

# Muhammad Abrar Yousaf

PhD Student | Biology and Genetics Section  
Department of Neurosciences, Biomedicine and Movement Sciences  
University of Verona, Italy

**Email** muhammadabrar.yousaf@univr.it  
**Gender** Male  
**Date of birth** 10 Feb1997  
**Nationality** Pakistani  
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**Google Scholar** bit.ly/3s5gsTy  
**ResearchGate** bit.ly/3FcEaT9

## EDUCATION

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**PhD Applied Life and Health Sciences**  
**University of Verona** | Oct 2022 – Sep 2025  
Verona, Italy  
**Advisor:** Prof. Anna Savoia

**MS Zoology**  
**University of the Punjab** | Oct 2018 – Oct 2020  
Lahore, Pakistan  
**CGPA:** 3.84 / 4.00  
Earned 30 credit hours including the courses of Recombinant DNA Technology, Advanced Analytical Techniques and Industrial Biotechnology.  
**Thesis:** Morphometric Analysis of Nile tilapia from Indus River

**BS Zoology**  
**University of the Punjab** | Oct 2014 – Dec 2018  
Lahore, Pakistan  
**CGPA:** 3.66 / 4.00  
Earned 140 credit hours including the courses of Cell and Molecular Biology, Genetics, Biochemistry, Cancer Biology, Bioinformatics, General Microbiology, Fundamentals of Microbiology and Synopsis & Research Methodology  
**Thesis:** Isolation and Molecular Identification of Heavy Metal and Antibiotic Resistant Bacteria from Tannery Effluents

## RESEARCH EXPERIENCE

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### CRISPR/Cas9 Mediated Myostatin Knock-out in Chicken Cells

Nov 2021 – Feb 2022

**Role:** Researcher

**Principal Investigator:** Dr. Akhtar Ali

Department of Biology, Virtual University of Pakistan, Lahore, Pakistan

**Research Skills:**

- *In silico* primer designing and PCR amplification
- *In silico* guide RNA designing
- Culture of the chick embryo cells
- Genomic DNA extraction and PCR amplification
- Agarose gel electrophoresis
- Plasmid transformation into competent bacterial cells and extraction of plasmid DNA from cultured bacterial cells
- Confirmation of a specific plasmid DNA using restriction digestion
- Plasmid transfection into the cultured cells

### Discovering anti-cancer natural compounds via computational approaches

May 2022 – Present

**Role:** MSc thesis supervisor

Department of Biology, Virtual University of Pakistan, Lahore, Pakistan

**Research Skills:**

- Molecular docking analysis of target protein and natural compounds
- Molecular dynamics simulation

## Landmark-Based Truss Network System Analysis of Some Commercial Fish Species

Dec 2021 – Apr 2022

**Role:** MSc thesis supervisor

Department of Biology, Virtual University of Pakistan, Lahore, Pakistan

### Research Skills:

- Digital imaging of commercial fish species
- Insertion of landmarks and generation of truss network analysis system
- Statistical analysis using PAST and IBM SPSS software

## Molecular Identification of Fishes from Punjab to Assess Present Biodiversity and Promote Export of the Meat Products

Dec 2019 – Sep 2020

**Role:** Studentship

**Principal Investigator:** Prof. Dr. Javed Iqbal Qazi

Department of Zoology, University of the Punjab, Lahore, Pakistan

### Research Skills:

- Designing the basic research plan and literature review
- Visit to different waterbodies for fish sampling
- Digital imaging and marking/tagging of fish species
- Assistance of PhD senior for DNA extraction and PCR amplification COI gene fragment
- Evaluation of diversity and distribution of fish species using statistical formulas
- Fundamental statistical analysis using MS Excel and IBM SPSS

## Morphometric Analysis of Nile tilapia from Indus River

2019 – 2020

MS Thesis Research

**Supervisors:** Dr. Hafiz Abdullah Shakir  
Prof. Dr. Javed Iqbal Qazi

Department of Zoology, University of the Punjab, Lahore, Pakistan

### Research Skills:

- Literature review and designing of the research plan
- Learning and establishing the protocol of software (tpsUtil, tpsDig2 and PAST) by communicating with international researchers
- Sampling of wild fish species
- Software mediated morphometric analysis of fish species (from digital images) using the landmark-based truss network analysis
- Meristic analysis of fish species
- Evaluation of length-weight relationship and condition factor of fish species
- Statistical analyses of the data using PAST, IBM SPSS and MS Excel

