

Dr. Soumble Zulfiqar

Current Position

March 2018 - to date **Assistant Professor**, School of Biological Sciences, University of The Punjab, Lahore

Professional Experience

Aug. 2012- March 2018 **Post-Doctoral Fellow**, School of Biological Sciences, University of The Punjab, Lahore

Project: Regulation of copper metallothionein in *Klebsiella pneumoniae*

Jan., 2018 **Focal person, Molecular Biology lab** for Ph.D., King Edward Medical University, Lahore

Oct. 2015 - July 2016 **Assistant Professor (visiting)**, Faculty of Life Sciences, University of Central Punjab, Lahore

Sep.-Nov., 2016 **Focal person, Molecular Biology lab** for Ph.D., King Edward Medical University, Lahore

May-Aug, 2012 **Research Officer**, School of Biological Sciences, University of The Punjab, Lahore

2002 – 03 **Subject specialist (Science)**, City Cadet School, Al-Mumtaz road, Off Multan road, Lahore

Literary Composition

- **Co-editor, Urdu Science Encyclopedia** published by Urdu Science Board, Ministry of Education, Govt. of Pakistan. ISBN: 969-477 117-X

Area of Research Interest

My area of research interest has been to isolate best possible metal resistant microbes and explore metal resistance mechanisms in them. Cloning, promoter activity and transcriptional profiling of some metal responsive genes have revealed many structural and functional aspects. The application of this research is quite diverse such as development of industrial waste management systems. This study can also lead to development of bioreporters for biomining industry.

I am also utilizing my expertise in the field of bio medical sciences. A project 'Prevention of NSAID-induced enteropathy through dietary intervention' is in progress.

PU-Funded Projects Completed

- Characterization of microbiome from heavy metal rich industrial effluents of Lahore based industrial areas through next generation sequencing
- Study of Microbiome in Chromium Rich Industrial Effluents and Discovery of Novel Bacteria for Bioremediation
- Characterization of Bioremediation Potential of Bacteria isolated from cadmium rich industrial effluents

Other Projects Completed

- Regulation of copper metallothionein in *Klebsiella pneumoniae*
- Molecular Characterization of silver resistance in *Klebsiella pneumoniae*
- Protein Engineering of Cadmium Metallothionein PMCD1 of *Paramecium* sp.

- Identification and molecular characterization of metal resistant gene(s) of ciliates from local industrial wastewater
- Effect of Butyrate on Genetic Expression of Sirt1/AMPK and Akt/mTOR Axes in mice

Projects Undergoing

- Identification and bioremediation characterization of novel cadmium tolerant bacteria through next generation genomics
- Prevention of NSAID-induced enteropathy through dietary intervention

