

## Dr. Riffat John. PhD

Plant Molecular Biology Lab

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### I. Professional Summary:

- ✓ A dedicated and enthusiastic academician and researcher. With about 12 years of refined teaching and research experience in domains across plant stress genomics, plant proteomics, genome engineering and plant environment interaction.
- ✓ Proven competencies in grant writing and administration, project and program management, and staff development and empowerment.
- ✓ Extensive background of delivering popular science lectures in remote areas for college and school students.

### II. Education

<b>Ph.D.</b>	Plant biochemistry/biochemistry Indian Institute of Technology (IIT), Delhi	2005
<b>M.Sc.</b>	Botany Jamia Hamdard, Hamdard University, New Delhi	2000
<b>B.Sc.</b>	Science with Botany, Zoology, Chemistry and English Government Degree College for Women, Anantnag, Kashmir	1998

### III. Professional Experience

Assistant professor (Plant Molecular Biology and Genetics) University of Kashmir, Srinagar	2011-till present
Assistant Professor Govt. Degree College for Boys, Anantnag	2009-2011
Young Scientist (Molecular and Cell Biology) ICGEB, New Delhi and South Campus, University of Delhi	2005-2007

#### **IV. Academic Honours and Awards:**

- ✓ China-Inno Tour for Indian Scientists Travel Award – 2019
- ✓ Indo-U.S. Genome Engineering and Editing Technology (GETin) Overseas Fellowship by IUSSTF – 2017
- ✓ Selected for INSA (Indian National Science Academy) International Bilateral Scientist Exchange Program to Europe – 2016
- ✓ Member of the Indian National Young Academy of Science (INYNAS): 2016 – 2021
- ✓ Young Scientist Award by State of Jammu and Kashmir Science and Technology Council – 2015
- ✓ INSA Visiting Fellowship – 2013
- ✓ Junior Research Fellowship (among top 20%) awarded by Council for Scientific and Industrial Research, New Delhi – India
- ✓ GATE – General Aptitude Test in Engineering (All India Rank- 37th with 97.55 percentile)
- ✓ Outstanding Speaker Award: “Management of Solid Wastes in Delhi”, Seminar held at India Habitat Centre, New Delhi – India
- ✓ 3rd Prize: “National Seminar on Environmental Awareness” at Jamia Hamdard, Hamdard University, and New Delhi.

#### **V. RESEARCH GRANTS/FUNDED PROJECTS**

##### **Projects Completed:**

##### **As Principal Investigator (PI)**

- Gene Stacking in Transgenic Tomato for Abiotic Stress (Drought and Salinity) Tolerance” (Funded by Department of Science and Technology (DST), Govt. of India)
- Developing Cold Tolerant Transgenic Tomato by Overexpression of Novel cold Induced Gene from *Brassica oleracea*” (Funded by Department of Biotechnology (DBT)
- Biochemical and Proteomic Analysis of Cold Tolerant Plants of Kashmir Himalayan Region” (Funded by SERB, DST, Govt. of India).

### **As Co-PI**

- Antioxidant and Metabolomic Changes in *Digitalis purpurea* in response to Abiotic Stress” (Funded by SERB-DST)
- Functional characterization of Novel cold Induced Gene from Brassica oleracea in *Arabidopsis thaliana* (WOS-DST)
- Functional characterization of PSII-TC gene for abiotic stress tolerance (SERB-DST)

### **Ongoing Projects:**

- Modulation of Carbon metabolism in *Brassica rapa* by over expression of AtPAP2 gene for increasing seed yield (Funded by CSIR, New Delhi)
- Investigation of Altitudinal Adaptation of *Trifolium pratense* in their Natural Habitats by Proteomic and Microbiome Analysis (SERB, DST)

## **VI. PROFESSIONAL ACTIVITIES**

- ✓ **Organizing secretary** National Science Day – 2013 with focal theme “Genetically Modified Crops and Food Security” (sponsored by Council for Science and Technology, J and K State Government)
- ✓ **Organized Science Camp** for School children at Indian Institute of Integrative Medicine (IIIM), Srinagar – 2017 and Department of Botany, University of Kashmir, 2018.
- ✓ Member of Department Research Committee, Department of Botany, University of Kashmir
- ✓ Member of anti-ragging and discipline committee for women students at Degree College Boys, Anantnag
- ✓ Warden Rabia Basria Hostel, University of Kashmir
- ✓ Academic counsellor for postgraduate students, Department of Botany
- ✓ Teacher-in-charge Greenhouse, Department of Botany

## **VII. PROFESSIONAL ASSOCIATIONS**

- Life member of Proteomic Society of India
- Life member of Society for Plant Biochemistry and Biotechnology, New Delhi, India
- Life Member of American Society for Plant Biologists

