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Personal	• Family name Ahmad • First name Aftab • Date of birth 15-04-1977 (dd-mm-yyyy) • Nationality Pakistani
Education	• **PhD Food and Nutrition (Plant Molecular Biology)**, University of Shizuoka**,** Japan (**October 2005- March 2009).** • **MPhil Biochemistry**, University of Agriculture, Faisalabad (UAF), Pakistan. (**January 2000 – July 2002)**. • **MSc Biochemistry** from UAF, Pakistan (**October 1997- January 2000)**. • **BSc Biology** from the University of Punjab, Pakistan (**Sep. 1995- Sep. 1997)**.
Employment/ Experience	• **Associate Professor -Tenured (October 2021- Present)** Department of Biochemistry, University of Agriculture, Faisalabad, Pakistan. • **Assistant Professor (April 2015- October 2021)** Department of Biochemistry/CASAFS, University of Agriculture, Faisalabad, Pakistan. • **Visiting Scientist (August 2016- February 2017)** Department of Plant Sciences**,** University of California, Davis, USA**.** • **Assistant Professor (November 2014-April 2015)** Department of Biochemistry and Molecular Biology, University of Gujrat (Sialkot Campus), Pakistan. • **Postdoc Fellow** (**August 2009-August 2013),** Plant Cell Technology Lab, University of Shizuoka, Japan.
Honors/Awards	• **Monbukagakusho (MEXT)** award for PhD studies from Japan • **Helmholtz-DAAD** award for PhD studies from Germany (NA) • **EMBO** award from China to attend the EMBO practical course on "**Plant Reproduction**" in Beijing, China

	• **Best poster presentation** award from the University of Shizuoka, Japan
Research Skills	Gene editing through CRISPR/Cas, Gene Cloning, gRNA design, construct designing for CRISPR-Cas (Golden Gate Cloning), plant transformation, Real-time PCR (Light Cycler), Microarray (Affymetrix and Agilent), protein/antibody purification, DNA-protein interaction (EMSA and ChIP-on-CHIP), CRISPR/Cas9 and CRISPR12 based gene editing in plants, recombinant protein expression, Bioanalyzer, TAIL-PCR, DNA sequencing, RNA-Seq, NGS, Western Blotting, Southern Blotting, MEGA-X, BLAST, Recombinant Protein purification (GST-Tag, MBP-Tag, His-Tag), In-Vitro Transcription, Molecular Biology Software's such as Partek Genomic Suite, Snap gene etc.
Teaching Skills	• Enhancing learner-centered pedagogical Skills • Instructional Skills Workshop (June 2024) • Copus • Facilitator Development Workshop (August 26-August 30, 2024)
Research Topic	• **PhD-** Genome-wide search and practical use of novel salt-tolerant genes in *Arabidopsis*.
Research Statement	During my PhD and Postdoc research experience in the **Laboratory of Plant Molecular Improvement (PMI)**, **University of Shizuoka, Japan**, I established a **new method of activation tagging** at the cellular level. I identified four new components of the salt stress regulatory system. I screened approx. 62,000 mutants and identified 18 potential candidates. TAIL-PCR was carried out to determine the location of T-DNA and real-time PCR was performed to identify activated genes within 10kb region of T-DNA borders. In addition, microarray (GeneChip) was performed to analyze whole genome transcriptomic analysis. Among these 18 mutants, 21 candidate genes were ascertained. After studying their knockout and over-expression lines, four genes (out of 21 activated genes found) have been confirmed for their role in salt stress regulation. The confirmed five genes for their role in salt stress regulation are: 1. Encodes for myoinositol-1-P-synthase (**AtMIPS1**), which gives salt tolerances through increasing inositol levels. (https://doi.org/10.1371/journal.pone.0115502). 2. A gene coding basic helix-loop-helix (**AtbHLH106**) transcription factor confer salt, cold and ABA tolerance. (https://doi.org/10.1371/journal.pone.0126872). 