CURRICULUM VITAE

Background Information

Name:	**MUHAMMAD SARWAR KHAN (BPS-21)** *President's Medal for Technology* *Best University Teacher Award – Higher Education Commission* *Gold Medal in Agriculture - Pakistan Academy of Sciences* *Performance Gold Medal – Pakistan Atomic Energy Commission* *Biotechnologist Award - National Commission on Biotechnology* *Fellow - Cambridge Commonwealth Society* *Fellow - Cambridge Philosophical Society* *Fellow-The Rockefeller Foundation* *Member - International Society for Transgenic Technology, USA* *Member - Science Advisory Board, USA*
Date of Birth:	May 07, 1966
Citizenship: **Marital Status:** **Address:**	Pakistani Married Professor and Director, Centre of Agricultural Biochemistry and Biotechnology (CABB), University of Agriculture, Faisalabad-Pakistan Cell: + 92 300 3307219/300 5551731 (mobile) Email sarwarkhan_40@hotmail.com
Publications:	**68**
Impact Factor:	**218.764**
PhD Students Supervised :	**07 Degrees awarded** (and 06 are being supervised)
MPhil Students Supervised :	**25** (and 08 are being supervised)

Books:	**Khan, M.S.,** Khan, I.A. and Barh, D. eds. (2016). Applied Molecular Biotechnology: The Next Generation of Genetic Engineering. CRC Press Taylor & Francis Group, LLC, Florida 33487, U.S.A. ISBN 978-1-49-871481-5. Barh**,** D., **Khan, M.S.** and Davies**,** E. (2015). PlantOmics: The Omics of Plant Science. Springer, ISBN 978-81-322-2171-5.
Manual :	Khalid, A.M., **Khan, M.S**., Shinwari, Z.K., Malik, K.A. and Nasim, A. (2004). Advanced Techniques in Biotechnology: A manual of an international NIBGE-COMSTECH (CPC) workshop, Shangrila Printers, Fsd. Pakistan.

Employment/ Higher Learning

Position	Dates (Month/year)	Institution
Professor of Plant Molecular Biology	11/08 to present	Centre of Agricultural Biochemistry and Biotechnology (CABB), University of Agriculture, Faisalabad-Pakistan.
Principal Scientist	2/05 to 11/08	Biotech Interdisciplinary Division, National Institute for Biotechnology and Genetic Engineering (NIBGE), Faisalabad, Pakistan.
Senior Scientific Officer	9/99 to 2/05	Plant Biotechnology Division, National Institute for Biotechnology and Genetic Engineering (NIBGE), Pakistan.
Postdoctoral Research Associate	4/01 to 10/01	University of Central Florida, Orlando, USA.
Postdoctoral Fellow	8/97 to 8/99	Waksman Institute, Rutgers, The State University of New Jersey, USA.
PhD Fellow/Teaching Assistant	4/94 to 7/97	Plant Molecular Biology Laboratory, Department of Plant Sciences, University of Cambridge, UK.
M.Sc.(Hons) Fellow/Studentship	1/92 to 2/94	Plant Tissue Culture cell, Department of Horticulture, Faculty of Agriculture, University of Agriculture, Faisalabad.
Graduate student	09/87 to 12/91	Plant Tissue Culture cell, Department of Horticulture, Faculty of Agriculture, University of Agriculture, Faisalabad

