

CURRICULUM VITAE

Khyber Medical University, Peshawar

1. Personal Information

Name: Dr. Muhammad Zakria

Designation: Lead, Advanced Center for Genomic Technologies (ACGT)

Department: Public Health Reference Lab, Khyber Medical University

Nationality: Pakistani

Gender: Male

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2. Professional Summary

- Pharmacist and molecular geneticist by training, holding a Pharm-D, an M.Phil in Pharmacogenomics, and a PhD in Pharmacogenomics from Khyber Medical University, Peshawar.
- Currently leading the Advanced Center for Genomic Technologies (ACGT) at the Public Health Reference Lab, Khyber Medical University, Peshawar, actively contributing to genomic surveillance of SARS-CoV-2 (August 2021–present).
- Research interests lie in pharmacogenomics, molecular diagnostics, and next-generation sequencing; PhD work focused on the association of lipid-lowering efficacy and adverse effects of statins with SLCO1B1, HMGCR, and CYP2C9 gene polymorphisms in hyperlipidemia patients.
- Extensive hands-on expertise across DNA/RNA extraction, primer design, PCR (conventional and real-time), Sanger sequencing, and second- and third-generation NGS platforms (Illumina MiSeq and Oxford Nanopore MinION), having personally reported over 400 SARS-CoV-2 genome sequences during the pandemic.
- Experienced in research leadership and grant management, including work as a research associate on an HEC-funded project and as Focal Person/Co-PI on a CDC-US funded whole genome sequencing project.

3. Academic Qualifications

Degree	Institution	Year
PhD, Pharmacogenomics Thesis: “Association of Lipid-lowering Efficacy and Adverse Effects of Statins with SLCO1B1, HMGCR, and CYP2C9 Genes Polymorphisms in Patients with Hyperlipidemia”	Khyber Medical University, Peshawar, Pakistan	2023
M.Phil, Pharmacogenomics Thesis: “Association of Lipid-lowering Efficacy and Adverse Effects of Statins with SLCO1B1, HMGCR, and CYP2C9 Genes Polymorphisms in Patients with Hyperlipidemia”	Khyber Medical University, Peshawar, Pakistan	2014
Pharm-D, Pharmacy (BSc Honours, 5-year program)	Faculty of Pharmacy, Gomal University, Dera Ismail Khan, Pakistan	2006 – 2011
FSc, Pre-medical (79%)	Govt. Post-graduate College, Khar, Bajaur, Pakistan	2003 – 2005

SSC, Science (78%)	Govt. High School Gardai, Bajaur, Pakistan	2002 – 2003
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4. Professional Experience

Position	Organization	Duration
Lead, Advanced Center for Genomic Technologies (ACGT)	Public Health Reference Lab, Khyber Medical University, Peshawar, Pakistan	08/2021 – Present
Lead, PCR Group	Public Health Reference Lab, Khyber Medical University, Peshawar, Pakistan	03/2020 – 07/2021
Research Associate, HEC-funded project	Khyber Medical University, Peshawar, Pakistan	01/2017 – 12/2019
Demonstrator (TMO)	Institute of Basic Medical Sciences (IBMS), Khyber Medical University, Peshawar, Pakistan	N/A
Focal Person / Co-PI, CDC-US funded project	Khyber Medical University, Peshawar, Pakistan	N/A

5. Areas of Specialization / Research Interests

- Pharmacogenomics — statin lipid-lowering efficacy and adverse-effect gene associations.
- Molecular Diagnostics and Genomic Surveillance — SARS-CoV-2 variant tracking.
- Next-Generation Sequencing — Illumina MiSeq and Oxford Nanopore MinION platforms.
- Genomic Data Analysis — whole genome, whole exome, metagenomic, and targeted sequencing data.

Research Skills & Techniques

- DNA/RNA extraction from blood, solid tissue, serum (ctDNA), saliva, and microbial samples, with protocol optimization for maximal yield and purity.
- Primer design for single and overlapping targets, including allele-specific primers, using manual and bioinformatics tools.
- Gel electrophoresis for separation, visualization, and interpretation of DNA/RNA fragments.
- PCR techniques: conventional PCR (optimization, batch calculations, gradient, touch-down PCR) and real-time PCR (SYBR-Green and TaqMan chemistries).
- Sanger sequencing: wet-lab procedures, genetic analyzer operation, and post-run analysis and troubleshooting.
- Illumina MiSeq (2nd-generation NGS): library preparation, sequencing, and bioinformatic data analysis.
- Oxford Nanopore Technologies MinION (3rd-generation NGS): library preparation, machine operation, and data analysis.
- Genomic data analysis using NCBI, UCSC Genome Browser, Ensembl, and GISAID databases; statistical analysis with SPSS, GraphPad Prism, and Stata 12.
- HPLC: biological sample preparation, dilutions and calculations, mobile phase preparation, machine operation, and data analysis.

