

CURRICULUM VITAE OF

PROF. DR. FARAH RAUF SHAKOORI

1. **NAME OF FATHER:** Sh. Abdul Aziz (late)
2. **NAME OF HUSBAND:** Prof. Dr. Abdul Rauf Shakoori,
Distinguished National Professor and Professor Emeritus, School of Biological Sciences, University of the Punjab, Lahore.
3. **PRESENT ADDRESS:** Institute of Zoology,
University of the Punjab, Lahore.
4. **N.I. CARD NO:** 35202-2290205-4
5. **PRESENT POSITION:** Professor of Zoology
University of the Punjab, Lahore.
6. **RESEARCH INTEREST:** Molecular Biology (Regulation of Cell Growth, Tumor genesis), Environmental Biotechnology
7. **IMPACT FACTOR** 173.855
8. **TOTAL CITATION** 2563 (According to Google scholar)
9. **h- index & i10-index** 27 & 50
10. **AWARDS**
HEC Approved Supervisor
Higher Education Commission
(Since 2004 –Continuing)

Prof. Dr. Mirza Azhar Beg Gold Medal (2005)
Awarded by Zoological Society of Pakistan

Productive Scientist of Pakistan (Since 2007 – Continue. Awarded by Pakistan Council for Science and Technology

Prof. A. R. Shakoori Gold Medal (2008)
Awarded by Zoological Society of Pakistan.

PAS Gold Medal 2014 with Cash Prize Rs.35, 000/-
Awarded by Pakistan Academy of Science.

Zoologist of the year award 2020 with Cash Prize Rs.15, 000/- Awarded by the Zoological Society of Pakistan.

11. **ACADEMIC QUALIFICATIONS:**

1. **Ph.D;** Cell and Molecular Biology, University of Massachusetts Medical Centre, Worcester, USA and Department of Zoology, University of the Punjab, New Campus, Lahore, 1997.
2. **M.Sc;** Punjab University, Lahore; 1989; Ist. Division (736/1200); Subjects: Zoology (Cell Biology, Developmental Biology, Physiology, Genetics, Biochemistry, Environmental Biology, Evolution, Palaeontology, Zoogeography, Wildlife, Taxonomy, Microbiology).
3. **B.Sc.;** Govt. College for Women, Samanabad, Lahore; 1986; 2nd Division (410/800); Subjects: English, Botany, Zoology, Chemistry, Pak. Studies, Islamiyat.
4. **Intermediate; (Pre-Medical);** Govt. APWA College for Women, Lahore; 1984; 2nd Division (619/1100); Subjects: Physics, Chemistry, Biology, English, Urdu, Pak. Studies, Islamiyat.
5. **Matriculation;** Tehzibul-binat High School, Lahore; 1981; Ist. Division (525/850); Subjects: English, Physics, Chemistry, Biology, Math., Pak. Studies, Urdu, Islamiyat

12. **TEACHING/JOB EXPERIENCE**

Sr.	POSITION	DATES	SALARY/ Grade	JOB DESCRIPTION
1.	Professor of Zoology, University of the Punjab, Lahore.	26 th August 2020	BPS – 21	Teaching P.hD and M.Sc. and B.Sc Hons classes and supervising research work of B.Sc. (Hons), M.Phil. And Ph.D. students.
2.	Associate Prof. of Zoology, University of the Punjab, Lahore.	3 rd May, 2011-continuing	BPS – 20 Rs 109680	Teaching P.hD and M.Sc. and B.Sc Hons classes and supervising research work of B.Sc. (Hons), M.Phil. And Ph.D. students.
3.	Associate Prof. of Zoology, GC University, Lahore	1 st April 2010 – 2 nd May, 2011	BPS – 20 Rs 4,855.00	Teaching B.Sc. (Hons) and M.Phil and Ph.D classes and supervising research work of B.Sc (Hons), M.Phil and Ph.D students.
4.	Assistant Prof. of Zoology, GC University, Lahore	April 9th, 2004-March,31 st 2010	BPS – 19 Rs 12,730.00	Teaching courses of Biochemistry and conducting Practical of Biochemistry to B.Sc. Hons. Classes. Teaching Microbiology and Biotechnology and conducting Practicals to B.Sc. Hons classes. Teaching to PhD Class, besides supervising research projects of PhD, Mphil and B.Sc. Hons

				students.
5.	Lecturer in Zoology, Government College, Lahore	July 12th, 2000-April, 8 th 2004	BPS – 17 Rs 10,395.00	Teaching courses on Biotechnology and conducting practical on Biochemistry to postgraduate classes, Cell Biology and Research Methodology to Graduate classes, besides teaching Advanced Biotechnology to M. Phil Students and Biology to F. Sc. Classes.
6.	Research Scholar, Department of Zoology, Punjab University	Oct., 1997-Oct., 1998	Rs. 4,500	Conducted Cell Biology Practical to M.Sc. classes
7.	Research Associate of Department of Zoology, Punjab University	Nov. 1, 1996 to Sept. 1997	Rs. 4,500	Conducted experiments in PSF-funded Research Project on Environmental Toxicology
8.	Graduate Research Assistant, Department of Cell Biology, U Mass Medical Center, Worcester, MA, USA	July 1992-April 1996 0	US \$1300	a) Research on “Transcriptional control of Histone protein genes during the cell cycle of HeLa cells” b) Demonstrated various molecular biology techniques to graduate students of the Department.
9.	Research Scholar of Department of Zoology, University of the Punjab	April 13, 1991- July 30, 1992	Rs 2,500	a) Assisted research projects b) Conducted Molecular Biology Practical to M.Sc. classes
10.	Research Officer, Department of Zoology, University of the Punjab	February 1, 1990-April 4, 1991	Rs 2000	Performed experiments in NSRDB Research Project on Toxicological effects of synthetic pyrethroids on the growth and metabolism of poultry.

13. RESEARCH EXPERIENCE

Sr.No	Period	Under the Supervision of/Collaboration/ Principal investigator	Nature of work
1.	1988-1990	Dr. A.R. Shakoori, Cell & Molecular Biology Laboratory, Department of Zoology, University of the Punjab, New Campus, Lahore	Toxicological effects of Talstar (Bifenthrin) on hematological and biochemical components of blood of rabbit, <i>Oryctolagus cuniculus</i> . (Wrote thesis for M.Sc. degree)
2.	February, 1990 April, 1991	Dr. A.R. Shakoori, Cell and Molecular Biology Laboratory, Department of Zoology, University of the Punjab, New Campus, Lahore.	Toxicological effects of synthetic pyrethroid on the quality and growth of Poultry in Pakistan.
3.	April, 1991 June, 1992	Dr. A.R. Shakoori, Cell and Molecular Biology Laboratory, Department of Zoology, University of the Punjab, New Campus, Lahore.	Studies on hazards of chemical pollutants to fish life, using fish blood as an indicator of aquatic pollution in industrialized areas of Punjab.
4.	1992	Dr. A.R. Shakoori, Cell and Molecular Biology Laboratory, Department of Zoology, University of the Punjab, New Campus, Lahore.	Studies on specificity of <i>Bacillus thuringiensis</i> toxin to agricultural pests. The objective was to identify B-endotoxin gene borne plasmids of local strains of <i>Bacillus thuringiensis</i> and transform endogenous bacteria of non-coleopterous, and non-lepidopterous insects with these plasmids to expand their insecticidal specificity.

5.	1992-1996	Drs. Gary Stein, Janet Stein and Andre Van Wijnen, Department of Cell Biology, University of Massachusetts Medical Centre and Comprehensive Cancer Centre, Worcester, USA, in conjunction with Dr. A.R. Shakoori, Cell and Molecular Biology Laboratory, Department of Zoology, University of the Punjab, New Campus, Lahore, Pakistan.	Transcriptional control of histone nucleosomal protein genes during the cell cycle of HeLa cervical carcinoma cells. The goal of these studies was to analyze the regulatory role of several different transcription factors (e.g. IRF-HiNF-D, a CDP-1/cdc2/cyclin A and Rb related protein complex) in histone gene transcription. The results of these studies contributed to our basic understanding of cell cycle control and abnormal cell growth control which is observed in cancer-related diseases. (Wrote thesis for Ph.D. degree).
6.	Nov. 1, 1996 to 1997	Dr. A.R. Shakoori, Cell and Molecular Biology Laboratory, Department of Zoology, University of the Punjab, New Campus, Lahore.	Assessment of physiological and genetic defects on human population exposed to industrial pollutants in the industrial area of district Kasur, Punjab Pakistan.
7.	Oct. 1997 to Oct. 1998	Research Scholar, Department of Zoology, University of the Punjab, New, Campus, Lahore.	Associated with Research Projects on Environmental Biotechnology in the Cell and Molecular Biology Laboratory and conducting Cell Biology practical for M.Sc. classes.

8.	Nov. 1998 to July 2000	Dr. A.R. Shakoori, Cell and Molecular Biology Laboratory, Department of Zoology, University of the Punjab, New Campus, Lahore.	Associated with Research Projects on Environmental Biotechnology
9.	2004-2010	Ph.D. thesis Supervised	Study on Bacterial Isolates for Amino Acid Production: Improvement in Production of Amino Acid of Commercial Importance”.
10.	2006-2007	Principle investigator Government College University, Lahore	Awarded a research project for the year 2006-2007 entitled “Isolation of Nickel Resistant Ciliate, <i>Stylonychia mytilus</i> from Industrial Effluents and its Role in Decontamination of Polluted Waste Water of Rs: 1, 93000/- funded by Government College University, Lahore.
11.	Jan 2007- March, 2011	Principle investigator Government College University, Lahore	Awarded a research project entitled “Role of Microorganisms in Decontamination of Arsenic from Toxic Polluted Environment” of Rs: 2,204,796/- under national research program for Universities by Higher Education Commission (HEC) , 2006-2011
12.	2011-2012	Principal Investigator	Awarded a research project entitled “Molecular Identification of ciliates isolated from waste water samples” of Rs: 2,00,000/- Funded by University of the Punjab, Lahore , for the fiscal year 2011-2012
13.	2012-2013	Principal Investigator	Awarded research project for the fiscal year 2012-2013. entitled “Heavy metal (Cu and Cr) uptake by <i>Paramecium</i> species” funded by University of the Punjab of Rs: 2,00,000/-
14.	2013-2014	Principal Investigator	Awarded research project entitled for the fiscal year 2013-2014 entitled “Expression of cadmium uptake ability of <i>Paramecium</i> metallothionein gene “funded by University of the Punjab. Of Rs: 2,00,000/-
15.	2014-2015	Principal Investigator	Awarded research project for the fiscal year 2014-2015 funded by University of the Punjab. Rs/-200,000. Expression of a mutant synthetic cadmium metallothionein gene of <i>Paramecium</i>
16.	2015-2016	Principal Investigator	Awarded research project for the fiscal year 2015-2016 (Principal Investigator) funded by University of the Punjab. Rs/- 200,000. The role of autophagy related genes (VDR and P2X7) and Cytokine gene (IFN- γ) in host defense against <i>Mycobacterium tuberculosis</i> infection in Pakistani population.
17.	2016	Co-Principal Investigator	Awarded a research project (Co-Principal Investigator) entitled “Expression Augmentation of Recombinant Human Therapeutic Peptides in Bacillus Expression System” of Rs: 5.88 Million under National Research Programme for Universities by Higher Education Commission (HEC).

			Education Commission (HEC) 2016.
18.	2016	Principal Investigator	Awarded a research project (Principal Investigator) entitled “Characterization of metal resistant microorganisms and their potential use to remove heavy metals from polluted industrial wastewater and understanding their molecular mechanisms involve in cleaning up the polluted environment” of Rs: 4,726155/- under National Research Programme for Universities by Higher Education Commission (HEC) , 2016.
19.	2017	Principal Investigator	Awarded research project for the fiscal year 2017-2018 (Principal Investigator) funded by University of the Punjab. Rs/- 200,000. Association of Autophagy Gene IRGM Polymorphism and Susceptibility to Tuberculosis in Pakistan.
20.	2019	Principal Investigator	Awarded research project for the fiscal year 2019-2020 (Principal Investigator) funded by University of the Punjab. Rs/- 200,000. Synergistic Toxicity of Profenofos and Abamectin on Energy Reserves in <i>Trogoderma granarium</i>
21.	2020	Principal Investigator	Awarded research project for the fiscal year 2019-2020 (Principal Investigator) funded by University of the Punjab. Rs/- 400,000. “Screening of mutations in PIK3CA and other genes as important regulator of PI3K/AKT/mTOR pathway, a road map to personalized medicine in patients of breast cancer in Pakistan”
22.	2021	Principal Investigator	Awarded research project for the fiscal year 2019-2020 (Principal Investigator) funded by University of the Punjab. Rs/- 300,000. “Decolorization and detoxification of textile azo dyes waste in aquatic environment by Paramecium sp.”