Administrative/Academic/Scientific/Financial Management

Position	Dates Month/year	Institution
Director	06/13 to present	Centre of Agricultural Biochemistry and Biotechnology (CABB), University of Agriculture, Faisalabad-Pakistan. ***Responsibility: Academic and Financial Management***
Director General	02/10 to 08/12	Inspection & Training, Admin & HR, Government of Pakistan, F-Block, Pak Secretariat, Islamabad. ***Responsibility: Administration and Financial Management***
Principal Officer & In-charge	2009	Central Hi-tech Labs, University of Agriculture, Faisalabad. ***Responsibility: Research and Financial Management***
Professor In-charge Transgenics/CABB	11/2008 to 02/10	Centre of Agricultural Biochemistry and Biotechnology (CABB), University of Agriculture, Faisalabad-Pakistan. ***Responsibility: Academic and Financial Management*** Assistant Professors, Lecturers, Laboratory Technicians, PhD and M. Phil Scholars, Laboratory Assistants
Founder Head	07/05 to 11/08	Biotech Interdisciplinary Division, National Institute for Biotechnology and Genetic Engineering (NIBGE), Faisalabad, Pakistan. ***Responsibility: Administrative, Research and Financial Management***
Graduate Program Coordinator	06/05 to 11/08	Biotechnology Department, NIBGE Campus, Quaid-I-Azam University; and PIEAS, Islamabad. ***Responsibility:*** **Coordination for admissions, research thesis submission and degree award to M. Phil and PhD Students.**
Project Director	5/02 to 11/08	Ministry of Science & Technology Projects, National Institute for Biotechnology and Genetic Engineering (NIBGE), Faisalabad, Pakistan. ***Responsibility: Administrative and Financial Management***
National Coordinator	05/04 to 11/08	National Biology Talent Contest, STEM Careers Project ***Responsibility:*** To hold 3-4 training camps each year to groom talented students from all across the country at A and F. Sc. Levels at National Institute for Biotechnology and Genetic Engineering (NIBGE), Faisalabad. Participation of Pakistani Team in International Biology

Founder Group Leader	9/99 to 11/08	Olympiads, held in various countries as Team Leader and Jury Member. Chloroplast Biotechnology & Biopharming, PBD, (NIBGE), Faisalabad, Pakistan. ***Responsibility: Research and Financial Management*** Junior Scientific Officers, Trainee Research Officers, Researchers, Research Fellows, PhD & M. Phil Scholars, Lab Assistance and Field Staff

Education

Degree	Institution	Year	Distinction/remarks
Ph.D. Plant Molecular Biology	University of Cambridge, Department of Plant Sciences, U.K.	07/1997	Competitive winning of Overseas research Student Award as well as Cambridge Commonwealth Trust Scholarship. Introduced the technology in Europe during Doctorate.
M.Sc. (Hons) Hort., Plant Tissue Culture	Plant Tissue Culture Cell, Department of Horticulture, University of Agriculture, Faisalabad, Pakistan	02/1994	Secured CGPA 4.0/4.0 (Distinction)
B.Sc. (Hons.) Agriculture	University of Agriculture, Faisalabad, Pakistan.	12/1991	Secured CGPA 3.89/4.0
F.Sc. (Intermediate)	Lahore Secondary School Board, Punjab, Pakistan.	02/1986	Pre-medical subjects: Biology, Chemistry and Physics
S.S.C. (High School)	Lahore Secondary School Board, Punjab, Pakistan.	07/1983	Science subjects: Biology, Chemistry, Physics and Math

Postdoctoral/Visiting Fellowships

Training/Residence	Dates Month/year	Institution
1. Visiting Scientist (by invitation - Prof. Takashi Shiina)	9-11/06	Laboratory of Applied Biology, Kyoto Prefectural University, Japan.

2. Visiting Postdoctoral Research Associate (by offer - Prof. Henry Daniell)	4-10/01	University of Central Florida, Orlando, USA.
3. Fellow/Post-doctorate Rockefeller Foundation (Through competition-Prof. Maliga)	8/97-8/99	Waksman Institute of Microbiology, Rutgers - The University of New Jersey, USA.
4. Cochran Fellowship Program	7/2016-8/2016	USDA/Tennessee State University, ARS/UDA Mississippi, USA

