 2015.
- 42) Sports Gala 2015: Certificate of achievement award for excellence in honor of outstanding performance and dedication (overall incharge for girl’s event).
- 43) Attended seminar on “Targeted therapies and companion diagnostics” delivered by Dr. Sairah Alvi (Consultant Global Medical Affairs, Astellas Chicago USA) organized by Department of Microbiology & Molecular Genetics, University of the Punjab on 6th October, 2015.
- 44) Attended workshop on “Research design for diagnostic studies” organized by University of Health Sciences on 5th Nov. 2015 on the occasion of 38th annual PAP conference of the societies of Pathology in collaboration with the Royal College of pathologists and British Association of Pakistan Pathologists from 6th to 8th November, 2015.
- 45) Attended 5th International / 10th National Conference of Pakistan Phytopathological Society, Crop Protection for Sustainable Agriculture, organized by Institute of Agriculture Sciences, University of the Punjab, and Lahore from 23rd to 25th. November, 2015. Presented poster on “Metabolic fingerprinting of bacterial strains isolated from northern areas of Pakistan and won 1st. Prize and Rs. 3000/- cash prize.

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- 46) Member of organizing committee and attended conference “Diversity in Microbiology: A Crosstalk” on 17th December, 2015 organized by Department of Microbiology & Molecular Genetics, University of the Punjab.
- 47) Attended “Hands-On Training on Usage of Fire Extinguishers” organized by Department of Microbiology & Molecular Genetics, University of the Punjab, Lahore, December 21, 2015.
- 48) Attended international symposium on “Advances in Molecular Biology of Plants and Health Sciences” from 29th to 31st. Dec. 2015 organized by Centre of Excellence in Molecular Biology, University of the Punjab, Lahore Pakistan.
- 49) Attended One day awareness seminar on “Zika Virus” by Dr. H. M. Kashif Saleem from United State of America organized by Department of Microbiology & Molecular Genetics, University of the Punjab, Lahore and National Academy of Young Scientist (NAYS), April 25, 2016.
- 50) Organized workshop on DNA fingerprinting: A tool to explore genetic diversity. 25-26 May, 2016, at Department of Microbiology and Molecular Genetics, University of the Punjab.
- 51) Attended One day awareness seminar on “Vaccine a Shield” by Dr. Imran Iltaf from University of Animal Sciences (UVAS) organized by Department of Microbiology & Molecular Genetics, University of the Punjab, Lahore, April 28, 2016.
- 52) Attended one day symposium on the awareness of diabetes. 14th Nov 2016, at Department of Microbiology and Molecular Genetics, University of the Punjab.
- 53) Attended international conference on “Significance of potash use in Pakistan agriculture” from 24th to 25th Nov. 2016 organized by Institute of Agricultural Sciences, University of the Punjab, Quaid-e-Azam Campus, Lahore.
- 54) Attended first international conference on “Emerging trends in Earth and Environment Sciences (ETEES 2017) organized by College of Earth and Environmental Sciences, University of the Punjab, Lahore, March 09-10, 2017.
- 55) Organized one day Symposium “Awareness on HIV/AIDS” on 30th March, 2017. Organized by Punjab AIDS Control Program (PACP) and Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore.
- 56) Organized the event title “BSL-1 Design, Budget and working: A competition” on 25th April, 2017 organized by biosafety and bio-resource committee, Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore.
- 57) Attended one day national agribusiness conference on “Green Punjab and CPEC” on 10th May 2017 at pearl Continental Hotel, Lahore organized by Institute of Agricultural Sciences, university of the Punjab, Lahore.
- 58) Organized one day seminar on “international women’s health day” on 12th May, 2017 at Department of Microbiology & Molecular Genetics, University of the Punjab, Lahore.
- 59) Attended workshop on “Next generation Sequencing (NGS) data analysis” from 21st to 23rd August, 2017 organized by Next Generation Solution (NGS-Pakistan) at the Department of Biosciences, COMSATS Institute of Information Technology, Islamabad.
- 60) Attended one day workshop “Countering Violent Extremism Orientation” on 13th September, 2017 organized by University of the Punjab and Center for Health and Gender Equality (CHANGE)
- 61) Organized seminar on “Molecular mechanism governing metal transport and it implications for improvement” on 24th Oct 2017 delivered by Dr. Khurram Bashir from Plant Genomics Net Research Team, Center for Sustainable Resource Science, Riken Yokohama Campus, 1-7-22 Sue cho, Tsurumi-ku, Yokohama City, Kanagawa, 230-0045, Japan in the Department of Microbiology Molecular Genetics, University of the Punjab, Lahore
- 62) Organized International women’s day on 8th March 2018 at the Department of Microbiology & Molecular Genetics, University of the Punjab, Lahore.
- 63) Organized World health Day on 6th April 2018 at the Department of Microbiology & Molecular Genetics, University of the Punjab, Lahore.
- 64) Organized World Environment Day on 5th June 2018 at the Department of Microbiology & Molecular Genetics, University of the Punjab, Lahore.

Professional Profile of Dr. Zakia Latif

- 65) Attended and presented oral and poster presentation in 2nd National conference “Emerging Trends in Bioinformatics and Biosciences. The conference was organized by the Department of Bioinformatics, Hazara University Mansehra from 9th to 11th August 2018.
- 66) Attended and presented three posters in 3rd International Symposium on Advances in molecular biology of plants and health sciences, Dec. 19-21, 2018 organized by Centre of Excellence in Molecular Biology, University of the Punjab, Lahore Pakistan
- 67) Attended seminar on “QS University Ranking” on 28th August 2019, in Al-Raazi Hall, Centre for Undergraduate Studies, Quaid-Azam Campus, University of the Punjab, Lahore
- 68) Attended seminar on “ideal invention towards translator application” on 22nd Oct. 2019, delivered talk by Prof. Mutalib , Faculty of Medicine, University Sultan Zainal Abidin, Malaysia
- 69) Attended seminar on “Molecular Medicine : Basic aspects towards application” on 22nd Oct. 2019, delivered talk by Dr. Aatif Amin, Faculty of Medicine, University Sultan Zainal Abidin, Malaysia
- 70) Organizer International conference on recent innovations in molecular sciences organized by the University of the Punjab, Lahore from 6th to 8th November 2019.
- 71) Attended “Peace narrative training” organized by University of the Punjab, Lahore and Center for health and gender equality (CHANGE) at Executive Club, University of the Punjab, Lahore, from 09-01-2020 to 10-01-2020.
- 72) Attended “PSHA International horticulture conference” organized by Institute of agriculture Sciences, University of the Punjab, Lahore jointly organized by SA Group, Agri Tourism development corporation of Pakistan, PSHS, from Feb. 26 to 28, 2020.