## Isolation and Molecular Identification of Heavy Metal and Antibiotic Resistant Bacteria from Tannery Effluents

2018

BS Thesis Research

**Supervisor:** Prof. Dr. Javed Iqbal Qazi

Department of Zoology, University of the Punjab, Lahore, Pakistan

### Research Skills:

- Literature review and designing of research plan
- Visit to the leather tanneries for wastewater and soil sampling
- Isolation and purification of heavy metal resistance bacteria
- Morphological characterization of bacteria
- Evaluation of minimum inhibitory concentration of bacteria against heavy metals
- Assessment of antibiotic resistance in bacteria

## The Mental Health and Wellbeing of Adults During COVID-19 Pandemic Survey

2020

**Role:** Collaborator

Mental Health and Wellness Study Group (<https://mehewe.com>)

**Organizations:** World Health Organization (WHO) and Africa CDC

**Principal Investigator:** Prof. Morenike Oluwatoyin Folayan

Department of Child Dental Health, Obafemi Awolowo University, Ile-Ife, Nigeria

## Effect of COVID-19 on Dietary and Oral Health Habits among Children and Adolescents: A Multi-Country Study

2020

**Role:** Collaborator

**Principal Investigator:** Dr. Heba Mohamed Elkhodary

Department: Pediatric Dentistry Department, University: King Abdulaziz University, Saudi Arabia Kingdom

## COLLABORATORS

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**Dr. Maurice Michel**

Department of Oncology and Pathology, Karolinska Institutet, Sweden

**Prof. Morenike Oluwatoyin Folayan**

Department of Child Dental Health, Obafemi Awolowo University, Ile-Ife, Nigeria

**Dr. Naila Malkani**

Department of Zoology, Government College University, Lahore, Pakistan

**Dr. Muhammad Imran Sohail**

Department of Zoology, Government College University, Lahore, Pakistan

**Dr. Abeedha Tu-Allah Khan**

School of Biological Sciences, Faculty of Life-Sciences, University of the Punjab, Lahore, Pakistan & Department of Biological Sciences, Faculty of Sciences, Superior University, Lahore, Pakistan

**Dr. Heba Mohamed Elkhodary**

Department: Pediatric Dentistry Department, University: King Abdulaziz University, Saudi Arabia Kingdom

**Dr. Shefin Basheera**

Jawaharlal Nehru Tropical Botanic Garden and Research Institute, India

## TEACHING EXPERIENCE

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**Tutor/Instructor (Biology)**

18 Mar 2021 – 19 Jan 2023

Department of Biology, Virtual University of Pakistan, 1-Davis Road, Lahore, Pakistan

**Responsibilities:**

- Teaching (synchronous) undergraduate students
- Conducting the course practicals in lab
- Developing new courses and research projects
- Supervision of research students
- Attending research and skill-based conferences, workshops and seminars
- Drafting department-related different reports
- Working with different committees at the university

**Biology Teacher**

Mar 2019 – Jan 2020

The Royal Education Empire (TREE) School, Nain Sukh, Shahdara, Lahore, Pakistan

**Responsibilities:**

- Teaching biological sciences
- Making course material

## REVIEWER FOR THE JOURNALS

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- Natural Product Research (ISSN: 1478-6427)
- BioScientific Review (ISSN: 2663-4201)
- Scientific Inquiry and Review (ISSN: 2521-2435)

## PUBLICATIONS

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**Published Articles:**

1. A computational and bioinformatic analysis of ACE2: an elucidation of its dual role in COVID-19 pathology and finding its associated partners as potential therapeutic targets  
Khan et al. (2022). Journal of Biomolecular Structure and Dynamics. <https://doi.org/10.1080/07391102.2020.1833760>
2. Optimization of Tannase Production from Raoultella ornithinolytica using Corn (Zea mays) Leaves in Solid State Fermentation  
Shakir et al. (2023) Pakistan Journal of Zoology. <https://dx.doi.org/10.17582/journal.pjz/20191210061234>

