

Sameera Hassan (Ph.D)



### PERSONAL INFORMATION

Date of Birth January 27, 1972  
Designation Associate Professor  
Postal Address CEMB, 87 West Canal Bank Road, Thokar Niaz Baig,  
University of the Punjab, Lahore, Pakistan.  
Email [sameera.hassan@cemb.edu.pk](mailto:sameera.hassan@cemb.edu.pk)

### ACADEMIC QUALIFICATIONS

- **2016 Ph.D. (Molecular Biology):** Centre of Excellence in Molecular Biology, University of the Punjab, Lahore, Pakistan. **Thesis Title:** Cellular Characterization, Cloning & Expression of Universal Stress Protein Gene (GUSP1) in Cotton and its Role in Drought Tolerance.

• M. Phil	University of the Punjab	2012
Research Title	The Effect of NaCl Stress on <i>Gossypium arboreum</i>	
• M. Sc (Zoology)	University of the Punjab	1995
<b>Roll of honor</b>	Government College Lahore.	
Research Title	Transformation in <i>Salmonella typhi</i>	
• B. Sc	University of the Punjab	1991
• F. Sc (Pre-medical)	Lahore Board	1989
• SSC (Science)	Lahore Board	1987

### Professional Career

Associate Professor 01March 2021- Date

Assistant Professor (Adhoc) Aug 2019- Feb 2021

Senior Research Officer Oct 2005-July2019

Research Officer Mar1999- Sep 2005

Research Fellow June1997-Feb1999

**STUDENT SUPERVISION:** A total of 15 MPhil scholars have completed their thesis; two are working in the lab and synopsis of three PhD scholars are approved.

**HEC Approved Supervisor**

**TEACHING (MPhil Scholars):** CEMB501- Molecular Biology  
CEMB 509-Biotechnology

### RESPONSIBILITIES

- Plants Abiotic/biotic Stress Tolerant genes identification, isolation and characterization 2017 – to date
- Maintenance of CEMB Vector Repository
- PhD Thesis Completion & Maintenance of CEMB Vector Repository 2016
- Enrolment in M. Phil Leading to PhD 2010-2014(on Leave)
- Antimicrobial against MRSA 2008-2010
- Virology research 2006-2008
- Production of Recombinant Cytokines 2002-2005

- STR Standardization in Forensic DNA Typing 2001-2002
- Mammalian Tissue Culturing 2000-2001
- Phage Display of *Bt* Protein 1997-2000