- Member of Indian National Young Academy of Science (INYAS):
- Member of Selection Committee for New members of INYAS in the area of Biology – 2017
- Core Committee member of INYAS
- Part of panel for framing Guidelines for INYAS Members and CC Members
- Mentor for KARYA (Knowledge Augmentation through Research in Young Aspirants) program by DST-Rajasthan

### **VIII. INVITED LECTURES/RESOURCE PERSON**

- ✓ Jury member for Virtual Video Making for theme “Innovative Science Teaching during Pandemic” Competition (NSTC 2020)
- ✓ Jury member for Regional Level National Children Science Congress (NCSC) 2020-21
- ✓ My Journey as Scientist”, invited talk for “She Inspires” web series by CSIR-Central Scientific Instruments Organisation (CSIR-CSIO), 21<sup>st</sup> November, 2020.
- ✓ “Bioenergy vis a viz fossil fuels”, Zero Waste virtual workshop organised by Central University Punjab and Indian National Young Academy of Sciences, 16-14<sup>th</sup> June, 2020.
- ✓ “Basics of Immunity”, Igniting Young Minds organised by Indian Academy of Young Scientists and University of Delhi, 20<sup>th</sup> April, 2020.
- ✓ “Understanding abiotic stress tolerance in plants by proteomics”, National Frontiers of Science (NatFoS) Meeting, 2019, Samode Bagh Resort, Jaipur.
- ✓ Resource person for Molecular Taxonomy at National Training Workshop on “Plant Taxonomy: Principles and Practice” from 27-29 March, 2017, sponsored by Ministry of Environment, Forests & Climate Change, Govt. of India, New Delhi.
- ✓ “Global Food Security and Role of GM Crops”, INSA-GBM (Indian National Science Academy, General Body Meeting), 2016, NISER, Bhubaneswar, India.
- ✓ “Genetically Modified Crops: A Boon or a Bane”, Academic Staff College, Summer School Programme (2015), University of Kashmir, Srinagar.

### **IX. EDITOR:**

- ✓ Editorial Member: Phyton; International Journal of Experimental Botany

- ✓ Guest Editor: Special Issue of 'Resonance', Journal published by Indian Academy of Science.

#### **X. REVIEWER FOR SCIENTIFIC JOURNALS:**

- Environmental Pollution
- Frontiers in Plant Science
- Plant Growth Regulation
- Journal of Plant Growth Regulation
- Plant Physiology and Biochemistry
- Acta Physiologiae Plantarum
- Journal of Protein and Proteomics
- Archives of Agronomy and Soil Science
- Journal of Phytopathology

#### **XI. COURSES TEACHING AT PG DEPARTMENT OF BOTANY:**

- ✓ Cell and Molecular Biology
- ✓ Pteridophytes and Gymnosperms
- ✓ Reproductive and Developmental Plant Biology
- ✓ Plant Stress Biology
- ✓ Molecular Genetics
- ✓ Principles of Genetics
- ✓ Bioenergy

## XII. PUBLICATIONS:

1. Jan N, Ramazan S, **John R** (2021) Effect of Climate Change on the Himalayas: An overview. *Resonance*, 26 (9), 1221-1228.
2. Wani UM, Majeed ST, Raja V, Wani ZA, Jan N, Andrabi KI, **John R** (2021) Ectopic expression of a novel cold-resistance protein1 from *Brassica oleracea* promotes tolerance to chilling stress in transgenic tomato. *Scientific Reports*, 11 (1), 1-14.
3. Ramazan S, **John R** (2021) Abiotic stress responses in maize: a review. *Acta Physiologiae Plantarum*, 43 (9), 1-22.
4. Raja V, Wani UM, Wani ZA, Jan N, Kottakota C, Reddy MK, Kaul T, **John R** (2021) Pyramiding ascorbate–glutathione pathway in *Lycopersicon esculentum* confers tolerance to drought and salinity stress. *Plant Cell Reports*, 1-19.
5. Ramazan S, Bhat HA, Zargar MA, Ahmad P, **John R** (2021) Combined gas exchange characteristics, chlorophyll fluorescence and response curves as selection traits for temperature tolerance in maize genotypes. *Photosynthesis Research*, 1-13.
6. Lone WA, Majeed N, Yaqoob U, **John R** (2021) Exogenous brassinosteroid and jasmonic acid improve drought tolerance in *Brassica rapa* L. genotypes by modulating osmolytes, antioxidants and photosynthetic system. *Plant Cell Reports*, 1-13.
7. Ramazan S, Qazi HA, Dar ZA, **John R** (2021) Low temperature elicits differential biochemical and antioxidant responses in maize (*Zea mays*) genotypes with different susceptibility to low temperature stress. *Physiology and Molecular Biology of Plants*, **27**, pages 1395–1412.