3. A gene responsible for ABC transporter (**AtWBC7**). Presented in JSPP Annual Meeting 2011(https://doi.org/10.14841/jspp.2011.0.0284.0). 4. A Calmodulin-binding protein kinase 3 (**AtCBK3**) (KO and OX lines have been studied, and the manuscript is ready for submission). For my **career as an Assistant and Associate Professor** at the University of Agriculture, Faisalabad, Pakistan, I worked on **CRISPR/Cas-mediated gene editing for plant genetic improvement**. I employed CRISPR/Cas9 and CRISPR/Cas12a in Nicotiana tabacum as a model system to develop resistance against Cotton Leaf Curl Virus (CLCuV) disease. We completed single and multiplex constructs of CRISPR-Cas9 and CRISPR-Cas12 against Rep, βC1, and overlapping regions of genes of CLCuV to develop resistance. Results of these studies have been published in GM crops and Food (https://doi.org/10.1080/21645698.2021.1938488), Plant Protection Science (https://doi.org/10.17221/105/2019-PPS), International Journal of Molecular Sciences (https://doi.org/10.3390/ijms222212543), and Frontiers in Plant Science (https://doi.org/10.3389/fpls.2023.1233295). In addition, I also published several papers on gene editing, such as regulatory frameworks of gene-edited crops, molecular fingerprinting of plants, and gene editing in insects. Moreover, I obtained a project on developing CRISPRi-mediated low gossypol cotton, and we designed a CRISPRi construct to reduce gossypol specifically in cotton seeds. Similarly, I obtained funding

	to develop low-phytate maize through CRISPR technology. We **established cotton transformation** in collaboration with **Professor Abhaya M Dandekar, University of California, Davis, USA** (DOI: 10.1371/journal.pone.0263219). This work was part of a **research grant** on "**CRISPR/Cas9 based virus resistance in cotton**" from USAid in collaboration with **Professor Yinong Yang** from Pennsylvania State University and **Professor Abhaya M Dandekar**, UC Davis, California, USA. I am currently working as an associate professor at the Natural and Medical Sciences Research Center (NMSRC), University of Nizwa, Oman. I have been focusing on applications of multiplex gene editing in date palm to develop resistance against the Dubas bug. **Future Goals**: • CRISPR-Cas mediated gene editing for genetic improvement of date palm. • CRISPR RNPs for Gene editing in date palm. • CRISPR-mediated gene editing in lemon to control witches broom disease
Funded Projects as PI or Co-PI	1. **Genes conferring tolerance to salt stress on plants and their impact on human health and longevity**. Funding Agency- Global Center of Excellent (COE) Program of Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT). 300, 000 JPY. Duration: 1 year (2009). 2. **Utilization of plants for human health and longevity: Genes for protecting plants against environmental stresses**. Funding Agency- Global Center of Excellent (COE) Program of the Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT). 300, 000 JPY. Duration: 1 year (2010). 3. **Contribution of plants to human health and longevity: Utilization of genes for protecting plants against salt stress**. Funding Agency- Global Center of Excellent (COE) Program of the Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT). 300, 000 JPY. Duration: 1 year (2011). 4. **CRISPR/Cas9-based virus resistance in cotton.** Funding Agency- **US-Aid. US-Pakistan Center for Advanced Studies in Agriculture and Food Security (USPCAS-AFS)** 33 000 USD. Duration: **Role: PI**. Duration: 3 Years (2016-2019). **5. Development of RNA-based next-generation biopesticides to control cotton bollworms.** Funding agency Higher Education Commission (HEC), Pakistan, under NRPU scheme 2016-2017. Project No.6350. 