Member/Convener/Chairman of Governing Bodies/Boards/Important Committees

- Member, Science Advisory Board, USA
- Chairman, Committees for Procurement of Goods and Services, Government of Pakistan, F-Block, Islamabad (05/2010 to 10/2011).
- Member Board of Studies (CABB), UAF (2008 to present). This board decides and approves curricula for various degree programs and other related teaching activities.
- Member, Faculty Board, Faculty of Agriculture, UAF (2008 to present). These boards decide and approve curricula for various degree programs and other related teaching activities.
- Nominated Member of Faculty Board, Faculty of Veterinary Sciences, UAF (2008 to present). These boards decide and approve curricula for various degree programs and other related teaching activities.
- Member Academic Council, UAF (2008 to present). The council is an apex body to decide and approve academic activities at UAF.
- Member Senate, University of Agriculture, Faisalabad.
- Founder Secretary of Institutional Biosafety Committee (IBC), Centre for Agricultural Biochemistry and Biotechnology (CABB), Faisalabad, Pakistan (2008-2010).
- National Coordinator, National Biology Talent Contest, STEM Careers Project-joint venture of HEC and NIBGE, Islamabad, Pakistan (05/2004-11/2008).
- Nominated/Elected Member of Board of Studies, Department of Biotechnology NIBGE Campus, Quaid-e-Azam University (06/2007 to11/2008).
- Member, Governing Body, National Institute for Biotechnology and Genetic Engineering, Faisalabad (2005-2008), which decides way forward and routine activities of the institute.
- Coordinator /Liaison Officer -M Phil/PhD Program, Department of Biotechnology NIBGE Campus, Quaid-e-Azam University (06/2007 to11/2008).
- Nominated Member, Institutional Biosafety Committee (IBC), National Institute for Biotechnology and Genetic Engineering, Faisalabad, Pakistan (2006-November 2008).
- Convener, House Assessment and Allotment Committee, National Institute for Biotechnology and Genetic Engineering, Faisalabad, Pakistan (2007-November 2008).
- Elected Secretary General, Cambridge Pakistan Graduate Student Society, University of Cambridge, UK (1994-97).

- Jury Member, 18th International Biology Olympiad Committee, Saskatoon, Canada (July 2007).
- Jury Member, 17th International Biology Olympiad Committee, Rio Cuarto, Argentina (July 2006).
- Jury Member, 16th International Biology Olympiad Committee, Beijing, China (July 2005).
- Member, Governing Body, National Institute for Biotechnology and Genetic Engineering (February 2005-November 2008).
- Team Leader, 17th International Biology Olympiad Committee, Rio Cuarto, Argentina (July 2006).
- Team Leader, 18th International Biology Olympiad Committee, Saskatoon, Canada (July 2007).
- Observer, 17th International Biology Olympiad, Beijing, China (July 2005).
- Examinations Inspector, 16th International Biology Olympiad, Beijing, China (July 2005).

Academic Distinctions/Honors/Awards

- Best University Teacher Award – Higher Education Commission, Islamabad – Pakistan.
- Pakistan Civil Award - Presidential Medal for Technology, Ministry of Science and Technology, Government of Pakistan, 2007.
- Performance Gold Medal, National Institute for Biotechnology and Genetic Engineering (NBGE), Faisalabad, 2007.
- Gold Medal in Agriculture, Pakistan Academy of Sciences, Islamabad, 2005.
- Biotechnologist of the Year Award, National Commission on Biotechnology, Ministry of Science and Technology, Government of Pakistan, 2005.
- Productive Scientist Year Awards-Research Productivity Allowance (RPA), Pakistan Council for Science and Technology (PCST), Ministry of Science and Technology, Government of Pakistan, 2003/04, 2004/05, 2005/06, 2006/07 and 2007/08.
- Merit Scholarship, University of Agriculture, Faisalabad, Pakistan, 1987/94.
- District Council Student Scholarship, Sheikhupura Zila Council, Pakistan, 1988/89 and 1989/90.
- *Letters of Appreciation:* Letters received on best performance, scientific achievements, productivity allowances, and on conferment of national medals and awards.
- *Letters of Appreciation:* Appreciation received for organizing/coordinating National Biology Olympiads and winning medals in International Biology Olympiads.
- *Letter of Appreciation:* Letters received on conferment of Presidential Medal for Technology by Minister for Science and Technology.

