

Samra Kousar

Assistant Professor

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Postal Address: Centre of Excellence in Molecular Biology, 87-West Canal Bank Road, Thokar Niaz, Baig, Lahore-53700, Pakistan.

Academic Qualification

- **Ph.D. in Molecular Biology (2023)**
Centre of Excellence in Molecular Biology (CEMB), University of the Punjab, Lahore, Pakistan
Thesis Title: *Case–Control Chronic Obstructive Pulmonary Disease Association Studies with SNP Variants of Potential Candidate Genes in the Pakistani Population*
- **M.Phil. in Molecular Biology (2016)**
Centre of Excellence in Molecular Biology (CEMB), University of the Punjab, Lahore, Pakistan
Thesis Title: *Identification of Genetic Determinants of Hearing-Impaired Families from the Central Punjab Region of Pakistan*
- **M.Sc. in Chemistry (2007)**
University of the Punjab, Lahore, Pakistan
Thesis Title: *Synthesis, Spectroscopic, and In-Vitro Antibacterial Studies of Transition Metal Complexes of Schiff Bases Derived from Benzil and Sulphanilamide*

Academic and Professional Experience:

- **Assistant Professor**
Centre of Excellence in Molecular Biology (CEMB), University of the Punjab, Lahore, Pakistan
January 2024 – Present
- **Research Officer cum Lecturer**
Centre of Excellence in Molecular Biology (CEMB), University of the Punjab, Lahore, Pakistan
January 2010 – December 2023
- **Research Officer**
Centre of Excellence in Molecular Biology (CEMB), University of the Punjab, Lahore, Pakistan
April 2008 – December 2009
- **Quality Control Analyst (Six-Month Contract)**
Zenith Chemicals (Pvt.) Ltd., Lahore, Pakistan

International Research Experience:

- **Post-Doctoral Fellow**
Faculty of Medicine and Health Sciences, University of Nottingham, United Kingdom
November 2026-July 2027
- **Research Fellow**

Department of Health Sciences, University of Leicester, United Kingdom
December 2021 – May 2022
(University of Leicester ID: 209056240)

International Conferences, Fellowships & Academic Exposure:

- Participant, Global Young Scientists Summit (GYSS) 2018
January 21–27, 2018
- Abstract & Travel Grant Award for participation in the WAO/BSACI International Conference, Edinburgh, UK (2022).

Research Project & Grants:

- **Principal Investigator**
NRPU Project #8460: *Study of Association of Potential Candidate SNPs Residing on Chromosome 14 with Inherited Emphysema in the Local Population*
Funding: PKR 1.87 million — Completed
- **Principal Investigator**
VDR and VDB Gene Expression Studies in COPD and Asthma Patients of Lahore, Pakistan
Funding: Punjab University Research Grant — Completed
- **Co-Investigator / Team Member**
Cost-Effective BRCA1/2 Screening for Early Cancer Detection
Funding Agency: Pakistan Academy of Sciences
Funding: PKR 10.5 million — Ongoing
- **Principal / Co-Investigator**
Genetic Characterization of COPD in the Pakistani Population
In collaboration with the Pulmonology Department, Fatima Memorial Hospital, Lahore
Status: Ongoing
- **International Collaborative Research**
Common and Rare Genetic Variants in Respiratory Health: UK Biobank Lung Exome Variant Evaluation (UK BiLEVE) Consortium
Department of Health Sciences, University of Leicester, United Kingdom

Technical and Research Skills:

- **Oxford Nanopore Sequencing (MinION):** Fully trained in MinION platform for targeted and diagnostic sequencing, including BRCA1/2, lung cancer-related genes, and CFTR (cystic fibrosis) screening.
- **Human Genetic Association Studies:** Experienced in genetic association analyses of COPD in the Pakistani population, including SNP-based case-control studies.
- **Family-Based Genetic Studies:** Conducted exclusion studies in hereditary deafness families for mutation screening and segregation analysis.
- **DNA Sequencing Platforms:** Proficient in operating ABI 3100 Genetic Analyzer and ABI 3730 DNA Analyzer.
- **Molecular Biology Techniques:** Skilled in gel electrophoresis, SDS-PAGE, genotyping, PCR-based sequencing, ethanol/precipitation-based purification, and

real-time PCR (qPCR).