23.	2022	Principal Investigator	Awarded research project for the fiscal year 2021-2020 (Principal Investigator) funded by University of the Punjab. Rs/- 300,000. “Extraction and characterization of polyhydroxyalkanoates from <i>Paramecium</i> species isolated from industrial wastewater”
24.	2023	Principal Investigator	Awarded a research project (Principal Investigator) entitled “Investigation on identification of phosphine resistance gene for effective control of stored grain pest, <i>Trogoderma granarium</i>” Rs: 2,060 910 /- funded by Pakistan Science Foundation (PSF)

14. **Ph.D RESEARCH THESES SUPERVISED / COMPLETED AND DEGREE AWARDED**

Sr.No.	Name of Student	Year completed	Topic of Thesis
1.	Nazish Mazhar Ali (HEC Awardee)	2010	Study on Bacterial Isolates for Amino Acid Production: Improvement in Production of Amino Acid of Commercial Importance.
2.	Muhammad Tariq Zahid (HEC Awardee)	2015	Molecular characterization of gene(s) of ciliates, isolated from local industrial wastewater.
3.	Tanzeela Riaz (HEC Awardee)	2015	Biochemical basis of resistance in phosphine exposed populations of <i>Trogoderma granarium</i> from Punjab: Role of estrases and microsomal enzymes.
4.	Fareeda Tasneem (HEC Awardee)	2018	Paramecium Diversity and Phylogeny: Three Loci Molecular Characterization
5.	Ambreena Hafiz	2019	Mechanistic analysis of insecticide resistance in stored grain pest, <i>Trogoderma granarium</i> (EVERTS)
6.	Maimoona Imran	2022	Molecular Characterization Of Cus Regulon In Response To Silver In <i>Klebsiella Pneumoniae</i>
7.	Anum Feroz	2022	Synergistic Toxicity of Bifenthrin and Chlorpyrifos in <i>Trogoderma granarium</i> (Everts)

8.	Ayesha Zafar	2023	The role of autophagy gene IRGM (LRG47) and chemokine gene CCL1 in host defense against <i>Mycobacterium tuberculosis</i> infection in Pakistan.
9.	Ayesha Liaqat	2023	Molecular Characterization of Copper Resistant Gene(s) of <i>Paramecium</i> sp. Isolated from Industrial Wastewater
10.	Ayesha Ghauri	2023	Genetic expression of toll like receptors in chronic obstructive pulmonary disease
11.	Muhammad Javed Iqbal	2023	Mutation profiles of PI3K/AKT1/MTOR pathway member genes (PIK3CA, AKT1, PTEN and MTOR) in breast cancer patients
12.	Nabila Kousar (In-Service)	2024	Studies on synergistic potential of diatomaceous earth and deltamethrin to control <i>Trogoderma granarium</i> : Impact on detoxification mechanism
13.	Itrat Zahra	2024	Characterization of Cadmium Resistant Ciliates and understanding the molecular mechanism involved in its Efflux
14.	Uzma Ramzan	2024	Biodegradation of Azo dyes in industrial wastewater by locally isolated strains of <i>Paramecium</i> sp.
15.	Sammi Rasheed (HEC Awardee)	2025	<i>Trogoderma granarium</i> : Microbiome diversity and phylogeographic analysis on the basis of molecular marker
16.	Roohi Ijaz	2025	<i>Trogoderma granarium</i> : High-throughput sequencing of phosphine susceptible and resistant species and phylogenetic studies based on Cytochrome Oxidase Gene I.

14 A. ONGOING RESEARCH PROJECTS OF PH.D. STUDENTS

Sr.No.	Name of Student	Topic of Thesis
1.	Afsheen Munawar Butt	Study on Toxicity of Essential Oils on Different Populations of <i>Trogoderma granarium</i> (Everts)
2.	Awais Ibrahim	Polyhydroxyalkanoate extraction from <i>Paramecium spp.</i>
3.	Mehreen Kiran	Analysis of neurotoxic effect of polystyrene microplastic in mice model

15. M.S/M.PHIL RESEARCH THESES SUPERVISED/COMPLETED AND DEGREE AWARDED

Sr.No.	Name of Student	Year	Topic of Thesis
1.	Farhana Saleem	2002	Isolation and characterization of Nickel resistant yeast from industrial waste and their role in bioremediation of waste water.
2.	Yasir Arafat	2002	Isolation and characterization of Zinc resistant yeast from industrial waste and their role in bioremediation of waste water.
3.	Nazish Mazhar Ali	2003	The study of bacterial fauna of local honey.
4.	Muhammad Shehzad	2003	Isolation and characterization of Silver resistant yeast and their role in environmental cleanup.
5.	Sumbal Nazir	2005	Isolation, Characterization and Screening of <i>Bacillus thuringiensis</i> Positive for CRY9 Gene.
6.	Shahzad Waheed	2006	Isolation of mega plasmids and determination of antibiotic resistance gene in <i>Bacillus thuringiensis</i>
7.	Kiran Akhtar	2006	Screening and Sub screening of <i>Bacillus thuringiensis</i> for <i>CRY1</i> gene
8.	Iram Aziz	2007	Growth characteristics and uptake of arsenic ions by Arsenic-resistant bacteria isolated from industrial waste water.
9.	Shagufta Tabssum	2008	Growth, Characteristics and Reduction of Chromium Ions by Chromium Resistant Bacteria Isolated from Industrial Waste water.
10.	Mahvish Fatima Zafar	2009	Detection of Metallothionein Gene of some Ciliates Isolated from Industrial Waste water.
11.	M. Tariq Zahid	2009	Molecular characterization of Cry 11 Gene from local Isolate of <i>Bacillus thuringiensis</i> .

12.	Abida shehzadi	2010	<i>In Silico</i> study of promiscuous MHC, I and MHC II binding epitopes of H1N1 viral proteins of Asian Origin, their visualization and Phylogenetic analysis
13.	Ayesha Zafar	2013	Site-directed mutagenesis of cadmium metallothionein (PMCD1syn) at N-terminal end of mutative protein of <i>paramecium</i> .
14.	Sobia Maqbool	2013	Site-directed mutagenesis of cadmium metallothionein (PMCD1syn) at C-terminal end of mutative protein of <i>paramecium</i> .
15.	Qurat ul ain	2015	The effect of mutation on the expression of cadmium metallothionein gene of <i>Paramecium PMCD1</i> on its C- Terminal.
16.	Maryam Ijaz	2015	The effect of mutation on the expression of cadmium metallothionein gene of <i>Paramecium PMCD1</i> on its N- terminal
17.	Asra Ghous	2015	Expression of a mutant of synthetic cadmium metallothionein gene of <i>Paramecium</i> .
18.	Anum Firoz	2015	Efficacy of phosphine against <i>Trogoderma granarium</i> over a wide range of phosphine concentrations and exposure periods: effects on metabolites
19.	Nida Nawaz Khan	2016	The role of autophagy-related gene P2X7 on autophagy-mediated killing of <i>Mycobacterium tuberculosis</i> in Pakistani tuberculosis patients.
20.	Saima Dildar	2016	The role of autophagy-related gene VDR on autophagy-mediated killing of <i>Mycobacterium tuberculosis</i> in Pakistani tuberculosis patients.
21.	Amna Murtaza	2016	The role of interferon Gamma (IFN- γ) gene in host defense against tuberculosis in Pakistani population.
22.	Beenish	2016	3D structure of PMcd1 and its mutated sequences and their comparison.
23.	Rabia Afzal	2017	Effect of spinosad and chlorpyrophos methyl on metabolism of deltamethrin resistant and susceptible population of <i>Trogoderma granarium</i> collected from Punjab
24.	Safoora Ashraf	2017	Identification and isolation of cadmium resistant ciliates from industrial wastewater
25.	Itrat Zahra	2017	Identification and isolation of cadmium resistant paramecium from industrial wastewater
26.	Hafiza Saleha Batool	2017	Molecular characterization and expression of cadmium resistant genes in paramecium
27.	Sana Amjad	2017	Molecular characterization and expression of cadmium resistant genes in ciliates

28.	Hafiz Azhar Hussain	2017	Tracing out through enamel hypoplasia the impact of ecological stresses in the late Miocene Siwalik Suids of Pakistan.
29.	Hussain Yazdani	2018	Impact of Abamectin and Emamectin Benzoate on energy reserves and detoxification enzymes of <i>Trogoderma granarium</i>
30.	Ghulam Murtaza	2018	Toxic effect of Abamectin and Emamectin Benzoate on protein metabolism of <i>Trogoderma granarium</i>
31.	M. Waleed Tahir	2018	Synergistic toxicity of Abamectin and Emamectin Benzoate on energy reserves and detoxification enzymes of <i>Trogoderma granarium</i>
32.	Rida Fatima	2018	Studies on IFN gamma gene in Host Defense Against <i>Mycobacterium tuberculosis</i> in Punjab Population
33.	Ifrah Javed	2018	Studies on P2X7 gene in Host Defense Against <i>Mycobacterium tuberculosis</i> in Punjab Population
34.	Sammi Rasheed	2018	Biochemical abnormalities induced by Profenofos and Laser (Dimethoate and Cypermethrin mixture) in <i>Trogoderma granarium</i>
35.	Azeeqa Barkat	2018	Study of toxicity of essential oils in <i>Trogoderma granarium</i>
36.	Abida Rafiq	2018	Molecular characterization of metal resistant <i>Paramecium</i> species and its role in bioremediation.
37.	Asif Hayat	2018	Isolation and characterization of ciliates (<i>Paramecium spp.</i>) and their role in bioremediation of heavy metals.
38.	Mehwish Zahid	2019	Statistical optimization of protease production using mango peels in submerged fermentation.
39.	Asma Ilyas	2019	Biochemical analysis of toxicity induced by Clove oil on 4 th instar larvae of <i>Trogoderma granarium</i>
40.	Sadia Khaliq	2019	Biochemical analysis of toxicity induced by Peppermint oil on 4 th instar larvae of <i>Trogoderma granarium</i>
41.	Tasur Riaz	2019	Molecular Identification of <i>Trogoderma granarium</i> on the basis of 16s gene
42.	Maheen Arif	2020	Study of metal resistant ability of ciliate population exposed to mercury
43.	Saima Akhtar	2020	Gut content analysis of <i>Labeo rohita</i> and <i>Cyprinus carpio</i> to explore dietary competition
44.	Zarafshan	2020	Synergistic Toxicity of Profenofos and Abamectin on Energy Reserves in <i>Trogoderma granarium</i>

45.	Fatima Batool	2020	Toxic effect of lead on the activity of glutathione in different <i>Paramecium</i> species.
46.	Asma Hassan	2021	Growth patterns of ciliates in the presence and absences of azo dyes
47.	Tooba Zahid	2021	Toxic effect of azo dyes on the activity of various enzymes and metabolites in ciliates
48.	Ayesha Sania	2021	Molecular basis of heat stress on the growth of <i>Paramecium</i> sp.
49.	Samra Hsnat	2021	Study of heat shock proteins (HS20) in <i>Trogoderma granarium</i>
50.	Muzammil Rani	2022	Growth pattern of Ciliates in the presence of copper oxide nanoparticles
51.	Alina Anwar	2022	Impact of DIAMIX BLUE XF disperse dye on physico-chemical and metabolic activities of Ciliates.
52.	Arooj Latif	2022	Gut microbiome of insecticide susceptible strains of <i>Trogoderma granarium</i> collected from godown of DG khan.
53.	Hafsa	2022	Gut microbiome of insecticide susceptible strains of <i>Trogoderma granarium</i> collected from godown of Lahore.
54.	Nida Saddique	2023	Isolation of gut microbiome of insecticide resistant insect <i>Trogoderma granarium</i> collected from Sialkot and Khanpur godowns
55.	Iqra	2023	Isolation of gut microbiome of insecticide resistant insect <i>Trogoderma granarium</i> collected from Gujranwala and Jhang godowns
56.	Ayesha Arshad	2023	Extraction and characterization of Polyhydroxyalkanoates(PHAs) from <i>Paramecium multicronucleatum</i> isolated from industrial wastewater
57.	Shahid Nawaz	2023	Extraction and characterization of Polyhydroxyalkanoates(PHAs) from <i>Paramecium jenningsi</i> isolated from stagnant wastewater
58.	Usama Shabbir	2024	Extraction and characterization of Polyhydroxyalkanoates(PHAs) from <i>Paramecium caudatum</i> isolated from stagnant wastewater
59.	Tuba Arooj	2024	Extraction and characterization of Polyhydroxyalkanoates(PHAs) from <i>Paramecium</i> specie isolated using agri food products
60.	Muqadas Sardar	2024	Petroleum biodegradation potential of <i>Paramecium jenningsi</i> isolated from industrial waste water
61.	Waqar un Nisa	2024	Petroleum biodegradation potential of <i>Paramecium multimicronucleatum</i> isolated from industrial waste water

15 A. M.Phil. RESEARCH THESIS CO- SUPERVISED/COMPLETED

Sr. No	Name of Student	Year	Topic of Thesis
1.	Freeda Tasneem	2012	Isolation, identification and molecular characterization of ciliates.