Other Honors/Medals

- **Silver Medal 19th International Biology Olympiad, India:**
  Pakistani Team was trained during NBTC training camps three coordinated and organized at NIBGE, won Silver Medal in 19th International Biology Olympiad, India (July 2008).
- **Bronze Medal 18th International Biology Olympiad, Canada:**
  Pakistani Team, trained during three coordinated and organized training NBTC camps at NIBGE, won Bronze Medal in 18th International Biology Olympiad, Canada (July 2007).
- **Bronze Medal17th International Biology Olympiad, Argentina:**
  Pakistani Team, trained during three coordinated and organized training NBTC camps at NIBGE, won Bronze Medal in 17th International Biology Olympiad, Argentina (July 2006).

Postgraduate Teaching and Training

Summary of Students/Visiting Scientists Supervision/Examinations

Directly Supervised:	**M. Phil**	**Ph.D.**
Graduated	25 (08 on-going)	07 (06 on-going)
External/Internal/Comprehensive Examinations	100	150

PhD Students Supervised (07 students)

1. Transgenic Expression and Analysis of Cane-Borer Resistance in Sugarcane, student name: Safder Ali Mirza - (2007).
2. Chloroplast-based overexpression of Pharmaceuticals to develop Cost-effective Therapeutics, student name: Farwa Nurjis - (2010).
3. Development of Plastid Transformation in Sugarcane, student name: Ghullam Mustafa - (2011).
4. Genetic and Morphological Characterization of Citrus Polyploids, student name: Fatima Balquees - (2004).
5. In Vitro Regeneration and Plastid Transformation of High Value Crop Plants, student name: Muhammad Usman - (2007).
6. Engineering Novel Pathways in Chloroplast for Improving the Crop Yield, student name: Shahid Nazir - (2012).
7. Rice Plastid Transformation by Microproctile Bombardment, student name: Faiz Ahmed Joyia - (2012).

Funded Research Projects

1. Developing climate-resilient plant-based recombinant subunit vaccine against Foot-and-Mouth Disease Virus of livestock. Rs. $75000/-, US-PCAS-AFS.
2. Engineering antigens in chloroplasts to immunize poultry birds against multiple diseases. Rs. 5.7767 million, Higher Education Commission, Pakistan.

3. Engineering phage-type chimeric promoters for expression in non-green plastids of rice. Rs. 0.7 Million, Pakistan Science Foundation.
4. Development of biosafe transgenic plants. Rs. 30.9 million, M/o Science and Technology.
5. Chloroplast-based overexpression of pharmaceuticals to develop cost-effective therapeutics. Rs. 35.5 million, M/o Science and Technology.
6. Khan MS (Co-Investigator). Characterization and over-expression of sugarcane derived Scdr1 gene in sugarcane to combat abiotic stresses. ($12000 - Approved by IFS).
7. Khan MS (Co-Investigator). Overexpression of endogenous sugarcane defense protein SUGARWIN2 in sugarcane for enhanced antipathogenic activity. (Rs.3.65 million, Higher Education Commission, Pakistan.

Projects Submitted for Funding:

8. Khan MS (PI). Norman Borlaug Reference DNA Barcoding and Forensic Laboratory at UAF. Rs. 549.591 million. Submitted to PARB-under approval process.
9. Khan MS (PI). Cost-effective production of cell-wall degrading enzymes in higher plant chloroplasts for bioethanol production from lignocellulosic plant biomass. (Submitted and under review-PARB). Rs. 27.148 million.
10. Khan MS (PI). Enhancing chickpea yield by developing resistance against pod borers through accumulation of cry proteins in chloroplasts, and determining blight resistance using molecular approaches.(Submitted to PARB, Rs. 22.23 million).
11. Khan MS (Co-PI). Heterologous expression of mycoparasite derived glucanolytic and chitinolytic enzymes in potato, to combat fungal pathogens. (Submitted and under review-PSF/NSLP). Rs. 3.94 million.