6. Publications

- Zakria M, Hussain A, Ahmad N, Rauf MA, Ahmad N, Siraj S. Lipid lowering efficacy of Rosuvastatin is associated with variations in SLCO1B1: 12-month long prospective cohort study. European Reviews for Medical and Pharmacological Sciences (accepted).
- Hussain A, Zakria M, Tariq SA, Siraj S, Khan A, Khattak BG, Siddiqui F, Kakar M. Simultaneous analysis of atorvastatin and rosuvastatin by LC-MS: development, validation, and application of the proposed method to

analysis of atorvastatin pharmacokinetics in Pakistani population. Pharmaceutical Chemistry Journal, 2022;56(8):1149–1156.

- Un-Nisa A, Khan A, Zakria M, Siraj S, Ullah S, Tipu MK, Ikram M, Kim MO. Updates on the role of probiotics against different health issues: focus on Lactobacillus. International Journal of Molecular Sciences. 2022 Dec 21;24(1):142.
- Ahmad N, Muhammad H, Khan IN, Siraj S, Ahmad S, Zakria M, Ali A, Yousafzai YM. Effectiveness of PCR pool testing for screening of COVID-19 infection in Pakistan. Journal of Ayub Medical College, Abbottabad: JAMC. 2022 Oct 1;34(4):817–822.
- Zakria M, Hussain A, Ali I, Hussain A, Siraj S. Pattern of dyslipidemia and associated factors in coronary artery disease patients in Khyber Pakhtunkhwa: a secondary data analysis of a multicenter longitudinal study (submitted, Pakistan Journal of Medical Sciences).
- Khan J, Ali G, Khurshid A, Saeed A, Ahmad S, Ullah N, Khan A, Sewell RD, Zakria M. Mechanistic efficacy assessment of selected novel methanimine derivatives against vincristine-induced neuropathy: in-vivo, ex-vivo and in-silico correlates. International Immunopharmacology. 2022 Nov;112:109246.
- Shah MW, Qureshi MI, Khan IN, Zakria M, Ahmad S, Rahim T, Ahmad N, Muhammad H, Ahmad S, Yousafzai YM. SARS-CoV-2 variants and genomic surveillance in the Khyber Pakhtunkhwa Province of Pakistan: an innovative approach for rapid detection of emerging variants (submitted, Journal of Infection and Public Health, Elsevier).

7. Patents

None reported.

8. Research Grants & Projects

Project Title	Role	Funding Agency	Duration
Statins Dilemma, Efficacy and Adverse Effects of Statins in Association with Genetic Make-up of KPK Population	Research Associate	Higher Education Commission (HEC), Pakistan	01/2017 – 12/2019
Whole Genome Sequencing of SARS-CoV-2	Focal Person / Co-PI	CDC, United States	N/A

9. Book Chapters

None reported.

10. Student Supervision

- Supervised the PCR group lab team at the Public Health Reference Lab, KMU, and coordinated with zonal public health labs and the National Institute of Health (NIH) (2020–2021).

11. Achievements & Awards

- Conducted targeted and whole genome sequencing of SARS-CoV-2, reporting over 400 sequences during the pandemic.
- Secured and delivered on a Higher Education Commission (HEC)-funded research project as well as a CDC-US funded genomic surveillance project.

Language Proficiencies

English	Arabic	Urdu	Pashto
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Excellent (reading, writing, listening, speaking)	Reading, writing, and basic speaking	Native	Native
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12. References

Dr. Sami Siraj, B.Pharm, PhD, Postdoc (Chinese Science Academy)

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Dr. Yasar Mehmood Yousafzai, MBBS, PhD (Glasgow)

Director, Khyber Pakhtunkhwa Public Health Reference Lab (KP-PHRL); Associate Professor, Hematology, Khyber Medical University, Peshawar, Pakistan.
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Dr. Asif Ali, MBBS, PhD (Glasgow)

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