

## Muhammad Rehman Shirzad

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### Objective

*Ph.D. candidate in Anthropology at The Pennsylvania State University with doctoral minors in Bioinformatics and Genomics. I bring an interdisciplinary background that bridges forensic anthropology, genetics, and biological anthropology, with both laboratory and computational expertise. My research includes work with human skeletal and craniofacial data, 3D facial imaging and morphometric analysis, and large-scale genetic data interpretation using next-generation sequencing and bioinformatics tools. I have direct forensic experience from prior work in Afghanistan, where I contributed to forensic casework and applied anthropological methods in practical contexts. Currently, I teach Forensic Molecular Anthropology (ANTH 413) at Penn State University, where I combine molecular genetics and forensic anthropology to train undergraduate students in the integration of DNA, skeletal biology, and anthropology. This experience, combined with my training in forensic science and microbiology, provides a strong foundation in biological profile estimation, trauma assessment, and medical diagnostic approaches. I also served as president of the Anthropology Graduate Student Association, where I gained leadership, project coordination, and community outreach experience. I am eager to apply my forensic expertise, teaching experience, and interdisciplinary research background to advance anthropological practice in a medical examiner setting, while continuing to grow as a scholar and practitioner.*

### Education

**The Pennsylvania State University**, State College (PA 16802)  
*Ph.D. Anthropology (Majors), Bioinformatics and Genomics (Minors)*  
January 2022–till **Status: Research in Progress.**

**The Pennsylvania State University**, State College (PA 16802)  
*Masters in Anthropology (majors), Bioinformatics and Genomics (minors)*  
Aug 2024 **Status: Completed, Degree Obtained.**

**The University of Lahore**, Lahore (Pakistan)  
*Master of Philosophy in Forensic Science (MPhil)*  
Jan. 2016 **Status: Completed, Degree Obtained.**

**University of Peshawar**, Peshawar (Pakistan)  
*Bachelor of Science Honors (BS Honors) in Microbiology*  
Aug. 2012 **Status: Completed, Degree Obtained.**

**Center of Bioinformatics Research and Technology**  
15-days online training program on foundational tools and techniques in bioinformatics (October 2024). **Status: Completed.**

**Center of Bioinformatics Research and Technology**  
10-days online hands-on training program on machine learning in bioinformatics (Oct 2024). **Status: Completed.**

**Center of Bioinformatics Research and Technology**  
One-month online hands-on training program on Next-Generation Sequencing Data Analysis (November 2024). **Status: Completed.**

**Center of Bioinformatics Research and Technology**  
10 days of hands-on online training program on foundational concepts, data analysis techniques, and practical application of R programming in biological data analysis (December 2024). **Status: Completed.**

### **Center of Bioinformatics Research and Technology**

13-day online hands-on training program on Genome-wide Association Studies (GWAS) Data Analysis (August 2025). **Status: Completed.**

### **Thermo Fisher Scientific**

10-11 March 2020 - hands-on training program on foundational concepts of HID (DNA - Human Identification) workflow training, hands-on training on laboratory workflow for forensic DNA analysis on ABI GA3500XL, data interpretation, report, and practical application in forensic DNA analysis for casework and research (March 2020). **Status: Completed.**