4.2 million. **Role: PI**. Duration: 3 Years (2017-2020) 6. **CRISPR/Cas9 based virus resistance in cotton.** Funding Agency: Punjab Agriculture Research Board (PARB), Pakistan. 0.907 million. **Role: PI**. Duration: 1 Year (2018-2019) 7. **Development of low-phytate maize through CRISPR-Cas genome editing.** Project-No. PSF-NSLP-877**. Funded by the** Pakistan Science Foundation (PSF), Islamabad. 2.9 million**. Role: PI**. Duration: 3 Year (2022-2025) **8. CRISPRi mediated tissue specific reduction of gossypol contents in cottonseeds:** Project No. PSF/CRP/Consrm-58. Funded by Pakistan Science Foundation (PSF), Islamabad. **6.25 million. Role: PI**. Duration: 2 Year (2023-2025) 9. **Gene editing in *Aedes aegypti* using CRISPR-Cas9 system to replace blood-sucking females with nectar-feeding males.** Funded by HEC-NRPU, Islamabad, Pakistan. 8.7 million. Role: **Co-PI.** Duration: 3 Years (2017-2021) **10. Gene editing of cadherin receptors for Bt toxin in pink bollworm, *Pectinophoragossypiella* using CRISPR-Cas9 system to develop non-feeding character towards Bt cotton.** Funded by HEC-NRPU**.** 2.7: Million, **Role-Co-PI:** Duration 3 Years (2020-2023) **11. Gene Editing of Biological Agents for Nutritional, Biochemical, and Therapeutic Purposes. (Establishment of National Center for Genome Editing for Crop**

	Improvement and Human Health). 500 million funded by Planning Commission of Pakistan. **Role: Co-PI.** Duration: 3 years (2021-2024) 12. **Gut Microbiota mining in Pakistan and its utilization in Health and Disease, an approach towards developing Novel probiotics**. 4.3 Million funded by Jiangnan University, China. Role: **Co-PI,** Duration: 1 Year (2021-2022) 13. **Multiplex CRISPR/Cas editing to develop double zero *Brassica juncea*** (Project No. **CS-445)- (7 Million) Revised** after Reviewer comments. **Under evaluation** of ALP (Agricultural Linkage Program), Pakistan Agricultural Research Council (PARC).
Books	1. **CRISPR Crops: The Future of Food Security (2020)** Editors: **Aftab Ahmad**, Sultan Habibullah Khan and Zulqurnain Khan. ISBN 978-981-15-7141-1: DOI: 10.1007/978-981-15-7142-8. Publisher-**Springer Nature.** 2. **The CRISPR/Cas Toolkit for Genome Editing (2021):** Editors- **Aftab Ahmad**, Sultan Habibullah Khan and Zulqurnain Khan. ISBN: 978-981-16-6304-8, DOI: https://doi.org/10.1007/978-981-16-6305-5. Publisher: **Springer Nature.** 3. **Global Regulatory Outlook of CRISPRized Plants (2023).** Editors- Kamel A. Abd-Elsalam and **Aftab Ahmad**- Publisher- Elsevier- **ISBN 978-0-443-18444-4**. Link: https://www.sciencedirect.com/book/9780443184444/global-regulatory-outlook-for-crisprized-plants 4. **CRISPRized Horticultural Crops (2024).** Editors- Kamel A. Abd-Elsalam and **Aftab Ahmad** and Baohong Zhang- In Production with **Elsevier**- ISBN: eBook ISBN: 9780443132308. Link: https://shop.elsevier.com/books/crisprized-horticulture-crops/a-abd-elsalam/978-0-443-13229-2 5. **CRISPR Edited Food Crops: Reshaping the Global Food Security (2024)** Editors: **Aftab Ahmad**, Nayla Munawar, and Baohong Zhang. In production by **CRC Press** (Taylor and Francis Group). 6. **Advances in AI for Plant Protection (2024). Editors:** Kamel A. Abd-Elsalam and **Aftab Ahmad. Accepted by CRC Press** (Taylor and Francis Group). 7. **CRISPRized Cereals:** Proposal submitted: Expected publication **June 2025**: Editors: Kamel A. Abd-Elsalam, **Aftab Ahmad.** Publisher**: Springer-Nature.**