16. M.Sc. RESEARCH THESIS SUPERVISED

Sr.No.	Name of Student	Year	Topic of Thesis
1.	Kiran Khawaja	2001	Isolation and characterization of Zinc resistant bacteria from industrial waste and their role in bioremediation of waste water.
2.	Amir Rafiq	2001	Isolation and characterization of Nickle resistant bacteria from industrial waste and their role in bioremediation of waste water.
3.	Noreen Shakoor	2002	Metal resistance and metal accumulation efficiency of yeast capable of growing on inorganic media containing iron or Sulphur.
4.	Farhan Saboor	2002	Effect of pH on growth and precipitation of heavy metal resistant bacterial isolates.
5.	Saba Khalid	2003	Isolation and characterization of hydrocarbon resistant bacteria.
6.	Sidra Tauqir	2003	Isolation and characterization of Manganese resistant bacteria and their role in bioremediation.
7.	Naila Shahid	2004	Isolation of mega plasmid from heavy metal resistant bacteria.
8.	Agha Usman	2005	Isolation and Characterization of Insecticide degrading bacteria.
9.	Bushra Mazhar	2006	Isolation and Characterization of Bacterial Fauna Isolated From Different Types of Wounds From Different Hospitals of Lahore
10.	Sadia Abbas	2006	Isolation and Characterization of Bacterial Fauna Isolated From Eatable Items Collected from Different Localities of Lahore.
11.	Mehvish Fatima Zafar	2007	Effect of Nickel on the ciliate <i>stylonychia myhilus</i> and role in Bioremediation of toxic wastes.
12.	Ayesha Fateh-ullah	2007	Effect of Zinc on the ciliate <i>stylonychia myhilus</i> and role in Bioremediation of toxic wastes.
13.	Zeba Shehnaz	2008	Inductin of heat shock proteins in <i>Bacillus Thringensis</i>
14.	Zunaira Qayyum	2008	Identification of chromium processing gene on plasmid of chromium resistant bacteria

15.	Masooma Maryam	2012	Molecular identification of ciliates isolated from waste water samples.
16.	Aleena Aslam	2014	Random site directed mutagenesis of cadmium metallothionein <i>PMCdI</i> <i>Syn</i> gene mutant of <i>Paramecium</i>
17.	Momina Shokat	2015	Screening production and optimization of xylanase enzyme from locally isolated bacteria
18.	Ayesha Gondal	2016	Toxicological effect of lambda-cyhalothrin on carbohydrate metabolism of stored grain pest <i>Trogoderma granarium</i> from Punjab
19.	Hafiza Sweba	2017	Role of IRGM-1161 C/T polymorphism in host defense against tuberculosis in Pakistani population.
20.	Ayesha Sania	2018	Role of IRGM polymorphism -947 C/T in host defense against tuberculosis in Punjab Pakistan.
21.	Anila Yasmeen	2019	Effect of zinc on the growth pattern of ciliates.
22.	Ayesha Arshad	2020	Comparative analysis of investigations on toxicity induced by various heavy metals on <i>Paramecium</i> species.
23.	Tooba Arooj	2021	Effect of Azo dyes on the growth pattern of ciliates by changing various PH values
24.	Mariam Haider	2022	Growth pattern of <i>Paramecium caudatum</i> at different concentrations of reactive red 3BS dye
25.	Eisha Shahid	2023	Analysis of essentials oil s induced cytotoxicity in <i>Trogoderma granarium</i>
26.	Hizra Iman	2024	Study of heat shock protein indifferent larval stages of <i>Trogoderma granarium</i>

17. B.S. (Hons) RESEARCH THESES SUPERVISED

1.	Ammra Amin	2009	Effect of Nickel, Zinc and Arsenic on Bacterial Growth
2.	Sundas Sajid	2010	Characterization of Genomic DNA of <i>Paramecium</i> and its growth under stress conditions
3.	Ammara Shaukat	2010	Total body proteins of ciliates and electro-phoretic studies
4.	Sadaf Ilyas	2012	Metal uptake ability of ciliates isolated from industrial waste water.
5.	Asra Ghaus	2013	Uptake of heavy metals (copper and chromium) by paramecium species isolated from waste water.

6.	Sidrah	2014	Growth characteristics of heavy metals resistant <i>Paramecium caudatum</i> strains and their potential role in bioremediation.
7.	Komal Abdul Haq	2014	Growth characteristics of heavy metals resistant <i>Paramecium multimicronucleatum</i> species and estimation of their metal uptake ability.
8.	Fiza Sana Ullah Khan	2015	Screening and optimization of cultural conditions for production of thermophilic mannanase from locally isolated bacteria
9.	Tahira Arooj	2015	Isolation of mannase producing bacteria production, optimization of enzyme activity and partial purification
10.	Uzma Ramzan	2016	Toxicological effect of esfenvalerate on carbohydrate metabolism of stored grain pest <i>Trogoderma granarium</i> from Punjab
11.	Ayesha Mahboob	2017	Role of <i>IRGM</i> polymorphism -1208A/G in host defense against tuberculosis in Pakistani population
12.	Ayesha Saddiqa	2018	Identification of metal resistant ciliates from water samples of different ponds.
13.	Shah Khanum	2019	Biochemical analysis of toxicity induced by essential oils of Eucalyptus for the control of <i>Trogoderma granarium</i> .
14.	Tooba Maryam	2020	Comparative analysis of investigations on toxicity induced by various essential oils on the energy reserves and detoxification enzymes on 4 th instar larvae of <i>Trogoderma granarium</i> .
15.	Maliha	2021	Determination of LC ₅₀ of <i>Moringa oleifera</i> on <i>Trogoderma granarium</i>
16.	Masaim Zahra	2022	Biochemical abnormalities induced by Caraway Oil against the different populations of <i>Trogoderma granarium</i>
17.	M. Taimoor	2023	Analysis of Deltamethrin -induced cytotoxicity in <i>Paramecium sp.</i>
18.	Hafiza Rimsha Amer	2024	Study of heat shock protein in 6 th instar larvae of <i>Trogoderma granarium</i>

RESEARCH PUBLICATIONS:

ORIGINAL ARTICLES

List of Publications	Impact factor
1. Shakoori, A.R., Aziz, F. , Alam, J and Ali, S.S., 1990. Toxic effects of Talstar, a new synthetic pyrethroid, on blood and liver of rabbit. <i>Pakistan J. Zool.</i> , 22 : 289-300.	
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19. BOOK CHAPTERS:

Shakoori, AR., Aftab, S.and **Shakoori, FR**. 2016. Numerical Changes in Chromosomes. In: *Chromosomes: Structure and Abberations* (eds. T.A. Bhat and A.A.Wani). Springer Verlag.

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20. SEQUENCE SUBMITTED TO GENE BANK

Sr. No	Accession No.	Detail
1.	HE653999	<i>Bacillus cereus</i> partial 16S rRNA gene, isolate A9.
2.	HE653997	<i>Bacillus</i> sp. MZ-2012-S6 partial 16S rRNA gene, isolate S6.
3.	HE653995	<i>Escherichia coli</i> partial 16S rRNA gene, isolate H.
4.	HE653998	<i>Bacillus anthracis</i> partial 16S rRNA gene, isolate A1.
5.	HE653996	<i>Escherichia coli</i> partial 16S rRNA gene, isolate M2
6.	FR869987	<i>Paramecium</i> sp. para200 partial 18S rRNA gene, isolate para200.
7.	FR869988	<i>Stylonychia</i> sp. StyloJ3 partial 18S rRNA gene, isolate StyloJ3.
8.	FR869986	definition <i>Paramecium</i> sp. paraGC partial 18S rRNA gene, isolate paraGC

9.	HE662765	<i>Paramecium caudatum</i> partial 18S rRNA gene, isolate FT9.
10.	HE662763	<i>Paramecium caudatum</i> partial 18S rRNA gene, isolate FT7.
11.	HE662761	<i>Paramecium multimicronucleatum</i> partial 18S rRNA gene, isolate FT5.
12.	HE650906	<i>Paramecium multimicronucleatum</i> partial 18S rRNA gene, clone FT1.
13.	HE650907	<i>Paramecium multimicronucleatum</i> partial 18S rRNA gene, clone FT3.
14.	HE662764	<i>Paramecium caudatum</i> partial 18S rRNA gene, isolate FT8.
15.	HE662762	<i>Paramecium multimicronucleatum</i> partial 18S rRNA gene, isolate FT6.
16.	HE662760	<i>Paramecium jenningsi</i> partial 18S rRNA gene, isolate FT4.
17.	HE971994	<i>Bacillus cereus</i> partial 16S rRNA gene, strain MBZ4
18.	HE971995	<i>Klebsiella pneumoniae</i> partial 16S rRNA gene, strain MBZ6
19.	HE820726	<i>Tetrahymena</i> sp. 1.7 partial 18S rRNA gene, isolate 1.7
20.	HE820725	<i>Tetrahymena</i> sp. 1.7 CuMT gene for metallothionein, isolate 1.7
21.	HE662762	(<i>Paramecium multimicronucleatum</i> partial 18S rRNA gene, isolate FT6) Isolation, identification and molecular
22.	HE662761	(<i>Paramecium multimicronucleatum</i> partial 18S rRNA gene, isolate FT5) Isolation, identification and molecular
23.	KP844456	16S rRNA gene of <i>Citrobacter freundii</i>
24.	KP844457	16S rRNA gene of <i>Klebsiella pneumoniae</i>
25.	KP844458	16S rRNA gene of <i>Klebsiella pneumoniae</i>
26.	KP844459	16S rRNA gene of <i>Klebsiella</i>
27.	OR348648	16S rRNA gene of <i>Bacillus pumilus</i>
28.	OR362801	16S rRNA gene of <i>Bacillus safensis</i>
29.	OR342074	16S rRNA gene of <i>Bacillus safensis</i>
30.	OR362803	16S rRNA gene of <i>Bacillus safensis</i>
31.	OR361324	16S rRNA gene of <i>Bacillus</i> sp.
32.	OR362786	16S rRNA gene of <i>Bacillus</i> sp.
33.	OR361386	16S rRNA gene of <i>Bacillus paramycoid</i>
34.	OR362799	16S rRNA gene of <i>Bacillus safensis</i>
35.	OR362800	16S rRNA gene of <i>Bacillus safensis</i>
36.	OR348725	16S rRNA gene of <i>Bacillus anthracis</i>
37.	OR362806	16S rRNA gene of <i>Bacillus safensis</i>
38.	OR360784	16S rRNA gene of <i>Priestia megaterium</i>
39.	OR363109	<i>Trogoderma granarium</i> Mitochondrial gene for Cytochrome b