Research Supervision/co-supervision

- **PhD student currently under supervision:**
 - Sadia Mushtaq (Ph.D-BS07F20) Identification and Bioremediation Characterization of Novel Cadmium Tolerant Bacteria Through Next Generation Genomics
 - Huzaifa Farooq (Ph.D-13F22) Evaluation of the preventive efficacy of dietary interventions against NSAID-induced enteropathy in mouse model
- **MPhil degrees Supervised:**
 - Shagufta Zaheer (MPhil-BS14F17) "Effect of Butyrate on Gene Expression of Sirt1/AMPK and Akt/mTOR Axes in Murine Liver"
 - Shabahat Khan (MPhil-BS16F17) "Effect of Butyrate on Gene Expression of Sirt1/AMPK and Akt/ mTOR Axes in Murine Skeletal Muscle"
 - Iqra Shahid (MPhil-BS20F18) "Effect of Butyrate on Gene Expression of Sirt1 and AMPK - Involved in Nutrient Sensing and Energy Homeostasis - in Murine Brain"
 - Sadia Mushtaq (MPhil-BS17F18) "Effect of Butyrate on Gene Expression of Akt and mTOR-Involved in Regulation of Cellular Proliferation - in Murine Brain"
 - Samrana Inayat (MPhil-BS08F19) "Effect of Butyrate on Expression of Genes Associated With Oxidative Stress in Murine Brain"
 - Hira Kiran (MPhil-BS16F19) "Effect of Butyrate on Expression of Genes Associated With Physiological Stress in Murine Skeletal Muscle"
 - Hajra Bibi (MPhil-BS07F20) "Efficacy of Soluble Dietary Fiber Guar Gum for the Treatment of Enteric Ulcer in Mouse Model"
 - Aiman Sahar (M.Phil-BS10F21) "Efficacy of *Fructus Hordei Germinatus* for the Prevention of Indomethacin Induced Enteric Ulcer in Mice"
 - Aimen Karim (M.Phil-BS15F21) "Preventive Efficacy of *Plantago Ovata* Husk Against Indomethacin Induced Enteric Ulcer in Mice"
 - Rabbia Jawad M.Phil-21F22 "Mitigation of NSAID-induced small intestinal damage in a mouse model using psyllium husk"
 - Naila Farooq (M.Phil-22F22) "Mitigation of NSAID-induced small intestinal damage in a mouse model using moringa leaf powder"
 - Muhammad Faizan (M.Phil-22F23) "Protective Efficacy of Moringa and Psyllium Against NSAID-Induced Enteropathy"
- **MPhil degrees co-supervised:**
 - Qudsia Mahmood Khan, 2020S-mulmpl-bioche-006 (2022). Isolation and Characterization of Chromium Resistant Microbes from Tannery Wastewater. School of Biochemistry, Minhaj University, Lahore.

- Maria Haq Nawaz, W20-MPBC-005 (2023). “Biochemical and Molecular Characterization of Probiotic Bacteria.” Department of Biochemistry Kinnaird College for Women, Lahore.
- Saba Akram, (MU 2021-23). Efficacy of *Ficus Carica* (fruit) Extract in Joint Inflammation by Measuring Expression of Il-10 and Dityrosine (Inflammatory Biomarkers) in Mice Mode. School of Biochemistry, Minhaj University, Lahore.
- Muhammad Subhan, (MU 2022-24). Evaluation Anti-inflammatory Activity of *Ficus Carica* by the Expression of Cox-1 and Cox-2 Gene Using Mice Model. School of Biochemistry, Minhaj University, Lahore.
- **MPhil students currently under supervision:**
 - Salika (M.Phil-17F24)
 - Aasma Sharif (M.Phil-22F24)
- **MPhil students currently under co-supervision:**
 - Zunaira Javaid (F24MPBC013) Department of Biochemistry Kinnaird College for Women, Lahore

Scholarship/Award/Honour

- **Chairperson/Co-chairperson** of sessions - Cell and Molecular Biology, Physiology, Genetics – in 34th - 43rd Pakistan Congress of Zoology (International)
- **Plenary lecture**, Two-day Workshop on Gene Cloning, Aug. 25-26, 2022. Department of Zoology, Govt. College University, Lahore.
- **Indigenous scholarship for Ph.D.** program (2004-2009). School of Biological Sciences, University of The Punjab, Lahore
- **President Talent Farming Scheme Scholarship** during M.Sc. under the auspices of University Grants Commission (1998)

Congresses/Symposia/workshop Organized

- **Organizer**, National Workshop on Recombinant DNA technology, April 28-May 02, 2025. School of Biological sciences, University of The Punjab, Lahore
- **Organizer**, Hands On Training Recombinant DNA Technology and its applications – 2024 (March 4-7, 2024). School of Biological sciences, University of The Punjab, Lahore
- **Organizer**. 41st Pakistan Congress of Zoology (International) March 19-18, 2023. Institute of Zoology, University of the Punjab, Lahore
- **Coordinator**, First Virtual Pakistan Congress of Zoology [40th Pakistan Congress of Zoology (International)] Dec. 14, 17-19, 2021. Sindh Agriculture University, Tandojam.
- **Instructor**. National Workshop on Recombinant DNA technology, April 8-13, 2019. School of Biological sciences, University of The Punjab, Lahore
- **Instructor**. National Workshop on Production & Purification of Recombinant Proteins, Nov. 12-17, 2018. School of Biological sciences, University of The Punjab, Lahore
- **Instructor**. National Workshop on Recombinant DNA technology, April 2-7, 2018. School of Biological sciences, University of The Punjab, Lahore
- **Organizer**. Child Abuse Awareness Seminar, Feb, 17, 2018. The Shakoorian Society of Biomedical Researchers. Children Library Complex, Shahrah Aiwan e Sannat O Tijarat, Lahore