### Scientific Symposium/ Workshops/ Seminars/ Conferences/ Trainings

- **Member Organizing Committee** at “CEMB Cotton Seminar” held at CEMB, University of the Punjab, Lahore; organized by CEMB. Dated: March 22, 2022.
- **Member Organizing Committee** at two days ‘Hands on Training Workshop on Structural Bioinformatics Tools’ held at CEMB, University of the Punjab, Lahore; organized by CEMB, Dated: February 23-25, 2022.
- **Attended three days** National hands-on training workshop on "Current Techniques in Bioinformatics" skills dated 28-30 December 2021, University of the Lahore, Lahore
- **Member Organizing Committee** at two days “4th International Symposium on Advances in Molecular Biology of Plants and Health Sciences” held at CEMB, University of the Punjab, Lahore; organized by CEMB, Dated: December 23-24, 2021.
- **Attended two days** “Virtual Biological Risk Management Conference” organized by Pakistan Biological Safety Association (PBSA) in collaboration with Fogarty international Centre (FIC), NIH-USA, June 4-5, 2021.
- **Member Organizing Committee** at the International Symposium on “Development of CKC Technology”, Organized by and held at CEMB December 15, 2020.
- **Attended the scientific symposium** on “Brain, Neurogenetics and Regenerative Medicine” held at CEMB, University of the Punjab, Lahore; organized by CEMB and University of Health Sciences, Lahore. October 3<sup>rd</sup>, 2019.
- **Member of the Organizing team of the 3<sup>rd</sup> International symposium** on “Advances of Molecular Biology in Plant and Health Sciences” held and organized by CEMB Lahore, Dec 19-21, 2018.
- **Participated in Two days Training workshop on “Biological Waste Management and Emergency Response Procedures”** held at held at CEMB, University of the Punjab Lahore; organized by CEMB, Gulls and Health Security Partners. October 11-12, 2018.
- **Participated in Two days Training workshop on “An awareness cum workshop on “Biological Waste Management”** held at held at CEMB, University of the Punjab Lahore; organized by CEMB, Gulls and Health Security Partners. October 09-10, 2018.
- **Participation in two days’ workshop**, “Protein Structure Analysis & Computer Aided Drug Designing” organized by Gulls’ and held at CEMB, University of the Punjab Lahore. September 28, 2018.
- **Participated in one day Seminar on “Risk Assessment of Genetically Modified (GM) Crops”** held at CEMB; organized by CEMB, Gull’s and American Society of Plant Biologists. July 20, 2018.
- **Participated in two days workshop** “ Training on Incineration and other waste treatment methods” held at held at CEMB, University of the Punjab Lahore; organized by CEMB, Gulls and Health Security Partners. February 21-22, 2019.
- **Member organizing committee** at 2<sup>nd</sup> International symposium on “Advances in Molecular Biology of Plants and Herbal Sciences” held at CEMB, University of the Punjab, Lahore; organized by CEMB, HEC and PARB. November 21-23, 2017.
- **Member organizing committee** at International Training Workshop on “Microarray for gene expression” held at CEMB, held at CEMB, University of the Punjab, Lahore; jointly organized by CEMB and CMG. February 14-17, 2017.
- **Member organizing committee** at ICGEB course on ‘Basic Biotechnology Techniques’ held at CEMB, University of the Punjab, Lahore; jointly organized by CEMB and NAYS. March 7-9, 2016.
- **Member organizing committee** at International training workshop on “Microarray for gene expression”, held at CEMB, February 14-17, 2017.
- **Member organizing committee** at training course to equip brother Islamic countries with advance technology entitled “Planning of cotton production, land preparation, weed control, pest and disease

control and harvesting” held at CEMB, University of the Punjab, Lahore; organized by CEMB. December 12-16, 2016.

- **Participation in 3days International symposium** on “Advances in Molecular Biology of Plants and Health Sciences” held at CEMB, University of the Punjab, Lahore. December 29-31, 2015.
- **Participation in 6<sup>th</sup> National Training Workshop on Electron, Confocal and Atomic Force Microscopy.** NIBGE, Faisalabad. Organized by NIBGE and PAEC. November 17-21, 2014.
- **Member organizing committee** at hands on training workshop entitled” Microarray for Gene Expression” held at CEMB, University of the Punjab, Lahore; organized by CEMB. April 22-25, 2014.
- **Member organizing committee** at hands on training workshop entitled “The Development and Testing of Transgenics for Cotton Leaf Curl Virus (CLCuV) Disease Resistance “ held at CEMB, University of the Punjab, Lahore; organized by CEMB and ICARDA. March 18-19, 2014.

