

# Muhammad Israr, PhD

Assistant Professor,  
Department of Biology,  
The University of Haripur.  
HEC Approved Supervisor

## Address:

Department of Biology, The University of Haripur, Hattar  
Road, Near Swat Chock, Haripur, 22620, Khyber  
Pakhtunkhwa Pakistan.

Cell No: +923065818359

Email: [m.israr@uoh.edu.pk](mailto:m.israr@uoh.edu.pk) [m.israr88@hebtu.edu.cn](mailto:m.israr88@hebtu.edu.cn)

[http://www.uoh.edu.pk/profile.php?id=NDUw#tabs/Tabs\\_Group\\_name:Tab\\_1\\_name](http://www.uoh.edu.pk/profile.php?id=NDUw#tabs/Tabs_Group_name:Tab_1_name)



## Research Interest

---

- **Molecular Enzymology:** Enzyme Engineering, Enzymatic Characterization, Catalytic Mechanism Analysis: Cloning, Expression, Purification of Enzyme Protein, Characterization of Enzymatic Properties, Homology Modeling, Multiple Sequence Alignment and Protein Crystal Structure Analysis to Elucidate its Catalytic Mechanism.
- **Rational Design, Directed Evolution and Application of Enzyme Protein:** Based on the Three-dimensional Structural Information of Enzyme Protein, using Rational Design and Directed Evolution Technology to obtain Enzyme protein with high Catalytic Efficiency and good Stability to serve the Bio- Catalytic Industry.

## Research Publications

---

1. Shujing Xu, Mengqiu Chu, Fa Zhang, Jiawei Zhao, Jiaqi Zhang, Yuting Cao, Guangzheng He, **Muhammad Israr** \*, Baohua Zhao, Jiansong Ju, Enhancement in the catalytic efficiency of D-amino acid oxidase from *Glutamicibacter protophormiae* by multiple amino acid substitutions. *Enzyme and Microbial Technology*, <https://doi.org/10.1016/j.enzmictec.2023.110224>, (IF 4.30)
2. Muhammad Tariq, **Muhammad Israr**\*, Muslim Raza, Bashir Ahmad, Azizullah Azizullah, Shafiq Ur Rehman, Muhammad Faheem, Xinxiao Sun, Qipeng Yuan. Engineering of Phenylalanine Dehydrogenase from *Thermoactinomyces Intermedius* for the Production of a novel Homoglutamate. *PLOS ONE*. <https://doi.org/10.1371/journal.pone.0263784>. (IF 3.752)
3. **Muhammad Israr**, Guoping Lv, Shujing Xu, Yunhe Li, Shengting ding, Baohua Zhao, Jiansong Ju, Biochemical characterization and mutational analysis of alanine racemase from *Clostridium perfringens*, *Journal of Bioscience and Bioengineering*, <https://doi.org/10.1016/j.jbiosc.2019.02.003>. (IF 2.89)
4. **Muhammad Israr**\*, Faiza Basheer, Syeda Amna Hussain, Azizullah Azizullah, Shafiq Ur Rehman. Cloning, Purification and Biochemical Characterization of UDP MurNAc-L- Alanine-D-Glutamate: L-Lysine Ligase (MurE) From *Streptococcus iniae*. Accepted in *PLOS ONE* (IF 3.752)
5. Syeda Asma Bano, **Muhammad Israr** et al. Detection of Microorganisms with antibacterial activities from different industrial wastes and GC-MS analysis of crude microbial extracts. *Brazilian Journal of Biology*. <https://doi.org/10.1590/1519-6984.245585> (IF 1.65).
6. **Muhammad Israr**\*, Shakir Ullah, Guojun Zheng, Aziz Ullah, Bashir Ahmad, Shafiq Ur Rehman. Enhancement in the catalytic activity of *Anabaena variabilis* phenylalanine ammonia-lyase (AvPAL) for the production of L-Phenylalanine using site-directed mutagenesis. Under review in *Biotechnology and Applied Biochemistry*.
7. **Muhammad Israr**\*, Qing Jin, Jing Bai, Aziz Ullah, Bashir Ahmad, Umar Zeb, Shafiq Ur Rahman, Dong Liu, Jiansong Ju, Baohua Zhao\* Improvement in the catalytic activity and thermal stability of Alanine Racemase from *Thermoanaerobacter tencongenesis* MB4 through iterative saturation mutagenesis, Under review in *Journal of Bioscience and Bioengineering*.
8. **Muhammad Israr**\*, Jiansong Ju, Baohua Zhao, D-amino acid metabolic enzymes: Functions and industrial application (review article) under review in *Journal of Biochemistry*.