- **Organizer.** National Workshop on Recombinant Protein Production & Purification, Nov. 6-11, 2017. School of Biological sciences, University of The Punjab, Lahore
- **Organizer.** National Workshop on Recombinant DNA technology, March 3-8, 2017. School of Biological sciences, University of The Punjab, Lahore
- **Member, organizing committee & instructor,** Second National Workshop on Recombinant DNA technology, April 25-30, 2016. School of Biological sciences, University of The Punjab, Lahore
- **Member, organizing committee & instructor,** First National Workshop on Recombinant DNA technology, April 22-29, 2013. School of Biological sciences, University of The Punjab, Lahore
- **Member, organizing committee,** International symposium on glycoproteins in health and diseases, May 27-29, 2008. School of Biological sciences, University of The Punjab, Lahore
- **Member, organizing committee,** International symposium on Nanochemistry of enzymes. Sep. 20-21, 2006. School of Biological sciences, University of The Punjab, Lahore

Conferences/Symposia/Workshops attended

- **Participation.** Practical Steps in Patent Drafting and Filing. Nov. 26, 2025. Office of research innovation and commercialization, University of the Punjab, Lahore.
- **Oral presentation.** 43rd Pakistan Congress of Zoology (International) June 23-25, 2025. Department of Zoology, University of Okara, Okara
- **Oral presentation.** 15th Biennial International Conference. Trends in Molecular Sciences. April 14-17, 2025. Pakistan Society for Biochemistry and Molecular Biology, University of the Punjab
- **Participation.** Hands on Training on Patent Claims Drafting. Dec. 18, 2024. Office of Research Innovation & Commercialization (ORIC), University of the Punjab, Lahore
- **Oral presentation.** 42nd Pakistan Congress of Zoology (International) April 23-25, 2024. Institute of Zoology, University of Azad Jammu & Kashmir, Muzaffarabad
- **Participation.** International Conference on Current Trends, Prospects & Opportunities in Vaccine Research. Feb. 28-29, 2024. Centre of Excellence in Molecular Biology, University of the Punjab, Lahore
- 41st Pakistan Congress of Zoology (International) March 16-18, 2023. Institute of Zoology, University of the Punjab, Lahore
- **Participation.** International Conference on Advances in Biological Sciences (ICABS-2023) March 6-8, 2023. School of Biological Sciences, University of the Punjab, Lahore
- **Participation.** International Conference on Trends and Challenges in Health Sciences, March 1, 2, 2023. Centre of Excellence in Molecular Biology, University of the Punjab, Lahore
- **Participation.** SPSS Hands On: Sampling and Statistical Analysis Skills for Researchers. Aug. 23-37, 2021. College of Statistical & Actuarial Sciences, University of the Punjab, Lahore.
- First Virtual Pakistan Congress of Zoology [40th Pakistan Congress of Zoology (International)] Dec. 14, 17-19, 2021. Sindh Agriculture University, Tandojam.
- **Oral presentation.** International Conference of Punjab University 2019 "Recent Innovations in Molecular Sciences". Nov. 6-8, 2019. University of the Punjab, Lahore