Major Publications	1. Muhammad Kashif Zahoor, **Aftab Ahmad** and Muhammad Zulhussnain (2024) **Genome Editing in Insects: CRISPR Technology and its Prospects**. Science Reviews-Biology. https://doi.org/10.57098/SciRevs.Biology.3.3.3 2. Humara Naz Majeed and **Aftab Ahmad** (2024) **Emerging Bioengineering Approaches for Cancer and Tumor Therapy**. Science Reviews-Biology. https://doi.org/10.57098/SciRevs.Biology.3.3.1 3. Muhammad Naeem Khan, **Aftab Ahmad**, Kunrong Mei, Muhammad Zubair Ghouri, Sabin Aslam, Muhammad Shahzad Zafar, Nabeela Channar, Nayla Munawar, Sultan H. Khan. (**2024**) **Molecular fingerprinting of Pakistani almonds using chloroplast cpDNA sequences of rbcL and matK genes.** Submitted in Scientific Reports. 4. Muhammad Sulyman Saleem, Sultan Habibullah Khan, **Aftab Ahmad**, Iqrar Ahmad Rana, Zunaira Afzal Naveed and Azeem Iqbal Khan. (2024) **The 4Fs of cotton: Genome editing of cotton for food, feed, fiber, and fuel to achieve zero hunger.** Accepted in *Frontier in Genome Editing*. DOI: 10.3389/fgeed.2024.1401088. 5. Maliha Khalid Khan, Imran Ahmad Khan, Muhammad Omer Iqbal, Emad M Eed, **Aftab Ahmad**, Muhammad Naeem, Hafiza Tuba Ashiq, Nayla Munawar (2024). **The antimicrobial effect of Curcuma longa and Allium sativum decoction in rats explains its utility in wound care**. Am J Transl Res 2024;16(10):6159-6167. https://doi.org/10.62347/WUTE6317. 6. Muhammad Abubakkar Azmat, Malaika Zaheer, Muhammad Shaban, Saman Arshad, Muhammad Hasan, Alyan Arshaf, Muhammad Naeem, **Aftab Ahmad** and

Nayla Munawar (2024) **Autophagy: A new avenue and biochemical mechanisms to mitigate the climate change**. Scientifica. https://doi.org/10.1155/2024/9908323.

7. Ashiq Ali, Tayyab Ali, Muhammad Asim, Ghulam Muhammad, **Aftab Ahmad**, Muhammad Ikhwan Jamaludin, Sutha Devara, and Nayla Munawar (2024). **Innovative aspects and applications of single-cell technology for different diseases**. *American Journal of Cancer Research*. DOI: 10.62347/VUFU1836.
8. Muhammad Qasim Barkat, Chengyun Xu, Muhammad Omer Iqbal, Qasim Javed, Tashfa Javed, Majid Manzoor, **Aftab Ahmad**, Nayla Munawar (2024). Importance of eosinophils apoptosis in the mechanism of severe asthma and clinical implications. Accepted in American Journal of Translational Research.
9. Humera Naz Majeed, Sumera Shaheen, Sadaf Saleem, Sobia Aleem, Naila Sattar, Muhammad Kashif Zahoor and **Aftab Ahmad** (2024). **Structure Analysis and Site-Directed Mutagenesis of Glycosyltransferase, UGT71B8 Leads to Increased Stability and Substrate Activity in *Arabidopsis thaliana***. Critical Reviews in Eukaryotic Gene Expression. **DOI:** 10.1615/CritRevEukaryotGeneExpr.2024054550.
10. **Aftab Ahmad**, Neil E. Hoffman, Michael GK Jones and Baohong Zhang (2024) **Editorial: Frontiers in Regulatory Landscape of CRISPR Edited Crops**. *Frontiers in Plant Sciences*. DOI:10.3389/fpls.2024.1367698.
11. **Ahmad, A.,** Hoffman, N. E., Jones, M. G., & Zhang, B. (2024). **Frontiers in global regulatory landscape of CRISPR-edited plants**. *Frontiers in plant science*, *15*, 1367698.
12. **Aftab Ahmad**, Amer Jamil and Nayla Munawar (2023) **GMOs or non-GMOs: The CRISPR Conundrum**. *Frontiers in Plant Science.* doi: 10.3389/fpls.2023.1232938
13. Sidra Ashraf, **Aftab Ahmad**, Amer Jamil, Bushra Sadia, Judith K. Brown, and Sultan Habibullah Khan. (2023) **LbCas12a mediated suppression of Cotton leaf curl Multan virus**. *Frontiers in Plant Science* 14: 1233295.
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17. Ranian, K., Zahoor, M. K., Zulhussnain, M., & **Ahmad, A**. (2022). **CRISPR/Cas9 mediated sex-ratio distortion by sex specific gene editing in Aedes aegypti**. *Saudi journal of biological sciences*, *29*(4), 3015-3022.
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19. Khan, Z., Razzaq, A., Sattar, T., Ahmed, A., Khan, S. H., & Ghouri, M. Z. (2022). **Understanding floral biology for CRISPR-based modification of color and fragrance in horticultural plants**. *F1000Research*, *11*(854), 854.