40.	OR348724	<i>Trogoderma granarium</i> Mitochondrial gene for Cytochrome b
41.	OR363110	<i>Trogoderma granarium</i> Mitochondrial gene for Cytochrome b
42.	OR640680	<i>Trogoderma granarium</i> Mitochondrial gene for Cytochrome b
43.	OR703695	<i>Trogoderma granarium</i> Mitochondrial gene for Cytochrome b
44.	OR389486	<i>Trogoderma granarium</i> Mitochondrial gene for Cytochrome b
45.	OR389487	<i>Trogoderma granarium</i> Mitochondrial gene for Cytochrome b

21. **ABSTRACTS**

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40. Zahid, M.T., **Shakoori, F.R.** and Shakoori, A.R., 2012. Molecular Characterization of two Isoforms of Copper Metallothionein Gene(s) from a Local Isolate of *Tetrahymena*. *Proc. Pakistan Congr. Zool.* **32**:**98**.
41. Zahid, M.T., **Shakoori, F.R.**, Jehan N. and Shakoori, A.R., 2013. Expression level studies of *Tetrahymena* Copper Metallothionein. *Proc. Pakistan Congr. Zool.* **32**:**36**.
42. Waheed, S., **Shakoori, F.R.** and Shakoori, A.R, 2013. Molecular characterization of paramecium species based subunit ribosomal RNA. *Pakistan Congr. Zool.* **32**:**40**
43. Waheed, S., **Shakoori, F.R.** and Shakoori, A.R, 2013. Molecular characterization of ars genes responsible for arsenic resistance in *klebsiella pneumonia* CC *Proc. Pakistan Congr. Zool.* **32**:**96**.
44. Khan.R.U., Afzal,T.,Zahid ,M .T.and **Shakoori, F.R.** 2014. pH neutralizing effect of *klebsiella pneumonia* strain MBZ6 in acidic medium and molecular characterization of its transcriptional activator(cadC) gene *Proc. Pakistan Congr. Zool.* **34**:**75**
45. Waheed, S., **Shakoori, F.R.** and Shakoori, A.R, 2014. Molecular characterization of arsenic resistance protein in *klebsiella pneumonia* CC *Proc. Pakistan Congr. Zool.* **34**:**79**.

46. Zahid, M.T., **Shakoori, F.R.**, Jahan. N. and Shakoori, A.R., 2014. Molecular characterization of CuMT from locally isolated metal resistant *Tetrahymena* 1.7. Innovative Biological and Public Health Research (IBPHR). **41**.
47. Zahid, M.T., **Shakoori, F.R.**, Jahan. N. and Shakoori, A.R., 2015. Characterization of *Tetrahymena farahensis* MTT2 and quantitative analysis of its expression under copper stress Proc. Pakistan Congr. Zool **35: 15**.
48. Riaz, T., **Shakoori, F.R.** and Ali ,S.S. 2015. Toxicity of phosphine against resistant and susceptible populations of. *Trogoderma granium*. Proc. Pakistan Congr. Zool **35:36**.
49. Feroze., A, Riaz, T., and **Shakoori, F.R.** 2016. Efficacy of phosphine against *Trogoderma granium*. over a range of phosphine concentrations and exposure period: Effects on metabolites. *Proc. Pakistan Congr. Zool* **36:93**.
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51. Dildar, S., Zafar, A., Ali, B., Shakoori, A.R. and **Shakoori, F.R.** The role of autophagy related gene VDR on autophagy-mediated killing of *Mycobacterium tuberculosis* in Pakistani tuberculosis patients. *Proc. Pakistan Congr. Zool*. **37:370**.
52. Murtaza, A., Zafar, A., Ali, B., Shakoori, A.R. and **Shakoori, F.R.** The role of Interferon-Gamma in host defense against tuberculosis in Pakistani population. *Proc. Pakistan Congr. Zool*. **37:370**.
53. Riaz, T., Feroze, A., **Shakoori, F.R.** and Ali, S.S. Phosphine induced biochemical alterations in carbohydrate metabolism and macromolecular concentrations of a stored grain pest *Trogoderma granarium* over various exposure periods. *Proc. Pakistan Congr. Zool*, **37:193**.
54. Tasneem, F., **Shakoori, F.R.**, and Shakoori, A.R. Three loci molecular characterization of locally isolated *Paramecium* species. *Proc. Pakistan Congr. Zool* **38:103**.
55. Murtaza, G., Feroze, A. and **Shakoori, F.R.** Toxic effect of abamectin and emamectin benzoate on protein metabolism and detoxification enzymes in *Trogoderma granarium* (Khapra Beetle). *Proc. Pakistan Congr. Zool* **38:143**.
56. Ashraf, S., Zahra, I. and **Shakoori, F.R.** Identification of ciliate (*Paramecium* sp.) on molecular basis and their tolerance to different heavy metals. *Proc. Pakistan Congr. Zool* **38:97**.
57. Zahra, I., Ashraf, S. and **Shakoori, F.R.** Molecular characterization of ciliate (*Paramecium* sp.) isolated from different industrial waste waters. *Proc. Pakistan Congr. Zool* **38:88**.
58. Feroze, A., **Shakoori, F.R.**, and Shakoori, A. R. Study of deltamethrin tolerance and toxicity of bifenthrin, chlorpyrifos and their mixtures for the management of insecticide tolerance in stored grain pest, *Trogoderma granarium*. *Proc. Pakistan Congr. Zool* **39:171**.
59. Rasheed, S., Feroze, A., and **Shakoori, F.R.** Efficacy and toxicity of profenofos on the energy reserves and enzymatic activities of *Trogoderma granarium*. *Proc. Pakistan Congr. Zool* **39:31**.
60. Liaqat, A., Hayat, A., Zahra, I., and **Shakoori, F.R.** Isolation and characterization of ciliates (*Paramecium* Sp.) and their role in bioremediation of heavy metals. *Pakistan Congr. Zool* **39:15**.
61. Zahra, I, Rafique, H. A., Liaqat, A., and **Shakoori, F.R.** Molecular characterization of metal resistant *Paramecium* Sp. And its role in bioremediation. *Pakistan Congr. Zool* **39:16**.
62. Saddiqa, A., Liaqat, A., Zahra, I., and **Shakoori, F.R.** Identification of metal resistant ciliates from water samples of different ponds. *Pakistan Congr. Zool* **39:40**.

63. Ramzan, U., **Shakoori, F.R.**, and Nazeer, S., Mode of action of nanoparticles against insects. ICPU 2019 “Recent innovations in molecular sciences”, **229**.
64. Ijaz, R., Riaz, T., and **Shakoori, F.R.**, Molecular identification of *Trogoderma granarium* on the basis of 16s mitochondrial DNA. ICPU 2019 “Recent innovations in molecular sciences”, **305**.
65. Zahra, I., Liaqat, A., and **Shakoori, F.R.**, Identification of a ciliate (*Paramecium* sp) on the basis of histone H4 biomarker and their tolerance to different heavy metals. ICPU 2019 “Recent innovations in molecular sciences”, **318**.
66. Zafar, A., **Shakoori, F.R.**, Papp, A., Azad, A., Williams, A., Schlesinger, L., Sadee, W., Search for eQTLs as indicators of regulatory variants in immune genes related to TB. ICPU 2019 “Recent innovations in molecular sciences”, **106**.
67. Ayesha Sania, **Farah Rauf Shakoori**, Uzma Ramzan* and Itrat Zahra. 2021. Molecular Basis of Heat Stress on Growth of *Paramecium* Species. First Virtual *Pakistan Congr. Zool.* **07**.
68. Asma Hassan, **Farah Rauf Shakoori**, Uzma Ramzan*, Tooba Zahid and Roohi Ijaz. 2021. Growth Patterns of Ciliates in the Presence and Absence of Azo Dyes. First Virtual Pakistan Congr. Zool. **07**.
69. Tooba Zahid, **Farah Rauf Shakoori**, Uzma Ramzan*, Asma Hassan and Sammi Rasheed. 2021. Toxic Effect of Azo Dyes on the Activity of Various Enzymes and Metabolites in Ciliates. First Virtual *Pakistan Congr. Zool.* **08**.
70. Tuba Arooj, **Farah Rauf Shakoori**, Uzma Ramzan*, Roohi Ijaz and Sammi Rasheed. 2021. Effect of Azo Dyes on the Growth Pattern of Ciliates by Changing Various pH Values. First Virtual Pakistan Congr. Zool. **08**.
71. Samra Hasnat*, Sammi Rasheed and **Farah Rauf Shakoori**. 2021. Study of Heat Shock Proteins (HSP20) in *Trogoderma granarium*. First Virtual *Pakistan Congr. Zool.* **10**.
72. Ayesha Liaqat1, Tsvetan Bachvaroff and **Farah Rauf Shakoori**. 2021. Discovery of Differentially Expressed Genes of *Paramecium* sp. Under Copper Ions Stress Using Transcriptome Sequencing. First Virtual *Pakistan Congr. Zool.* **10**.
73. Ayesha Zafar, Mohsin Shafiq, Basharat Ali, Wolfgang Sadee4, Abdul Rauf Shakoori and **Farah Rauf Shakoori***. 2021. Association of IRGM Promoter Region Polymorphisms and Haplotype with Pulmonary Tuberculosis in Pakistani (Punjab) Population. First Virtual *Pakistan Congr. Zool.* **11**.
74. Maleeha Khalid*, Sammi Rasheed and **Farah Rauf Shakoori**. 2021. Determination of LC50 of *Moringa oleifera* on Khapra Beetle (*Trogoderma granarium*). First Virtual *Pakistan Congr. Zool.* **38**.
75. Itrat Zahra, Michael Betenbaugh, Ayesha Liaqat, **Farah Rauf Shakoori**, and Abdul Rauf Shakoori. 2023. Genomics and proteomics insights into the heavy metal bioremediation by the ciliates *Paramecium multimicronucleatum*. 41st *Pakistan Congr. Zool.* **14**.
76. Maryam Haider, Uzma Ramzan, Itrat Zahra, **Farah Rauf Shakoori** and Abdul Rauf Shakoori. 2023. Growth pattern of *Paramecium caudatum* at different concentrations reactive red 3BS dye. 41st *Pakistan Congr. Zool.* **21**.
77. Muzammil Rani, Alina Anwar, Uzma Ramzan, Itrat Zahra, **Farah Rauf Shakoori** and Abdul Rauf Shakoori. 2023. Growth pattern of ciliates in the presence of copper oxide nanoparticles. 41st *Pakistan Congr. Zool.* **21**.

78. Ayesha Arshad, Itrat Zahra, Ayesha Liaqat, Uzma Ramzan, **Farah Rauf Shakoori**, and Abdul Rauf Shakoori. 2023. Tolerance and Uptake of Copper, Cadmium, Lead, and Zinc by a Ciliate *Paramecium Multimicronucleatum*. 41st Pakistan Congr. Zool. **22**.
79. Alina Anwar, Muzammil Rani, Uzma Ramzan, Itrat Zahra, **Farah Rauf Shakoori** and Abdul Rauf Shakoori. 2023. Impact of Diamix Blue Xf Disperse Dye on Physicochemical and Metabolic Activities of Ciliates. 41st Pakistan Congr. Zool. **23**.
80. Masaim Zahra, Sammi Rasheed, Arooj Latif, Hafsa Shaukat, **Farah Rauf Shakoori**. 2023. Biochemical Abnormalities Induced by Caraway Oil against the different Populations of *Trogoderma Granarium*. 41st Pakistan Congr. Zool. **92**.
81. Sammi Rasheed, Hafsa Shaukat, Arooj Latif, **Farah Rauf Shakoori**, and Abdul Rauf Shakoori. 2023. The Contribution of gut microbiota of Insecticide-Resistant Insect *Trogoderma Granarium* against deltamethrin and emamectin. 41st Pakistan Congr. Zool. **93**.
82. Anum Feroz, Abdul Rauf Shakoori and **Farah Rauf Shakoori** 2025 Modulations in the Activities of Digestive Enzymes and Phosphatases in *Trogoderma granarium* Larvae Following Exposure to Bifenthrin, Chlorpyrifos, and Their Combinations. 2nd International Electronic Conference on Entomology (19–21 May 2025, online). Organizers MDPI and Insect.