PAPERS PRESENTED TO SCIENTIFIC MEETINGS:

- Strange, N. Richard, Alam, S. S., Chen. Y. and Latif, Z. (1990). Current knowledge of the toxins produced by species of ascochyta. In abstract book on: Molecular aspects of Plant/ Microbial interaction at University of Warwick U.K 11-12.
- Latif, Z., Shahid, A. A. Rahman. Z. and Riazuddin, S.(1991). Molecular and chemical basis of virulence in chickpea blight caused by *Ascochyta. rabiei*. In proceeding of SAARC Symposium "Biological Control of Agriculturally Important Plant Pests" at National Centre of Excellence in Molecular Biology, Lahore, Pakistan pp 15-27.
- Zakia Latif; Ahmad Ali Shahid and S. Riazuddin (1995). Role of *Ascochyta rabiei* virulence factor in breeding resistance to chickpea. In Proceeding of fourth International Symposium/Workshop on the Application of Molecular Biology Research in Agriculture Health and Environmental held in CEMB from 8-11 April, 1995.
- T. Hussain, A. Jan., T. Fatima, N. Riaz, Z. Latif, A. Yasmeen, K. Malik and S. Riazuddin (2000). Transformatoin of Basmati Rice with CryIAb, CryIAc and Cry2A gene. 4th International rice genetic symposium Oct. 22-27, 2000.
- Zalia Latif (2004) Lecture/Practical on “ Mycotools of new Millennium” in HEC training workshop “Identification and Conservation of Micromycetes” held from 23-28 August, 2004 at the Department of Mycology & Plant Pathology, University of the Punjab, Lahore.
- Zalia Latif (2007). Lecture/Practical on “Characterization of fungi on molecular and biochemical basis” in training workshop “Identification and Conservation of

Micromycetes” held from August 20-25, 2007 at the Department of Mycology & Plant Pathology, University of the Punjab, Lahore, sponsored by HEC –National Core Group Life Sciences and HEC.

- Aatif Amin and Zakia Latif (2015). Paper presented “Role of IAA producing bacteria in bioremediation of mercury from industrial wastes” in 10th Biannual International Conference of Pakistan Society for Microbiology, organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore on 25th to 28th March, 2015
- Zakia Latif and Arslan Sarwar (2018). Presented paper “Biological control of potato common scab with rare Isatropolone C compound produced by plant growth promoting *Streptomyces* A1RT in 2nd National conference “Emerging Trends in Bioinformatics and Biosciences. The conference was organized by the Department of Bioinformatics, Hazara University Mansehra from 9th to 11th August 2018.

Scientific Publication:

- Ikram-ul-Haq., **Zakia Latif**, S. H. Iqbal and M. A. Qadeer. (1991). Production of cellulase by locally isolated mould cultures. *Biologia*. **37**: (1), 43-50.
- **Latif, Z.**, Strange, N. Richard., Bilton, John and Riazuddin, S.(1993). Production of the Phytotoxins Solanapyrones A and C and Cytochalasin D by nine isolates of *A.rabiei*. *Plant Pathology*. **42**: (2) 172-180.
- **Latif, Z.** and Riazuddin, S. (1994). Phytotoxic activity associated with in vitro growth of *Ascochyta rabiei* Pakistan Journal of Biochemistry and Molecular Biology. **27**: No. 1-2, 17-26.
- **Latif, Z.** and Riazuddin, S. (1995). DNA fingerprinting of *Ascochyta rabiei* with digoxigenated oligonucleotide probes. *Journal of Biological Sciences*. **3**: 87-95.
- Shahid, A. A., **Latif, Z.** and Riazuddin, S.(1998). Comparison of phytotoxin(s) production among two isolates of *Ascochyta rabiei* varying in virulence. *Pakistan Journal of Plant Sciences*. **4**(1): 1-11.
- **Latif, Z.**, Shahid, A. A. and Riazuddin, S.(1998). Production of phytotoxins in chickpea plants infected with the *Ascochyta rabiei*. *Pakistan Journal of Biochemistry and Molecular Biology*. **31**:48-60.
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- **Latif, Z.**, Nasir,A.I. and Riazuddin, S (2007) Indigenous production of synthetic seeds in *Daucus carota*. *Pakistan Journal of Botany*. **Vol. 39**, No. 3, pp 849-855.
- Abdul Hannan, Rukhsana Bajwa and Zakia Latif (2009) Status of *Aspergillus niger* for pectinases production potential. *Pakistan Journal of Phytopathology* **21**: No. 2 pp 78-83.
- Bushra Tabassum, Idrees Ahmed Nasir, Abdul Munim Farooq, Ziaur Rehman, **Zakia Latif** and Tayyab Husnain (2010). Viability assessment of *in vitro* produced synthetic seeds of cucumber. *African journal of Biotechnology*, **9**(42): pp. 7026-7032 Available online at <http://www.academicjournals.org/AJB> ISSN 1684-5315