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21. Riaz, B., Kashif Zahoor, M., Malik, K., **Ahmad, A**., Majeed, H. N., Jabeen, F., ... & Ranian, K. (2022). **Frequency of Pyrethroid Insecticide Resistance kdr Gene and**

Its Associated Enzyme Modulation in Housefly, Musca domestica L. Populations from Jhang, Pakistan. *Frontiers in Environmental Science*, 704.

22. Aslam, S., Khan, S. H., **Ahmad, A**., Walawage, S. L., & Dandekar, A. M. (2022). **Founder transformants of cotton (Gossypium hirsutum L.) obtained through the introduction of DS-Red, Rec, Rep and CRISPR/Cas9 expressing constructs for developing base lines of recombinase mediated gene stacking**. *PloS one*, *17*(2), e0263219.
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33. Moin ud Din, Abid Ali, Muhammad Yasir, Muhammad Idrees Jilani, Sanila Shoaib, Muhammad Latif, **Aftab Ahmad**, Saima Naz, Munawar Iqbal, Arif Nazir* (Accepted 2020) **Chemical Composition and in vitro Evaluation of Cytotoxicity, Antioxidant and Antimicrobial Activities of Extract from Dried aril of Myrystica Fragrans Houtt**. DOI: 10.15244/pjoes/124738

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42. Suliman M. Alghanem, Khalid Ali Khan, Muhammad Fiaz Khan, Samina Qamer. **Development of DNA barcodes for selected Acacia species by using rbcL and matK DNA markers.** *DOI:* 10.1016/j.sjbs.2020.08.020
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Book Chapters	1. Kamel A Abd-Elsalam, **Aftab Ahmad**, Ahmad Munir (2024). CRISPRized fruit, vegetable, and ornamental crops: A note from editors. In *CRISPRized Horticulture Crops*, pp. 3-20. Academic Press. 2. Arif, Aiman, Ahmad Munir, Muhammad Noman, Nayla Munawar, Kamel A. Abd-Elsalam, Sameer H. Qari, and **Aftab Ahmad**. "Global patent landscape in CRISPR-Cas." In *CRISPRized Horticulture Crops*, pp. 487-506. Academic Press, 2024. 3. Munawar, N., Faheem, M., Niamat, A., Munir, A., Khan, S.H., Zahoor, M.K., Aslam, A. and **Ahmad, A**., 2024. Regulatory, ethical, social, and biosafety concerns in genome-edited horticultural crops. In *CRISPRized Horticulture Crops* (pp. 421-438). Academic Press. 4. Munir, Ahmad, Muhammad Ali, Sameer H. Qari, Nayla Munawar, Muhammad Sulyman Saleem, and **Aftab Ahmad**. "CRISPR workflow solutions: Cargos and versatile delivery platforms in genome editing." In *CRISPRized Horticulture Crops:* pp. 67-90. Elsevier, 2024. 5. Aiman Arif, Rana Ali Haider, Ahmad Munir, Muhammad Zubair Ghouri, Sultan Habibullah Khan, Kamel A Abd-Elsalam, **Aftab Ahmad** (2024) Bioinformatics tools and databases in genome editing for plants. In *CRISPRized Horticulture Crops:* pp. 51-66. Elsevier, 2024. 6. Ahmad Munir, Imran Amin, Muhammad Kashif Zahoor, Humara Naz Majeed, Hassan Almoammar, Abdul Ghaffar, **Aftab Ahmad** (2024) Multiplex genome editing in plants through CRISPR-Cas. In *CRISPRized Horticulture Crops:* pp. 127-142. Elsevier. 7. Abd-Elsalam, K. A., & **Ahmad, A**. (2024). **Regulations of genome edited plants: notes from editors**. In *Global Regulatory Outlook for CRISPRized Plants* (pp. 1-20). Academic Press. 8. Khan, S., Zafar, H., & **Ahmad, A**. (2024). **Reagents and their delivery systems in CRISPR/Cas**. In *Global Regulatory Outlook for CRISPRized Plants* (pp. 71-90). Academic Press. 9. **Ahmad, A**., Abd-Elsalam, K. A., Ali, M., Majeed, H. N., Arif, A., Munir, A., ... & Munawar, N. (2024). **Regulatory triggers of CRISPR-edited crops.** In *Global Regulatory Outlook for CRISPRized Plants* (pp. 91-112). Academic Press. 10. **Ahmad, A**., Munir, A., Zafar, H., Zahoor, M. K., Hassan, S., & Khan, S. H. (2024). **Tracking footprints of CRISPR-based genome editing.** In *Global Regulatory Outlook for CRISPRized Plants* (pp. 113-145). Academic Press. 