22. RESEARCH GRANTS AWARDED BY RECOGNIZED NATIONAL INSTITUTIONS/ORGANIZATIONS WITH COST.

1. **Awarded a research project (Principal Investigator)** entitled “Role of Microorganisms in Decontamination of Arsenic from Toxic Polluted Environment” of Rs: 2, 204796/- under National Research Programme for Universities by **Higher Education Commission (HEC)**, 2006. .
2. **Awarded a research project for the year 2006-2007 (Principal Investigator)** entitled “Isolation of Nickel Resistant Ciliate, *Stylonychia mytilus* from Industrial Effluents and its Role in Decontamination of Polluted Waste Water” of Rs: 1, 93000/- funded by **Government College University, Lahore**.
3. **Awarded research project for the fiscal year 2011-2012 (Principal Investigator) funded by University of the Punjab. Rs/- 200,000** Molecular identification of ciliates isolated from waste water samples.
4. **Awarded research project for the fiscal year 2012-2013 (Principal Investigator) funded by University of the Punjab. Rs/- 200,000** Heavy metal (Cu and Cr) uptake by *Paramecium* species.
5. **Awarded research project for the fiscal year 2013-2014 (Principal Investigator) funded by University of the Punjab. Rs/- 200,000**. Expression of cadmium uptake ability of *Paramecium* metallothionein gene.
6. **Awarded research project for the fiscal year 2014-2015 (Principal Investigator) funded by University of the Punjab. Rs/- 200,000**. Expression of a mutant of synthetic cadmium metallothionein gene of *Paramecium*.

7. **Awarded research project for the fiscal year 2015-2016 (Principal Investigator) funded by University of the Punjab. Rs/- 200,000.** The role of autophagy related genes (VDR and P2X7) and Cytokine gene (IFN- γ) in host defense against *Mycobacterium tuberculosis* infection in Pakistani population.
8. **Awarded a research project (Co-Principal Investigator) entitled “Expression Augmentation of Recombinant Human Therapeutic Peptides in Bacillus Expression System” of Rs: 5.88 Million** under National Research Programme for Universities by **Higher Education Commission (HEC) 2016.**
9. **Awarded a research project (Principal Investigator) entitled “Characterization of metal resistant microorganisms and their potential use to remove heavy metals from polluted industrial wastewater and understanding their molecular mechanisms involve in cleaning up the polluted environment”** of Rs: 4,726,155/- under National Research Programme for Universities by **Higher Education Commission (HEC), 2016.**
10. **Awarded research project for the fiscal year 2017-2018 (Principal Investigator) funded by University of the Punjab. Rs/- 200,000** Association of Autophagy Gene IRGM Polymorphism and Susceptibility to Tuberculosis in Pakistan.
11. **Awarded research project for the fiscal year 2019-2020 (Principal Investigator) funded by University of the Punjab. Rs/- 200,000** Synergistic Toxicity of Profenofos and Abamectin on Energy Reserves in *Trogoderma granarium*
12. **Awarded research project for the fiscal year 2019-2020 (Principal Investigator) funded by University of the Punjab. Rs/- 400,000.** Screening of mutations in PIK3CA and other genes as important regulator of PI3K/AKT/mTOR pathway, a road map to personalized medicine in patients of breast cancer in Pakistan.
13. **Awarded research project for the fiscal year 2020-2021 (Principal Investigator) funded by University of the Punjab. Rs/- 300,000.** Decolorization and detoxification of textile azo dyes waste in aquatic environment by *Paramecium* sp.
14. **Awarded research project for the fiscal year 2022-2023 (Principal Investigator) funded by University of the Punjab. Rs/- 300,000.** Extraction and characterization of polyhydroxyalkanoates from *Paramecium* species isolated from industrial wastewater
15. **Awarded a research project (Principal Investigator) entitled “Investigation on identification of phosphine resistance gene for effective control of stored grain pest, *Trogoderma granarium*” 2023 Rs: 2,060 910 /- funded by Pakistan Science Foundation (PSF)**
16. **Awarded research project for the fiscal year 2024-2025 (Principal Investigator) funded by University of the Punjab. Rs/- 300,000.** Petroleum hydrocarbon degradation potential of different ciliates isolated from industrial wastewater”

23. TECHNICAL REPORTS

1. Shakoori, A.R., **Aziz, F.**, Aslam, F., Sabir, M. and Alam, J., 1991. Effects of Talstar on blood, liver and muscles of *Gallus domesticus*. Ist. Ann. Tech. Rep. NSRDB Proj., pp.1-72.
2. Shakoori, A.R., **Aziz, F.**, Aslam, F. and Alam, J., 1992. Pyrethoid induced macromolecular abnormalities and their effects on growth in chicks of *Gallus domesticus*. 2nd Ann. Tech. Rep. NSRDB Proj., pp.1-76.
3. Shakoori, A.R. and **Aziz, F.**, 1997. Assessment of physiological and genetic defects in human population exposed industrial pollutants in the industrial area of District Kasur, Punjab, Pakistan. Ist. Semi-Ann. Tech. Rep. PSF Proj., pp.1-14.
4. Shakoori, A.R., **Shakoori, F.R.** and Ahsan, M.M., 1998. Assessment of physiological and genetic defects in human population exposed to industrial pollutants in the industrial area of district Kasur, Punjab, Pakistan. Final Technical Report of PSF Research Project P-PU/Envr (360, pp. 171).
5. **Shakoori, F.R.** and Zafar, M.F., 2007. Isolation of Nickel Resistant Ciliate, *Stylonychia mytilus* from Industrial Effluents and its Role in Decontamination of Polluted Waste Water. (Published in impact factor journal in 2011) *Pakistan Journal of Zoology*, vol 43(3), pp. 569-574.
6. **Shakoori, F.R.** and Rehman, A. 2007. 1st annual report of HEC funded project (No.20-802/F&D/06) Titled “Role of microorganism in decontamination of arsenic from toxic polluted environment”.
7. **Shakoori, F.R.** and Rehman, A. 2008. 2nd annual report of HEC funded project (No.20-802/F&D/06) Titled “Role of microorganism in decontamination of arsenic from toxic polluted environment”.
8. **Shakoori, F.R.** and Rehman, A. 2010. Final technical report of HEC funded project (No.20-802/F&D/06) Titled “Role of microorganism in decontamination of arsenic from toxic polluted environment”.
9. **Shakoori, F.R.** and Tasneem, F. 2012. “Annual technical report of Punjab University funded project. “Molecular Identification of Ciliates isolated from Waste Water”.
10. **Shakoori, F.R.** and Tasneem, F. 2013. “Annual technical report of Punjab University funded project. “Heavy metal (Cu and Cr) uptake by *Paramecium* species”.
11. **Shakoori, F.R.** and Tasneem, F. 2014. “Annual technical report of Punjab University funded project. Expression of cadmium uptake ability of *Paramecium* metallothionein gene.
12. **Shakoori, F.R.** and Ghous, A. 2015. “Annual technical report of Punjab University funded project. “Expression of a mutant of synthetic cadmium metallothionein gene of *Paramecium*”
13. **Shakoori, F.R.** and Zafar, A. 2016 “Annual technical report of Punjab University funded project “The role of autophagy-related gene (VDR P2X7) and cytokine gene (IFN- γ) in host defense against *Mycobacterium tuberculosis* infection in Pakistani population”.
14. **Shakoori, F.R.** and Zafar, A. 2018. Annual technical report of Punjab University funded project. “Association of Autophagy Gene IRGM Polymorphism and Susceptibility to Tuberculosis in Pakistani Population.
15. **Shakoori, F.R.** and Zahra, I. 2019. 1st Annual Progress Report for NRPU Funded Project # 4232. Titled “Characterization of metal resistant microorganisms and their potential use to remove heavy

metals from polluted industrial wastewater and understanding their molecular mechanism involve in cleaning up the polluted environment”.

16. **Shakoori, F.R.** and Zahra, I. 2020. 2nd Annual Progress Report for NRPB Funded Project # 4232. Titled “Characterization of metal resistant microorganisms and their potential use to remove heavy metals from polluted industrial wastewater and understanding their molecular mechanism involve in cleaning up the polluted environment”.
17. **Shakoori, F.R.** and Zahra, I. 2021. 3rd Annual Progress Report for NRPB Funded Project # 4232. Titled “Characterization of metal resistant microorganisms and their potential use to remove heavy metals from polluted industrial wastewater and understanding their molecular mechanism involve in cleaning up the polluted environment”.
18. **Shakoori, F.R.** and Rasheed, S. 2021. Annual technical report of Punjab University funded project. Synergistic effect of Profenofos and Abamectin on various metabolites of a stored grain pest in *Trogoderma granarium*. (Submission was due in 2020 due to COVID -19 submitted in 2021).
19. **Shakoori, F.R. and Ramzan, U.** 2021. Annual technical report of Punjab University funded project “Decolorization and detoxification of textile azo dyes waste in aquatic environment by *Paramecium* sp” .
20. **Shakoori, F.R.** and Zahra, I. 2023. Annual technical report of Punjab University funded project Extraction and Characterization of Polyhydroxyalkanoates by *Paramecium* sp. Isolated from industrial waste water.
21. **Shakoori, F.R.** and Ijaz, R. 2023. Six month technical report of Pakistan Science Foundation funded project “Investigation on identification of phosphine resistant gene for effective control of stored grain pest, *Trogoderma granarium*.”
22. **Shakoori, F.R.** and Ijaz, R. 2023. Annual technical report of Punjab Pakistan Science Foundation funded project “Investigation on identification of phosphine resistant gene for effective control of stored grain pest, *Trogoderma granarium*.”

27. MEMBERSHIP OF SCIENTIFIC SOCIETIES

1. Life Fellow, Zoological Society of Pakistan.
2. Fellow, Pakistan Society of Biochemistry, 1991.
3. Member, American Society for Cell Biology, 1994-1995.
4. Member, Organization for Women in Science for the Developing World (OWSDW) since 12-07-2007-continuing under the umbrella of The World Academy of Science (TWAS).

25. COUNTRIES VISITED

Sr. No.	Countries Name	Purpose	Year
1.	United States of America	Completed Ph.D. thesis	1992-96, 2007-2010
2.	Canada	To visit family and friends	1994
3.	Germany	Visited Research lab. in Marburg	1998
4.	United Kingdom	Visited Research lab. in Colchester /Visited family and friends in London	1998-2010
5.	Italy	Attended 18th General TWAS meetings in Trieste Italy 13-14 Nov 2007. Hosted by ICTP.	2007
6.	Kingdom of Saudi Arabia	For performing Haj	2009
7.	Azerbaijan	My husband received ECO International Award, I and my kids accompanied him.	2012
8.	China	Attended 23rd General The World Academy of Science (TWAS) meetings in China 18-21 September, (2012).	2012
9.	Dubai	To visit family and friends	2013
10.	Argentina	Attended 24 th General The World Academy of Science (TWAS) meeting in Argentina 1-4 October,(2013).	2013
11.	Muscat Sultanate of Oman	Attended 25th General The World Academy of Science (TWAS) meeting in Muscat Sultanate of Oman, 25 th -28 th October 2014.	2014
12.	United Kingdom	Official visit to University of Essex and Liverpool British Council Pakistan Under INSPIRE Translational Education Program 308 – Extended and UK ZOOS 4 th Aug -10 th Aug 2017	2017
13.	United States of America	To visit University of Vermont and to meet Family and Friends. 11 th Aug – 27 th Aug 2017	2017
14.	Turky(Istanbul)	For Sight seen in winter vacations 24 th -31 st December 2018	

26. CONFERENCES ATTENDED/PRESENTED PAPERS/POSTERS

1. Tenth Pakistan Congress of Zoology held under the auspices of the Zoological Society of Pakistan at Khanspur (Murree Hills) on May 26-27, (1990). “Toxicological effect of bifenthrin on rabbit blood”. **(Oral presentation)**.
2. Eleventh Pakistan Congress of Zoology held under the auspices of the Zoological Society of Pakistan at Khanuspur (Murree Hills) on May 25-26, (1991). “Toxicological effects of Talstar on growth, hematological and biochemical components of blood of *Gallus domesticus*” **(Oral presentation)**.