University Degree Courses Developed/Offered

29-09-1999 to 28-11-2008 (Postgraduate)

1. Biopharming and Protein Engineering
2. Advancements in Transplastomic Technology
3. Techniques in Biotechnology
4. Applications in Biotechnology
2. Thesis Research

***28-11-2008 to Present* (Postgraduate)**

- Concepts and Principles in Biotechnology
- Biotechnology in Agriculture
- Molecular Cell Biology
- Biochemistry of Nucleic Acids
- Transgenic Plants
- Introduction to Computational Molecular Biology
- Advanced Molecular Genetics
- Plant Molecular Genetics
- Concepts in Genetic Engineering-I
- Plant Cell Biotechnology
- Functional Genomics and Bio informatics
- Molecular Microbiology & Virology

- Enzyme Biotechnology
- Proteomics and Protein Engineering
- Concepts in Genetic Engineering-II
- Recent Trends and developments in Biotechnology

28-11-2008 to Present **(Under-graduate, developed)**

- Fundamentals of Agricultural Biotechnology-I
- Recombinant DNA Technology-I
- Techniques in Biotechnology-I
- Plant Cell Tissue and Organ Culture
- Introduction to Bioinformatics and Functional Genomics-I
- Fundamentals of Agricultural Biotechnology-II
- Recombinant DNA Technology-II
- Techniques in Biotechnology-II
- Fundamentals of Chloroplast genetics and Biopharming
- Introductory Plant Cell Biology and Microbiology
- Application of Biotechnology in Agriculture
- Introduction to Bioinformatics and Functional Genomics-II
- Principles of Plant Biochemistry and Molecular Physiology
- Plant Transformation
- Fundamentals of Plant Molecular Virology
- Application of Nano-biotechnology in Agriculture
- Plant Genetic Diversity and Conservation
- Biosafety and Bioethics
- Risk Assessment
- Communication skills in Biotechnology
- Special Problem in Biotechnology
- Special Topics/Seminars

Referee/Reviewer:

- The Plant Journal
- The Plant Physiology
- The Plant Cell Reporter
- The FASEB Journal
- Trends in Plant Sciences
- Trends in Biotechnology
- Journal of Plant Research
- Journal of Experimental Botany
- International Journal of Agriculture and Biology, Faisalabad, Pakistan

Editorial/Advisory Board Member:

- Biosafety, OMICS journal, OMICS Publishers, USA
- Novus International Journal of Biotechnology & Bioscience, Novus Scientia Journals, USA
- International Journal of Genetic Engineering, Scientific & Academic Publishing, USA
- Medical Advancements in Genetic Engineering, OMICS Publishers, USA

Publications (*Total Impact Factor: 218.764*)

Khan, M.S. (2005). Engineered Male Sterility. *Nature* 436, 783-785. IF: 42.351

Khan, M.S. and P. Maliga (1999). Fluorescent antibiotic resistance marker to track plastid transformation in higher plants. *Nature Biotechnology* 17, 910-915. IF: 43.113

Khan, M. S. (2005) Unraveling the complexities of plastid transcription in plants. *Trends in Biotechnology* 23, 535-38. IF: 12.065

Khan, M. S. and Nurjis, F. (2012). Synthesis and expression of recombinant interferon alpha-5 gene in tobacco chloroplasts, a non-edible plant. *Mol. Biol. Rep.* 39, 4391-4400. IF: 1.85

Khan, M.S., Kanwal, B. and Nazir S. (2016). Metabolic engineering of the chloroplast genome reveals that the yeast *ArDH* gene confers enhanced stress tolerance in plants. Frontiers Plant Science 6: 725. doi:10.3389/fpls.2015. 00725. IF: 4.495

Khan, M.S. (2006). Hybrid transcription-mediated transgene regulation in plastids. *Trends in Biotechnology* 24, 479-482. IF: 12.065

Khan, M.S. (2007). Engineering photorespiration in chloroplasts: a novel strategy for increasing biomass production. *Trends in Biotechnology* 25, 437-440. IF: 12.065