- **Data Analysis & Bioinformatics:** Hands-on experience with PLINK v1.9, Haploview, SPECTRE, R, and Linux-based environments for genetic and statistical analyses.
- **Analytical & Problem-Solving Skills:** Strong abilities in data interpretation, logical reasoning, and experimental troubleshooting.
- **Analytical Instrumentation:** Experienced in HPLC (gradient and isocratic methods), UV–Visible spectrophotometry, FT-IR spectroscopy, and real-time PCR systems.

Awards, Scholarships and Recognitions:

- International Research Support Scholarship for six-month advanced research training at the University of Leicester, UK (2021).
- Performance Evaluation Award (2020).
- Performance Evaluation Award (2019).
- Incentive Award for Research Publications (2019).
- Performance Evaluation Award (2018).
- Letter of Appreciation from Office of Research, Innovation and Commercialization (ORIC), University of the Punjab, for organizing the CEMB Technology Stall at the 7th Invention to Innovation Summit (2018).
- Letter of Appreciation for organizing the 2nd International Symposium on Advances in Molecular Biology of Plants and Health Sciences, held 21–23 November 2017, at Centre of Excellence in Molecular Biology (CEMB), University of the Punjab, Lahore.
- Research Incentive Award (2016).
- Letter of Appreciation for organizing and participating in the International Symposium on Advances in Molecular Biology of Plants and Health Sciences, held 29–31 December 2015, at Centre of Excellence in Molecular Biology (CEMB), University of the Punjab, Lahore.

MEMBERSHIPS:

- Member of International association for study of lung cancer (IASLC)
Member ID 531103
- Member of European Academy of Allergy and Clinical Immunology (EAACI 18568)
- Member World Allergy Organization.
- ORCID: 0000-0002-5388-3498
- BSACI member (membership #746)
- Web of Science Researcher ID is AAQ-7730-2020.
- Working as treasurer GULLS Association.
- Working as Joint Secretary of Congress of Molecular Biology, CEMB.
- Journal Club In charge of Centre of Excellence in Molecular Biology from January 2012

PUBLICATIONS:

Manuscripts Submitted

- Kousar S., et al. *Impact of VDR Gene Expression and SNP rs4516035 on Asthma and COPD in a Pakistani Cohort.*
Hormone and Metabolic Research (Under review).

Peer-Reviewed Publications

- 1-Shahid, M., & Kousar, S. (2026). Integrative Bioinformatics Analysis Reveals GATM as a Key Genetic Modulator in COPD-Associated Lung Cancer. *In Silico Research in Biomedicine*, 100376.
- 2- Yousaf, S., Sumaira, Bano, I., Rehman, A., Kousar, S., Ghani, M. U., & Shahid, M. (2024). Case Study: Analyzing CFTR Mutations and SNPs in Pulmonary Fibrosis Patients with Unclear Symptoms. *Case Reports in Medicine*, 2024(1), 8836342.
- 3- Safir, W., Altaf, S., Jan, P. F. U., Shujaat, N., Khan, F. U., Rehman, A., ... & Shahid, M. (2024). Association of ORMDL3 single nucleotide polymorphic variants with bronchial asthma in Pathan population. *Gene Reports*, 36, 101958.
- 4- Kousar, S., & Shahid, M. (2022, August). Single nucleotide polymorphism on chromosome 14 associated with emphysema in local Pakistani population. In *CLINICAL AND EXPERIMENTAL ALLERGY* (Vol. 52, No. 8, pp. 1039-1039). 111 RIVER ST, HOBOKEN 07030-5774, NJ USA: WILEY.
- 5-Aslam, R., Shahid, M., Bano, I., Ayoub, M., Sabar, M. F., Altaf, S., ... & Shahid, A. A. (2021). Major histocompatibility complex class II polymorphic variants are associated with asthma predisposition in the Punjabi population of Lahore, Pakistan. *The Clinical Respiratory Journal*, 15(4), 374-381.
- 6-Jan, P. F. U., Kousar, S., Mahmood, A., Nadeem, S., Malik, K., Safir, W., ... & Shahid, M. (2023). Risk loci for Chronic Obstructive Disease reside on Chromosome 14: A Case-Control study on the Pakistani population. *Journal of Ayub Medical College Abbottabad*, 35(2), 203-209.
- 7- kousar, s., mahmood, a., sajjad, m., rehman, a., tayyab, u., khan, a., & shahid, m. (2024). Copd risk in pakistani punjabi population: role of gatm, psma4, and chrna5-a3-b4 gene variants. *International journal*, 5(2).
- 8-Tariq, H., Zaigham, K., Kousar, S., & Azhar, A. (2019). Genetic contribution of GJB2 gene to hearing impairment in Pakistan. *Advancements in Life Sciences*, 7(1), 38-43.
- 9-Shahid M, Tayyab U, Kousar S, Ghani MU, Sabar MF, Husnain T (2019). rs153109 as possible indicator of effectiveness of Vitamin D supplements for suppressing COPD symptoms, CHEST, Vol. 155, Issue 4, p219A
- 10- Sabar MF, Akram M, Awan FI, Ghani MU, Shahid M, Iqbal Z, Kousar S, Idrees M (2018). Awareness of Asthma Genetics in Pakistan: A Review with Some Recommendations, Adv. Life Sci. 6(1): 1-10
- 11- Sabar MF, Shahid M, Bano I, Ghani MU, Akram M, Awan FI, Kousar S, Iqbal Z, Altaf S, Husnain T (2017). “rs12603332 is associated with male asthma patients specifically in urban areas of Lahore, Pakistan”; *Journal of Asthma* ;54(9):887-892
- 12- Sabar MF, Kousar S, Zafar AU, Shahid M (2013). “PEG-interferon conjugates: Effects of length and structure of linker”, *Pak. J. Pharm. Sci.*, Vol.26, No.2, pp.425-430