11. Munawar, N., Ahsan, K., & **Ahmad, A**. (2024). **CRISPR-edited plants' social, ethical, policy, and governance issues.** In *Global Regulatory Outlook for CRISPRized Plants* (pp. 367-396). Academic Press. 12. **Ahmad, A**., Munir, A., Munawar, N., Khan, S. H., Khan, Z., & Akhtar, B. (2024). **Regulations of multiplex genome-edited crops and CRISPR/Cas gene drives.** In *Global Regulatory Outlook for CRISPRized Plants* (pp. 397-445). Academic Press. 13. **Ahmad, A**., Arif, A., & Munir, A. (2024). **CRISPR technology commercialization and biosafety.** In *Global Regulatory Outlook for CRISPRized Plants* (pp. 461-514). Academic Press. 14. Ghouri, M. Z., Munawar, N., Aftab, S. O., & **Ahmad, A**. (2023). **Regulation of CRISPR edited food and feed: legislation and future**. In *GMOs and Political*

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	Accepted in Book: Cotton: ISBN: 978-953-51-5817-2. Edited by Dr Mehboob-ur-Rahman and Dr Yusuf Zafar published by INTECH publishers. DOI:10.5772/intechopen.73600.
PhD Students	1- **Sehrish Khan** (Reg. # 2014-ag-9691), Research associate in my project (**Co-Supervisor**)- **Thesis Title**: Use of CRISPR/Cas9 like immune system for cotton leaf curl virus (CLCuV) interference. **Completed**. 2- **Sadaf Ornab (**Reg.# 2011-GCUF-05276) (**Supervisor II**) – **Thesis Title**: Molecular characterization of AtCNGC19 and AtCNGC20 in *Arabidopsis thaliana* for their potential role in salt stress. **Completed** 3- **Kanwal Ranian** (Reg.# 2011-GCUF-02156) (**Supervisor-II**) **Thesis Title**: CRISPR/Cas9 mediated sex ratio distortion for the genetic control of dengue vector *Aedes Aegypti.* **Completed**. 4- **Sidra Ashraf** (Reg. # 2014-ag-2198) (**Supervisor**) **Thesis Title**: CRISPR/Cas based multiplex genome editing in plants against Begomovirus- **Thesis evaluated (**Paper Published in Frontiers in Plant Science**)**. 5- **Muhammad Salman Mubarik** (Reg.# 2008-ag-2227)- Research associate in my project (**Member**) Conferring resistance to Begomoviruses with CRISPR/Cas9 System. **Completed**. 6- **Qaisar Sultan (**Reg. # 2011-GCUF-02393**) -** (**Supervisor-II**) **Thesis Title**: Functional characterization of *KCS6* gene in water stress tolerance in cotton (*Gossypium hirsutum L.)* through gene knock-out technology. **Thesis ready for submission.** **7-** **Muhammad Zulhusanain** (Reg. # 2012-GCUF-06627) (**Supervisor-II**) **Thesis Title**: Genome editing in Dengue vector, *Aedes Aegypti* using CRISPR/Cas9 system to replace blood sucking females to nector feeding males. **Thesis submitted.** 8- **Samia Hassan (**Reg. # 2015-ag-3498**)** (**Supervisor**)- **Thesis Title**: CRISPR/Cas mediated modification of phytic acid biosynthetic pathway to reduce phytic acid in maize. **Research in Progress**. 9- **Aiman Arif (**Reg. # 2017-ag-501) **Supervisor- Thesis Title:** CRISPRi mediated tissue specific reduction of gossypol content in cottonseeds. **Research in Progress**. 10- **Muhammad Faheem (**Reg. # 2020-ag-1375**) Supervisor- Thesis Title:** CRISPR/Cas mediated Genome editing of Late Blight susceptible genes to develop disease resistance in Potato. **Research in Progress**. 11- **Anam Niamat** (Reg.# 2020-ag-1336**) Supervisor- Thesis Title**: Optimizing targeted Genome Editing to regulate post-harvest associated quality traits in potato tubers. **Research in Progress** 12- **Ahmad Munir (**Reg. # 2018-ag-4102**) Supervisor**- **Thesis Title**: Prospects of CRISPR-Cas mediated Development of Short-stature Maize Isotype by Targeted Suppression of Gibberellin Biosynthetic Genes. **Research in Progress**. 13- **Noor-Ul-Huda (**Reg. # 2020-ag-1271**) Supervisor- Thesis Title:** Applications of dsRNA based Biopesticides as a Foliar Spray to Control Cotton Bollworms. **Research in Progress**. 14- **Muhammad Zubair Ghouri (**Reg. # 2011-ag-3049**) –** worked as research associate in my NRPU Project-6350 **(Member) Thesis title:** CRISPR/Cas9 mediated mutagenesis of *G. hirsutum* for improved fiber and mechanical picking. **Research in Progress**. **15- Muhammad Sulyman Saleem (**Reg. # **2020-ag-1600) (Member)-Thesis Title:** Improvement of fiber quality in *G. hirsutum* by CRISPR/Cas9 mediated editing in *GhJAZ2* gene. **Research in Progress**.