- Irshad Ahmed; Idrees Ahmed Nasir; M. Saleem Haider; M. Arshad Javed; M. Aslam javed; **Zakia Latif** and Tayyab Husnain (2010). *In vitro* induction of mutation in potato cultivars. Pakistan Journal of Phytopathology. **22(1)**: 51-57.
- Idrees Ahmed Nasir; Bushra Tabbasum; **Zakia Latif** ; M. Aslam javed ;M. Saleem Haider; M. Arshad Javed;; and Tayyab Husnain (2010). Strategies to control Potato virus Y under *in vitro* conditions. Pakistan journal of Phytopathology. **22(1)**: 63-70
- Aatif Amin and **Zakia Latif** (2011) Isolation and characterization of H₂S producing yeast to detoxify mercury containing compounds. International Research Journal of Microbiology (IRJM) (ISSN: 2141-5463) **2(12)**: 517-525
- Shama Nazir and **Zakia Latif** (2012). Screening of natural extracts for their antibacterial activity against different enteric pathogens isolated from soil, water and rotten fruit samples. African Journal of Microbiology Research. **6(40)**: 6864-6870
- Anam Tariq and **Zakia Latif** (2012). Isolation and Biochemical Characterization of Bacterial Isolates Producing Different Levels of Polygalacturonases from Various Sources. African Journal of Microbiology Research. **6(45)**: 7259-7264.
- **Zakia Latif** and Muhammad Sohail (2012). Molecular characterization of polygalacturonase producing *Klebsiella* and *Staphylococcus* species by 16S rRNA sequencing collected from rotten fruits and vegetables. African Journal of Microbiology Research. **6(46)**: 7319-7323.
- Aatif Amin and **Zakia Latif** (2013). Detoxification of Methylmercury Pollutant by Immobilized Yeast Strain (*Candida xylopsoci*). Pakistan Journal of Botany. **45(4)**: 1437-1442.
- Arooj Yousaf Khan and **Zakia Latif** (2014). Screening of medicinal natural extracts for their antibacterial activity against *Salmonella* species. Pakistan Journal of Botany. **46**: 2269-2275.
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- Arsalan Sarwar and **Zakia Latif** (2015). GC- MS characterization of antibacterial activity evaluation of *Nigella sativa* oil against diverse strains of *Salmonella*. Natural Product Research. **29(4)**: 447-451; DOI : 10.1080/14786419.2014.947493.
- Aatif Amin and **Zakia Latif** (2015). Phytotoxicity of Hg and its detoxification through microorganisms in soil. Review article in: Advancements in Life Sciences. **2(2)**: 98-105.
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- Sarwar., **Z. Latif.**, C. Cabaleiro., C.R. Osorio. (2016). First report of *Streptomyces turgidiscabiei* and *S. stelliscabiei* causing potato common scab in Lahore Punjab, Pakistan. *Plant Disease*. **100**: 10, 2160. Online on 15 July, 2016; <http://dx.doi.org/10.1094/PDIS-03-16-0300-PDN>.
- Hira Muzamal and **Zakia Latif** (2016). Improvement of *Bacillus* strains by mutation for over production of exo-polygalacturonases. *Indian Journal of Experimental Biology*. **54**: 509-517.
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- Sarwar, **Z. Latif**, C. Cabaleiro (2017). First report of *Streptomyces turgidiscabies* causing potato common scab in Spain. *Plant Disease*. **101(9)**: 1671
- Aqsa Zaheer and **Zakia Latif** (2017). Metabolic fingerprinting of bacterial strains isolated from northern areas of Pakistan. *Pakistan Journal of Botany*, 49**(4)**: 1509-1516
- Aatif Amin and **Zakia Latif** (2017). Cloning, expression, isotope labelling, and purification of transmembrane protein MerF from mercury resistant *Enterobacter* sp. AZ-15 for NMR studies. *Frontiers in Microbiology*. **8**: 1250-1261. doi: 10.3389/fmicb.2017.01250
- Muhammad Sohail and **Zakia Latif** (2017). Prevalence and antibiogram of Methicillin Resistance *Staphylococcus aureus* (MRSA) isolated from medical device related infections; a retrospective study in Lahore, Pakistan. *Revista da Sociedade Brasileira de Medicina Tropical / Journal of the Brazilian Society of Tropical Medicine*. **50**: 680-684.
- Muhammad Sohail and **Zakia Latif** (2018). Molecular analysis, biofilm formation and susceptibility patterns of methicillin-resistance *Staphylococcus aureus* strains causing community and health care associated infections in central venous catheters. . *Revista da Sociedade Brasileira de Medicina Tropical / Journal of the Brazilian Society of Tropical Medicine*. **51**: 603-609.
- Sarwar, **Z. Latif** and C. Cabaleiro (2018). First report of *Streptomyces bottropensis* causing potato common scab in Spain. *Plant Disease*, 102**(7)**: 1445. <https://doi.org/10.1094/PDIS-11-17-1803-PDN>. **(IF 3.173)**.
- Arslan Sarwar, **Zakia Latif**, Songya Zhang, Jing Zhu, David Zechel and Andreas Bechthold (2018). Biological control of potato common scab with rare Isatropolone C compound produced by plant growth promoting *Streptomyces* A1RT. *Frontiers in Microbiology* 9:1-10 <https://doi.org/10.3389/fmicb.2018.01126>. **(IF: 4.076)**.
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- Advancement in Life Sciences 6(1): 34-40.
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 - Amin, A., Sarwar, A., Saleem, M. A., **Latif, Z.**, & Opella, S. J. (2019). Expression and Purification of Transmembrane Protein MerE from Mercury-Resistant *Bacillus cereus*. *Journal of Microbiology and Biotechnology*, 29(2), 274-282.
 - Sarwar, A., **Latif, Z.**, Zhang, S., Hao, J., & Bechthold, A. (2019). A Potential Biocontrol Agent *Streptomyces violaceusniger* AC12AB for Managing Potato Common Scab. *Frontiers in Microbiology*, 10. doi.org/10.3389/fmicb.2019.00202
 - Sarwar, A., **Latif, Z.**, Cabaleiro, C., Amin, A., & Saleem, M. A. (2019). First Report of *Streptomyces europaeiscabiei* Causing Potato Common Scab in Galicia, Spain. *Plant Disease*, <https://doi.org/10.1094/PDIS-08-18-1397-PDN>
 - Arslan Sarwar, **Zakia Latif**, Carlos R. Osorio, Cristina Cabaleiro. (2020) *Streptomyces* spp. Associated to potato common scab (PCS) in Galicia Spain. *Spanish Journal of Agriculture Research*. (**Under 3rd. revision**)
 - Dalaq Aiysha and Zakia Latif (2020). Insights of organic fertilizer micro flora of bovine manure and their useful potentials in sustainable agriculture. *PLOS ONE* | <https://doi.org/10.1371/journal.pone.0226155> December 20, 2019
 - Aatif Amin¹, Zakia Latif, Arslan Sarwar, Basit Zeshan and Mushtaq A. Saleem (2020). Molecular Characterization of Mercury Resistant Bacteria Isolated from Tannery Wastewater. *Pak. J. Zool.* pp 1-7 <https://dx.doi.org/10.17582/journal.pjz/20190426100430>
 - Roheen and Zakia Latif (2021). Characterization of Bacterial Strains from Rotten Fruits Treated with Harmful Preservatives. *Advancement in Life Sciences* (Accepted for publication)