### **Research Publicatiuons**

- 1) Muzaffar A, Arif U, Akram F, Batool F, Hassan S, Rashid B (2022) Abiotic Stress: Interplay Between ROS Production and Antioxidant Machinery, Signaling, and ROS Homeostasis. *OBM Genetics* 6 (4): doi:10.21926/obm.genet.2204171
- 2) Azhar M, Batool F, Akram F, Hassan S, Rashid B (2022). Worldwide Impact of Covid-19 on Food Security and Farming Sector. *Acta Scientific Biotechnology* 3 (5): 01-08.
- 3) Anicet B A, Sarwar M B, Jabbar B, Hassan S, Rashid B (2022). Transient Expression Analysis of Agave sisalana Heat Shock Protein Gene (AsHSP70) in Model Species (*Nicotiana benthamiana*) under Heat Stress *Biology Bulletin* 49 (3): 160-168.
- 4) Hafeez MN, Khan MA, Sarwar B, Hassan S, Ali Q, Husnain T, Rashid B (2021). Mutant *Gossypium universal stress protein-2 (GUSP-2)* gene confers resistance to various abiotic stresses in *E. coli* BL-21 and *CIM-496-Gossypium hirsutum*. *Sci Rep* 11, 20466. <https://doi.org/10.1038/s41598-021-99900-x>
- 5) Hassan S, Ahmad A, Batool F, Rashid B, Husnain T (2021). Genetic Modification of *Gossypium arboreum* Universal Stress Protein (GUSP1) Improves Drought Tolerance in Transgenic cotton (*Gossypium hirsutum*). *Physiology and Molecular Biology of Plants* 27(8):1779-1794. <https://doi.org/10.1007/s12298-021-01048-5>.
- 6) Sher Z, Majid MU, **Hassan S**, Batool F, Aftab B, Rashid B (2021). Identification, isolation and characterization of GaCyPI gene in *Gossypium arboreum* under cotton leaf curl virus disease stress. *Phyton-International Journal of Experimental Botany*. 90 (6): 1613 – 1632. <https://doi.org/10.32604/phyton.2021.016154>.
- 7) Jabbar B, Anicet B A, Sarwar M B, Rashid B; **Hassan S** & Husnain T (2021). RNA-Seq Data Analysis Unveils Potential Conserved Micro-RNAs in *Agave deserti*. *Current Proteomics* 18 (2): 248-263. <https://doi.org/10.2174/1570164617999200529122637>.
- 8) Batcho, A.A., Sarwar, M.B., Rashid, B. **Hassan S**, Husnain T (2021). Heat shock protein gene identified from *Agave sisalana* (AsHSP70) confers heat stress tolerance in transgenic cotton (*Gossypium hirsutum*). *Theoretical and Experimental Plant Physiology*. 33: 141-156. <https://doi.org/10.1007/s40626-021-00200-6>.
- 9) Mizna, Sajid M, **Hassan S**, Rashid B & Husnain T (2020). Embryogenic Capabilities of Cotton through Tissue Culture and Expression Analysis of SERK3 for Regeneration Potential. *Indian Journal of Agricultural Research*, 54 (3): 361-366. <https://doi.org/10.18805/IJARE.A-515>
- 10) Sarwar MB, Ahmad Z, Anicet BA, Sajid M, Rashid B, **Hassan S**, Ahmad M & Husnain T (2020). Identification and validation of superior housekeeping gene(s) for qRT-PCR data normalization in *Agave sisalana* (a CAM-plant) under abiotic stresses. *Physiology and Molecular Biology of Plants* 26, 567–584. <https://doi.org/10.1007/s12298-020-00760-y>
- 11) Ahmad Z, Sadique S, Sarwar M B, Rashid B, **Hassan S**, Rasheed S, Bashir K, Seki M & Husnain T (2020). Transcriptomic analysis of root specific drought mediated response of *G. arboreum* and *G. hirsutum*. *Biologia*: 75 (4), 627-636. <https://doi.org/10.2478/s11756-019-00382-0>
- 12) Batcho A A, Sarwar M B, Tariq L, Rashid B, **Hassan S** & Husnain T (2020). Identification and characterization of heat shock protein gene (HSP70) family and its expression in *Agave sisalana* under heat

stress. *The Journal of Horticultural Science and Biotechnology*; 95(4): 470-482.