MPhil Students	**1.** Supervised more than **100 MPhil Students.**

Training Courses	1. Participated in **HEC- British Council** training course on "**Research Capacity Building Programmed for Grant Reviewers**" held in Serena Faisalabad from 13-17 February, 2023. 2. **Consultancy service** as a resource person for one-week training of **CRISPR/Cas based genome editing in plants** in Virtual University, Lahore, March 11-15, 2019. **3.** Attended training program of **Agilent Microarray Gene Expression at Agilent Malaysia;** 11-13 April 2018. **4. Workshop/Training on QEC Self-Assessment Proforma** conducted by QEC, UAF on 20-11-2018 in University of Agriculture, Faisalabad. **5. An introduction to LATEX, UAF Synopsis and Thesis", organized by** Department of Mathematics and Statistics, University of Agriculture, Faisalabad, 26-28 July 2017**.** 6. International workshop on "**Applications of Computational Biology in Biotechnology**" held on July 31st , 2018 in National Institute of Biotechnology and Genetic Engineering (NIBGE), Faisalabad, Pakistan. 7. **Food and Agriculture Entrepreneurship Academy**: Institute of Innovation and Entrepreneurship, UC Davis, February 6-8, 2017, UC Davis, USA. 8. **RNA-Seq Workshop**: Genome Center February 8-10, UC Davis, USA. 9. **EMBO practical course** on "Plant Reproduction" Beijing, China from August 25 – September 7, 2004. 10. **2nd National training course** on "Integration of Modern Biotechnological Tools with Conventional System of Crop Improvement" held in Centre for Agricultural Biochemistry and Biotechnology, University of Agriculture, Faisalabad, Pakistan. 11. **Postgraduate training course** on "Nuclear and Other Advance Techniques in Agricultural and Biological Research" Faisalabad, Pakistan from October 15 – 26, 2001. 12. **Training course** on "The Safety Measures in the Use of Radiation in Agriculture and Biology" Faisalabad, Pakistan from October1 – 5, 2001. 13. **Training course** on "Write-up and presentation skills" at University of Shizuoka, Japan. 14. **Training course on "Grant writing skills for academics"** held on 1st June 2015, in University of Agriculture, Faisalabad, Pakistan
Workshops/ Meetings/ organized	1. Organizing Secretory of **1st National workshop on CRISPR Applications in Biological Systems held on 30th November-1st December 2023,** Organized by the Department of Biochemistry and CASAFS-UAF. 2. Resource Person of 1st National **Hands-on Training on CRISPR-Cas mediated Genome Editing** Held on **February 21-25, 2022** in CASAFS, UAF. 3. Resource Person of 2nd National **Hands-on Training on CRISPR-Cas mediated Genome Editing** Held on **May 23-27, 2022** in CASAFS, UAF 4. **International Conference on Biochemistry, Biotechnology and Biomaterials** (ICBBB-2018) December 9-11, 2018, Organized by Department of Biochemistry, University of Agriculture, Faisalabad. **5. International Seminar and Workshop on CRISPR/Cas based Genome Editing**. September 19-20, 2017. US-Pakistan Center for Advanced Studies in Agriculture and Food Security, University of Agriculture, Faisalabad, Pakistan **6. Biotechnology for Crop Improvement**. September 5-7, 2016 organized by Chair Biotechnology and Team under USPCAS-AFS. **7. International Conference of Biochemistry, Biotechnology and Biomaterials** (ICBBB), 22-24 February 2016, University of Agriculture, Faisalabad, Pakistan.