Khan, M.S., Ali, S. and Iqbal, J. (2011). Developmental and photosynthetic regulation of *Bacillus thuringiensis* δ-endotoxin reveals that engineered sugarcane conferring resistance to ` dead heart` contains no toxins in cane juice. *Mol. Biol. Rep.* 38, 2359-2369. IF: 1.85

Khan, M.S., Hameed, M. W., Nozoi, M. and Shiina, T. (2007). Disruption of the psbA gene by copy correction mechanism reveals that the expression of plastid-encoded genes is regulated by photosynthesis activity. *J Plant Research* 120,421-430. IF: 1.684

Khan, M.S., Khalid, A.M and Malik K.A. (2005). Intein-mediated protein trans-splicing and transgene containment in plastids. *Trends in Biotechnology* 23, 217-220. IF: 12.065

Khan, M.S., Khalid, A.M and Malik K.A. (2005). Phage phiC31 integrase: a new tool in Plastid genome engineering. *Trends in Plant Science* 10, 1-3. IF: 10.899

Khan, M.S., Nazir, S., Amjad, H., Jamil, S. and Khan, I.A. (2016). Genotype-dependent regulation of δ-endotoxin reveals that insect-resistant cotton contains toxin predominantly in seeds. Pest Management Science (Submitted under review process, PM-16-0615).

Khan, M.S., Usman, M. and Lilla, M.I. (2006). Facile plant regeneration from tomato leaves induced with spectinomycin. *Pak. J. Bot.* 38, 947-952. IF: 0.658

Khan, M.S. (2001). Utilizing heterologous promoters to express green fluorescent protein from jellyfish in tobacco chloroplasts. *Pak. J. Bot*. 33, 43-52. IF: 0.658

Bock, R. and Khan, M.S. (2004). Taming plastids for a green future. *Trends in Biotechnology* 22: 311-318. IF: 12.065

Jabeen, R., Khan, M.S., Zafar, Y., Anjum, T. (2010). Codon optimization of cry1Ab gene for hyper expression in plant organelles. *Mol. Biol. Rep.* 37, 1011–1017. IF: 1.85

Jha, C. U., Chaturvedi, S.K., Bohra, A.K., Basu, P., Khan, M.S. and Barh, D. (2014). Abiotic stresses, constraints and improvement strategies in chickpea. *Plant Breed*. 133, 163-178. IF: 1.502

Chaudhry, I., Mustafa, G., Joyia, F.A. and Khan, M.S. (2016). Dissecting out the role of auxins in rice root development. Transylvanian Review (In Press)

Daniell, H., Khan, M.S. and L. Allison (2002). Milestones in chloroplast genetic engineering: an environmentally friendly era in biotechnology. *Trends in Plant Science* 7, 84-91. IF: 10.899

Hibberd, J. M., Linley, P. J., Khan, M. S. and J.C. Gray. (1998). Transient expression of green fluorescent protein in various plastid types following microprojectile bombardment. *Plant J.* 16, 627-632. IF: 5.468

Maenpaa, P., Gonzalez, E.B., Khan, M. S., J. C. Gray and E-M. Aro. (2000). The ycf9 (orf 62) gene in the chloroplast genome encodes a hydrophobic protein of stromal thylakoid membranes. *J. Exp. Bot.* 51, 375-382. IF: 5.677

Majid, M., Joyia, F. A., Mustafa, G., Zia, M. A., Ghazala, and Khan, M. S. (2016). Isolation, purification and functional characterization of Serine protease from a biocontrol agent *Trichoderma harzianum*. Int. J. Bioscience 9: 376-383. IF: 0.553

Ali, S., Khan, M.S. and Iqbal, J. (2010). Genotype independent *in vitro* regeneration system in elite varieties of sugarcane. *Pak. J. Bot.* **42, 3783-3790**. IF: 0.658

Ali, S., Khan, M.S. and Iqbal, J. (2012). *In vitro* direct plant regeneration from cultured young leaf segments of sugarcane (*Saccharum Officinarum* L.). *J. Animal & Plant Sci.* **22, 1107-1112**. IF: 0.448

