## SCO – 1st YOUNG SCIENTISTS CONCLAVE
**Shaping SCO-STI Partnership: Young Scientists Perspectives**

**NOMINEE'S DETAILS/INFORMATION**

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| Country Name : PAKISTAN | |
| Last Name: NOOR | First Name: SABAHAT |
| Date of Birth : (DD/MM/YYYY) 05/01/1985 | |
| Address: National Institute for Genomics and Advanced Biotechnology (NIGAB), National Agricultural Research centre (NARC), Park Road, Islamabad. | |
| Telephone: +92-334-5281842 | Email: Sabahatnoor85@yahoo.com |
| Title: Dr. | Gender: Female |
| Institution/Affiliation: National Agriculture Research Centre | |
| Field of Science and Technology: Plant Biotechnology. | |

**ACADEMIC QUALIFICATION: degree and discipline** (please indicate where appropriate)

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|---|---|---|---|---|---|---|---|
| **Degree:** | Bachelors | | Masters | | PhD ✓ | | Other | |
| **Discipline:** | | | | | Plant Genomics and Biotechnology | | | |

**Nomination Statement (up to 300 words):** Please describe area of expertise in which the nominee has demonstrated innovation excellence. *Please provide the information in English.*

- PhD in Plant Genomics and Biotechnology
- Working in gene transformation of wheat and potato.
- Executing a project on double haploid Production in wheat via wide hybridization.
- Have expertise in molecular techniques and transgene analysis (expression analysis).

**Innovative Project Statement (up to 300 words):** Please provide brief information on the nominee's innovative idea. *Please provide the information in English.*

- Working as project incharge on "Production of double haploid system in wheat".

| **Participation in Innovation Competitions/Awards/Achievements:** Please list previous participation in innovation competitions and awards/achievements, if any. *Please provide the information in English.* |
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**DECLARATION BY THE CANDIDATE:**

I hereby declare that all the information given above is true to the best of my knowledge. I accept to participate in the virtual conference of1st SCO -Young ScientistsConclave in India, and will attend the entire programme of five days.

Place: Islamabad.

Date: 09-10-20.

Signature of the nominee: ----------

**Name of the nominating authority:**
(Contact details, i.e. telephone, email and designation)

Place: ----------

Date: ----------

Signature: ----------

Member
Plant Sciences Division
Pakistan Agricultural Research Council
Islamabad

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**NB: Please remember to include the followingalong with Nomination Form:**

- **Nominee's Curriculum Vitae/Biography at the end of nomination form.**

**Dr. Sabahat Noor**
**National institute for Genomics and Advanced Biotechnology**
**NARC, Islamabad**
**E.mail: sabahatnoor85@yahoo.com**

**RESEARCH EXPERTISE:**

Gene Transformation, Gene isolation, Gene cloning, Tissue culture, TAIL-PCR

**ACADEMIC QUALIFICATION:**

- PhD in Plant Genomics and Biotechnology from PIASA National Agriculture Research Center, Islamabad, Pakistan
  **Thesis Title:** Genetic Transformation of wheat for drought/salt stress

- M. Phil in Molecular Biology from PMAS, University of Arid Agriculture, Rawalpindi, Pakistan (2006-08)
  **Thesis Title:** *Agrobacterium* mediated gene transformation in wheat using RCG3 gene at Plant Biotechnology Program NARC.

- Master in Molecular Biology from PMAS, University of Arid Agriculture, Rawalpindi, Pakistan (2004-06)
  **Research Title:** Identification of Expressed Sequence Tags (EST) by using Citrus Harvest Software

- Bachelor in Science from University of Punjab, Lahore, Pakistan (2003-04)

- Faculty of Sciences(Pre-Medical) from BISE, Faisalabad, Pakistan (2000-02)

- Matriculation in Science from BISE, Faisalabad, Pakistan (1999– 2000)

**PROFESSIONAL EMPLOYMENT HISTORY:**

1. a) IRSIP Training at McGill Canada: 6 months IRSIP training at **TAIL-PCR** and Expression analysis of transgene at McGill University Canada.
   b) Three months extensive work on sequencing of Barley genome by using **Next Generation and third Generation Sequencer**.
2. Working as **Senior Scientific Officer** (SPS-09) in National Institute for Genomics and Advanced Biotechnology, NARC, Islamabad **(15-05-2015 - To date)**
   - Molecular analysis of T3 transgenic wheat plants and their confirmation through PCR
   - Successful bioassay for drought and salt resistance in transgenic wheat plants at T3 stage
   - ***In-vitro*** **multiplication in Banana** to combat Banana Bunchy Top Virus (BBTV) for Sindh area.
   - Working on **Development of Double Haploid system in wheat** in ALP funded project as PI.
3. Worked as **Scientific officer** (SPS-08) in National Institute for Genomics and Advance Biotechnology , NARC, Islamabad (**2012 – 14-05-2015**)
   - Screening of 2000 lines (20,000 plants) of Pak-13 & NARC-11 wheat varieties through Molecular markers in **CIMMYT Project**
   - Modified the callus induction media for **four banana cultivars**
   - ***In-vitro*** **multiplication in Banana** to combat Banana Bunchy Top Virus (BBTV) for Sindh area.
   - Rapid identification of **Olive cultivars** using DNA markers