: <https://doi.org/10.1080/14620316.2019.1685412>

- 13) **Hassan S**, Qadir I, Aslam A, Rashid B, Sarwar MB & Tayyab Husnain (2020). Cloning, Genetic Transformation and Cellular Localization of Abiotic Stress Responsive Universal Stress Protein Gene (*GUSPI*) in *Gossypium hirsutum*. *Iranian Journal of Biotechnology*; 18 (2): 37-46. <https://doi.org/10.30498/IJB.2020.138051.2312>
- 14) Majid, MU, Sher Z, Rashid B, Ali Q, Sarwar MB, **Hassan S**, Husnain T (2020). Role of Leaf Epicuticular Wax Load and Composition against Whitefly Population and Cotton Leaf Curl Virus in Different Cotton Varieties. *Cytology and Genetics*: 54 (5): 472–486. <https://doi.org/10.3103/S009545272005014X>.
- 15) Sarwar M B, Ahmad Z, Rashid B, **Hassan S**, Gregersen L P, De la M O, Istvan L N, Asp T & Husnain T (2019). De novo assembly of *Agave sisalana* transcriptome in response to drought stress provides insight into the tolerance mechanisms. *Scientific Reports-uk*; 9: 396-409. <https://doi.org/10.1038/s41598-018-35891-6>
- 16) Khan A, Tabassum B, Aaliya K, Tariq M, Nasir I A, **Hassan S**, Ali I T & Ponya Z. (2019) The Effectiveness of Recombinant Chitinase obtained from Barley (*Hordeum vulgare* L.) against Potato Pathogens. *Applied Ecology and Environmental Research*; 17: 4147- 4157. [http://dx.doi.org/10.15666/aeer/1702\\_41474157](http://dx.doi.org/10.15666/aeer/1702_41474157)
- 17) Qamar Z, Tariq M, Rehman T, Iqbal MS, Sarwar MB, Sharif MN, Hassan Z, Ahmad A, Zahra A, Latif A, Rashid B, Zaidi MA, Tabassum B, **Hassan S**, Bakhsh A, Javaid M, Akram S, Azam S, Naz F, Ahmed S, Bajwa KS, Awan MF, Shahid N, Ali A, Riaz S, Bashir B, Sadiq K, Kokab QA, Yousaf I, Farooq AM, Javid MA, Rehman ZU, Saleem MZ, Yasmeen A, Bhatti MU, Arif U, Bashir K, Jamal A, Butt SJ, Arif A, Ahmed I, Rao AQ, Haider MS, Malik TH and Nasir IA (2019). Trackable CEMB-Klean Cotton Transgenic Technology: Affordable Climate Neutral Agri-biotech Industrialization for Developing Countries. *Advancement in Life Sciences*: 6(3): 131-138.
- 18) Sarwar MB, Ahmad Z, Rashid B, **Hassan S** and Husnain T (2019). Sequence Analysis of Alpha Crystalline Domain of Small Heat Shock Proteins (sHSPs) Family in different plant species. *Iranian Journal of Science and Technology, Transactions A: Science* 43(4): 1457-1467.
- 19) **Hassan S**, Samiullah TR, Ansari MR, Rashid B, Husnain T (2018). Cloning, Antibody Development, Expression and Cellular Localization of Universal Stress Protein Gene (USP1-GFP) in Transgenic Cotton. *Journal of Plant Biochemistry and Biotechnology*. 27(2):175–185. <https://doi.org/10.1007/s13562-017-0427-5>
- 20) Rehman I, Aftab B, Sarwar MB, Rashid B, Ali Q, Majid MU, **Hassan S**, Ali MA, Nasir IA, Haider MS, Husnain (2017). Gene Expression in Response to Cotton Leaf Curl Virus Infection in *Gossypium hirsutum* under variable environmental conditions. *Genetika*. 49 (3): 1115-1126. <https://doi.org/10.2298/GENSR1703115R>
- 21) Mohamed BB, Aftab B, Sarwar MB, Rashid B, Ahmad Z, **Hassan S**, Husnain T (2017). Identification and characterization of the diverse stress responsive R2R3-RMYB transcription factor from *Hibiscus sabdariffa* L. *International Journal of Genomics*. 2017: 1-12. <https://doi.org/10.1155/2017/2763259>
- 22) Javed S, Meraj M, Mahmood S, Hameed A, Naz F, **Hassan S**, Irfan R (2017). Biosynthesis of lovastatin using agro-industrial wastes as carrier substrates. *Tropical Journal of Pharmaceutical Research*. 16 (2): 263-269. <http://dx.doi.org/10.4314/tjpr.v16i2.2>
- 23) Javed S, Raza A, Mahmood S, Meraj M, Naz F, **Hassan S** (2017). Strain improvement of *Aspergillus terreus* for hyper production of lovastatin and immobilization of mutant atu-06 strain for repeated batch culture process. *Acta Poloniae Pharmaceutica-Drug Research*; 74(5): 1485-1491.
- 24) Sarwar MB, Sadique S, **Hassan S**, Riaz S, Rashid B, Mohamed BB, Husnain T (2017). Physio-Biochemical and Molecular Responses in Transgenic Cotton under Drought Stress. *Tarım Bilimleri Dergisi- Journal of Agricultural Sciences*, 23 (2): 157-166.
- 25) **Hassan S**, Sadique S, Sarwar MB, Rashid B, Husnain T. (2015). Morpho-physiological, biochemical and developmental responses of diploid cotton (*Gossypium arboreum* L.) cultivars under varying NaCl stress. *International Journal of Biosciences*. 6 (12): 9-20.
- 26) Jamal A, Shahid MN, Aftab B, Rashid B, Kiani S, Mohammed BB, Sarwar MB, **Hassan S**, Husnain T (2015). Alternation in Photosynthetic Pigments Water Relation and Biochemical in Cottons Subjected to Drought Stress. *Journal of Global Biosciences*. 4(2): 1517-1529.