### **Academic Publications**

- 2020** Atif Adnan, Shao-Qing Wen, Allah Rakha, Rashed Alghafri, Shahid Nazir, Muhammad Rehman, Chuan-Chao Wang, Jie Lu, Forensic features and genetic legacy of the Baloch population of Pakistan and the Hazara population across the Durand line revealed by Y chromosomal STRs, <https://doi.org/10.1101/2020.11.21.392456>, from medRxiv and bioRxiv, NOV 2020.
- 2020** Faridullah Rahiq, Li Xiguang, Muhammad Rehman, Azizaqa Zahed, Khalil Ahmad Pashtooniar, Bashir Ahmad Taseer, Ahmad Shah Wazir, Mohammad Mustafa Amarkhil, Suicide Cases and Causes Reported in Forensic Medicine Directorate and Isteqlal Hospital of the Ministry of Public Health, Kabul Afghanistan, Volume 9, Issue 7(3), July 2020, International Journal of Multidisciplinary Educational Research.
- 2019** Muhammad Waqas, Muhammad Saqib Shahzad, Arif Malik, Ishaq Ahmad, Haleema Sadia, Muneeba Butt, Murtaza Hassan, Waseem Ashraf, Muhammad Rehman, Trace Elemental Analysis of Hair for Toxicity Using Partial Induced X-Ray Emission (PIXE) Testing For Forensic Science Applications, IJBPAS, November 2019, 8(11): 2181-2194 :10.31032/IJBPAS/2019/8.11.4865, ISSN: 2277-4998.
- 2019** Guanglin He, Atif Adnan, Allah Rakha, Hui-Yuan Yeh, Mengge Wang, Xing Zou, Jianxin Guo, Muhammad Rehman, Abulhasan Fawad, Pengyu Chen, Chuan-Chao Wang (2019). A comprehensive exploration of the genetic legacy and forensic features of Afghanistan and Pakistan's Mongolian-descent Hazara. Forensic Science International: Genetics 42 (2019) e1– e12.
- 2018** Muhammad Rehman, Muhammad Waqas, Muhammad Saqib Shahzad, Saeeda Kalsoom, Javed Iqbal Bajwa, Amina Arif, Muhammad Azmat Ullah Khan (2018). Detection and comparison of light metals in hair among workers of different industries using Particle Induced X-Ray Emission (PIXE) for forensic casework. Adv. life sci., vol. 5, no. 4, pp. 154-157.

### **Media Publications**

- 2023** I take immense pride in my role as the field producer for the extraordinary film "The Night Doctrine" at the renowned Tribeca Film Festival in NYC 2023, website , (<https://tribecafilm.com/films/night-doctrine-2023> ). Having dedicated five years to this outstanding project, witnessing its fruition on such a prestigious platform fills me with profound joy and satisfaction. It was an extraordinary experience to contribute to this remarkable production, showcasing the power of storytelling and the magic of cinema on such a prestigious platform.
- 2023** What We Know About U.S.-Backed Zero Units in Afghanistan. Website: <https://www.propublica.org/article/afghanistan-night-raids-zero-units-investigation-takeaways>

2022	For many Afghans, terror came when night fell. (Website: <a href="https://www.propublica.org/article/afghanistan-night-raids-zero-units-lynzy-billing">https://www.propublica.org/article/afghanistan-night-raids-zero-units-lynzy-billing</a> )
2021	A day on the job with Kabul's crime scene investigators Website: ( <a href="https://www.aljazeera.com/features/2021/2/1/in-afghanistan-a-day-on-the-job-with-kabuls-crime-scene-investi">https://www.aljazeera.com/features/2021/2/1/in-afghanistan-a-day-on-the-job-with-kabuls-crime-scene-investi</a> )
2020	The wild shrub at the root of the Afghan meth epidemic (website: <a href="https://www.salon.com/2020/05/24/the-wild-shrub-at-the-root-of-the-afghan-meth-epidemic-partner/">https://www.salon.com/2020/05/24/the-wild-shrub-at-the-root-of-the-afghan-meth-epidemic-partner/</a> )
2020	Muhammad Rehman Shirzad-Advancing the Forensic Biosciences in Afghanistan—Progress, potential and possibilities/youtube.com.
2019	Inside Afghanistan's main forensic lab: four scientists, one microscope. (Website: <a href="https://www.latimes.com/world-nation/story/2019-08-27/inside-afghanistans-main-forensic-lab">https://www.latimes.com/world-nation/story/2019-08-27/inside-afghanistans-main-forensic-lab</a> )
<b>Working Experience</b>	
Aug 2023-till	<b>Graduate Teaching Assistant (TA)</b> Department of Anthropology, College of Liberal Arts, The Pennsylvania State University, PA 16802. <b>Subjects:</b> Forensic Molecular Anthropology (ANTH-413), Introduction to Biological Anthropology (ANTH-21), and Understanding Humans (ANTH-01).
Oct 2023-till	<b>Translator/Interpreter</b> State College Area School District, 240 Villa Crest Dr., State College, PA 16801. <b>Languages:</b> Pashto, Dari/Farsi, Hindi/Urdu
May 2024-May 2025	<b>AGSA President</b> Anthropology Graduate Student Association (AGSA), Department of Anthropology, College of Liberal Arts, The Pennsylvania State University, PA 16802.
Jan 2022 - July 2023	<b>Graduate Research Assistant (RA)</b> Shriver Anthropological Genomics Laboratory, Department of Anthropology, College of the Liberal Arts, Pennsylvania State University, PA 16802.
Nov 2021–Dec 2021	<b>Teacher at Liberty Village Community Education Program</b> Joint Base McGuire-Dix-Lakehurst (JBMDL), Fort Dix, New Jersey, United States of America.
Dec 2015–Aug 2021	<b>Forensic Laboratories Consultant and Labs Director</b> Forensic Medicine Directorate, Ministry of Public Health, Afghanistan.
Jun 2016–Jul 2021	<b>Asst. Director and Molecular Pathologist (Part-time)</b> Noor Rahman Medical Laboratories, Kabul, Afghanistan.
Jul 2020–Mar 2021	<b>SARS-CoV-2 (COVID-19) Molecular Biology Laboratory Consultant (part-time)</b> Blossom Healthcare Center, Kabul, Afghanistan.
Jan 2018–May 2019	<b>Volunteer Lecturer of Biotechnology, (part-time)</b> Faculty of Sciences, Nangarhar University, Jalalabad, Nangarhar, Afghanistan.
Sep 2014 - Dec 2015	<b>Forensic Labs Investigative Scientist (Volunteer)</b> Forensic Medicine Directorate, Ministry of Public Health, Afghanistan.