- **Isolation, cloning and sequencing of lectin gene** from garlic fruit
- Developed transgenic wheat plants (Lasani-09) for drought/salt tolerance and completed their bioassay
- **Supervised** 14 students and researchers from different universities at NIGAB

4. **Research Assistant** in a project entitled "Genetic Transformation of wheat for stress tolerance(drought/salt and rust) at National Institute for Genomics and Advance Biotechnology , NARC, Islamabad **(2007-2011)**
    - Established tissue culture and regeneration protocols for wheat cultivars
    - Developed transgenic wheat plants (Chakwal-97) for rust resistance
    - Developed *inplanta* transformation method for local wheat cultivars (NARC-2011 and NARC-09)
5. Worked as **Research Fellow** with Chairperson Dr. Rehana Asghar, Department of Botany PMAS, University of Arid Agriculture, Rawalpindi in "Identification of EST by using Citrus Harvest Software" in Anatomy lab. (**6 Months in 2006**)
6. Helped faculty members of PIASA in teaching different courses to M.Phil students at PIASA.

**PUBLICATIONS:**

1. Noor S., S.Ali, H.Rehman, Farhatullah, G.M.Ali. 2018. Comparitive Study of transgenic (DREB1A) and non-transgenic wheat lines on relative water content, sugar, proline and chlorophyll under drought and salt stresses. Sarhad Journal of Agriculture. Vol. 34, No. 04.
2. InamS., KhanM R., RehmanN., AbbasZ., **NoorS.,** and Ali GM. (2017) Molecular Detection and Quantification of Non-Basmati Adulterants in Basmati Rice using BADH2 Gene Marker. Int. J. Agric. Biol. 19: 1463–1468
3. Wajeeha Shamsi, **Sabahat Noor** ,Anam Minhas, Ammara Saleem, Naeem Khan, Ghulam Muhammad Ali 2018. Optimization of *in vitro* regeneration protocol for selected rice varieties. Submitted in springer journal, *in-vitro* cellular and developmental biology plant.
4. Abbas. Z, **S. Noor**, S. Inam, N. Rehman, S. Ali, M.R.Khan and G.M.Ali, 2018. Development of reproducible *in planta* transformation system for wheat and reverse transcriptase PCR (RT-PCR) analysis of transgenic plants. Accepted to *Pak. J. Agricul. Sci.* 17 October 2018
5. **Sabahat Noor**, Ghulam Muhammad Ali, Muhammad Arshad, Shoukat Ali and Yusuf Zafar (2009) Optimization of callus induction and regeneration system for Pakistani wheat cultivars Kohsar and Khyber-87. African Journal of Biotechnology, 8 (19), pp, 5556-5559 Online, 2009
6. Mehmooda Munazir, Rahmatullah Qureshi, Ghulam Muhammad Ali, Umer Rashid, **Sabahat Noor**, Khalid Mehmood, Shoukat Ali and Muhammad Arshad 2010 Primary callus induction, Somatic Embryogenesis and regeneration studies in selected elite wheat varieties From Pakistan Pak. J. Bot., 42(6): 3957-3965.

**Abstract Published**:

1. Established a regeneration protocols for local wheat varieties Khyber-87 and Inqilab-91 using tissue culture techniques. Preceding of National Conferences on recent Advantages in Agriculture Biotech dated on March 18-19, 2008
2. Use of different concentrations of hormones for regeneration in wheat varieties Chakwal-97 and GA-2002. Preceding of National Conferences on recent Advantages in Agriculture Biotech dated on March 18-19, 2008
3. Genetic Improvement of local wheat cultivars for diseases and drought/salt resistance, SAARC Regional Conference on "New Frontiers in Agricultural Genomics & Biotechnology" June 5-7, 2012.