- 27) Shahid N, Tahir S, Rao AQ, **Hassan S**, Khan A, Latif A, Khan MA, Tabassum B, Shahid AA, Zafar AU & Husnain T (2015). *Escherichia coli* expression of NDV fusion protein gene and determination of its antigenic epitopes. *Biologia*, 70(12), 1553-1564. <https://doi.org/10.1515/biolog-2015-0191>
- 28) Hafeez MN, Sadique S, **Hassan S**, Sarwar MB, Rashid B, Ali Q, Husnain T (2015). Physiological, Morphological, Biochemical and Molecular Basis of Drought Tolerance in Cotton. *International Journal of Biology, Pharmacy and Allied Sciences*, 4 (3): 1091-1112.
- 29) Mohamed BB, Sarwar MB, **Hassan S**, Rashid B, Aftab B, Husnain T (2015). Tolerance of Roselle (*Hibiscus sabdariffa* L.) Genotypes to Drought Stress at Vegetative Stage. *Advancements in Life Sciences*. 2(2): 74-82.
- 30) Sarwar MB, Batool F, Rashid B, Aftab B, **Hassan S** & Husnain T. (2014). Integration and Expression of Heat Shock Protein Gene in Segregating Population of Transgenic Cotton for Drought Tolerance. *Pakistan Journal of Agricultural Sciences*. 51(4): 935-941.
- 31) Mohamed BB, Shahid MN, Rashid B, Jamal A, Aftab B, Dahab AA, Kiani S, Ashraf MA, Sarwar MB, **Hassan S**, Husnain T (2015). Identifying salt stress-responsive transcripts from Roselle (*Hibiscus sabdariffa* L.) roots by differential display. *African journal of Biotechnology*, 13(53): 4775-4781.
- 32) Jamal A, Shahid MN, Aftab B, Rashid B, Sarwar MB, Mohamed BB, **Hassan S**, Husnain T (2014). Water Stress Mediated Changes in Morphology and Physiology of *Gossypium arboreum* (Var FDH-786). *Journal of Plant Sciences*. 2(5):179-186. <https://doi.org/10.11648/j.jps.20140205.15>
- 33) **Hassan S**, Sarwar M B, Sadique S, Rashid B, Aftab B, Babiker M B & Husnain T (2014). Growth, Physiological and Molecular Responses of Cotton (*Gossypium arboreum* L.) under NaCl Stress. *American Journal of Plant Sciences*. 5: 605-614. <http://dx.doi.org/10.4236/ajps.2014.55075>.
- 34) Mohamed BB, Sarwar MB, Rashid B, Dahab AA, Jamal A, Shahid M N, Aftab B, **Hassan S** and Husnain T. (2013). Physiological and Biochemical responses of Roselle (*Hibiscus sabdariffa* L.) to NaCl stress. *Agrochimica*, 57(3): 250-266.