3. Twelfth Pakistan Congress of Zoology held under the auspices of the Zoological Society of Pakistan at Government College, Lahore, on April 11-12, (1992). "Effects of Danitol on the growth pattern in broiler and cockerel chicks of *Gallus domesticus*". (**Oral presentation**).
4. **34th Annual Meeting. American Society for Cell Biology (San Francisco, California), USA (1994) "Molecular dissection of a multi-partite cell cycle domain of H4 gene transcription". (Poster presentation).**
5. Eighteenth Pakistan Congress of Zoology held under the auspices of the Zoological Society of Pakistan at University of the Punjab, Lahore during March, (1998).
6. Nineteenth Pakistan Congress of Zoology held under the auspices of the Zoological Society of Pakistan at National Agriculture Research Center, Islamabad during March, (1999). "Histone H4 gene expression"(**Oral Presentation**)
7. Twentieth Pakistan Congress of Zoology held under the auspices of the Zoological Society of Pakistan at University of Sindh, Jamshoro on March 24-26, (2000). (**Poster presentation, First Prize**). "Degradation of organochlorine insecticide, Endosulphan, in polluted soil through bacteria"
8. Twenty First Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at University of Agriculture, Faisalabad on March 15-17, (2001) (**One oral presentation and one Poster presentation**). "Zinc resistant bacteria from industrial effluents and their role in environmental clean-up"
9. First National Conference of Biology held under the auspices of Biological Society of Pakistan at Government College University, Lahore on March 28-30, (2002). (**Poster Presentation 3rd Prize.**) "Nickel resistant bacteria"
10. Twenty Second Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at University of Azad Jammu & Kashmir, Muzaffarabad on April 16-18, (2002). (**One poster and two oral presentations first prize**). "Metal resistance and metal accumulation efficiency of yeast capable of growing on inorganic media containing iron or sulphur"
11. Twenty Third Pakistan Congress of Zoology held (International) under the auspices of the Zoological Society of Pakistan at University of Arid Agriculture, Rawalpindi, Pakistan on March 03-05, (2003).(**One poster and one oral presentation Third prize**). "pH on growth and precipitation of lead resistant bacteria –a strategy for removal of bacteria from the fresh water after heavy metal uptake."
12. Twenty Fourth Pakistan Congress of Zoology held under the auspices of the Zoological Society of Pakistan at Allama Iqbal Open University, Islamabad on March 30-April 1, (2004) (**Two Oral Presentations**). "Microbiological analysis of honey of *Apis mellifera*".
13. Second National Conference of Biology held under the auspices of Biological Society of Pakistan at Government College University, Lahore on April 22-24, (2004) and **Co-chaired Molecular Biology and Serology Session.**
14. Twenty fifth Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at Sindh Agriculture University Tandojam, Pakistan, March 1 – 3, (2005). (**Poster Presentation, First Prize**). "Isolation of megaplasmid from heavy metal resistant bacteria."
15. Twenty sixth Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at University of the Punjab, Lahore, Pakistan, April 4-6, (2006) and **Co-chaired Cell and Molecular Biology session.**
16. Two-day conference of life scientist at Bahauddin Zakariya University Multan on 13 and 14 November, (2006). Organized by National Core Group in Life Sciences (HEC Islamabad).

17. International Conference on “Solving Problems of Freshwater Fish Farming in Pakistan” on November 27-28, (2006) organized by Faculty of Fisheries & Wildlife University of Veterinary & Animal Sciences, Lahore Pakistan.
18. Twenty-seventh Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at University of the Bahauddin Zakariya University, Multan, Pakistan, February 27 to 1st March, (2007) and **Co-chaired Cell Biology, Molecular Biology, Genetics, Physiology and Toxicology session**
19. **Attended 18th General TWAS meetings in Trieste Italy 13-14 Nov 2007. Hosted by ICTP.**
20. Twenty-eighth Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at Government College University Faisalabad, Faisalabad, Pakistan, March 18-20, (2008) and **Co-chaired Cell Biology, Molecular Biology, Genetics, Physiology and Toxicology session.**
21. Twenty-ninth Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at University of Sindh Jam Shoro, Pakistan, February 24-26, (2009) and **Co-chaired Cell Biology, Molecular Biology, session.**
22. 30th Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at, University of Agriculture Faisalabad, Pakistan, March 2-03, (2010) and **Co-chaired Cell Biology, Molecular Biology, session.**
23. 31st Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at, University of Azad Jammu & Kashmir Muzaffarabad, April 19-21 (2011) and **Co-chaired Cell Biology, Molecular Biology, session.**
24. 32nd Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at, GC University, March, 6-8 (2012) and **Co-chaired Cell Biology, Molecular Biology, session.**
25. **Attended 23rd General The World Academy of Science (TWAS) meetings in China 18-21 September, (2012).**
26. 33rd Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at, Convention, Center Islamabad, April, 2-4 (2013) and **Chaired Cell Biology, Molecular Biology, Genetic, Physiology Session**
27. **Attended 24th General The World Academy of Science (TWAS) meeting in Argentina 1- 4 October,(2013).**
28. 34th Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at, Bahauddin Zakria university, Multan, February 25-27 (2014) and **Chaired Cell Biology, Molecular Biology, Genetic, Physiology Session.**
29. Two days Invention to Innovation Summit March 2014. Jointly organized by Pakistan Science Foundation, University of the Punjab and Institute of research Promotion.
30. Attended international conference on innovative biological and public health research (IBPHR) held at department of Zoology, Govt. college University, Lahore, May 06-08 (2014).
31. **Attended 25th General The World Academy of Science (TWAS) meeting in Muscat Sultanate of Oman, 25th -28th October 2014.**
32. 35th Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at, Karachi University, March, 1-4 (2015) and **Chaired Cell Biology, Molecular Biology, Genetic, Physiology Session.**

33. 37th Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at, Department of Zoology, Government College University Faisal Abad, Faisal Abad February 28 – March 2nd ,(2017) and **Chaired Cell Biology, Molecular Biology, Genetic, Physiology Session.**
34. Attended “**International conference on China – Pakistan Economic Corridor Political, Economic and Social Perspectives** “Organized by Department of History and Pakistan Studies University of the Punjab Lahore. 11th September – 13th September 2017.
35. Attended “**International conference on New Trends In Natural Sciences: From Basics to Applied**” Jointly organized by Department of Biotechnology and Department of Zoology, Lahore, College Women University Lahore. 25thOctober – 27th October (2017) and **Co-Chaired Session.**
36. Attended “**2nd International Conference on Innovative Biological and Public Health Research**” (IBPHR-2017) organized by Department of Zoology, GC University, Lahore. 6th December, 2017.
37. 38th Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at Department Zoology, University of the Punjab New Campus Lahore February 27 – March 1st, (2018) and **Chaired Cell Biology, Molecular Biology, Genetic, Physiology Session.**
38. Attended International Conference on **Governance, Management & HR: Strategic Directions.** 19th-21st March, 2018 organized by Institute of Administrative Sciences, University of the Punjab. Pearl Continental, Lahore.
39. Attended **Peace, Harmony & Nationalism Conference** held at University of the Punjab in collaboration with Center for Health and Gender Equality. March 22, 2018 Faisal Auditorium University of the Punjab New Campus Lahore.
40. Attended Conference on **Industry academia Linkage, VISION 2030**, organized by Industry Academia Linkage Committee LCCI. April 4, 2018. Lahore Chamber of Commerce and Industry.
41. 39th Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at Department of Zoology, Islamia College University, Peshawar March 4-6, (2019) and **Chaired Cell Biology, Molecular Biology, Genetic, Physiology Session.**
42. Attended “**3rd International Conference on Innovative Biological and Public Health Research**” (IBPHR-2019) organized by Department of Zoology, GC University, Lahore. 13-14 November, 2019.
43. Attended “**4th International Conference on Innovative Biological and Public Health Research**” (IBPHR-2021) organized by Department of Zoology, GC University, Lahore. 7-8th December, 2021.
44. **Attended 40th Pakistan Congress of Zoology (International).First Virtual Pakistan Congress of Zoology December 14, 17-19, 2021** held under the auspices of the Zoological Society of Pakistan at Department of Parasitology, Sindh Agriculture University, Tandojam. **Chaired Cell Biology, Molecular Biology Physiology, Biochemistry, Genetics and Toxicology session.**
45. **Attended International Conference on Fisheries and Aquaculture and EXPO-2022** organized by Department of Zoology, GC University, Lahore. November 23rd – 24th, 2022.
46. **Attended International Fisheries and Aquaculture Conference -2023** organized by Institute of Zoology, University of the Punjab Lahore. February, 8th – 9th 2023.
47. **Attended 41st Pakistan Congress of Zoology (International). February 16- 18 2023** held under the auspices of the Zoological Society of Pakistan at Institute of Zoology, University of the Punjab New Campus Lahore. **Chaired Cell Biology, Molecular Biology Physiology, Biochemistry, Genetics and Toxicology session.**
48. **Attended “5th International Conference on Innovative Biological and Public Health Research**” (IBPHR-2023) organized by Department of Zoology, GC University, Lahore. 11-12 October, 2023.

49. Attended 42nd Pakistan Congress of Zoology (International). April 23- 25 2024 held under the auspices of the Zoological Society of Pakistan at Department of Zoology, University of Azad Jammu and Kashmir King Abdullah Campus AJ&K. Chaired Cell Biology, Molecular Biology Physiology, Biochemistry, Genetics and Toxicology session

27. SEMINARS/ WORKSHOPS/ SYMPOSIA/WEBINAR ATTENDED

1. **Seminar in “Cell Biology” from 1992-1996. Weekly at Cell and Molecular Biology Lab, University of Massachusetts Medical Centre, Worcester, (USA).**
2. **Workshop on “Cell cycle regulation” 1996 at Biotech II, Worcester MA 01655 (USA)**
3. **Training in “Intel Teach to the Future Program” Intel Innovation in Education, Government College University Lahore, from 05.06.2000 to 05.25.2000.**
4. **Workshop on “Digital Library” 2005. Organized by HEC, Government College University, and Lahore.**
5. **3rd Symposium of Fisheries** held under the auspices of Pakistan Fisheries Society at G.C., University. Lahore, 25th - 26th April, 2005. (Member of Organizing Committee).
6. **International Symposium on “Nano-Chemistry of Enzymes”** held at School of Biological Sciences University of the Punjab, Lahore. Sponsored by Pakistan Academy of Science September 20th to 21st 2006.
7. **Workshop on “National Innovation Systems”** 14-15 December 2006, Lahore, Pakistan organized by **Asian Pacific Center for Transfer of Technology (APCTT), New Delhi, India in cooperation with Pakistan Council of Scientific & Industrial Research (PCSIR) Ministry of Science & Technology Government of Pakistan.**
8. **International Symposium on “Glycoprotein in Human Health and Diseases”** held at School of Biological Sciences University of the Punjab, Lahore. Sponsored by Pakistan Academy of Science May 27th to 29th 2008.
9. **Seminar on “Fish Health Management”** organized by Department of Zoology, GC University, Lahore and Department of Biological Sciences, University of Aberdeen UK under HEC- British Council joint Higher Education links programme (2006-2009) 12th March 2009.
10. **4th National symposium on fisheries** on March 18-19, 2009. Organized by Pakistan Fisheries Society and Department of Fisheries.
11. **Workshop on HRDC-cycle IV: All about Assessment in Higher Education** held in GCU, April 09-11, 2009. Organized by QEC (Quality Enhance Cell), GC University, Lahore.
12. **Seminar on “Fish and Fisheries of Pakistan”** organized by Department of Zoology, GC University, Lahore and Department of Biological Sciences, University of Aberdeen UK under HEC- British Council joint Higher Education links program (2006-2009) 22nd June 2009.
13. **First Workshop on Biosafety and Risk Management** held in Karakoram International University Gilgit-Baltistan June 11-16, 2013. **Organized by Department of Biological Sciences KIU, GB Fogarty International Center USA and Pakistan Biological Safety Association.**
14. **National Seminar on “Dengue awareness”** September 22-9-2014. Organized by Department of Zoology, University of the Punjab Lahore.
15. **Indigenous on-Campus Training Program for Management team** Nov 17-21, 2014 University of the Punjab in collaboration with Higher Education Commission.