Book Chapter:

- **Zakia Latif** and Aatif Amin (2017). Bioremediation of heavy metals for sustainable agriculture In: *Rhizotrophs: Plant growth promotion to Bioremediation*. pp 275-289, ISBN 978-981-10-4861-6; ISBN 978-981-10-4862-3 (eBook); DOI: 10.1007/978-981-10-482-3. Springer Nature Singapore Pte Ltd.

Publication in Proceedings/Abstracts:

- Ikram-ul-Haq, **Zakia Latif**, S.H. Iqbal and M.A. Qadeer. (1989). Production of cellulases by locally isolated mould cultures (Abstract) in symp: **Biotechnology for Energy**. Dec. 16-21 Faisalabad, Pakistan..
- Strange, N. Richard., Alam, S. S., Chen. Y. and **Latif, Z.** (1990). Current knowledge of the toxins produced by species of *Ascochyta*. In abstract book: *Molecular aspects of Plant/ Microbial interaction at University of Warwick U.K.*, p 11-12.
- **Zakia Latif** and Richard N. Strange. (1990). Cytochalasin production by *Ascochyta rabiei*. In abstract book: *Molecular aspects of Plant/ Microbial interaction at University of Warwick U.K.*, p 27.

Professional Profile of Dr. Zakia Latif

- **Latif, Z.**, Shahid, A. A. Rahman. Z. and Riazuddin, S.(1991). Molecular and chemical basis of virulence in chickpea blight caused by *Ascochyta rabiei*. In proceeding of SAARC Symposium "Biological Control of Agriculturally Important Plant Pests" at National Centre of Excellence in Molecular Biology, Lahore, Pakistan pp 15-27.
- **Zakia, Latif**; Ahmad Ali Shahid and S. Riazuddin (1995). Role of *Ascochyta rabiei* virulence factor in breeding resistance to chickpea in proceeding of: Fourth International Symposium/Workshop on the "Application of Molecular Biology Research in Agriculture Health and Environment" held in CEMB from 8-11 April, 1995.pp 149-154
- T.Hussain, A. Jan., T. Fatima, N. Riaz, **Z. Latif**, A. Yasmeen, K. Malik and S.Riazuddin (2000). Transformation of Basmati Rice with CryIAb, CryIAc and Cry2A gene. 4th. International Rice Genetic symposium Oct. 22-27, 2000.
- Arshad Jamal, Idrees Ahmad Nasir, Rahat Makdoom, **Zakia Latif** and S. Riazddin (2003). Molecular Detection, cloning and sequencing of capsid protein Gene of potato virus X and potato virus Y. In 7th international conference on Trends in Biochemistry and Molecular Biology, April 2-5, p 107.
- Arshad Ahmad, Idrees Ahmad Nasir, **Zakia Latif** and S. Riazuddin (2003). RAPD Analysis of mutated potato cultivar. In 7th international conference on Trends in Biochemistry and Molecular Biology. April 2-5, p. 108-109.
- **Zakia Latif** (2004). Mycotools of new millennium in Proceeding of HEC workshop on Identification and Conservation of Micromycetes organized by Department of Mycology and Plant Pathology, University of the Punjab, Lahore Pakistan from 23rd to 28th August 2004, p 10.
- **Zakia Latif** (2007). "Characterization of fungi on molecular and biochemical basis" In Proceeding of training workshop "Identification and Conservation of Micromycetes" held from August 20-25, 2007 at the Department of Mycology & Plant Pathology, University of the Punjab, Lahore, sponsored by HEC –National Core Group Life Sciences and HEC, pp 74-78.
- **Zakia Latif** and Graham Pavitt (2009). Interaction between subunits of eIF2 and eIF2B that is critical for protein synthesis control by eIF2 α phosphorylation In abstract book: Translation UK, 2009, p 31.