9. Rashid Iqbal, Muhammad Aown Sammar Raza, Muhammad Habib-Ur Rahman, Sajjad Hyder, **Muhammad Israr**, Muhammad Usman Aslam, Farhan Mustafa, Muhammad Shahzaman, Muhammad Ayaz, Monika Toleikiene, Fatemeh Hashemi, Muhammad Tahir Khan & Muhammad Mahran Aslam. Effect of partial rhizosphere drying on plant photosynthetic, antioxidative and water related indicators in cotton. *Communications in Soil Science and Plant Analysis*. : <https://doi.org/10.1080/00103624.2022.2070633>. (IF 1.327)
10. Banzeer Ahsan Abbasi, Javed Iqbal, **Muhammad Israr**, Tabassum Yaseen, Syeda Anber Zahra, Amir Shahbaz, Abbas Rahdar, Blqees Raouf, Shahid Ullah Khan, Sobia Kanwal, Tariq Mahmood. *Rhamnella gilgitica* functionalized green synthesis of ZnONPs and their multiple therapeutic properties. *Microscopy Research and Technique*. <https://doi.org/10.1002/jemt.24090>. (IF 2.769)
11. Xing Ge, Ying Zhang, Yong Zuo, **Muhammad Israr**, Bowen Li, Peng Yu, Guofen Gao, Yanzhong Chang, Zhenhua Shi, Transcriptomic analysis reveals the molecular mechanism of Alzheimer-related neuropathology induced by sevoflurane in mice, *Journal of Cellular Biochemistry*, <https://doi: 10.1002/jcb.29020>. (IF 4.429)
12. Bashir Ahmad, Yaser Gamallat, Muhammad Fiaz Khan, Syed Riaz Uddin, **Muhammad Israr**, Manzoor Ahmad, Naeem Tahir et al. Natural Polyphyllins (I, II, D, VI, VII) Reverses Cancer Through Apoptosis, Autophagy, Mitophagy, Inflammation, and Necroptosis. *Oncotargets and Therapy*. (14):1821-1841. (IF 4.147)
13. Najeeb Ullah, Syeda Asma Bano, Ume Habiba, Maimoona Sabir, Andleeb Akhtar, Samreen Ramzan, Ayesha Shoukat, **Muhammad Israr**, Sher Shah, Syed Moazzam Nizami, Majid Hussain. Environmental impacts, water footprint and cumulative energy demand of match industry in Pakistan. *PLOS ONE*. <https://www.researchgate.net/deref/https%3A%2F%2Fdoi.org%2F10.1371%2Fjournal.pone.0251928> (IF 3.752)
14. Ata Ur Rehman, Asif Hayat, Adnan Munis, Tianyu Zhao, **Muhammad Israr**, Zheng Maosheng, Characterization of magnesium, zinc and iron sulfates for thermochemical storage. *Proceedings of the Institution of Civil Engineers- Energy*, <https://doi.org/10.1680/jener.19.00018>. (IF 1.121)
15. Muhammad Saqlain Zaheer, Hafiz Haider Ali, Walid Soufian, Rashid Iqbal, Muhammad Habi-ur-Rahman, **Muhammad Israr**, Ayman EL Sabagh. Potential effect of biochar application for improving wheat (*Triticum aestivum L.*) growth and soil biochemical properties under drought stress conditions. *Land*. <https://www.mdpi.com/2073-445X/10/11/1125>. (IF 3.39)
16. **Muhammad Israr\***, Fawad Ali, Arif Nawaz, Muhammad Idrees, Aishma Khattak, Shafiq Ur Rehman, Azizullah Azizullah, Bashir Ahmad, Syeda Asma Bano, Rashid Iqbal. Seroepidemiology and Associated Risk Factors of Hepatitis B and C Virus Infections among Pregnant Women Attending Maternity Wards at Two Hospitals in Swabi Khyber Pakhtunkhwa Pakistan. *PLOS ONE* 16(8): e0255189. <https://doi.org/10.1371/journal.pone.0255189>. (IF 3.752).
17. **Muhammad Israr\***, Fawad Ali, Murtala Muhammad, Noor Bahadar, Seroprevalence and risk factors of hepatitis B virus among blood donors in district Charsadda Khyber Pakhtunkhwa Pakistan, *Journal of Pure and Applied Biology*, 6(2): 669-675, June 2017.
18. Noor Bahadar, Fawad Ali, **Muhammad Israr**, Shabeer Ahmad, The correlation between RT-PCR and ELISA assay on hepatitis C positive serum samples, *Journal of Pure and Applied Biology*, 5(4): 689-694, December 2016.
19. Meher Hassan, **Muhammad Israr\***, Simeen Mansoor, Shafiq Ur Rehman, Azizullah Azizullah. Alleviation of genotoxicity and oxidative stress caused by cadmium in mung bean seedlings by priming effect of phytohormones and proline. *PLOS ONE*. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0257924>. (IF 3.752).
20. Fawad Ali, **Muhammad Israr\***, Shafiq Ur Rehman, Azizullah Azizullah, Hussain Gulab, Muhammad Idrees, Rashid Iqbal, Aishma Khattak, Majid Hussain, Fahad Mohammed Al-Zuaibr. Health risk assessment of heavy metals via consumption of dietary vegetables using wastewater for irrigation in Swabi, Khyber Pakhtunkhwa, Pakistan. *PLOS ONE* 16(8): e0255853. <https://doi.org/10.1371/journal.pone.0255853> (IF 3.752).
21. **Muhammad Israr\***, Fawad Ali, Aziz Ullah, Shafiq Ur Rehman, Arif Nawaz, Rashid Iqbal, Shakir Ullah, Zobia Noreen. Immunochromatographic Test and Third Generation ELISA for Elucidating the Existence and Risk Factors of Anti-HCV Antibodies among Blood Donors from Swabi Pakistan. *Abasyn Journal of Life Science*. 2020, 3 (2): 138- 144.
22. Kanwar Muhammad Raheel Mehboob, Rashid Iqbal, **Muhammad Israr**, Jaweria Shamshad, Umair Riaz, Muhammad Habib-ur-Rahman, Fawad Ali, Arif Nawaz, Maliha Sarfraz, Abdul Waheed, Muhammad Tahir Khan and Muhammad Aslam. Assessment of the Consequences of Heat Changes on Cotton Cultivars Growth, Phenology and Yield at Different Sowing Regimes. *Pakistan Journal of Agricultural Research*, 33, 4: 759-769.