#### **Administrative Skills**

- In charge Journal Club CEMB; to make arrangements for functions, seminars, symposia, tours and other extra-curricular activities; University of the Punjab, Lahore. March 2019 to date.
- Organizer ‘ 3<sup>rd</sup> Alumni meet 2021’ held at National Centre of Excellence in Molecular Biology, University of the Punjab, Lahore December 24, 2021.
- Member organizing committee ‘ 2<sup>nd</sup> Alumni meet 2017’ CEMB, University of the Punjab, November 20, 2017.
- Organizer at CEMB Sports Gala 2013 held at CEMB, University of the Punjab, Lahore. March 4-8, 2013.
- Organizer at CEMB Sports Gala 2014 held at CEMB, University of the Punjab, Lahore. March 10-14, 2014.
- Member of the organizing committee at “National Bioforum, 2008” CEMB Lahore (March, 2008).
- In charge Journal Club CEMB, University of the Punjab, Lahore. November 2004-October, 2005.

#### **EST's**

##### **Expression Omnibus (GEO) Acc# GSE116908.**

- Bilal S, Batcho A, Ahmad Z, Tariq L, Ahmed M, Rashid B, **Hassan S** & Husnain T (2018). cDNA Library constructed from mRNA of drought stress *Agave sisalana* cDNA, mRNA sequence. (JZ979889- JZ979902)
- Riaz S, Aftab B, Sarwar B, **Hassan S**, Rashid B and Husnain T. (2015). High Throughput search of drought tolerant genes in *Agave sisalana* L. Acc # JZ892707- JZ892811, (105EST's).
- Mohamed BB, Shahid MN, Dahab AA, Riaz S, Jamal A, Sarwar MB, Sadique S, Batool F, **Hassan S**, Sulaiman AA, Aftab B, Rashid B, Husnain T (2012). Identification of salt stress responsive gene(s) from Roselle (*Hibiscus sabdariffa* L.) by differential display. Acc# **JK757799- JK757805**; (7 ESTs)

##### **Partial cDNA's**

- Batcho, A.A., Sarwar, B.M., Tariq, L., Ahmad, Z., Rashid, B., **Hassan, S.** and Husnain, T (2019). Identification of the large heat-responsive HSP70 gene family in *Agave sisalana*. Accession # MH555298; MH555300 - MH555313 and MH555315 (16 HSP70 mRNA, partial cds).
- Hameed, R., Batcho, A.A., Sarwar, B., Rashid, B., **Hassan, S.** and Husnain, T. (2019) Identification and Validation of Transcription factors genes from *Agave sisalana* under Abiotic Stress. mRNA, partial cds Accession # MK639428.