Sep 2013 - Mar 2014	<b>Laboratory Technologist/Molecular Technologist</b> <i>French Medical Institute for Children (FMIC), Kabul, Afghanistan.</i>
Jun 2011–Jul 2011	<b>Undergraduate Intern</b> <i>Post Graduate Medical Institute (PGMI), Lady Reading Hospital, Department of Pathology, Peshawar, Pakistan.</i>
<b>Professional Memberships</b>	
2022 - till	<b>AAFS - Associate Member in Criminalistics</b> <i>American Academy of Forensic Sciences (AAFS).</i>
2025 - till	<b>AAFS - Applicant in Anthropology</b> <i>American Academy of Forensic Sciences (AAFS). (I have submitted an application for changing my Associate Membership status from Criminalistics to Anthropology).</i>
2023 - till	<b>ASHG - Student Affiliate</b> <i>American Society of Human Genetics.</i>
<b>Conferences and Training</b>	
2025	<b>Forensic Analysis of Human DNA, Gordon Research Conference, Maine, USA.</b> Connecting Fundamental Science, Innovative Methodologies, and Forensic Casework Applications.
2025	<b>AAFS 77 Annual Meeting</b> American Academy of Forensic Science, 2025 Annual Meeting at Baltimore, Maryland.
2023	<b>ASHG75-Meeting</b> American Society of Human Genetics, 2023 Annual Meeting at Washington, DC.
2022	<b>Gordon Research Conference—Forensic DNA</b> JRC Human Identification Conference-2022, Mount Snow, Vermont.
2015	<b>Organizer of Investigation Evidences in Criminal Cases</b> Involvement as an organizer for the training of investigation evidence in criminal cases (04 sessions X 1.5 hours, 1.0 CPD C credit points) at The University of Lahore, Pakistan.
2015	<b>Coordinator at International workshop on Vaccinology</b> Involvement as COORDINATOR in The University of Lahore International Workshop on Vaccinology by the Institute of Molecular Biology and Biotechnology (IMBB) and the Center for Research in Molecular Medicine (CRiMM) at The University of Lahore, Pakistan.
2014	<b>Forensic Conference UOL -Chief Organizer</b> 1st National Conference on Integrated Role of Forensic Science in Criminal Justice System, Department of Forensic Science, The University of Lahore, Pakistan.
<b>Scholarships and Awards</b>	