Balqees, F., Usman, M., Khan, M.S., Khan, M.M. and Khan, I.A. (2015). Identification of citrus polyploids using chromosome counts, morphological and SSR markers. *Pak. J. Agri. Sci.* 52: 107-114. IF: 1.049

Mirza, S.A. and Khan, M. S. (2013). Characterization of synthetically developed *cry1Ab* gene in transgenic tobacco chloroplasts. *Turk. J. Bot.* 37, 506-511. IF: 1.178

Mustafa, G. and Khan, M.S. (2015). Differential role of Indolebutyric acid in sugarcane root development. *Sugar Tech*., Doi 10.1007/s12355-014-0362-x. IF: 0.621

Nazir, S. and Khan, M. S. (2012). Chloroplast-encoded *chlB* gene from *Pinus thunbergii* promotes root and chlorophyll pigment development in *Nicotiana tabaccum. Mol. Biol. Rep.* 39, 10637-10646. IF: 1.85

Nazir, S. and Khan, M. S. (2013). Integration of novel chlorophyll genes from black pine into the chloroplast genome of tobacco. *Pak. J. Bot.*45, 595-600. IF: 0.658

Qamar, M.T.U. and Khan, M.S. (2016). Computational analysis of structural and functional aspects of chloroplast-encoded central subunit of dark-operated protochlorophyllide oxidoreductase of plants. Frontiers Plant Science (Decision is awaited, ID: 210657).

Shaheen, S., Khan, A., Khan, M.Z., Hussain, I. and Khan, M.S. (2009). Expression of Eaea, Stx1 and Stx2 gene of enteropathogenic *E. coli* recovered from milk, beef and buffalo neonatal calf faeces. *Pak. J. Zoology* (*suppl*) 9, 257-260. IF: 0.45

Shiina, T., Tsunoyama, Y., Nakahira, Y and Khan, M.S. (2005) RNA polymerases, promoters and transcription regulators in higher plant chloroplasts. *IRC-Cell Biology* 244, 1-68. IF: 7.50

Usman, M., Fatima, B., Gillani, K.A., Khan, M.S. and Khan, M.M. (2008). Exploitation of potential target tissues to develop polyploids in citrus. *Pak. J. Bot*. 40, 1755-1766. IF: 0.658

Usman, M., I.A. Khan, M.S. Khan and Khan, M.M. (2010). Exploring Citrus cultivars for underdeveloped and shriveled seeds: A valuable resource for spontaneous polyploidy. *Pak. J. Bot*. 42,189-200. IF: 0.658

Viitanen, P.V., Devine, A.L., Khan, M.S., Deuel, D.L., Van-Dyk, D.E., and Daniell, H. (2004). Metabolic Engineering via the Chloroplast Genome to Produce 4-Hydroxybenzoic Acid a Principle Monomer of Liquid Crystal Polymers. *Plant Physiology* 136: 4048-4060. IF: 6.28

Joyia, F. A. and Khan, M.S. (2013). Scutellum-derived callus-based efficient and reproducible regeneration system for elite varieties of indica rice of Pakistan. *Int. J. Agric. Biol*. 15, 27-33. IF: 0.902

Joyia, F. A. and Khan, M.S. (2012). Reproducible and expedient rice regeneration system using *in vitro* grown plants. *Afri. J. Biotechnol.* 11, 138-144. IF: 0.573

Mustafa, G. and Khan, M.S. (2012). Prospecting the utility of antibiotics as lethal selection agents for chloroplast transformation in sugarcane. *Int. J. Agric. Biol*., 14, 307–310. IF: 0.902

Mustafa, G. and Khan, M.S. (2012). Reproducible *in vitro* regeneration system to purify sugarcane clones. *Afri. J. Biotechnol.*11, 9961-9969. IF: 0.573

Nurjis, F. and Khan, M.S. (2011). Expression of recombinant interferon alpha-2a in tobacco chloroplasts using microprojectile bombardment. *Afri. J. Biotechnol.* 10, 17016-17022. IF: 0.573