8. Majeed N, Panigrahi KCS, Sukla LB, **John R**, Panigrahy M (2020) Application of carbon nanomaterials in plant biotechnology. *Materials Today Proceedings*, 30 (2), 340-345.
9. Ramazan S, **John R** (2020) Climate Change Impacts and Mitigation; Abiotic Stress Impressions and Tolerance — A Perspective from Kashmir Himalayas. *Proceedings of Indian National Science Academy*, 86 (3), 1139-1156.
10. Majeed N, Panigrahi KCS, Sukla LB, **John R**, Panigrahy M (2021) Regulatory mechanisms across networks of the circadian clock and senescence pathways. *Journal of Plant Biochemistry and Biotechnology*, **29**, 665–674.
11. Jan N, Qazi HA, Raja V, **John R** (2019) Proteomics: A tool to decipher cold tolerance. *Theoretical and Experimental Plant Physiology*, 1–31.
12. Amin S, Wani TA, Kaloo ZA, Singh S, John R, Majeed U, Shapoo GA (2018) Genetic stability using RAPD and ISSR markers in efficiently in vitro regenerated plants of *Inula royleana* DC. *Meta Gene* 18, 100-106.
13. Majeed U, Yaqoob U, Qazi HA, Ahmad S and **John R** (2018) CRISPR/Cas System as an Emerging Technology to Enhance Plant Viral Immunity. *Physiological and Molecular Plant Pathology* 103, 107-113.
14. Jan N, Wani UM, Andrabi KI and **John R** (2018). Cold Stress Modulates Osmolytes and Antioxidant System in *Calendula officinalis*. *Acta Physiologiae Plantarum*, 40:73.
15. Mir MA, **John R**, Alyemeni MN, Alam P and Ahmad P (2018) Jasmonic acid ameliorates alkaline stress by improving growth performance, ascorbate glutathione cycle and glyoxylase system in maize seedlings. *Scientific Reports*, 8 (2831).

16. Jan N, Andrabi KI and **John R** (2017) *Calendula officinalis* - An Important Medicinal Plant with Potential Biological Properties. *Proceedings of Indian National Science Academy*, 83 (4), 769-787.
17. Raja V, Majeed U, Kang H, Andrabi KI and **John R** (2017) Abiotic Stress: Interplay between ROS, Hormones and MAPKs. *Environmental and Experimental Botany*, 137, 142-157.
18. **John R**, Anjum NA, Sopory SK, Akram NA and Ashraf M (2016) Some Key Physiological and Molecular Processes of Cold Acclimation. *Biologia Plantarum*, 60(4), 603–618.
19. **John R**, Ganeshan U, Singh B N, Kaul T, Reddy MK, Sopory SK and Rajam MV (2016) Over-expression of Topoisomerase II Enhances Salt Stress Tolerance in Tobacco. *Frontiers in Plant Science*, 7, 1280.
20. Singh BN, Mudgil Y, **John R**, Acharya MM, Tripathy MK, Sopory SK, Reddy MK and Kaul T (2015) Cell cycle stage-specific differential expression of Topoisomerase I in tobacco BY-2 cells and its ectopic overexpression and knockdown unravels its crucial role in plant morphogenesis and development. *Plant Science*, 240, 182–192.
21. Ahmad P, Hashem A, Fathi Abd-Allah E, Alqarawi A, **John R**, Egamberdieva D and Gucel S (2015) Role of *Trichoderma harzianum* in mitigating NaCl stress in Indian mustard (*Brassica juncea* L) through antioxidative defense system. *Frontiers in Plant Science*, 6, 868.
22. Hashmi U, Shafqat S, Khan F, Majid M, Hussain H, Kazi A G, **John R**, Ahmad P (2015) Plant exomics: Concepts, applications and methodologies in crop improvement. *Plant signaling & behavior* 10 (1).
23. **John R**, Pandey R, Sopory S K and Rajam M V (2010) Engineering Antioxidant Enzymes for Abiotic Stress Tolerance in Plants. *Journal of Plant Biology*, 37 (3), 1–18.