<b>2024</b>	<b>Emmy Award - 2024</b> Emmy Award, The Night Doctrine (2024): I and my team won three Emmy Awards for Outstanding News Discussion Analysis: Editorial and Opinion, Outstanding Graphic Design: News, and Outstanding Music Composition: News. As field producer, I led field operations, research, and logistics, playing a key role in the documentary's critical and award-winning success.
<b>2023</b>	<b>AGSA - Visual Anthropology Award</b> Visual Anthropology award, 2023—for the short 3D documentary “The Night Doctrine” from Penn State University.
<b>2021</b>	<b>PhD. Scholarship</b> Ph.D. Scholarship in Anthropology, Bioinformatics, and Genomics, The Pennsylvania State University, USA.
<b>2019</b>	<b>Principle nominee for IVLP</b> Principal nominee for the program “Rule of Law and the U.S. Judicial System” in 2019 from the International Visitor Leadership Program (IVLP), Department of State, USA.
<b>2018</b>	<b>Appreciation Certificate</b> Appreciation Certificate from the United States Department of State and the United States Embassy, Kabul, Afghanistan.
<b>2014</b>	<b>OIC - Scholarship</b> Student exchange scholarship from the Organization of Islamic Countries (OIC).
<b>2014</b>	<b>Forensic UOL</b> Shield for best performance and best organizer in the 1st National Conference on the Integrated Role of Forensic Science in the Criminal Justice System, Department of Forensic Science, The University of Lahore, Pakistan.
<b>2012</b>	<b>DAFI - Scholarship</b> Albert Einstein German Academic Refugee Initiative Scholarship, Germany.
<b>2003</b>	<b>Ministry of Education</b> Awarded the Merit Certificate for the District Topper in the Middle School Examination from the Executive District Officer of the Ministry of Education.
<b>Outreach</b>	
<b>2025</b>	<b>LION- BASH (Living in One Neighbourhood) at State College PA</b> I participated in LION-BASH at State College, PA, to share my research findings with the broader community and also helped the Center of Human Evolution and Diversity at Penn State University organize the iTOK podcast series and community discussion.
<b>2025</b>	<b>People Choice at The Pennsylvania Grange Fair Art Fest at the State College PA-2025</b> I participated in People's Choice at the Pennsylvania Grange Fair to present my research to the broader community and also helped the Center of Human Evolution and Diversity at Penn State University organize the iTOK podcast series.
<b>2025</b>	<b>Committee Member and Instructor - ARISE (Anthropological Research in Science Education)</b> I participated in the ARISE (Anthropological Research in Science Education) program at Penn State University, serving as a committee member and instructor for the genetics module.

<b>2025</b>	<b>AnthroFest-2025</b> I participated in AnthroFest to present my research to the broader community and also helped organize the event in my role as president of the Anthropology Graduate Student Association (AGSA).
<b>2023/2024/2025</b>	<b>Ask a Scientist - Pennsylvania Grange Fair</b> I participated in the Pennsylvania Grange Fair's "Ask a Scientist" event, where I had the opportunity to engage with schoolchildren who showed great interest in my research and work.
<b>2023/2024</b>	<b>Graduate Assistant - ARISE</b> I participated in the ARISE (Anthropological Research in Science Education) program at Penn State University in both 2023 and 2024. As a graduate student helper, I assisted with the genetics module and supported all assigned activities and responsibilities as instructed.
<b>2024</b>	<b>Love your Neighbor.</b> I participated as a speaker at the Love Your Neighbor event in State College, PA. This community gathering brought together people of various backgrounds, beliefs, and professions to promote understanding, respect, and unity. It was a meaningful opportunity to share my perspective and connect with others about the values of empathy and inclusion. Being part of such a diverse and welcoming environment was both inspiring and impactful.
<b>2023</b>	<b>Policy Council Representative</b> <i>I also serve as the Policy Council Representative for CenClear Preschool at the Mat-ternville Center, where I support communication between parents and teachers, attend school meetings, and help advocate for the needs and interests of families in the program.</i>
<b>Language Skills</b>	<i>English, Dari, Farsi, Hindi, Urdu and Pashto.</i>
<b>References</b>	<i>References will be provided upon request.</i>