23. Muhammad Idrees, **Muhammad Israr\***, Saman Naveed, Bashir Ahmad, Muhammad Mukaram Shah, Imran Khan, Aishma Khattak. Frequency distribution of Diabetes Mellitus and Chronic Kidney Disease among General Population of Peshawar Khyber Pakhtunkhwa Pakistan. *Pakistan Journal of Zoology (Accepted)*.
24. Imran Haider, Muhammad Aown Smmar Raza, Rashid Iqbal, Salman Ahmad, Muhammad Slman Ahmad, **Muhammad Israr**, Umair Riaz, Nasir Abbas, Salman Haider Abbasi. Alleviating the Drought Stress in Wheat (*Triticum aestivum* L.) by Foliar Application of Amino Acid and Yeast. *Pakistan Journal of Agricultural Research*. 34(1):239-246.

## Educational Background

---

### Postdoctoral Fellowship (IPFP)

Department of Biology, The University of Haripur, KPK, Pakistan

From November 2020 to November 2021.

Project title: Molecular Cloning and Biochemical Characterization of UDP-MurNAc-L- alanyl- D- glutamate: L-Lysine ligase (MurE) from pathogenic bacteria for Inhibitors Development

Remarks: **Completed**

### Ph.D. (Biochemistry and Molecular Biology)

School of Life Science, Hebei Normal University, Shijiazhuang, China. (Sep 2016- July 2019).

Dissertation title: Molecular Studies on the Catalytic Properties of D-amino Acid Metabolic Enzymes.