- **Oral presentation.** 39th Pakistan Congress of Zoology (International) March 4-6, 2019. Department of Zoology, Islamia College University, Peshawar
- 38th Pakistan Congress of Zoology (International) Feb. 27 – March 1, 2018. University of The Punjab, Lahore
- **Participation.** Child Abuse Awareness Seminar, Feb, 17, 2018. The Shakoorian Society of Biomedical Researchers. Children Library Complex, Shahrah Aiwan e Sannat O Tijarat, Lahore
- 37th Pakistan Congress of Zoology (International). Feb. 28 – March 2, 2017. GC University, Faisalabad
- **Participation.** Workshop on Western Blotting, March, 24, 2016. Tumor Metabolism Group, Department of Microbiology and Molecular Genetic, University of The Punjab, Lahore.
- **Participation.** Workshop on NGS data analysis. March 3-4, 2016. COMSATS Institute of Information Technology (CIIT) Islamabad, Pakistan.
- **Oral presentation.** 36th Pakistan Congress of Zoology (International). Feb. 16-18, 2016. Department of Zoology, University of Sindh, Jamshoro
- **Oral presentation.** 35th Pakistan Congress of Zoology (International). March 1-4, 2015. Centre of Excellence in Marine Biology, University of Karachi, Karachi
- **Oral presentation.** 34th Pakistan Congress of Zoology (International). Feb. 25-27, 2014. Bahauddin Zakariya University, Multan
- **Participation.** Hands on experience workshop on Enzyme Immunoassays. Dec. 10-12, 2013. National health Research Complex at Shaikh Zayed Medical Complex, Lahore
- **Participation.** Molecular Biosciences- Challenges and Opportunities (11th Biennial Conference by Pakistan Society for Biochemistry and Molecular Biology). Nov. 25-28, 2013. University of The Punjab, Lahore
- **Oral presentation.** 32nd Pakistan Congress of Zoology (International). March 6-8, 2012. Govt. College University, Lahore
- **Oral presentation.** 30th Pakistan Congress of Zoology (International). March 2-4, 2010. University of Agriculture, Faisalabad
- **Oral presentation.** 29th Pakistan Congress of Zoology (International). Feb. 24-26, 2009. University of Sindh, Jamshoro
- **Oral presentation.** 28th Pakistan Congress of Zoology (International). March 18-20, 2008. Govt. College University, Faisalabad
- **Oral presentation.** 27th Pakistan Congress of Zoology (International). Feb. 27- March 1, 2007. Bahauddin Zakriya University, Multan
- **Oral presentation.** 26th Pakistan Congress of Zoology (International). April 4-6, 2006, University of The Punjab, Lahore
- **Oral presentation.** 25th Pakistan Congress of Zoology. March 17-19, 2005. Agriculture University, Tandujam
- Teachers training Workshop August 1-10, 2002. City Cadet School, Al-Mumtaz road, Off Multan road, Lahore
- 20th Pakistan Congress of Zoology. March 28-30, 2000. University of Sindh, Jamshoro
- 19th Pakistan Congress of Zoology. April 19-21, 1999. NARC (PARC), Islamabad
- 18th Pakistan Congress of Zoology. April 20-22, 1998, University of The Punjab, Lahore