Teaching of BS, MPhil and PhD Biochemistry Courses	1- CRISPR-Cas Mediated Gene Editing (A skill-oriented course of 2 weeks for BS students) 2- Biochem-717: 3(2-1) Recombinant DNA technology and Gene Manipulation 3- Biochem-202: 2(2-0) Molecular Biology 4- Biochem-705: 3(1-2) Advanced Biochemical Techniques 5- Biochem-706: 2(2-0) Bioenergetics 6- Biochem-700: 3(3-0): Concepts in Biochemistry 7- Biochem-702: 2(2-0) Biochemical Regulators 8- Biochem-606: 3(3-0): Environmental Biochemistry 9- Biochem-609: 3(2-1) Biochemical Techniques 10- Biochem-303: 3(3-0) Biochemistry of Metabolism 11- Biochem-405: 3(3-0) Nutritional Biochemistry 12- Biochem-501: 3(3-0) Plant Biochemistry 13- Biochem-612: 3(3-0) Water and Mineral Metabolism 14- Biochem-615: 3(3-0) Bio-membranes and Cell Signaling 15- Biochem-617: 3(3-0) Advance Topics in Biochemistry
Editorial Assignments	**1. Guest Editor** in Frontiers in Plant Science on Special Issue**: Integrating CRISPR with AI: challenges and opportunities in the global regulatory landscape for gene-edited crops. Submitted to Frontiers in Plant Science.** **2. Guest Editor** in Frontiers in Genome Editing on Special Topic**: Convergence of CRISPR with AI: The Rise of Intelligent Gene Editing in Plants** (https://research-topic-management-app.frontiersin.org/manage/67273/dashboard**).** **3. Guest Editor** in Frontiers in Plant Science on Special Issue**: Frontiers in Global Regulatory Landscape of CRISPR Edited Plants (**https://www.frontiersin.org/research-topics/44621/frontiers-in-global-regulatory-landscape-of-crispr-edited-plants/magazine**)** **4. Guest Editor** in Frontiers in Bioengineering and Biotechnology on Special Issue**: Production and Modifications of Polysaccharides for Biotechnological Applications (**https://www.frontiersin.org/research-topics/58417/production-and-modifications-of-polysaccharides-for-biotechnological-applications**).** **5. Guest Editor** in **Frontiers in Genome Editing** **6. Guest Editor** in **Frontiers in Genome Plant Science** **7. Guest Editor** in **Frontiers in Industrial Biotechnology**
Grant Reviewer	**1.** Higher Education Commission (HEC), Pakistan 2. Pakistan Science Foundation (PSF), Pakistan 3. University of Jeddah, Saudi Arabia
Collaborations	1. Dr Nayla Munawar, UAE University, UAE: nmunawar@uaeu.ac.ae 2. Professor Kamel A. Elsalam, Giza University, Egypt: kamel.abdelsalam@arc.sci.eg 3. Professor Yinong Yang, Pennsylvania State University: yuy3@pasu.edu 4. Professor Abhaya M Dandekar, UC Davis: amdandekar@ucdavis.edu 5. Professor Caixia Gao, Chinese Academy of Sciences: cxgao@genetics.ac.cn 6. Professor Tianzhen Zhang, Nanjing Agriculture University: cotton@njau.edu.cn 7. Dr Imran Amin, NIBGE, Faisalabad: imranamin1@yahoo.com **8.** Dr Kashif Zahoor, GCUF, Faisalabad: Kashif.zahoor@gcuf.edu.pk

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