3. Individual, familial and country-level factors associated with oral hygiene practices in children: an international survey  
Elkhodary et al. (2023). BMC Oral Health. <https://doi.org/10.1186/s12903-023-02746-0>
4. A multi-country survey on access to healthcare and treatment services among individuals with critical medical care needs during the first wave of the pandemic  
Folayan (2023). BMC Public Health. <https://doi.org/10.1186/s12889-023-15007-0>
5. Factors associated with an increase in alcohol consumption and tobacco use during the COVID-19 pandemic: A cross-sectional study of data from 105 countries  
Quadri et al. (2023). Tobacco Induced Diseases. <https://doi.org/10.18332/tid/157205>
6. The Impact of COVID-19 on the Emotion of People Living with and without HIV  
Lusher et al. (2023). Hygiene. <https://doi.org/10.3390/hygiene3010005>
7. In silico analysis and identification of honey flavonoids as potential inhibitors of SARS-CoV-2 RNA-dependent RNA polymerase and main protease  
Yousaf (2022). BioScientific Review. <https://doi.org/10.32350/BSR.42.04>
8. Production and Characterization of Tannase By *Bacillus subtilis* in Solid State Fermentation of Corn Leaves  
Shakir et al. (2022). Journal of Applied Biotechnology Reports. <https://dx.doi.org/10.30491/jabr.2021.265181.1334>
9. Tannase production from *Bacillus amyloliquefaciens* in submerged fermentation through response surface methodology  
Sahkir et al. (2022). Pakistan Journal of Scientific and Industrial Research. <https://doi.org/10.52763.PJSIR.BIOL.SCI.65.2.2022.95.103>
10. Is self-reported depression, HIV status, COVID-19 health risk profile and SARS-CoV-2 exposure associated with difficulty in adhering to COVID-19 prevention measures among residents in West Africa?  
Folayan et al. (2022). BMC Public Health. <https://doi.org/10.1186/s12889-022-14429-6>
11. Impact of the COVID-19 pandemic on student' sleep patterns, sexual activity, screen use, and food intake: A global survey  
Ellakany et al. (2022). PLoS One. <https://doi.org/10.1371/journal.pone.0262617>
12. Factors Associated With Experiences of Fear, Anxiety, Depression, and Changes in Sleep Pattern During the COVID-19 Pandemic Among Adults in Nigeria: A Cross-Sectional Study  
Folayan et al. (2022). Frontiers in Public Health. <https://doi.org/10.3389/fpubh.2022.779498>
13. Associations between COVID-19 testing status, non-communicable diseases and HIV status among residents of sub-Saharan Africa during the first wave of the pandemic  
Folayan et al. (2022). BMC Infectious Diseases. <https://doi.org/10.1186/s12879-022-07498-w>
14. Factors associated with COVID-19 pandemic induced post-traumatic stress symptoms among adults living with and without HIV in Nigeria: a cross-sectional study  
Folayan et al. (2022). BMC Psychiatry. <https://doi.org/10.1186/s12888-021-03617-0>
15. Differences in COVID-19 Preventive Behavior and Food Insecurity by HIV Status in Nigeria  
Folayan et al. (2022). AIDS and Behavior. <https://doi.org/10.1007/s10461-021-03433-3>
16. Factors Associated with Financial Security, Food Security and Quality of Daily Lives of Residents in Nigeria during the First Wave of the COVID-19 Pandemic  
Folayan et al. (2021). International Journal of Environmental Research and Public Health. <https://doi.org/10.3390/ijerph18157925>
17. Debunking myths about COVID-19, paranoiac misconceptions, recent developments and its current stance  
Khalid et al. (2020). Pakistan Journal of Zoology. <https://dx.doi.org/10.17582/journal.pjz/20200608144416>
18. A Cross-Sectional Survey of Knowledge, Attitude, and Practices (KAP) Toward Pandemic COVID-19 Among the General Population of Jammu and Kashmir, India  
Yousaf et al. (2020). Social Work in Public Health. <https://doi.org/10.1080/19371918.2020.1806983>
19. Foraging Behavior of Birds at Morning and Evening Times: A Preliminary Study  
Yousaf et al. (2020). BioScientific Review. <https://doi.org/10.32350/BSR.0201.04>
20. Knowledge, Attitude and Practices of University Students of Pakistan towards Antibiotic Use and Resistance: Questionnaire Based Assessment  
Yousaf et al. (2021). BioScientific Review. <https://doi.org/10.32350/BSR.0303.05>
21. Mental Health and Coping Contingencies among Adults Residing in the United Kingdom during the COVID-19 Lockdowns  
Lusher et al. (2021). International Journal of Health and Psychology Research. 9(3):16-26. <https://doi.org/10.37745/ijhpr.13>

### **Submitted Articles/ In Pipeline:**

1. Repurposing FDA-approved drugs against monkeypox virus DNA polymerase: A virtual screening and molecular dynamics simulation study  
Yousaf et al. Journal of Biomolecular Structure and Dynamics
2. Computational investigation of *Moringa oleifera* phytochemicals targeting EGFR: Molecular docking, molecular dynamics simulation and density functional theory studies  
Yousaf et al. Journal of Biomolecular Structure and Dynamics
3. Identification and analysis of hub genes associated with adrenocortical carcinoma: a computation study  
Yousaf