Publications

1. Mohsin, A., Kusar, A., Naz, M.Y., Aziz, T., Hussain, K., Rafiq, M.A., Hussain, S., Zulfiqar, S., Shahid, R.N., Tariq, N.H., Ghani, T., Ali, F., 2026. Study of leached AlCuFeMn quasicrystalline (QC) alloy for catalytic growth of CNTs using CVD for antibacterial applications. *Materials Chemistry and Physics*, **352**: 132033
2. Aamir, Z., Alam, S.S., Riaz, A., Zulfiqar, S., 2025. Heerozygot Advantage at IL28B Rs12979860 and Its Influence on Treatment Outcomes in HCV Genotype 3a. *Eur. J. Clin. Pharm.*, **7(1)**: 4508-4514
3. Nizam H, Imtiaz A, Tasneem F, Shakoory FR, Zulfiqar S, Younas A, Mustafa S, Ghaus A, Zafar A, Nazir A, Sajjad M, Shakoory AR., 2025. Enhanced cadmium binding ability in response to novel modifications in a Paramecium cadmium metallothionein PMCd1. *PLoS One*, **20(5)**: e0324322
4. Mohsin, A., Naeem, S., Zahoor, A., Kusar, A., **Zulfiqar, S.**, Tayyab, A., Aziz, T., Hassan, A., Bhatti, M. H., Shahid, R.N., Tariq, N., Ali, F., 2025. Enhancement of Antibacterial Properties and Biocompatibility of Al-based Quasicrystals through Silver Incorporation. *JMR*, **40**:477–489
5. **Zulfiqar, S.** and Shakoory, A. R., 2024. Molecular Analysis of the CusA Transporter Involved in Copper Resistance in Prokaryotes: Cloning, Phylogenetics, and Structural Modeling. *JBES*, **01(2)**: 78-93.
6. Imran, M., Shakoory, F.R., **Zulfiqar, S.**, Khan, A.T-A. and Shakoory, A.R., 2024. Copper Stress-Induced Transcriptional Regulatory Protein CusR also Regulates Silver Efflux in *Klebsiella pneumoniae* KW. *Pak. J. Zool.*, **56(6)**: 2787-2797
7. **Zulfiqar, S.** and Shakoory, A. R., 2024. Molecular Analysis of the Two-Component CusS/CusR Regulon for Copper Resistance: Cloning, Phylogenetics, and Structural Modeling. *Proc. Pak. Congr. Zool.*, **42**: 65-74
8. Saeed, H., **Zulfiqar, S.**, Khan, A.T-A. and Shakoory, A.R., 2023. Molecular Characterization of Znt Regulon for Multi-Metal Resistance in *Klebsiella pneumoniae* KW. *Pak. J. Zool.*, **56(1)**: 103-113
9. Elahi, A., Rehman, A., Hussain, S.Z., **Zulfiqar, S.** and Shakoory, A.R., 2022. Isolation and characterization of a highly effective bacterium *Bacillus cereus* b-525k for hexavalent chromium detoxification. *Saudi J. Biol. Sci.*, **29**:2878-2885
10. Al-Aqmer, N.H.H., Aamir, Z., Hanif, M.F., **Zulfiqar, S.**, Zulfiqar, S., Izhar, M., Shakoory, A.R., 2022. Apal VDR Polymorphism as a Risk Factor of Treatment Failure in Chronic Hepatitis C Patients. *Pak. J. Zool.*, **54(5)**: 2055-2060
11. Al-Aqmer, N.H.H., **Zulfiqar, S.**, Zulfiqar, S., Shakoory, A.R., Izhar, M., 2021. FOKI Vitamin D Receptor Polymorphism as a Predictor of Response to Hepatitis C Antiviral Treatment. *Pak. J. Physiol.*, **17(3)**: 3-6
12. Imran, M., **Zulfiqar, S.**, Saeed, H. and Shakoory, F.R., 2021. Multi Metal Resistant *Klebsiella pneumoniae* KW is an Efficient Copper Accumulator and Bioremediator of Industrial Waste Water. *Pak. J. Zool.*, **53(6)**: 2175-2182
13. Zahoor, A., Aziz, T., **Zulfiqar, S.**, Sadiq, A., Ali, R., Shahid, R.N., Tariq, N.H., Shah, A., Shehzad, K., Ali, F. and Awais, H.B., 2020. Antimicrobial behavior of leached Al-Cu-Fe based quasicrystals. *J. App. Phy. A: Mater. Sci. Process.*, Ms. No. APYA-D-20-00279R1
14. Afshan, G., **Zulifqar, S.**, Mehboob, S., Khan, M. T. J. and Shakoory, A. R., 2019. Production of antibodies against hepatitis C virus envelope glycoprotein E2- A potential vaccine against HCV infection. *Pak. J. Zool.*, **51(6)**: 2311-2322