### Master (Chemistry with Specialization in Biochemistry)

Institute of Chemical Science, University of Peshawar, K.P.K, Pakistan (2008-2011).

Remarks: Division 1<sup>st</sup>

Thesis title: Epidemiologic study on Hepatitis B and C virus among the general population of district Peshawar, Khyber Pakhtunkhwa, Pakistan.

### Bachelor (Chemistry, Botany, Zoology)

Government Post Graduate College, Swabi, KPK, Pakistan (2006-2008)

Remarks: Division 1<sup>st</sup>

### Bachelor of Education (B.Ed.)

Aziz College of Education Yar Hussain, Swabi, KPK Pakistan (2013-2014)

Remarks: Division 1<sup>st</sup>

### Intermediate (FSc) (Chemistry, Biology, Physics)

Government Post Graduate College, Swabi, KPK, Pakistan (2004-2006).

Remarks: Division 1<sup>st</sup>

### Intermediate (SSC) (Chemistry, Biology, Physics)

Government High School Dobian, Swabi, KPK, Pakistan (2003-2004).

Remarks: Division 1<sup>st</sup>

## Employment

---

- **Assistant Professor**: Department of Biology, The University of Haripur, Haripur. Pakistan (1<sup>st</sup> December 2021 to current)
- **Assistant Professor (IPFP Fellow)**: Department of Biology, The University of Haripur, Pakistan (November 2020 to November 2021)
- **Research Internee**: National Academy of Higher Education (NAHE), Higher Education Commission Islamabad, Pakistan (August 2019 to October 2020)
- **Lecturer/Grade A-Levels**: The City School System, Jinnah Campus, Hyderabad, Pakistan (March 2011 to June 2015)

## Research Projects Completed

---

- Completed One Million PKR Research Grant as a Principal Investigator under the Start-Up Research Grant Program (SRGP) for IPFP (Phase-II) from the National Academy of Higher Education (NAHE) Pakistan. Project Title: Molecular Cloning and Biochemical Characterization of UDP-MurNAc-L-alanyl-D-glutamate: L-Lysine ligase (MurE) from pathogenic bacteria for Inhibitors Development. (Project ID 205/IPFP-II (Batch-I)/SRGP/NAHE/HEC/2020/238).
- Completed a 3.2 Million RMB Research Grant as a Co-Principal Investigator from the Foundation of Hebei Normal University, China. Project Title: Isolation and Synthesis Process Optimization of Biosynthetic Alanine Racemase. (Project ID: L2017K07).

## Students in Supervision

---

1. Tauheed Muhammad (M.Phil Biochemistry)
2. Saba Bibi (M.Phil Biochemistry)
3. Urwa Atique (M.Phil Biochemistry)
4. Noor Fatima (M.Phil Biochemistry)
5. Fatima Bibi (M.Phil Biochemistry)

## Students in Co-Supervision

---

1. Ibrar Wali (M.Phil Microbiology)
2. Khadija Malik (M.Phil Microbiology)
3. Muhammad Adnan (M.Phil Microbiology)

## Reviewer for International Journals

---

Reviewing articles for the following ISI Index journals

- Journal of Biochemistry and Biotechnology
- Pakistan Journal of Zoology
- Journal of Biotechnology

## International and National Conferences Attended

---

- 2<sup>nd</sup> Symposium on recent trends in Indigenous Chemical Research and Awareness on Data Presentation, Institute of Chemical Sciences, The University of Peshawar Pakistan held at Baragali Summer Campus during July 1-5, 2012.
- 11<sup>th</sup> International and 23<sup>rd</sup> National Chemistry Conference Organized by the National Centre of Excellence in the Physical Chemistry University of Peshawar. October 15- 17, 2012.
- 13<sup>th</sup> National Symposium Frontiers in Physics, Organized by University of Peshawar Pakistan, December 19-21, 2012.
- 4<sup>th</sup> Spring Research Poster Exhibition Organized by Institute of Chemical Sciences, University of Peshawar Pakistan, April 11, 2013. (**Participated as a presenter**).
- 10<sup>th</sup> International Symposium on Analytical and Environmental Chemistry Organized by National Centre of Excellence in Analytical Chemistry, University of Sindh, Jamshoro Pakistan. December 2-4 2013.
- International Conference on Physical and Environmental Chemistry Organized by National Centre of Excellence in the Physical Chemistry University of Peshawar Pakistan. Held at Hotel Elites Natia Gali Pakistan. September 9-11 2013.
- 12<sup>th</sup> Symposium on Biochemistry and Molecular Biology Organized by School of Life Science, Hebei Normal University Shijiazhuang China. April 10, 2018.
- 1<sup>st</sup> International Symposium on Current Trends and Future Perspective in Botanical Research Organized by the University of Okara. November 10, 2020.
- 1<sup>st</sup> Annual Natural Products Exhibition-2021. Organized by Department of Botany, University of Okara.