### **Conference Abstracts & Posters:**

1. Evaluation of Flavonoids as Potential Inhibitors of SARS-CoV-2: A Computational Approach for Drug Discovery  
Second International Congress on Biological and Health Sciences. Poster (25 Feb 2022).
2. Bacterial diversity in water from Lai Nullah contaminated with household sewage and industrial waste  
Second International Congress on Biological and Health Sciences. Poster (25 Feb 2022).
3. Protease Production Using Gut Waste of Poultry in Submerged Fermentation  
Science Talent Farming scheme (STFS), Pakistan Science Foundation.  
Poster (December 2021).
4. Stock Structure Analysis of Nile Tilapia from Indus River Using Landmark-based Truss Network System  
Science Talent Farming scheme (STFS), Pakistan Science Foundation.  
Poster (December 2021).
5. Statistical optimization of medium components for tannase production By *Bacillus amyloliquefaciens* in submerged fermentation  
Recent Innovations in Molecular Sciences, by International Conference of Punjab University (ICPU), University of the Punjab, Lahore (November 06th-08th, 2019). Abstract P-70, pp150-151 [Abstract].

## **RESEARCH SKILLS**

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### **Biological Techniques**

- Animal cell culture
- Bacterial cell culture
- DNA extraction
- Plasmid DNA extractions from bacterial cells
- DNA digestion using restriction enzyme
- Polymerase Chain Reaction
- Agarose gel electrophoresis
- Micro-pipetting
- Centrifugation
- UV-Vis spectroscopy
- Assay for heavy metal and antibiotic tolerance in bacteria
- Spread plate and disc diffusion method for bacteria
- Bacterial enzyme production and characterization

### **Bioinformatics Skills (Tools)**

- Multiple sequence alignment (MEGA X, Clustal Omega, T-Coffee, Muscle)
- Phylogenetic analysis (MEGA X)
- Physicochemical parameters of protein (ExPasy ProtParam & Protscale server)
- Protein structural analysis (SOPMA, Phyre2, SWISS MODEL, Ramachandran Plot Server & PROCHECK)
- Protein functional analysis
- Protein-protein interaction (STRING, Cytoscape)
- Prediction of protein localization in cell (CELLO, CELLO2GO)
- Polymorphism analysis (SIFT, PANTHER, PROVEAN)
- Microarray analysis (GEO2R)

### **Computational Drug Discovery**

- Retrieval of drug/natural compound structures (ZINC15 & PubChem)
- Retrieval of protein 3D structure (RCS PDB)
- Preparation of protein and compounds (BIOVIA Discovery Studio Visualizer, AutoDock MGL & PyRx)
- Molecular docking analysis (AutoDock Vina, PyRx & MOE)

### **Software Based Morphometrics**

- Digital imaging of specimen
- Digitization of landmarks on specimen image using tpsUtil and tpsDig2
- Truss network and statistical analysis using PAST

**Statistical Software**

- IBM SPSS
- PAST (PAleontological STatistics)
- MS Excel

**Referencing Tools**

- Mendeley
- EndNote

**PERSONAL SKILLS**

**Mother Tongues:** Urdu and Punjabi

**English**

<b>UNDERSTANDING</b>		<b>SPEAKING</b>		<b>WRITING</b>
Listening	Listening	Spoken interaction	Spoken production	
Advanced	Advanced	Advanced	Advanced	Advanced

**Computer Skills:**

- Basic computer operating
- Microsoft Office (Word, PowerPoint & Excel)
- Editing software: Adobe Illustrator & Canva
- Google (Form, Doc & Sheets)