15. **Zulfiqar, S.**, Shehzad, K., Tahir, S., and Shakoori, A. R., 2019. Dual role of multicopper oxidase of *Klebsiella pneumoniae* as a copper homeostatic element and a noval alkaline laccase with potential application in green chemistry. *Pak. J. Zool.*, **51(1)**: 107-115
16. Adalat, R., Saleem, F., Bashir, A., Ahmad, M., **Zulfiqar, S.**, Shakoori, A. R., 2019. Multiple upstream start codons (AUG) in 5' untranslated region enhance translation efficiency of cry2Ac11 without helper protein. *J. Cell. Biochem.*, **120(2)**: 2236-2250
17. Zahid, M. T., Shakoori, F. R., **Zulfiqar, S.**, Al-Ghanim, K. A., Shakoori, A. R., 2018. Growth characteristics, metal uptake and expression analysis of copper metallothionein in a newly reported ciliate, *Tetrahymena farahensis*. *Pak. J. Zool.*, **50(3)**: 1171-1181
18. Shakoori, T. A., **Zulfiqar, S.**, Khawaja, K. I. and Masud, F., 2018. Effect of Butyrate on Genetic Expression of Sirt1/AMPK and Akt/mTOR Axes in Murine Adipose Tissue. *Pak. J. Zool.*, **50(2)**: 515-522
19. Khan, Z., Rehman, A., Hussain, S. Z., Nisar, M. N., **Zulfiqar; S.** and Shakoori, A. R., 2016. Cadmium resistance and uptake by bacterium, *Salmonella enterica* 43C, isolated from industrial effluent. *AMB Express*, **6**:54-69
20. Zahid, M. T., Shakoori, F. R., **Zulifqar, S.**, Ahmed, I., Al-Ghanim, K., Mehboob, S. and Shakoori, A. R., 2016. Molecular Characterization of a Copper Metallothionein Gene from a Ciliate *Tetrahymena farahensis*. *J. Cell. Biochem.*, **117(8)**:1843-1854
21. Khan, Z., Hussain, S. Z., Rehman, A., **Zulfiqar, S.** and Shakoori, A. R., 2015. Evaluation of cadmium resistant bacterium, *Klebsiella pneumoniae*, isolated from industrial wastewater for its potential Use to bioremediate environmental cadmium. *Pak. J. Zool.*, **47(6)**: 1533-1543
22. Zahid, M. T., Shakoori, F. R., **Zulifqar, S.**, Jahan, N. and Shakoori, A. R., 2014. A New Ciliate Species, *Tetrahymena farahensis*, isolated from the industrial wastewater and its phylogenetic relationship with other members of the genus *Tetrahymena*. *Pak. J. Zool.* **46(5)**: 1433-1445
23. **Zulfiqar, S.** and Shakoori, A. R., 2012. Molecular characterization, metal uptake and copper induced transcriptional activation of efflux determinants in copper resistant isolates of *Klebsiella pneumoniae*. *Gene*, **510**: 32-38
24. Zahid, N., **Zulfiqar, S.** and Shakoori, A. R., 2012. Functional analysis of *cus* operon promoter of *Klebsiella pneumoniae* using *E. coli lacZ* assay. *Gene*, **495**: 81-88
25. Shakoori, A. R., Ismail, S., **Zulfiqar, S.** and Mujeeb, K. A., 2004. Effect of α -cypermethrin on esterases of 6th instar larvae and 10 days old adults of three different strains of *Tribolium castaneum*. *Pak. J. Zool.*, **36(3)**: 173–188

Advisory and administrative services

- Member, Board of Faculty of Life Sciences, University of the Punjab, Lahore
- Member, Doctoral Program Committee, School of Biological Sciences, University of the Punjab
- Member, Technical Committee, School of Biological Sciences, University of the Punjab
- Member, Admission Committee, School of Biological Sciences, University of the Punjab
- Member, (subject expert of Molecular Biology), Board of Faculty in Allied Health Sciences, Minhaj University Lahore.
- Member, (subject expert), Departmental Doctoral Program Committee (DDPC), Department of Zoology, The Women University, Multan.