- 13- Naz S, Li L, Riazuddin SA, Shahid M, Kousar S, Sieving PA, Hejtmancik JF, Riazuddin S (2010). "A novel locus for autosomal recessive Retinitis Pigmentosa in consanguineous Pakistani family maps to chromosome 2p", *Am.J.Ophthalmol.*, 149(5): 861-6
- 14- Kaul H, Riazuddin SA, Shahid M, Kousar S, Butt NH, Zafar AU, Khan SN, Husnain T, Akram J, Hejtmancik JF, Riazuddin S (2010). "Autosomal recessive congenital cataract linked to EPHA2 in a consanguineous Pakistani family." *Mol.Vis.* Mar.24; 16:511-7

Abstract/Poster Presentation:

- "Single nucleotide polymorphism on chromosome 14 associated with Emphysema in local Pakistani population" at WAO/BSACI conference held from 25-27th April 2022 in Edinburgh UK.
- "Genetic Variants Associated with Emphysema in Local Pakistani Population" (2021), Abstract book, *Advancements in Life Sciences*, page 100
- "Association of rs11558261, rs1057516555, rs199422212 and rs877081 with Chronic Obstructive Pulmonary Disease in Population of Lahore, Pakistan" (2021), Abstract book, *Advancements in Life Sciences*, page 115
- Kousar S, Ayub M, Shahid M, Aslam R, Hussain T(2019). Case-Control association studies of HLA-B variants with Asthma in local population of Lahore, Pakistan. <http://pu.edu.pk/icpu2019/index.html>
- "Case-control Association Study of HLA-B variant (rs866916063) with Asthma in local population of Lahore, Pakistan" (2018), Abstract book, *Advancements in Life Sciences*, page 50
- Muhammad ayub, Mariam shahid samra kousar saba altaf, (2017)Case-control Association Study of HLA-B variant (rs866916063) with asthma in local population of Lahore,Pakistan.<http://www.alsjournal.com/downloads/Proceedings2017.pdf>
- Saba altaf, Mariam shahid, samra kousar (2017).Association between genetic variant (rs11650680) of TOP2A and early onset asthma in population of Lahore, Pakistan. <http://www.als-journal.com/downloads/Proceedings2017.pdf>
- Shahid M., Sabar M.F., Rahman Z., Bano I., Ghani M.U., Kousar S., Akram M., Husnain T. (2015). Urbanization triggers asthma in 'C' allele carriers for rs12603332 European Academy of Allergy and Clinical Immunology (EAACI), P04, Istanbul, Turkey.

Scientific Symposia / Workshops Attended:

- A Symposium on Present status and Future trends in Molecular Biology Organized by the Center of Excellence in Molecular Biology and Centre for Applied Molecular Biology, University of the Punjab, Lahore, Pakistan. Mar. 25-28, 2009.
- An international workshop on "Modern techniques in Combinatorial Chemistry" held at COMSTECH Islamabad from 14-16 June 2011.
- A One Day Biosafety Training Workshop Organized by National academy of young Scientist and University of The Lahore on 9 July 2011.
- Six Week Course on "Communication Skill Development" held at

Institute of Chemical Engineering University of the Punjab Lahore
from 18 July to 26 August 2011.