POSTERS PRESENTED TO SCIENTIFIC MEETINGS:

- 1) **Latif, Z.** and Strange, N. Richard.(1990). Cytochalasin production by *A. rabiei*. In abstract book on: **Molecular aspects of Plant/ Microbial interaction** at University of Warwick U.K. Page 27.
- 2) **Zakia Latif** and Graham Pavitt. (2009).Interactions between subunits of eIF2 and eIF2B that are critical for protein synthesis control by eIF2 α Phosphorylation at University of Warwick U.K on 26-27 March, 2009. Poster no.24 ,page 31.
- 3) Arooj Yousaf Khan and **Zakia Latif** (2012). "Screening of medicinal natural extracts for their antibacterial activity against *Salmonella* species" in 12th. National and 3rd. International Conference of Botany organized by Pakistan Botanical Society at Quaid-e-Azam University, Islamabad, Pakistan from 1-3 Sep. 2012. (**2nd. Prize**)
- 4) Aatif Amin and **Zakia Latif** (2013). "Bioremediation of methylmercury from the environment by immobilized yeast strains" in ninth international biennial conference of Pakistan Society for Microbiology at University of Karachi, Pakistan from Jan.28-31, 2013.
- 5) Ayesha Tariq and **Zakia Latif** (2013). "Bioremediation of mercury compounds by using

- immobilized nitrogen fixing bacteria” in International Conference on application of molecular biology in medicine and agriculture at Quaid-e-Azam University, Islamabad, Pakistan from Aug. 20-22, 2013.
- 6) Arsalan Sarwar and **Zakia Latif** (2013). “Antibacterial activity of *Nigella sativa* (Kalvanji) against different strains of Salmonella characterized by microsatellite fingerprinting and 16S rRNA sequencing” in International Conference on application of molecular biology in medicine and agriculture at Quaid-e-Azam University, Islamabad, Pakistan from Aug. 20-22, 2013 (**2nd Prize**)
 - 7) Umar Khalid and **Zakia Latif** (2014). “Determination of antibacterial activity of natural plant extracts against highly drug resistant strains of bacteria causing urinary tract infections (UTI) and their genetic relationship” in International Conference on innovative biological and public health research (IBPHR) at Department of Zoology, Govt College University Lahore from May, 06-08, 2014.
 - 8) Ayesha Tariq and **Zakia Latif** (2014). “Molecular characterization of nitrogen fixing and IAA producing bacteria to remediate mercury pollutants and use as biofertilizer” in 1st. International seminar on soil health reclamation approaches on June 11, 2014, organized by College of Earth and Environmental Sciences, University of the Punjab, Lahore.
 - 9) Aatif Amin and **Zakia Latif** (2014). “Efficiency of nitrogen fixing rhizobacteria in bioremediation of Hg from industrial wastes and their role in enhancing plant growth promoting activities” in 2nd. International conference on biotechnology for sustainable development from November 26 to 28, 2014, on 150 years of Excellence organized by Institute of Industrial Biotechnology, GC University Lahore.
 - 10) Ayesha Tariq and **Zakia Latif** (2015). Molecular characterization of IAA producing nitrogen fixing bacteria to remediate mercury and use as biofertilizer. Poster presented in 10th Biannual International Conference of Pakistan Society for Microbiology, organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore on 25th to 28th March, 2015.
 - 11) Muhammad Sohail and **Zakia Latif** (2015). Emergence of methicillin- resistant *Staphylococcus aureus* (MRSA) and recent trends in antibiotic susceptibility pattern. Poster presented in 10th Biannual International Conference of Pakistan Society for Microbiology, organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore on 25th to 28th March, 2015.
 - 12) Aqsa Zaheer and **Zakia Latif** (2015). Isolation and biochemical characterization of bacterial strains isolated from northern areas of Pakistan. Poster presented in 10th Biannual International Conference of Pakistan Society for Microbiology, organized by Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore on 25th to 28th March, 2015.
 - 13) Aqsa Zaheer and **Zakia Latif** (2015). Metabolic fingerprinting of bacterial strains isolated from northern areas of Pakistan. Poster presented in 5th International / 10th National Conference of Pakistan Phytopathological Society, Crop Protection for Sustainable Agriculture, organized by Institute of Agriculture Sciences, University of the Punjab, Lahore from 23rd to 25th. November, 2015 (**1st Prize and cash Rs. 3000/-**).
 - 14) Muhammad Sohail and **Zakia Latif** (2015). Antibiotic resistance pattern and distribution of *mec* and *cna* gene among biofilm producing Methicillin Resistance *Staphylococcus aureus* (MRSA) isolated from wounds. Poster presentation in International Symposium on Advances in Molecular Biology of Plants and Health Sciences organized by the Centre of Excellence in Molecular Biology, University of the Punjab, Lahore Pakistan on 29th to 31st December 2015.
 - 15) Arsalan Sarwar and **Zakia Latif** (2015). GC-MS analysis and evaluation of antibacterial

- activity of *Nigella sativa* oil against diverse strains of *Salmonella*. Poster presentation in International Symposium on Advances in Molecular Biology of Plants and Health Sciences organized by the Centre of Excellence in Molecular Biology, University of the Punjab, Lahore Pakistan on 29th to 31st December 2015.
- 16) Dalaq Aiysha and **Zakia Latif (2017)**. Characterization of bacterial strains from bovine manure and their growth promoting parameters for sustainable vegetable farming as biofertilizer. Presented poster in 1st International conference “Conventional and Modern Approaches in Plant Sciences (CMAPS-2017)”. The conference was organized by the department of Botany, University of the Punjab, Lahore from 28th to 29th Nov. 2017.
 - 17) Dalaq Aiysha and **Zakia Latif (2018)**. Plant growth promoting parameters of isolated bacterial strains from bovine manure for sustainable vegetable farming as biofertilizer. Presented poster in 2nd National conference “Emerging Trends in Bioinformatics and Biosciences”. The conference was organized by the Department of Bioinformatics, Hazara University Mansehra from 9th to 11th August 2018. **(2nd position)**
 - 18) Roheen and **Zakia Latif (2018)**. Characterization of bacterial strains from rotten fruits treated with harmful preservatives. Presented poster in International Symposium on Advances in Molecular Biology of Plants and Health Sciences organized by the Centre of Excellence in Molecular Biology, University of the Punjab, Lahore Pakistan on 19th to 21st December 2018.
 - 19) Dalaq Aiysha and **Zakia Latif (2018)**. Effect of diversified isolated bacterial population on tomato cultivation. Presented poster in International Symposium on Advances in Molecular Biology of Plants and Health Sciences organized by the Centre of Excellence in Molecular Biology, University of the Punjab, Lahore Pakistan on 19th to 21st December 2018.
 - 20) Aisha Azhar and **Zakia Latif (2018)**. Biochemical and metabolic characterization of soil microflora from vegetable farm. Presented poster in International Symposium on Advances in Molecular Biology of Plants and Health Sciences organized by the Centre of Excellence in Molecular Biology, University of the Punjab, Lahore Pakistan on 19th to 21st December 2018.
 - 21) Dalaq Aiysha and **Zakia Latif (2019)**. Presented a poster “multi-factorial effect of plant growth promoting bacteria isolated from bovine manure on turnip growth” in international conference on “recent innovations in molecular sciences organized by the University of the Punjab, Lahore from 6th to 8th Nov. 2019.
 - 22) Dalaq Aiysha and **Zakia Latif (2020)**. Presented poster “impact of PGPB from bovine manure on vegetable farming for green and sustainable environment” in PSHS international horticulture conference organized by Institute of Agriculture Sciences and SA Group, Agri. Tourism development corporation of Pakistan PSHS from Feb. 26-28-2020.