24. **John R**, Ahmad P, Gadgil K and Sharma S (2009) Effect of cadmium and lead on growth, biochemical parameters and uptake in *Lemna polyrrhiza* L. *Plant Soil Environment*, 54 (6): 262–270.
25. **John R**, Ahmad P, Gadgil K and Sharma S (2009) Heavy metal toxicity: Effect on plant growth, biochemical parameters and metal accumulation by *Brassica juncea* L. *International Journal of Plant production*, 3(3): 65-76.
26. **John R**, Ahmad P, Gadgil K and Sharma S (2009) Cadmium and lead-induced changes in lipid peroxidation, antioxidative enzymes and metal accumulation in *Brassica juncea* L. at three different growth stages. *Archives of Agronomy and Soil Science*, 55(4), 395– 405.
27. Ahmad P, **R John**, Sarwat M and Umer S (2008) Responses of proline, lipid peroxidation and antioxidative enzymes in two varieties of *Pisum sativum* L. under salt stress. *International Journal of Plant production* 2(4):353-366.
28. **John R**, Ahmad P, Gadgil K and Sharma S. (2007) Response of *Lemna polyrrhiza* L. to Cd Induced Oxidative Stress. *International Journal of Environmental Biology*, 28 (2).
29. Ahmad P and **John R** (2005) Effect of salt stress on growth and biochemical parameters of *Pisum sativum* L. *Archives of Agronomy and Soil Science*, 51(6); 665-672.
30. **John R**, Gadgil K and Sharma S (2005) Resistance Mechanisms of Plants against Cadmium. *Asian Journal of Chemistry*, Vol. 17, pp, 1363-1370.

#### **Book Chapters:**

1. Qadir S, Bashir S, **John R**. (2020) Saffron—Immunity System. In Saffron-The Age-Old Panacea in a New Light. Edts. Maryam Sarwat and Sajida Sumaiya. ISBN 978-0-12-818462-2, Academic Press.

2. Qazi HA, Jan N, Ramazan S, John R (2020) Protein Modification in Plants in Response to Abiotic Stress. In: Protein Modificomics from Modifications to Clinical Perspectives, Edts. Tanveer Ali Dar and Laishram Rajendra kumar Singh. ISBN 978-0-12-811913-6, Academic press.
3. Qadir S, Ayub I, Sarwat M, **John R** (2019) Proteolytic Processes during Leaf Senescence. Senescence Signalling and Control in Plants. In: Maryam Sarwat and Narendra Tuteja (eds), Academic Press, 165-185.
4. Jan N., Qazi H.A., Ramzan S., **John R.** (2018) Developing Stress-Tolerant Plants Through In Vitro Tissue Culture: Family Brassicaceae. In: Gosal S., Wani S. (eds) John R, Raja V, Ahmad M, Jan N, Majeed U, Ahmad S, Yaqoob U, Kaul T (2017) Trehalose: Metabolism and Role in Stress Signalling in Plants. Stress Signaling in Plants: Genomics and Proteomics Perspective, Volume 2 pp 261-275.
5. Latef, A. A. H. A., Jan, S., Abd-Allah, E. F., Rashid, B., **John, R.** and Ahmad, P. (2016) Soybean under abiotic stress, in Plant-Environment Interaction: Responses and Approaches to Mitigate Stress (eds M. M. Azooz and P. Ahmad), John Wiley & Sons, Ltd, Chichester, UK. doi: 10.1002/9781119081005.ch2
6. Raja V, Ahmad Wani M. A., Wani U. M., Jan N., and **John R.** (2016) Understanding Abiotic Stress Tolerance in Plants by Proteomics Approach. Plant OMICS and Crop Breeding (eds S. M. Zargar, V. Rai). Apple Academic Press. Biotechnologies of Crop Improvement, Volume 1. Springer, Cham.

**Conferences and Oral presentations of research papers:**

1. Participated in the Brainstorming session on “Technical Workshop on Practical Considerations of Application of Genome Editing” by Department of Biotechnology and Biotech Consortium of India Limited on September 23rd, 2016 at Hotel Mercure, Hyderabad.

2. **John R** (2015) Engineering Plant Genome for Cold Tolerance. 7th Indo-Global Summit and Expo on Food & Beverages October 08-10, 2015 New Delhi, India.
3. **John R**, Gadgil K and Sharma S (2013) “Asian Congress on Biotechnology Bioprocessing for Sustainable Development” Dec 15-19, New Delhi, India
4. **John R** (2014) Cold Resistance in Plants of Himalayan Region”. National Conference on Climate Change, Environmental and Sustainable Development, 9th-10th December, New Delhi, India.
5. **John R** (2006) “Developing Stress Tolerant Tomato Transgenic by Modifying Polyamine Pathway”. International Workshop on Tomato Genomics 13-15 December, Hyderabad, India.
6. **John R** and Rehman M (2001) “In Vitro Study of Effect of Cd on *Dracena draco* L”. Proceedings of National Symposium on Biochemical Engineering and Biotechnology, IIT, Delhi.
7. **John R**, Gadgil K and Sharma S. (2002) “Phytoremediation in Removal of Heavy Metals”. Proceedings of International Conference WAPDEC, New Delhi, 11-13 Dec.
8. **John R**, Ahmad P, Gadgil K and Sharma S. (2004) “Effect of Cd and Pb on Growth and Biochemical Parameters of *L. polyrrhiza*”. Proceedings of International Conference on Emerging Technologies, Bhubaneshwar, Orissa, 22-24 Dec.

**References:**

**1. Prof. S. K. Sopory**

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