- A One Day Workshop on “Introduction and Applications of Fluorescent Microscopy” held at Department of Microbiology and Molecular Genetics Punjab University Lahore 24 September 2011.
- A One Day Workshop on “Young Researcher’s Skill Development” held at National University of Science and Technology Islamabad 26 November 2011.
- A One Day Workshop on “Qualitative Data Analysis through Software NVIVO” held at Institute of Research promotion, University of management and Technology on 28 January 2012.
- A One Day Symposium on “DNA Barcoding: A Promising Tool for Species Identification and Biodiversity Digitization” held at National Institute for Biotechnology and Genetic Engineering Faisalabad on 30 January 2012.
- Three Days workshop on Primer to Recombinant DNA Technology held on September 14-16, 2012 at The University of Lahore, Pakistan.
- 11th National Training course on “Modern Techniques in Molecular Biology” held at National institute for Biotechnology and Genetic Engineering Faisalabad from 11-15 February 2013.
- Two days Invention to Innovation Summit 2013 and UIP Exhibition of Indigenous Technologies held at University of the Punjab Lahore from April 9-10, 2013.
- 3rd Invention to Innovation Summit 2014 on “Technologies having potential for Commercialization” on March 19-20, 2014 at University of The Punjab, Lahore.
- Next generation Sequencing Data Analysis Workshop on October 28, 2014 held at COMSATS Institute of information Technology Islamabad.
- Hands On Training Workshop on “Next Generation Data Analysis” from 2-4 September 2015 at COMSATS Institute of information Technology Islamabad
- ICGEB course on Basic Biotechnology Techniques” From March 07-09, 2016 held at CEMB, University of Punjab Lahore.
- One week training course on “Planning of cotton production, land preparation, weed control pest and disease control and harvesting” held at National Centre of excellence in Molecular Biology, university of The Punjab Lahore from 12-16 December 2016.
- Two days’ workshop on “Bioinformatics and Computational Drug Designing” held at Department of Biochemistry, Kinnaird College for Women Lahore from 27-28 January 2017.
- 6th Invention to Innovation Summit 2017 on “Buy and Sell Technology” on March 08-09, 2017 at University of The Punjab, Lahore.
- Training workshop on Behavioral Based Biosafety Culture held at National Centre of Excellence in Molecular biology, University of the Punjab, Lahore on 23 August 2017.
- 2nd International symposium on Advances in Molecular Biology of Plant and health sciences held at Centre of Excellence in Molecular biology University of the Punjab from 21-23, Nov. 2017.
- Global Young Scientist summit 2018 held at Nanyang Technological University Singapore from 21-27 January 2018.
- International Conference on Recent innovations in Molecular Sciences,

University of the Punjab Lahore, Pakistan from November 06-08, 2019.

- Participated in International conference Recent Innovations in Molecular Sciences held on November 6-8, 2019 by University of the Punjab Lahore.
- Participated in Seminar on Genomic Applications of PCR, qPCR and NGS held on 12th December, 2019 by Thermofisher Scientific at PC, Lahore.
- Participated in 8th Invention to Innovation Summit, April 02-03, 2019 at University of the Punjab Lahore.
- Webinar on Wearable technologies in Respiratory functional assesment organized by European Respiratory Society, 25 February 2021.
- Webinar on Congenital Airways diseases organized by European Respiratory Society, 23 March 2021.
- Participated in ERS Satellite 2022 organized by European Respiratory Society on 24th February 2022.
- Participated in SEGEG scientific meeting held at university college London on 1st April 2022.
- Participated as poster presenter in WAO/BSACI conference held from 25-27th April 2022 in Edinburgh United Kingdom.
- Webinar on Respiratory sequelae of preterm birth across the life span organized by ERS on 29 November 2022.
- Participated in International conference on Plant Molecular Biology (ICPMB) Held in CEMB from 14-15 December, 2022.
- Participated in Awareness seminar on GM Soybean and potential of soybean cultivation in Pakistan held at CEMB on 23rd January, 2023.
- Organized International conference on Trends and Challenges in Health Sciences from March 1-2, 2023 at Centre of Excellence in Molecular Biology, University of the Punjab Lahore.
- Online hands-on course in Statistical data analysis and Machine learning from 8th July to 7th September 2024 held at COMSAT University Islamabad