4. InamS., KhanM R., RehmanN., AbbasZ., **NoorS.**, and Ali GM.,(2017) Molecular Detection and Quantification of Non-Basmati Adulterants in Basmati Rice using BADH2 Gene Marker. 3rdInternational Conference on Agriculture Food security and Biotechnology. NIGAB, NARC, Islamabad (April 26-27)
5. 2.Rehman, N., Khan MR., Abbas Z., **Noor S.,** Inam S. and Ali, GM. (2017). A Mitogen Activated Protein Kinase Kinase (*MAPKK*) Recruited in Salt Tolerance in Halophytic *Salicorniaeuropaea* (Amaranthaceae).3rdInternational Conference on Agriculture Food security and Biotechnology. NIGAB, NARC, Islamabad (April 26-27)

**INVOLMENT IN RESEARCH PROJECTS AT NIGAB:**

**A. Double Haploid Project:**

1. Working on development of double haploid system in wheat in NIGAB, NARC as PI…..A project of ALP

**B. CYMMT Project-Wheat:**

1. Screening of approximately 2000 pure lines of Pak-13 & NARC-11 wheat varieties through Molecular markers----a project of CYMMT

**C. Banana Project:**

1. Tissue culture optimization and genetic transformation in Banana varieties William-11, Pisang, Brazilian, Grand Niene to Combat Banana Bunchy Top Virus (BBTV)------Micro-Propagation of these varieties was done to produce Banana Bunchy Top Virus free plants.

**D. Transgenic Development and expression analysis**

1. Genetic Transformation of wheat cultivar lasani-09 for drought and salt resistance using DREB1A gene----plants are at T4 stage and their bioassay has successfully completed till T3 generation.
2. Successfully transformed rice chitinase gene RCG3 in local wheat cultivar Chakwal-97-----bioassay completed and T6 generation is in hand.
3. Genetic Transformation of rice cultivar Shaheen Basmati for drought and salt resistance by using OsNAC6 gene
4. Agrobacterium mediated gene transformation in local grape varieties y using RCG3 gene.
5. Genetic transformation of OsNAC6 gene through inplanta method in NARC-2011

**E. Micro propagation/Tissue culture:**

1. Optimization of callus induction and regeneration system in local wheat cultivars lasani-09, NARC-2011 and NARC-2009.
2. Optimization of efficient transformation system in local wheat cultivars Chakwal, Manthar, Lasani-09, NARC-2011 and NARC-2009.
3. Optimization of in-vitro regeneration protocol for Pakistani rice varieties Basmati-198, Shaheen basmati and super.
4. Optimization of olive callus induction by using different olive growth regulators.
5. Tissue culture and transformation protocol was established for local grapes varieties.

**F. Gene Isolation, gene cloning and vector construction:**

1. Isolation, cloning and sequencing of lectin gene from garlic fruit. The gene was successfully isolated from garlic fruit and confirmed through sequencing. Sequence analysis showed that these are new homologues. The Plant transformation vectors were constructed. The gene was transformed in model plant Arabidopsis.

**G. *Inplanta* Experiment:**

1. Tissue culture independent transformation protocol was established in wheat cultivar lasani-09 and the comparative performance was done between *inplanta* and *Agrobacterium* mediated transformation

**H. Somaclonal Experiment:**

1. Local wheat cultivars lasani-09 and inqilab-91 are tested for somaclonal variation by using auxin concentration.

## ATTENDED TRAININGS /WORK SHOPS:

1. IRSIP Training at McGill Canada: 6 months IRSIP training at TAIL-PCR and Expression analysis of transgene at McGill University Canada
2. Two months training on sequencer at McGill University Canada.
3. Attended 3rd one day Workshop on Bioinformatics, at Muhammad Ali Jinnah University Islamabad June 18, 2012
4. Oral presentation in conference on "New Frontiers in Agricultural Genomics & Biotechnology" held at Marriat Islamabad June 5-7, 2012.
5. Oral presentation in International Conference held in Rawalakot University, Kashmir dated August 2011.
6. Attended 9th Biennial Conference, Advances in Biochemistry and Molecular Biology dated on December 17-20, 2008
7. Oral presentation in International Workshop on Molecular Techniques in Biological Research dated on May 6-10, 2008 in PMAS, University of Arid Agriculture, Rawalpindi
8. Poster presentation in National Conference on Recent Advances in Agriculture Biotech dated on March 18-19, 2008
9. Attended International Conference on Biological Resources of Pakistan...Problems, success and Future Perspective dated on April 25-27, 2007

## RESEARCH REPORT WRITING AND THESIS:

1. **Ph.D Research Project:**
   Genetic Transformation of wheat for drought/salt resistance.

2. **M.phil Research Project:**
   *Agrobacterium* mediated gene transformation in wheat using RCG3 gene

3. **M.Sc Research Project:**
   Identification of Expressed Sequence Tags (EST) by using Citrus Harvest Software.

## EXPERTISE:

- Tissue culture technique like callus induction and regeneration for wheat, olive, banana
- Molecular biology techniques like DNA extraction, RNA extraction, PCR and Southern Blotting
- *Agrobacterium* mediated gene transformation, Biolistic method of transformation
- *Inplanta* experiment of different wheat varieties
- cDNA synthesis, RT-PCR
- Gene isolation and vector construction
- TAIL-PCR