- Sher Z, Majid MU, **Hassan S**, Batool F, Rashid B, Husnain T (2016). Gossypium arboreum wax related mRNA involve in protection against CLCuV infection caused by White fly showing homology with predicted peptidyl prolyl cis trans isomerase like (LOC108460743) mRNA, partial cds. Accession # KY368095  
**Full Length Gene**
- Majid,M.U., Sher,Z., **Hassan,S.** and Rashid,B (2022). Gossypium arboreum 3-ketoacyl-CoA synthase4 mRNA, complete cds. Accession # MW088916.
- Majid,M.U., Sher,Z., **Hassan,S.** and Rashid,B (2022). Gossypium arboreum 3-ketoacyl-CoA synthase6 mRNA, complete cds. Accession # MW088917.
- Majid,M.U., Sher,Z., **Hassan,S.** and Rashid,B (2022). Gossypium arboreum 3-ketoacyl-CoA synthase12 mRNA, complete cds. Accession # MW088918.
- Sher Z, Majid MU, **Hassan S**, Batool F, Rashid B, Husnain T (2016). Gossypium arboreum wax related mRNA involve in protection against CLCuV infection caused by White fly showing homology with predicted peptidyl prolyl cis trans isomerase like (LOC108460743) mRNA, complete cds. Accession # MT199216.
- Batcho,A.A., Sarwar,B.M., Tariq,L., Ahmad,Z., Rashid,B., **Hassan,S.** and Husnain,T (2019). Identification of the large heat-responsive HSP70 gene family in Agave sisalana. mRNA, complete cds. Accession # MH555299.
- Hameed,R., Batcho, AA., Sarwar,B., Rashid,B., **Hassan,S.** & Husnain,T. (2019). Identification and Validation of Transcription factors genes from Agave sisalana under Abiotic Stress.mRNA complete cds Accession # MK639425- MK639427 & MK639429.
- Batcho,A.A., Sarwar,B.M., Tariq,L., Ahmad,Z., Rashid,B., **Hassan,S.**, Husnain,T (2019). Identification of the large heat-responsive HSP70 gene family in Agave sisalana. mRNA, complete cds. Accession # MH555314.

### **Complete Protein**

- Sher Z, Majid MU, Hassan S, Rashid B, Husnain T. (2020) Cyclophilin peptidyl-prolyl cis-trans isomerase-like protein [Gossypium arboreum] Acc# QRM13496

### **Conference proceedings**

1. Hassan S, Zulfiqar F, Rashid B, Jamil A, Akram F, Batool F, Qamar Z, Sattar S, Shahid AA (2021). Tissue culture potential of *Gossypium hirsutum* (upland cotton) through somatic embryogenesis. Proc of the 4<sup>th</sup> International Symposium on on advances in Molecular Biology of Plants and Health Sciences held CEMB December 23-24,2021. pp107.
2. **Hassan S**, Rashid B, Batool F, Sarwar MB, Noor A, Nawaz S, Shahid AA (2021). Isolation and Characterization of Abscisic Acid (ABA) Responsive Transcripts from *Agave sisalana* under Drought Stress. Proc of the 4<sup>th</sup> International Symposium on on advances in Molecular Biology of Plants and Health Sciences held CEMB December 23-24, 2021. pp108.
3. Batcho AA, **Hassan S**, Batool F, Sarwar MB, Rashid B. (2021) Heat shock protein gene induces heat stress tolerance in transgenic cotton (*Gossypium hirsutum*). International scientific conference "Science, technology and development of innovative technologies", dedicated to the 30th anniversary of independence of Turkmenistan held in Ashgabat Turkmenistan, June 12-13, 2021. Rashid B, Batcho, AA, Jabbar B, Sarwar MB, Hassan S, Sajid M, Husnain T. (2019). Heat shock protein gene: The future for heat stress tolerance in plant species. Proc Intl conf Recent innovations in molecular sciences held at University of the Punjab Lahore, Nov 06-08, 2019. Pp93.
4. Batcho, AA, Sarwar MB, Jabbar B, Rashid B, Hassan S, Husnain T. (2019). Heat shock protein gene family in Agave sisalana: Identification and analysis of cDNA coding HSP70 in cotton under heat stress. Proc Intl conf Recent innovations in molecular sciences held at University of the Punjab Lahore, Nov 06-08, 2019. Pp94.
5. Sajid M, Bilal MS, Ahmad Z, Hassan S, Rashid B, Husnain T. (2019). Gene expression analysis reveals complex regulation of hormones and energy metabolism under osmotic and cold stress in root tissue of maize. Poster presentation Proc Intl conf Recent innovations in molecular sciences held at University of the Punjab Lahore, Nov 06-08, 2019. Pp132.