NUCLEOTIDE SEQUENCES REPORTED: (NCBI, GENBANK)

(18S rDNA, 16S rDNA, Mer A , MerB, txtAB and nec1 gene sequencing:)

Yeast strains and accession numbers: (18S rDNA sequencing)

Candida etchellsii KF472163; KF472164; *Pichia kudriavzevii* KF472165, KF472166, JF896572, JF896573 ; *Candida tropicalis* KF472167, JF896569; *Candida intermedia* KF472168; *Clavispora lusitaniae* KF472169; *Kluyveromyces marxianus* KF472170; *Hanseniaspora uvarum* KF47217; *Hanseniaspora guilliermondi* KF472172; *Meyerozyma guilliermondii* KF472173;

Candida rugose JF896570, JF896571; *Candida xylopsoci* JF896574; *Candida inconspica* JF896575

Bacterial strains accession numbers: (16S rDNA sequencing)

KT270481;KT270482;KT270483;KJ675626;KJ675627; KJ675628; KJ675629; KJ675630; KJ675631; KJ675632; KJ675633; KJ728670; KJ728671; KJ728675; KJ728678; JX185640; JX185641; JX185642; JX185643; JX185644; JX185645; JX185646; JX185647; JX185648; JX185649; JX185650; JX185651; JX185652; JX185653; JX185654; JX185655; JX185656; JX185657; JX185658; JX185659; JX185660; JX129164; JX129165; JX129166; JX129167; JX129168; JX129169; JX129170; JX129171; JX129172; JX129173; KM095952; KM095953; KM095954; KM095955; KM095956; KJ736011; KJ736012; KJ736013; KJ736014; KJ736015; KJ736016; KJ736017; JQ990296; JQ990297; JQ990298; JQ990299; JQ990300; JQ990301; JQ990302; JQ990303; JQ990304; JQ990305; JQ990306; JQ990307; JQ990308; JQ990309; JQ990310; JQ990311; JQ990312; JQ990313; JQ990314; JQ990315; JQ990316; JQ990317; KT273321; KT273322; KT273323; KT273324; KT273325; KT273326; KT273327; KT362713; KT362714; KT362715; KT362716; KT362717; KT362718; KT366025; KT366033; KT366026; KT366027; KT366028; KT366034; KT366029; KT366035; KT366030; KT366037; KT366031; KT366032; KT366036;

MerA gene sequencing:

Bacillus sp. KT270477; *Bacillus cereus* KT270478; KT270479; *Bacillus thuringiensis* KT270480

MerB gene sequencing:

Bacillus sp. KT783452; *Bacillus cereus* KT783453, KT783454; *Bacillus thuringiensis* KT783455

txtAB and nec1 gene sequencing

Streptomyces turgidiscabiei txtAB LN880525; *Streptomyces bottropensis txtAB* LN880527; *Streptomyces europaeiscabiei txtAB* LN880529

Streptomyces turgidiscabiei nec1 LN880526; *Streptomyces bottropensis nec1* LN880528; *Streptomyces europaeiscabiei nec1* LN880530

TEACHING EXPERIENCES

1994-2003 (In CEMB, PU)

- Toxicology, Recombinant DNA technology, Molecular Plant Virology and Molecular Biological techniques (PCR, Southern blot analysis, Western blot analysis, ELISA etc.) to M.Phil and Ph.D students

2003-2004 (MPPL, PU)

- Lower fungi to B.Sc (Hons.): Theory and Practical

Professional Profile of Dr. Zakia Latif

- Soil and Agricultural Microbiology to Ph.D: Theory and Practical

2004-2005

- Diseases of fruit and vegetables to B.Sc (Hons.) Theory and Practical
- Plant Pathogens other than fungi to M.Sc (Hons.) Theory and Practical
- Disease resistance to M.Sc (Hons.) Theory
- Phytopathogenic Bacteria, Viruses and Nematodes to B.Sc (Hons.) Theory and Practical

2005-2006

- Disease Resistance to B.Sc. (Hons.); Theory
- Phytobacteriology to M.Sc (Hons.); Theory and Practical
- Internship B.Sc (Hons) students

March 2006-May 2007

On Ex-Pakistan leave

2007-2008 (MPPL, PU)

- Disease Resistance to M.Sc (Hons.); Theory
- Host Pathogen Interaction to M.Sc (Hons.); Theory and Practical
- Recombinant DNA technology to M.Sc (Hons.) and Ph.D; Theory and Practical
- Phytobacteriology to M.Sc (Hons.); Theory and Practical
- Internship B.SC (Hons) students

Part time (Department of Botany)

- Plasmid, Episomes and Insertion Sequences to M.Sc (Hons.); Theory and Practical

Oct. 2008-Sep 2009

Post Doc. (From The University of Manchester, UK)

2010-2011 (MMG, PU)