**CONFERENCES / WORKSHOPS / SYMPOSIA ATTENDED**

- Workshop on Designing the guide RNAs for CRISPR/Cas Gene editing | 8 Nov 2021  
University of Veterinary & Animal Sciences, Ravi Campus, Pattoki, Pakistan
- Dissecting the scholarly publishing process. A current overview on the steps to getting published | 26 Jan 2022  
Wiley Publishing Company
- Undergraduate Faculty Training STEM Education in Pakistan | 14 – 18 Mar 2022  
British Council & Virtual University of Pakistan, Lahore, Pakistan
- International Conference on Bioinformatics & Computational Methods in Post Genomic Era | 10 Nov 2021  
Virtual University of Pakistan, Lahore, Pakistan
- One Day Virtual Training on "Bacteriophages: An alternate to antibiotics" | 20 Nov 2021  
University of Veterinary & Animal Sciences, Lahore, Pakistan
- Orientation Seminar of Bio Faculty with SAWIE (Sustainable Agriculture, Water & Intelligent Ecosystem-Smart Farming in Pakistan) | 10 Jan 2022  
Virtual University of Pakistan, Lahore, Pakistan
- One-Day Seminar on Intellectual Property Rights | 21 Dec 2021  
Virtual University of Pakistan, Lahore, Pakistan
- Camel as the Best Suited Animal under Changing Climate | 22 June 2021  
Virtual University of Pakistan, Lahore, Pakistan
- Principles of species conservation planning and remote conservation during a pandemic situation | 5 Jun 2021  
Department of Molecular Biology, Virtual University of Pakistan, Lahore, Pakistan
- Emerald Guide to Getting published | 16 April 2020  
Emerald Publishing
- COVID-19: Tackling the Novel Coronavirus | 1 May 2020  
London School of Hygiene & Tropical Medicine And UK Public Health Rapid Support Team
- Recent Innovations in Molecular Sciences | 6 – 8 Nov 2019  
International Conference of Punjab University (ICPU), University of the Punjab, Lahore, Pakistan
- Integrated Pest Management for Food Safety | 30 Jan 2019  
Department of Zoology, University of the Punjab, Lahore, Pakistan
- Potential of Sericulture for Employment and Income Generation | 15 Feb 2018  
Department of Zoology, University of the Punjab, Lahore, Pakistan
- 38th Pakistan Congress of Zoology (International) | 27 Feb – 1 Mar 2018  
Zoological Society of Pakistan, Department of Zoology, University of the Punjab, Lahore, Pakistan

## LEADERSHIP AND TEAMWORK

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- Secretary, Graduate Research Committee | Apr 2022  
Department of Biology, Virtual University of Pakistan, Lahore, Pakistan
- President, Youth Entrepreneurial Society (YES) | 2019  
Department of Zoology, University of the Punjab, Lahore, Pakistan
- Vice President, Zoological Character Building Society (ZCBS) | 2017, 2018  
Department of Zoology, University of the Punjab, Lahore, Pakistan
- Program Team Member, Directorate of Quality Enhancement | Oct 2021 – Present  
Department of Biology, Virtual University of Pakistan, Lahore, Pakistan
- Member, Departmental Equivalence Committee | Aug 2021 – Present  
Department of Biology, Virtual University of Pakistan, Lahore, Pakistan
- Member Registration Committee | 6 – 8 Nov 2019  
Recent Innovations in Molecular Sciences (International Conference), University of the Punjab, Lahore, Pakistan
- Member, Food and Transport Committees | 27 Feb – 1 Mar 2018  
38th Pakistan Congress of Zoology (International conference), Zoological Society of Pakistan
- Volunteer, Roadshow on New R&D Framework of HEC | 23 Nov 2019  
Research and Development Division, Higher Education Commission, Pakistan, at University of the Punjab, Lahore, Pakistan
- Member, Organizing Committee, Potential of Sericulture for Employment and Income Generation | 15 Feb 2018  
Department of Zoology, University of the Punjab, Lahore, Pakistan
- Member, organizing committee, Integrated Pest Management for Food Safety (one-day symposium) | 30 Jan 2019  
Department of Zoology, University of the Punjab, Lahore, Pakistan
- Organizer, four-day Sports Galas | 2018, 2019  
Department of Zoology, University of the Punjab, Lahore, Pakistan

## HONORS AND AWARDS

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- Winner of Scientific poster and model competition | 1<sup>st</sup> Mar 2018  
38th Pakistan Congress of Zoology (International)
- Departmental scholarships | 2014 – 2019  
Won six times at Department of Zoology, University of the Punjab, Lahore, Pakistan
- “The Brain of Okara” | 2011  
Title as winner of an educational competition organized by Suffa Educational Complex, Okara, Pakistan
- 2nd Position in Matric Examination (in boys) in District Okara | 2011
- Student Talent Award on securing 2nd position in district in matriculation | 2011
- B.I.S.E. Lahore merit scholarship on securing 90%+ marks in matriculation | 2011
- Cash prize (1000 PKR) from Assistant Commissioner Renala Khurd, Okara for matric marks | 2011
- 3<sup>rd</sup> Position in Middle Examination in District Okara | 2009
- Merit scholarship from Punjab Examination Commission in middle examination | 2009