Khan, M.S., Zafar, Y. and K. A. Malik (2000). Light that reflects your effort. *Int. J. Agri. Biol*., 2, 396-399. IF: 0.902

Khan, M.S. (2000). Development of polyclonal antibodies against membrane protein of higher plant plastids. *Int. J. Agri. & Biol.*, 2, 169-174. IF: 0.902

Khan, M.S. and Khan, I.A. (2015). Biopharming: A Biosecurity Measure to Combat Newcastle Disease for Household Food Security. Biosafety 4: e156. doi:10.4172/2167-0331.1000e156.

Khan, M.S. (2012). Engineered plastids assure Biosafety of transgenics. Biosafety 1:e126. doi:10.4172/2167-0331.1000e126.

Khan, M.S. (2012). Plastid genome engineering in plants: present status and future trends. *Molecular Plant Breeding.* 3, 91-102.

Khan, M.S. and J.C. Gray. (2001). Tobacco chloroplast open reading frame ycf10: deletion and consequences? *Pak. J. Bio. Sci*. 4, 208-214.

KhanKhan, M.S., Zafar, Y. and K. A. Malik (2001). Plastid genome engineering: a new road to develop environment friendly transgenic plants. *Proc. Pak. Acad. Sci*. 38, 250-261.

Book Chapters and Other Papers

Khan, M.S., Mustafa, G., Nazir, S. and Joyia, F.A. (2016). Plant molecular biotechnology: Applications of transgenics. Khan, M.S., **Khan, I.A. Barh**, D., Eds. Applied Molecular Biotechnology: The Next-Generation of Genetic Engineering, pp: 61-89, Taylor and Francis Books, Inc, NY, USA

Khan, M.S. (2015). Transplastomics: A convergence of genomics and biotechnology. **Barh**, D., Khan, M.S., **Davies**, E., eds. PlantOmics: The Omics of Plant Science, Springer.

Khan, M.S. (2013). Towards engineering dark-operative chlorophyll synthesis pathway in transgenic plastids. D. Barh et al., eds. OMICS: Applications in Biomedical, Agricultural and Environmental Sciences, Taylor and Francis Books, Inc, NY, USA.

Khan, M. S. (1995). Green fluorescent protein expression in tobacco chloroplasts following microprojectile bombardment. Plastid Preview Conference Proceeding, University of Warwick, Coventry, U.K. pp. 322.

Khan, M.S. (2004). Chloroplast molecular biology: from basic to modern horizons. (Khalid, A.M., Khan, M.S., Shinwari, Z.K., Malik, K.A. and Nasim, A. eds.) *Advanced Techniques in Biotechnology: A manual of an international NIBGE-COMSTECH (CPC)* workshop*, pp. 9-18, Shangrila Printers, Fsd. Pakistan.*

Khan, M.S. (2004). Development of biosafe transgenic plants. (Zafar, Y., Asif, M. and Khalid, A.M. eds) *Capacity Building in Biosafety of Genetically Modified Crops: GMOs (Genetically Modified Organisms) Detection*. NBGE-FAO Workshop on GMO Detection, pp. 66-71.

Khan, M.S. (2007). Plastid genome engineering and its applications. Hameed, S. eds. *Modern Techniques in Biotechnology. NIBGE pp.30-33* .

Khan, M.S., Ali, S., Kanwal, B. and Bhatti, F. (2004). Chloroplast transformation to develop biosafe transgenic plants. First National Agricultural Biotechnology Conference organized by National Commission on Biotechnology, August 16-18, 2004 at Nathiagali, Pakistan.

Khan, M.S., Kanwal, B., and Malik, K.A.(2005). Development of biosafe GM plants. International Conference on Biosafety-Muscat, February 21-23.

Khan, N. A. and Khan, M. S. (1992). Bibliography of research on citrus fruits in Pakistan since 1947-1992. *Proc. Intl. Sem. Citriculture*, U.A. Faisalabad, Pakistan. pp. 535-549.

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