- Environmental Microbiology to B.S; Theory and Practical
- Virology to B.S and M.Sc; Theory and Practical
- Gene Therapy to B.S and M.Sc; Theory
- Advance Topics in Molecular Biology to B.S; Theory and Practical
- Special Paper to MS/ M.Phil
- Research to BS, M.Sc, MS/ M.Phil and Ph.D students

2012-2013 (MMG, PU)

- Virology to B.S and M.Sc; Theory and Practical
- Gene Therapy to B.S and M.Sc; Theory
- Cytogenetics to BS; Theory and Practical
- Advance Topics in Molecular Biology to B.S; Theory and Practical
- Problems in Molecular Genetics to Ph.D
- Research to BS, M.Sc, MS/ M.Phil and Ph.D students

2014-2015 (MMG, PU)

- Virology to M.Sc; Theory and Practical
- Gene Therapy to B.S and M.Sc; Theory
- Cytogenetics to BS; Theory and Practical

Professional Profile of Dr. Zakia Latif

- Research to BS, M.Sc, MS/ M.Phil and Ph.D students

2015-2016 (MMG, PU)

- Fingerprinting and DNA Fingerprinting to MS and M.Phil
- Virology to M.Sc; Theory and Practical
- Gene Therapy to B.S and M.Sc; Theory
- Cytogenetics to BS; Theory and Practical
- Research to BS, M.Sc, MS/ M.Phil and Ph.D students

2016-2017 (MMG, PU)

- Fingerprinting and DNA Fingerprinting to MS and M.Phil
- PCR Lab techniques to Ph.D
- Gene Therapy to B.S Theory
- Cytogenetics to BS; Theory and Practical
- Research to BS, M.Sc, MS/ M.Phil and Ph.D students

2017-2018 (MMG, PU)

- Fingerprinting and DNA Fingerprinting to Ph.D
- Northern and southern blotting Lab Techniques to MS and M.Phil.
- Gene Therapy to BS; Theory
- Cytogenetics to BS; Theory and Practical
- Research to BS, M.Sc, MS/ M.Phil and Ph.D students

2018-2019 (MMG, PU)

- Fingerprinting and DNA Fingerprinting to Ph.D
- Northern and southern blotting Lab Techniques to MS and M.Phil.
- Gene Therapy to BS; Theory
- Cytogenetics to BS; Theory and Practical
- Research to BS, M.Sc, MS/ M.Phil and Ph.D students

2019-2020 (MMG, PU)

- PCR Lab Techniques to Ph.D
- Northern and southern blotting Lab Techniques to MS and M.Phil.
- Gene Therapy to BS; Theory
- Cytogenetics to BS; Theory and Practical
- Research to BS, MS/ M.Phil and Ph.D students

2020-2021 (MMG, PU)

- PCR Lab Techniques to Ph.D
- Northern and southern blotting Lab Techniques to MS and M.Phil.
- Gene Therapy to BS; Theory
- Cytogenetics to BS; Theory and Practical
- Research to MS/ M.Phil and Ph.D students

THESIS SUPERVISED:

Ph.D: (Completed)

Aatif Amin: (2018) Title of Thesis: “Molecular characterization of microorganisms to detoxify

mercury pollutants and their role in enhancing plant growth”.

Arslan Sarwar: (2018)

Title of Thesis: “Isolation and identification of causative agent of potato common scab and characterization of effective antagonistic bacteria as biological control of disease”

Muhammad Sohail: (2019)

Title of Thesis: “Prevalence of *Staphylococcus aureus* in surgical tubes and their gene study in relation to osteomyelitis development in human”.

Ph.D: (Under supervision)

Imran Hanif: (2015) (Thesis writing)

Title of Thesis: “Bio control of devastating effect of *Colletotrichum falcatum* (Sugarcane red rot) through genetically engineered bacterial protein”.

Daliq Ayesha (2016) (thesis writing)

Title of Thesis: “Isolation and molecular characterization of plant growth promoting bacteria from bovine manure to use as biofertilizer for seasonal vegetable farming”.

Saman (2017)

Title of Thesis: “Molecular characterization of cholesterol degrading LAB from human and animal sources”.

M.Phil /MS:

Attif Amin: (2011)

Title of Thesis: “Detoxification of Methyl mercury pollutant by immobilized yeast strains”.

Farah Khan: (2012)

Title of Thesis: “Molecular characterization of polygalacturonase producing bacterial strains collected from different sources”.

Hira Muzzamal: (2012)

Title of Thesis: “Enhanced production of polygalacturonase by mutation in *Bacillus* strains”.

M. Sohail Choudhery: (2012)

Title of Thesis: “DNA finger printing of polygalacturonase producing *Pseudomonas* and *Bacillus* species”.

Arslan Sarwar: (2013)

Title of Thesis: “Antibacterial activity of *Nigella sativa* (Kalvanji) against different strains of *Salmonella* characterized by microsatellite fingerprinting”.

Ayesha Tariq: (2014)

Title of Thesis: “Molecular characterization of IAA producing nitrogen fixing bacteria to remediate mercury”.

Fatima Nafisa Nasir: (2015)

Title of Thesis: “Molecular characterization of cellulose degrading bacteria isolated from different sources”.

Anwar Ul Haq: (2016)

Title of Thesis: “ Characterization of cellulose E producing bacterial strains from soil and rotten fruits”.

Aqsa Zaheer: (2017)

Title of Thesis: “Impact of topographic changes on the genetic profiling of microbial communities”.

Nousheen Shafaqat: (2018)

Title of Thesis: “Screening of bacterial strains for cellulase production: Amplification and sequencing of the cellulase D gene”.

Maria Rafique: (2018)

Title of Thesis: “Gastroenteritis microflora from spoiled food: Drug response and control remedies”.

Roheen Naseem: (2019)

Title of Thesis: “Molecular characterization of celD gene in different bacterial strains by RFLP and microsatellite fingerprinting”

Azeem Javed: (2020)

Title of Thesis: “Metabolic and genetic fingerprinting of bacterial strains from Saudi Arabia soil samples”

Asim Ullah: MS (2020)

Title of Thesis: “Antagonistic activity of probiotic Lactibacilli against gastrointestinal and UTI pathogens”.

