

# CURRICULUM VITAE

## Dr. Muhammad Sayyar Khan

### Academic affiliation

Khyber Pakhtunkhwa Agricultural University Peshawar, Pakistan

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### Academic career

- 1997-2001 B.Sc. (Hons) in Agriculture from the Department of Plant Breeding and Genetics at Khyber Pakhtunkhwa Agricultural University Peshawar, Pakistan. **President of Pakistan's** award in B. Sc. (Hons) for the year 2001
- 2001-2003 Master thesis from the Department of Plant Breeding and Genetics at Khyber Pakhtunkhwa Agricultural University Peshawar, Pakistan on "Heterotic studies for various characters in sunflower (*Helianthus annuus* L.)". **Gold Medal** in M.Sc. (Hons) for the year 2003.
- 2003-2004 Joined Nuclear Institute for Food and Agriculture Peshawar, Pakistan as a Research Fellow.
- 2005 Lecturer at the Department of Plant Breeding and Genetics at Khyber Pakhtunkhwa Agricultural University Peshawar, Pakistan

- 2005-2008      **PhD studies under the HEC/DAAD Scholarship program at Heidelberg Institute for Plant Science at University of Heidelberg, Germany**
- PhD Thesis on The role of sulfite reductase in assimilatory sulfate reduction in *Arabidopsis thaliana*
- 2009              **Post doctoral researcher at Heidelberg Institute for Plant Sciences, Germany**
- 2009              Re-joined Khyber Pakhtunkhwa Agricultural University Peshawar, Pakistan
- 2009-              Currently working as a group leader at Recombinant DNA Technology Lab at the Institute of Biotechnology and Genetic Engineering at Khyber Pakhtunkhwa Agricultural University Peshawar

## **Research experience**

### **Experince to work with**

The pathways related to sulfur metabolism, The transformation of different plant species, Molecular and biochemical characterization of different transgenic lines

Techniques of gene cloning, expression of recombinant proteins in *E-coli*, protein purification and isolation, enzymatic assays, metabolites, proteins and lipids analysis

High performance liquid chromatography, anion exchange chromatography, thin layer chromatography, tracer experiments using radioactive isotopes e.t.c.

## **Thesis Titles**

**M.Sc. (Hons):**              Heterotic studies for various characters in sunflower (*Helianthus annuus L.*)

**PhD:** The role of sulfite reductase in assimilatory sulfate reduction in *Arabidopsis thaliana*

### Publication List

- 1) **Khan, M.S.**, Haas, F.H., Allboje Samami, A., Moghaddas Gholami, A., Bauer, A., Fellenberg, K., Reichelt, M., Hansch, R., Mendel, R.R., Meyer, A.J., Wirtz, M., and Hell, R. (2010). Sulfite Reductase Defines a Newly Discovered Bottleneck for Assimilatory Sulfate Reduction and Is Essential for Growth and Development in *Arabidopsis thaliana*. *Plant Cell* **22**, 1216-1231
- 2) Hsu, Fu-Chen., Wirtz, M., Heppel, S.C., Bogs.J., Krämer,U., **Khan, M.S.**, Bub, A., Hell, R., and Rausch, T. (2011). Generation of Se-fortified broccoli as functional food: Impact of Se-fertilization on S-metabolism. *Plant, Cell and Environment*, **34**,192-207
- 3) Hell, R., **Khan, M.S.**, Peter, M., Wolf, I., Hsu, F.C., Schnug, E; Rausch, T., and Wirtz, M. (2008). Improvement of selenium contents for biofortification in Broccoli and Brassicaceae relatives. Proceedings of the 17th International Symposium of CIEC, November 24-27, 2008, Cairo, Egypt. 221-227
- 4) Jalal, A., Rahman, H., **Khan, M.S.**, Maqbool, K., and Khan, S. (2006). Inbreeding depression for reproductive and yield related traits in S1 lines of maize (*Zea mays* L.). *Songk. J. Sci.Technol.* **28**, 1169-1173
- 5) Iqbal, A., Khalil, I.H., Ateeq, N., and **Khan, M.S.**(2006). Nutritional quality of improved food legumes. *F. Chem.*, **97**, 331-335
- 6) Ahmad, S., **Khan, M.S.**, Swati, M.S., Khattak, G.S.S., and Khalil, I.H. (2005). A study on heterosis and inbreeding depression in sunflower (*Helianthus annuus* L.). *Songk. J. Sci. Technol.* **27**, 1-8
- 7) Khattak, G.S.S., Ashraf, M., and **Khan, M.S.** (2004). Assessment of genetic variation for yield and yield components in mungbean (*Vigna radiata* L. Wilczek) using generation mean analysis. *Pak. J. Bot.* **36**, 583-588
- 8) **Khan, M.S.**, Khalil, I.H., and Swati, M.S. (2004). Heterosis for yield components in sunflower (*Helianthus annuus* L.). *Asian J. Plant Sci.* **3**, 207-210
- 9) **Khan, M.S.**, Swati, M.S., Khalil, I.H., and Iqbal, A. (2003). Heterotic studies for various characters in sunflower (*Helianthus annuus* L.). *Asian J. Plant Sci.* **2**, 1010-1014

- 10)** Khan, M.S., Wolf, I., Peter, M., Speiser, A., Hsu, Fu-Chen., Wirtz, M., Rausch, T., and Hell, R. (2011). Impact of Selenite and Selenate Treatment on Sulfur Related Metabolism of Model Plant Arabidopsis. Manuscript in preparation
- 11)** Khan, S.A., Ambreen, Khan, R.S., Khan, M.S. (2001). *Agrobacterium*-mediated transformation of *Brassica juncea* with *Wasabi defensin* gene for enhanced resistance. Manuscript in preparation

### Chapters in Research Oriented Books by International Publishers

- 1)** Hell, R; Khan, M.S., and M. Wirtz. (2010). Cellular Biology of sulfur and its functions in plants. *In: cell biology of metals and nutrients* (ed) R. Hell and R. R. Mendel. Plant Cell Monographs 17, Springer-Verlag Berlin Heidelberg, Germany 243-280
- 2)** Khan, M.S., and Hell, R. (2008). A future crop biotechnology view of sulfur and selenium. *In: Sulfur a missing link between soils, crops, and nutrition*, (ed) Joseph, Jez., Agronomy Monograph No. 50. American Society of Agronomy, Crop Science Society of America and Soil Science Society of America. CSA Publ., Madison, USA, 293-311

### Supervision of Research Students (Master students)

Name of student	Research Title
Safira Attache	<i>Agrobacterium</i> -mediated transformation of oilseed rape with <i>chitinase</i> gene, conferring resistance against fungal pathogens
Sajid Ali Khan Bangash	<i>Agrobacterium</i> -mediated transformation of <i>Brassica juncea</i> with <i>Wasabi defensin</i> gene for enhanced resistance against fungal and bacterial pathogens

### Research Projects Completed

Project title: Development of Transformation Constructs to Modulate Sulfur-Enhanced Resistance in Oilseed rape

Funding Agency: German Academic Exchange Service (DAAD), Amount: 0.5 mio. Year: 2010