6. Riaz M, Sajid M, Ahmad Z, Sarwar MB, Rashid B, **Hassan S**, Husnain T (2019). Performance of Oligonucleotide Microarray for Identification of Candidate Genes in Root Tissues of *Zea mays*" Sep 27-28, 2019, Istanbul (Turkey)
7. Rashid B, Mohamed BB, Aftab B, Husnain T and **Hassan S** (2018). Identification of potential transcripts in *Hibiscus sabdariffa* L. expressing under drought and salt stress. 7th International Molecular Biology and Biotechnology Congress organized by and held at Necmettin Erbakan University Konya, Turkey 25-27 April.
8. Tariq L, Batcho A, Sarwar MB, Jabbar B, Rashid B, **Hassan S** & Husnain T (2018). In silico analysis, homology modeling and functional annotation of mitochondrial ZMHSP70. 3<sup>rd</sup> international conference on Biosciences (ICBS-2018) held at Government College University Lahore. 09-11 May.
9. Rashid B, **Hassan S**, Sarwar MB, SherZ, Ahmad Z and Husnain T (2018). Identification, Isolation and Characterization of Drought Stress Responsive Genes in Different Plant Species. Invited talk at Plant Biotechnology for Food Security, held at Forman Christian College Lahore- A Chartered University. 27-28 November.
10. **Hassan S**, Rashid B, Batool B, Sarwar MB, Ahmad Z, Sher Z, Husnain T. (2017) Expression of universal stress protein gene (GUSP1) will endure the abiotic stress tolerance in transgenic cotton. Proc of the International Symposium on Environmental Stress Adaptation & Memory in Plants. RIKEN Center for Sustainable Resource Science, Yokohama City, Kanagawa, Japan. Feb 27-28, 2017.
11. Husnain T, Rashid B, **Hassan S**, Sarwar MB, Mohamed BB, Batool F, Riaz S, Hafeez MN, Ahmad Z. (2017). Identification of abiotic stress tolerant genes in plants. Proc. "Conference on computational biology and genomics" organized by and held at Centre for Human Genetics, Hazara University Mansehra 27-29 Sep. pp 14.
12. Rashid B, Shahid MN, Jamal A, Aftab B, **Hassan S**, Sarwar MB, Husnain T. (2017). Breeding salt responsive genes in *Gossypium hirsutum* by using genomic approaches. Invited talk presented at "Conference on computational biology and genomics" organized by and held at Centre for Human Genetics, Hazara University Mansehra 27-29 Sep. pp06

#### **POSTER PRESENTATIONS**

1. Sarwar MB, Batcho AA, Noor A, Nawaz S, Akram F, **Hassan S**, Rashid B, Shahid AA (2021). Characterization of *Agave sisalana* Transcripts in Response to Drought Stress. Poster presented at 4<sup>th</sup> International Symposium on on advances in Molecular Biology of Plants and Health Sciences held at CEMB, University of the Punjab, December 23-24.
2. Sher Z, Majid MU, Rashid B, Hassan S, Batool F, Akram F, Ashraf R, Sattar S, Shahid AA (2021). GaCYP1 Induces Wax Abundance in Cotton to Tolerate Whitefly and Resistance against Cotton Leaf Curl Virus (CLCuV). Poster presented at 4<sup>th</sup> International Symposium on on advances in Molecular Biology of Plants and Health Sciences held at CEMB, University of the Punjab, December 23-24.
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