16. **Workshop on use of Bioinformatics in High Throughput Sequencing, Genomics, Proteomics and Transcriptomics** March 31st 2015 NIBGE Faisalabad.
17. **National Seminar** on “Dengue awareness” September 04-11-2015. Organized by Department of Zoology, University of the Punjab Lahore.
18. **Workshop attended** (Inaugural session) 12th National Honey bee Farming and Management Training Workshop. March 14-18 2016. Department of Zoology, University of the Punjab, Lahore.
19. **International Seminar on “Fisheries and Aquaculture”** organized by Department of Zoology GC University, Lahore and Department of Fisheries Punjab on Feb 10, 2017
20. **Seminar on “World Quality Day”** Organized by Quality Enhancement Cell, Punjab University New Campus Lahore. February 8, 2017.
21. **Workshop attended** (Inaugural session) 13th National Honey bee Farming and Management Training Workshop. March 13-17 2017. Department of Zoology, University of the Punjab, Lahore.
22. Attended seminar on **Celebration of World Quality Day** on 14th November, 2017, organized by Quality Enhancement cell in collaboration with Institute of Quality and Technology Management, university of the Punjab Lahore.
23. Exclusive lecture on “**Biopolymer, Biomaterials and Bio-textiles**” delivered by **Prof. Dr. Martin W King** North Carolina State University USA. Organized by Department of Polymer Engineering and Technology University of the Punjab, Lahore. March 9 , 2018
24. One Day Symposium on **DNA in Crime Investigation** organized by Centre for Applied Molecular Biology. April 5, 2018. At Al-Razi Hall, University of the Punjab, Lahore.
25. **Workshop attended on** “Insecticide resistance and possible solutions” October 10, 2018. Organized by Department of Zoology, Government College University Lahore.
26. Attended **World Fisheries Day 2019**, organized by Department of Zoology, Government College University, Lahore. 22nd November, 2019.
27. Attended **Webinar on Demographic and Clinical Aspect of Dengue in Pakistan**, organized by Department of Entomology, Link: <https://forms.gle/sXfcF3LZ2pHTgX4b9> University of the Punjab, Lahore. 23rd June, 2021.
28. Attended seminar on **Chemistry and Entrepreneurship** November 8th 2022, organized by Centre for Research in Ionic Liquid, School of Chemistry, University of the Punjab New Campus Lahore.
29. Attended Launching and Orientation ceremony of Ist batch of Post Graduate Diploma in **Chemistry and Entrepreneurship** December 15th 2022, organized by Centre for Research in Ionic Liquid, School of Chemistry, University of the Punjab New Campus Lahore.
30. Workshop attended (Inaugural and Closing session) 17th National Hands -On Training Workshop on Organic Beekeeping Practices November 06-14 2023. Institute of Zoology, University of the Punjab, Lahore.

28. ORGANIZED SUMMITS/WORKSHOPS/SEMINARS/CONFERENCES:

1. **Organized a workshop on “All about Assessment in Higher Education” as a Resource person** on April 17-18, 2009 Department of Zoology/QEC, GC University, Lahore.
2. **Organized a workshop on “Hands on Practice of Basic Molecular Techniques” as a Resource person** on February 11th, 2017 Department of Zoology, University, of the Punjab Lahore.
3. **Organized a workshop on “Hands on Practice of Basic Microbiological Techniques”** on February 18th, 2017 Department of Zoology, University, of the Punjab Lahore.
4. **Organized 2nd one day workshop on “Hands on Practice of Basic Molecular Techniques” as a Resource person** on March 4, 2017 Department of Zoology, University, of the Punjab Lahore.
5. **Organized 2nd Training workshop on “Hands on Practice of Basic Lab. Instruments”** on April 1st, 2017 Department of Zoology, University, of the Punjab Lahore.
6. **Organized a Seminar on “Science: Dry Wet and Moist”** April 6th, 2017 Department of Zoology, University, of the Punjab Lahore.
7. **Organized 2 days Workshop** on “Patent Filing and Intellectual Property System of Pakistan” May 17 -18, 2017 under ORIC, University of the Punjab.
8. **Organized one day workshop on “Entrepreneurship, Use of Business Intelligence for Development”**, September 13, 2017 under ORIC University of the Punjab Lahore.
9. **Organized one day workshop on “Entrepreneurship,”** January 10, 2018 under ORIC, Khorana Hall Institute of Chemistry University of the Punjab.
10. **Organized 2nd Training workshop on “Hands on Practice of Basic Lab. Instruments”** on February 03, 2018 Department of Zoology, University, of the Punjab Lahore.
11. **Organized 38th Pakistan Congress of Zoology (International)** held under the auspices of the Zoological Society of Pakistan at Department of Zoology, University of the Punjab New Campus Lahore February 27 – March 1st, (2018).
12. **Organized Summit “7th Invention to Innovation Summit To buy and Sell Technology”** under ORIC in University of the Punjab Lahore March 7-8, 2018.
13. **Organized Seminar on Awareness of Hepatitis B & C** in Senate Hall, University of the Punjab, Old Campus on April 23rd, 2018.
14. **Organized Seminar on Awareness of Hepatitis B & C to the Workers of Barber’s shops, Fruit Shops, Student Teacher Centre, Workers of Hostels and Professor’s Colony** in Institute of Social and Cultural Sciences, University of the Punjab, New Campus on April 24th, 2018.

15. **Organized one day Symposium on Integrated Pest Management for Food Safety** on 30th January, 2019 at Department of Zoology, University of the Punjab New Campus Lahore and C-Shine Group Lahore.
16. **Organized 40th Pakistan Congress of Zoology (International). First Virtual Pakistan Congress of Zoology December 14, 17-19, 2021** held under the auspices of the Zoological Society of Pakistan at Department of Parasitology, Sindh Agriculture University, Tandojam.
17. **Organized International Fisheries and Aquaculture Conference -2023** at Institute of Zoology, University of the Punjab Lahore. February, 8th – 9th 2023.
18. **Organized 41st Pakistan Congress of Zoology (International). February 16- 18 2023** held under the auspices of the Zoological Society of Pakistan at Institute of Zoology, University of the Punjab New Campus Lahore
19. **Organised 42nd Pakistan Congress of Zoology (International).** April 23- 25 2024 held under the auspices of the Zoological Society of Pakistan at Department of Zoology, University of Azad Jammu and Kashmir King Abdullah Campus AJ&K.

29. AWARDS/HONOURS

1. **Granted Six Advance Increments year 2000** in the meeting of Board of Governor for the post of lecturer in Zoology Government College Lahore, on the basis of number of publications in the world reputed journals *i.e.* **Nature, PNAS etc.** .
2. **Poster presentations** during 20th Pakistan Congress of Zoology (International) 2000 held at University of Sindh, Jamshoro was given the **First Prize**.
3. **Research Productivity Allowance of amount 60,000/- for the fiscal year 2001-2002** by the Pakistan Council for Science and Technology, (Ministry of Science and Technology) in recognition of the excellence of my research work.
4. **Special Science & Technology Allowance of amount Rs. 84000/-** by Higher Education Commissions (HEC) for the years 2001-2003.
5. **Poster presentation** in the First National Biological Congress 2002 at Government College, Lahore was given **Third prize**.
6. **Poster presentations** during 22nd Pakistan Congress of Zoology (International) 2002 held at University of Azad Jammu & Kashmir, Muzaffarabad was given the **First Prize**.
7. **Poster Presentation** during 23rd Pakistan Congress of Zoology (International) 2003 held at University Arid Agriculture. Rawalpindi, Pakistan was given the **Third prize**.
8. **Co-chaired “Molecular Biology and Serology”** in Second National Conference of Biology held under the auspices of Biological Society of Pakistan at Government College University, Lahore 2004.
9. **Nominated by Higher Education Commission. For Mohtarma Fatima Jinnah Medal for excellence 2004**

10. **Awarded Prof. Dr. Mirza Azhar Beg Gold Medal 2005** on outstanding contributions in the field of Environmental Biology, Wild life and Fisheries by the Zoological Society of Pakistan.
11. **Recommended by Higher Education Commission for the Civil Award Tamgha-e-Imtiaz on Independence Day, 14th August, 2005.**
12. **Poster presentation** during 25th Pakistan Congress of Zoology (international) 2005 held at Sindh Agriculture University, Tandojam Pakistan was given the **First prize**.
13. **Co-chaired Cell and Molecular Biology Session** in Twenty sixth Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at University of the Punjab, Lahore, 2006.
14. Lecture delivered as a **Resource person** on the topic entitled as “Gene Expression in Prokaryote and Eukaryote” in Six Days in Service Teachers Training in Zoology on 28th Aug-2nd Sept. 2006 held at Department of Zoology GC University, Lahore. Sponsored by HEC.
15. **Nominated by Pakistan National Commission for UNESCO for 2008 L-Oreal UNESCO Award “For Women in Science” Dedicated to Life Sciences.**
16. **Co-chaired Cell Biology, Molecular Biology, Genetics, Physiology and Toxicology Session** in Twenty-seventh Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at University of the Bahauddin Zakariya University, Multan, 2007.
17. **Co-chaired Cell Biology, Molecular Biology, Genetics, Physiology and Toxicology Session** in Twenty-eighth Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at Government College University, Faisalabad, Faisalabad, 2008.
18. **Awarded Prof. Dr. A.R. Shakoori Gold Medal 2008** on outstanding contributions in the field of Cell Biology and Molecular Biology by the Zoological Society of Pakistan.
19. Lecture delivered as a **Resource person** on the topic entitled as “Microbiological Techniques” in Six Days in Service Teachers Training Program in Zoology on **16th Feb.2009** held at Department of Zoology GC University, Lahore. Sponsored by **HEC**.
20. **Co-chaired Cell Biology and Molecular Biology Session** in Twenty-ninth Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at University of Sindh Jamshoro, Pakistan, 2009.
21. **Co-chaired Cell Biology and Molecular Biology Session** in 30th Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at University of Agriculture Faisalabad Pakistan, **2010**.
22. **Subject Expert to Punjab Public Service Commission (PPSC)** for the recruitment of the post of Assistant Professor of Zoology, 2010

23. **Subject Expert to Punjab Public Service Commission (PPSC)** for the recruitment of the post of Assistant Director Fisheries, 2011.
24. **Acting Chairperson, Department of Zoology** GC University, Lahore (April 11, 2011 to April 18, 2011).
25. **Co-chaired Cell Biology and Molecular Biology Session** in 31st Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at University of Azad Jammu & Kashmir Muzaffarabad, 2011.
26. **Member Board of Studies**, Department of Zoology, University of the Punjab, New campus Lahore. 2011-continuing
27. **Co-chaired Cell Biology and Molecular Biology Session** in 32nd Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at GC University, Lahore, 2012.
28. **Awarded Research Productivity Allowance** by the Ministry of Science and Technology in **2011**, based upon **Impact Factor**.
29. **Member Board of Studies**, Department of Biotechnology, Lahore College University, for Women Lahore. 2012- 30th January, 2021.
30. **Performance evaluation award 2012** Rs. 50,000 by University of the Punjab Lahore.
31. **Awarded Research Productivity Allowance** by the Pakistan Council for Science and Technology in **2012**, based upon **Impact Factor**.
32. **Chaired** Cell Biology and Molecular Biology Session in 33rd Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at Convention Center Islamabad, 2013.
33. Lecture delivered as a **Resource person** on the Personal Protection Equipment in Biosafety and Risk Management First Workshop held in Karakoram International University Gilgit-Baltistan June 11-16, 2013. Organized by Department of Biological Sciences **KIU, GB / Fogarty International Center USA and Pakistan** Biological Safety Association.
34. **Subject specialist in selection board of**, Department of Biotechnology, Lahore College University, for Women Lahore. 2013- 30th January, 2021.
35. **Chaired** Cell Biology and Molecular Biology Session in international conference on innovative biological and public health research (IBPHR) held at department of Zoology, Govt. college University, Lahore, May 06-08 (2014).
36. **Performance evaluation award 2013** Rs. 50,000 by University of the Punjab Lahore.
37. **Incentive award 2013** based on number of publications.