## International and National Workshops and Exhibitions attended

---

- China-Pakistan Economic Corridor (CPEC) Workshop Organized by College of International Culture Exchange, Hebei Normal University, Shijiazhuang China May 15, 2018.
- Chinese Cultural Exhibition, Organized by the College of International Culture Exchange, Hebei Normal University, Shijiazhuang China. May 18, 2019.

- One Month National Faculty Development Program, Organized by National Academy of Higher Education (NAHE), Higher Education Commission (HEC) Islamabad. September-October 2020.

## **Instrumental and Technical Skills**

---

- Conventional PCR, Real-Time PCR, Gradient PCR
- ELISA
- ICT
- Western Blotting
- Gel Electrophoresis
- SDS-PAGE
- HPLC
- FPLC
- ABI Sequencer (sequencing)
- Gene Cloning
- Protein expression and purification
- Kinetic characterization
- Cell culture
- **Bioinformatics tools** (Homology modeling, multiple sequences Alignment, Three-dimensional structural analyses using Swiss model, Swiss Dock, Zinc, PyMOL, Prochecker.

## **Language Skills**

---

- Excellent speaking, writing, reading and listening skills in Pashto, Urdu, and English.
- Can speak the Chinese language.
- Can read and write the Arabic language

## **Awards and Honors**

---

- Regular Top Position Holder in Primary, Middle and High School.
- Best English Speech Award during all government and private school competitions in 2004.
- 2<sup>nd</sup> Position in Biological Sciences at Graduation, Government Post Graduate College Swabi, KPK Pakistan. In 2008.
- 3<sup>rd</sup> Position in Biochemistry at Institute of Chemical Sciences in Master Final (based on overall score), University of Peshawar in 2011.
- Best Student Award of 10000 RMB in 2018 by Hebei Normal University, Shijiazhuang China.
- Granted Chinese Government Scholarship for PhD Studies in 2016.
- Won the Prize for 2<sup>nd</sup> Position in the Doctoral Forum within the series of “Learning in China” activities in the commemoration of the 40<sup>th</sup> anniversary of Reforms and Opening up Ceremony. Held in Chengdu, China 2018.
- Best International Researcher Award by College of International Cultural Exchange, Hebei Normal University Shijiazhuang China. October 29, 2018.
- Research Award by “Carrying the Flag World Records” based on excellent academic achievements (November 11, 2016)
- 2<sup>nd</sup> Position in the International Marathon of 5 kilometers running competition held in Hengshui Lake on September 24, 2016.

## **Countries Visited**

---

- China (2016-2019), Doctoral Studies, Hebei Normal University, Shijiazhuang, China.
- Russia (2017), Holidays
- Malaysia (2018) Holidays
- Thailand (2018) Official Visit with Supervisor.
- Sri Lanka (2019) Holidays

## References

---

- **Prof. Shafiq Ur Rehman**  
Vice Chancellor  
The University of Haripur  
Email: [vc@uoh.edu.pk](mailto:vc@uoh.edu.pk),  
[drshafiq@uoh.edu.pk](mailto:drshafiq@uoh.edu.pk)  
Contact: +92-995-615344
  
- **Dr. Aziz Ullah**  
Chairman,  
Department of Biology,  
University of Haripur  
Email: [azizullah@uoh.edu.pk](mailto:azizullah@uoh.edu.pk)  
Contact: +923349688547
  
- **Prof. Zhao Baohua**  
Director,  
Hebei Normal University  
Shijiazhuang, Hebei, China. Email:  
[zhaobaohua@hebtu.edu.cn](mailto:zhaobaohua@hebtu.edu.cn)