Kiran Nisa: MS (2020)

Title of Thesis: “Screening of herbal products for antimicrobial activity against gastroenteritis causing bacteria isolated from milk and milk products”.

Aqsa Mahmood: MS (2021). In progress

Title of Thesis: “Characterization and evaluation of probiotic Lactobacilli as a therapeutic agent isolated from different samples of yogurt”.

Zainab : MS (2021). In progress

Title of Thesis: “Abilities of Bacillus species from Saudi Arabian soil characterized by microsatellite fingerprinting to enhance the germination of mung bean and radish seeds ”.

M.Sc.:

Department of Mycology and Plant Pathology:

Sidra Mushtaq, Nausheen Sharif, Maria Ahsan and Madiha Fatima Kazmi (2007)

Title of Project: “Bacterial isolation and identification of plant disease material”

Saira Jabeen, Rabia Kalsoom, Ambrin Ilyas and Amna Mukhtar (2007)

Title of Project: “ Isolation and characterization of phytobacteria”.

Amna Ali, Rukhshanda Munir, Rifat Yasmeen, Ghazala Shafique and Mehwish Jabeen (2007)

Title of Project: “Isolation and characterization of phytopathogenic bacteria”

Sana Hanif, Sara Samad, Safida Anwar and Ayesha Ghani (2007)

Title of Project: “Isolation and characterization of plant pathogenic bacteria from different samples”

Syed Zahid Zafar Ali (2008)

Title of Project: “Phytopathological techniques”

Department of Microbiology and Molecular Genetics, PU, Lahore

Amira Rafique: (2012)

Title of Thesis: “Molecular characterization of Nitrogen fixing bacteria capable of Hg bioremediation”.

Sumera Tariq: (2013)

Title of Thesis: “Isolation and characterization of nitrogen fixing *Pseudomonas* capable of mercury detoxification”.

Nagina Mobeen: (2014)

Title of Thesis: “Isolation and characterization of nitrogen fixing *Enterobacter* spp. Capable of mercury detoxification”.

Mohtasham : (2015)

Title of Thesis: “Metabolic fingerprinting and molecular characterization of bacterial strains isolated from drinking water of Lahore, Pakistan”.

Maida Bashir: (2016)

Title of Thesis: “Physical and Microbiological status of pasteurized and raw milk collected from different regions of Lahore”.

Aisha Azhar: (2017)

Title of Thesis: “Metabolic fingerprinting of soil microflora from vegetable farm”.

Attiya Hameed (2019)

Title of Thesis: “Characterization of probiotic lactic acid producing bacteria isolated from

traditional Persian pickled vegetables”.

B.Sc. (Hons.):

Anum Tariq: (2011)

Title of Thesis: Isolation and characterization of bacterial strains producing different levels of polygalacturonase from various sources.

Arooj Yousaf Khan: (2011)

Title of Thesis: Screening of different medicinal natural extracts for their antibacterial activity against *Salmonella* species isolated from various habitats.

Shama Nazir: (2011)

Title of Thesis: Antimicrobial activity of different natural extract against enteric pathogens isolated from rotten food samples.

Ayesha Tariq: (2012)

Title of Thesis: “Bioremediation of mercury compounds by using immobilized nitrogen fixing bacteria”.

Muhammad Shahzad Ali: (2013)

Title of Thesis: “Molecular characterization of yeast strains by Restriction Fragment Length Polymorphism”.

Umair Munawar: (2014)

Title of Thesis: “Comparison of mercury detoxification abilities of nitrogen fixing bacterial strains isolated from different sources”.

Umar Khalid: (2014)

Title of Thesis: “Determination of antibacterial activity of natural plant extracts against highly drug resistant strains of bacteria causing urinary tract infection (UTI) and their genetic relationship”.

Aqsa Zaheer: (2015)

Title of Thesis: “Metabolic fingerprinting of bacterial strains isolated from northern areas of Pakistan”.

Hadiqa Jaleel: (2016)

Title of Thesis: “Metabolic fingerprinting of bacterial strains for pectinase and cellulose production”.

Roheen: (2017)

Title of Thesis: “Characterization of bacterial strains from rotten fruits: their resistance against different metal and drugs”.

Hafiza Aasia Malik: (2018)

Professional Profile of Dr. Zakia Latif

Title of Thesis: “Silver nanoparticles formation and their use against MRSA”.

Huda Barakullah: (2019)

Title of Thesis: “Biochemical and metabolic characterization of bacterial isolates from different soil samples of Saudi Arabia”.

Maliha Jabeen Butt: (2020)

Title of Thesis: “Antibacterial activity of black seeds and cinnamon against bacterial strains isolated from water samples of Lahore and Sheikupura”.

Afifa Noor: (2020)

Title of Thesis: “Determination of antibacterial activity of different herbs against bacterial strains isolated from contaminated food”.

Administrative Responsibilities:

- Member Board of studied since 2009 in PU
- Member board of studies in the subject of Microbiology ,University of Central Punjab since 2015
- Member board of studies CAMB since 2018 to date
- Member Board of Faculty of Life Sciences since 2009
- Member Departmental Doctoral Programme Committee
- Member Departmental Selection Committee since 2010
- Member Departmental Scholarship Committee since 2010
- Member admission committee M.Sc since 2008
- Member admission committee MS, M.Phil and Ph.D since 2010
- Member Student Advisory Committee since 2013
- Member of departmental council for considering the disciplinary cases of students for academic year 2013-2014
- Member of departmental tenure review committee (DTRC)(2014-2019)
- Member of committee to conduct Ph.D seminar after submission of synopsis
- Incharge annual repairing of Instrument since 2009
- Incharge Media Preparation Lab since 2010
- Maintenance and up gradation of Research Lab 1 since 2010.

THESIS SUPERVISION:

Ph.D, MS/ M.Phil, M.Sc and BS students