38. **Chaired** Cell Biology and Molecular Biology Session in 34th Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at Bahauddin Zakria university, Multan, February 25-27 (2014).
39. **Won Pakistan Academy of Sciences (PAS) Open Gold Medal 2014 for outstanding research work with cash prize of Rs. 35000/-**
40. **Performance evaluation award 2014** Rs. 42,000 by University of the Punjab Lahore.
41. **Incentive award 2014** based on number of publications.
42. **Chaired** Cell Biology and Molecular Biology Session in 35th Pakistan Congress of Zoology (International) held under the auspices of the Zoological Society of Pakistan at Karachi University, March 1-4 (2015).
43. **Advisor to Board of *Journal of Innovative Sciences*** published by Society for Promotion of Science and Technology Lahore College for Women University, Lahore (LCWU).
44. **Member of BOG of Punjab Curriculum and Textbook Board for Review of Text books.**
45. **Subject Expert to Punjab Public Service Commission (PPSC) 2015** for the recruitment of the post of lecturer in Zoology.
46. **Member Editorial Board of** HEC recognized *Punjab University Journal of Zoology, (PUJZ)* published by Department of Zoology, University of the Punjab Lahore.
47. **Performance evaluation award 2015** Rs. 50,000 by University of the Punjab Lahore.
48. **Member of Editorial team 2016- 2019 “Cogent Biology”** Oxford shire UK.
49. **Incentive award 2016** based on number of publications.
50. **Co-Chaired Session in “International conference on New Trends In Natural Sciences: From Basics to Applied”** Jointly organized by Department of Biotechnology and Department of Zoology, Lahore, College Women University (LCWU) **25thOctober – 27th October (2017).**
51. **Establishment of Technology & Innovation Support Center (TISC) Network in Pakistan**, signing ceremony of Institutional Agreement among intellectual Property Organization of Pakistan, Higher Education Commission of Pakistan and Host Institutions for establishment of TISCs. **12th December, (2017).**
52. **Incentive award 2017** based on number of publications.
53. **Performance evaluation award 2017** Rs. 50,000 by University of the Punjab Lahore.
54. **Member of expert panel from University of the Punjab for the Constitution of Pakistan Health Research Council’s Expert Panel (2018)** for reviewing Research proposal for funding / Research Articles for publishing in Pakistan Journal of Medical Research (PJMR).

55. **Convener to Pakistan Science Foundation from University of the Punjab (2018)** for Selection of Professors/Lecturer as a Mentor/ Research Supervisor under project “Science Talent Farming Scheme” STFS Students, Phase I(Component-I), Govt. of Pakistan Islamabad
56. **Awarded reviewer certificate** for reviewing one article for the **journal of cellular biochemistry** having **impact factor of 3.448** in year **2018**.
57. **Won Third prize** (oral presentation) for “Search for eQTLs as indicators of regulatory variants in immune genes related to TB” at ICPU 2019 “Recent innovations in molecular sciences”, **6-8 November, 2019**.
58. **Co-Chaired** joint session II: Plenary Lecture at “**3rd International Conference on Innovative Biological and Public Health Research**” (IBPHR-2019) organized by Department of Zoology, GC University, Lahore. **13-14 November, 2019**.
59. **Incentive award 2019** based on number of publications.
60. **Awarded Zoologist of the year award 2020** on outstanding contributions in the field of Molecular Biology by the Zoological Society of Pakistan.
61. **Incentive award 2020** based on number of publications.
62. **Performance evaluation award 2020 Rs. 50,000 by University of the Punjab Lahore**.
63. **I am placed at position 20** out of 130 scientists, one country one university **in AD scientific index 2021 for ranking of universities**.
64. **Chaired** Molecular Biology and Genetics Session at “**4th International Conference on Innovative Biological and Public Health Research**” (IBPHR-2021) organized by Department of Zoology, GC University, Lahore. **7-8th December, 2021**.
65. **Co-Chaired** joint session II: Plenary Lecture at “**4th International Conference on Innovative Biological and Public Health Research**” (IBPHR-2021) organized by Department of Zoology, GC University, Lahore. **7-8th December, 2021**.
66. **Chaired Cell Biology, Molecular Biology Physiology, Biochemistry, Genetics and Toxicology Session in 40th Pakistan Congress of Zoology (International)**. First Virtual Pakistan Congress of Zoology December 14, 17-19, 2021 held under the auspices of the Zoological Society of Pakistan at Department of Parasitology, Sindh Agriculture University, Tandojam.
67. **Guest of honour and speaker in Women Day** organized by University of Jhang March, 8th 2022.
68. **Subject Expert** for the Recruitment of Two Hundred and Twelve Posts of Secondary School Teacher (Male) (BS-17), Federal Directorate of Education, Ministry of Federal Education & Professional Training. From 20-06-2022 to 24-06-2022.
69. **Subject Expert** for the Recruitment to two hundred and four Secondary School Teacher (Female) (BS-17), Federal Directorate of Education, Ministry of Federal Education & Professional Training. 4-07-2022 to 5-07-2022.

70. **Subject Expert** for the Recruitment to fifty three Posts of Secondary School Teacher (Male) (BS-17), Federal Government Educational Institutions (Cantts/Garison) Ministry of Defence. 26-09-2022.
71. **Chaired Session at International Conference on Current and Innovative Trends in Applied Bio-Sciences** (CTABS - 2022) organized by Department of Biology, Garison University, Lahore, Pakistan 21-11-2022.
72. **Guest of honour** Launching and Orientation Ceremony of Ist batch of Post Graduate Diploma in **Chemistry and Entrepreneurship** December 15th 2022, organized by Centre for Research in Ionic Liquid, School of Chemistry, University of the Punjab New Campus Lahore.
73. **Incentive award 2021** based on number of publications.
74. **Elected as Treasurer** of Academic Staff Association (ASA) 2021.
75. **Elected as Vice President (Science)** of Academic Staff Association (ASA) 2022.
76. **Chaired Cell Biology, Molecular Biology Physiology, Biochemistry, Genetics and Toxicology** Session in 41st Pakistan Congress of Zoology (International). February 16- 18 2023 held under the auspices of the Zoological Society of Pakistan at Institute of Zoology, University of the Punjab New Campus Lahore.
77. **Member of BOS in School of Biochemistry and Biotechnology** University of the Punjab w.e.f. 12-4-2023.
78. **Co-Chair Plenary Lecture in “5th International Conference on Innovative Biological and Public Health Research”** (IBPHR-2023) organized by Department of Zoology, GC University, Lahore. 11-12 October, 2023.
79. **Elected as Vice President (Science)** of Academic Staff Association (ASA) 2024.
80. **Chaired Cell Biology, Molecular Biology Physiology, Biochemistry, Genetics and Toxicology session** in 42nd Pakistan Congress of Zoology (International). April 23- 25 2024 held under the auspices of the Zoological Society of Pakistan at Department of Zoology, University of Azad Jammu and Kashmir King Abdullah Campus AJ&K.

30. **ADMINISTRATIVE DUTIES:**

1. **In charge Departmental Time Table.** (Jan. 2009 to March 2010) Department of Zoology GC University Lahore.
2. **Program Team Member (PTM) of Quality Enhancement Cell,** Department of Zoology GC University Lahore. (April, 2009 – April, 2011).
3. **Preparation of Self-Assessment Report (SAR)** Department of Zoology GC University Lahore. (2010).
4. **Member of BOS of the** Department of Zoology.
5. **Member DDCP of the** Department of Zoology
6. **Member of Zoological Character-Building Society** Department of Zoology.

7. **Member of Scholarship and Financial Assistance Committee** Department of Zoology.
8. **In charge Central Research Lab** Department of Zoology University, of the Punjab Lahore. (2015-2022)
9. **Member Purchase Committee** Department of Zoology University, of the Punjab Lahore. (2013-2016)
10. **Editor Prospectus Department of Zoology University, of the Punjab Lahore** (2015 -2017).
11. **Member Editorial Board of HEC Recognized** Punjab University Journal of Zoology (PUJZ)since 2011
12. **In charge Seminar Holding Committee** Department of Zoology, University, of the Punjab Lahore.
13. **Member Admission Committee** Department of Zoology B.S M.S/M.Phil., Ph.D. Regular program etc.
14. **Member Admission Committee** Department of Zoology M.Phil. (In-Service Self-supporting Program).
15. **Member Departmental curriculum Committee**
Department of Zoology.
16. **Deputy Director ORIC (April 25, 2017 to October 25, 2017)**
17. **Director ORIC University of the Punjab (November 15, 2017 to 22nd July 2018)**
18. **Member** of Overseas Scholarship Committee, University of the Punjab (November 15, 2017 to 22nd July 2018)
19. **Member of Sub-Committee to evaluate the cases regarding Grant of Advance/Annual Increment and performance Based Increment /Honorarium to the faculty members working under TTS system (2018).**
20. **Convener of Committee** for the Audit of the MS/M.Phil. /Ph.D. accounts of department of Zoology, for the period 2015-2019.
21. **Member of Committee for the** Management of Fish Research Farm University of the Punjab.
22. **Coordinator BS 4 year's program** 27 July, 2020 -2021.
23. **Member of Board of Studies of Zoology Department, LCWU for a period of three years w.e.f. 29-11-21 to 28-11-2024.**
24. **Member of the Selection committee of candidates** against reserved seats on sports basis for admission2021-2022in BS program University of the Punjab
25. **Member of the House Allotment committee** for Teaching Staff of University of the Punjab 2022.

26. **Coordinator MS/M.Phil program** 2022- continuing
27. **Member Purchase committee** of medicine health center university of the Punjab 2022.
28. **Member Advisory committee** of health Center University of the Punjab 2024. **Member Purchase committee** of medicine health center university of the Punjab 2022.
29. **Chairperson** Purchase committee of medicine health Center University of the Punjab 2024.
31. **REVISION OF COURSES AND PREPRATION OF CURRICULLUM:**
 1. Revised the Course of Biochemistry for 5th semester B.S. Hons class Department of Zoology University, of the Punjab Lahore. (2011).
 2. Revised the Course of Molecular Genetics for B.S. Hons class Department of Zoology University, of the Punjab Lahore. (2011).
 3. Revised the Course of Biochemistry for M.Sc. Part 1 class Department of Zoology University, of the Punjab Lahore. (2011).
 4. Revised the Course of Molecular Biology for M.Sc. Part 11 class Department of Zoology University, of the Punjab Lahore. (2011).
 5. Revised the Course of Molecular Biology for Ph.D. class Department of Zoology University, of the Punjab Lahore. (2011).
 6. Revised the Course of Gene Cloning for Ph.D. class Department of Zoology University, of the Punjab Lahore. (2011).
 7. Introduced Course on Biosafety for M.Phil. /M.S. Ph.D. class Department of Zoology University, of the Punjab Lahore. (2017).
 8. Introduced Course on Applied Gene Cloning for M.Phil. /M.S. Ph.D. class Department of Zoology University, of the Punjab Lahore. (2017).
32. **SERVICES IN OTHER UNIVERSITIES As:**

Examiner for Conducting Viva for B.S, M.S., M.Phil. And Ph.D. Examination.

Department of Biotechnology, Lahore College for Women University, Lahore (LCWU).

Department of Zoology GC University Lahore. (GCU)

Department of Zoology GC University of Central Punjab Lahore. (UCP.

Institute of Industrial Biotechnology GC University Lahore. (GCU)

Department of Zoology Islamia College University Khyber Pakhtunkhwa.

Department of Zoology Wafaqi Urdu University Karachi.

Department of Zoology Islamia University Bahawalpur.

Department of Biotechnology University of Sargodha, Sargodha.

Department of Zoology University of Sargodha, Sargodha.

Virtual University, Lahore.

Subject Specialist for the scrutiny of the post of Assistant Professor and Lecturer in Punjab Public Service Commission (PPSC) and Federal Public Service Commission (FPSC).

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