



Dr. Harisingh Gour Vishwavidyalaya (A Central University)

Title	Dr.	First/ Middle Name	Aarti	Last Name	Gupta	Photograph	
Designation		Assistant Professor (Botany)					
Affiliation		Department of Botany, Dr. Harisingh Gour Vishwavidyalaya					
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EDUCATIONAL PROFILE							
Degree		Institution				Year	Remarks
B. Sc.		SGTB Khalsa College, University of Delhi, Delhi, India.				2005	I st Division
M. Sc.		Department of Botany, University of Delhi, Delhi, India.				2007	I st Division
M. Phil.		NA				NA	NA
Ph. D.		Department of Genetics, University of Delhi South Campus (UDSC), Delhi, India.				2014	NA
CAREER PROFILE							
Organization / Institution			Designation		Duration		Role
Department of Botany, Dr. Harisingh Gour Vishwavidyalaya, Sagar (M.P.)			Assistant Professor (Botany)		Nov’ 11 th 2024- Till date		Teaching, Research (Permanent)
Department of Plant Science (Botany), Central University of Kashmir, Jammu and Kashmir			Assistant Professor (Botany)		Jul’ 4 th 2024– Nov’ 9 th 2024		Teaching, Research (Permanent)
IGCAST, Department of Plant and Soil Science, TTU, Lubbock, TX, USA			Research Scientist		Feb’ 14 th , 2023 – June 30 th 2024		Research, Teaching, Lab Management, Mentoring Ph.D. and undergraduate students

POSTECH, Pohang, South Korea	Postdoctoral Research Associate	Dec' 23 rd 2019 – Jan 6 th 2023	Research, Mentoring Ph.D. and undergraduate students
National Institute of Plant Genome Research, New Delhi, India	Research Associate III	Aug' 2019- Oct' 2019	Research Mentoring Ph.D. and undergraduate students
Institute of Plant Genetics, Polish Academy of Sciences, Poland	Post-Doctoral Fellow	June-2018- Feb' 2019	Research, Mentoring Ph.D. student
National Institute of Plant Genome Research, New Delhi, India	CSIR-Senior Research Associate (Scientific officer's pool)	Apr' 2018-June 2018	Research, Mentoring Ph.D. and undergraduate students
SERB-DST, National Institute of Plant Genome Research, New Delhi, India	SERB-National Post- Doctoral Fellow	Mar' 2016- Mar' 2018	Research, Mentoring Ph.D. and undergraduate students
National Institute of Plant Genome Research, New Delhi, India	Research Associate III	Sep' 2015-Mar' 2016	Research, Mentoring Ph.D. and undergraduate students
National Institute of Plant Genome Research, New Delhi, India	DBT-Research Associate, DBT-IISc	July 2014-June 2015	Research, Mentoring Ph.D. and undergraduate students
National Institute of Plant Genome Research, New Delhi, India	Senior Research Fellow	August 2013-July-2014	Research, Mentoring Ph.D. and undergraduate students

Areas of Interest / Specialization

My research focuses on improving plant resilience to combined stresses to support sustainable agriculture. I study how plants respond at the physiological and molecular levels, including their interactions with beneficial microbes. I use approaches like gene regulation and transcriptomics to understand these processes and explore the role of plant growth-promoting rhizobacteria (PGPRs).

Publications

1. Laza H, Bhattharai B, Mendu V, Burow M, Emendack Y, Sanchez J, **Aarti Gupta**, Abdelrahman M, Tran L-SP, Tissue D, Payton P. Peanut leaf transcriptomic dynamics reveals insights into the acclimation response to elevated carbon dioxide under semiarid conditions. *Frontiers in Plant Science* doi: 10.3389/fpls.2024.1407574. (IF = 4.1)
2. **Aarti Gupta***, Li L, Zhu C, Jia K, Miao Y, Li W, Tran L-SP (2024). Differential modulation of hormonal pathways by strigolactone and karrikin signaling. *Plant Growth Regulation* 104:1197–1205. <https://doi.org/10.1007/s10725-024-01227-w> (*Corresponding Author). (IF = 3.5)
3. **Aarti Gupta**, Watanabe Y, Ha CV, Abdelrahman M, Li W, Rahman MM, Keya SS, Nigam D, Jiao Y, Anik TR, Saha G, Kojima M, Sakakibara H, Mochida K, Tran L-SP (2024). Disruption in jasmonic acid biosynthesis influences metabolism of other hormones in *Arabidopsis*. *Journal of Plant Growth Regulation* 44:367–372. <https://doi.org/10.1007/s00344-024-11446-0> (IF = 3.9)
4. **Aarti Gupta**, Kumar M, Zhang B, Tomar M, Walia AK, Choyal P, Saini RP, Potkule J, Burritt DJ, Sheri V, Verma P, Chandran D, Tran L-SP (2024). Improvement of qualitative and quantitative traits in cotton under normal and stressed environments using genomics and biotechnological tools: A review. *Plant Science* 340:111937. <https://doi.org/10.1016/j.plantsci.2023.111937> (IF = 4.2)
5. Khalil MI, Hassan MM, Samanta SC, Chowdhury AK, Hassan MZ, Ahmed NU, Somaddar U, Ghosal S, Robin AHK, Nath UK, Mostofa MG, Burritt DJ, Ha CV, **Aarti Gupta***, Tran L-SP*, Saha G* (2024). Unraveling the genetic enigma of rice submergence tolerance: Shedding light on the role of ethylene response factor (ERF)-encoding gene *SUB1A-1*. *Plant Physiology and Biochemistry* 206:108224. <https://doi.org/10.1016/j.plaphy.2023.108224> (IF = 6.1) (*Corresponding Author)
6. Abdelrahman M, Gorafi YSA, Sulieman S, Jogaiah S, **Aarti Gupta**, Tsujimoto H, Nguyen HT, Estrella LH, Tran L-SP (2024). Wild grass-derived alleles represent a genetic architecture for the resilience of modern common wheat to stresses. *Plant Journal* 119(4):1685-1702. <https://doi.org/10.1111/tpj.16887> (IF = 6.2)
7. Rahman MM, Keya SS, Sahu A, **Aarti Gupta**, Dhingra A, Tran L-SP, Mostofa MG (2024). Acetic acid: a cheap but chief metabolic regulator for abiotic stress tolerance in plants. *Stress Biology* 4:1-17. <https://doi.org/10.1007/s44154-024-00167-9>
8. Rahman MM, Mostofa MG, Keya SS, Ghosh PK, Abdelrahman M, Anik TR, **Aarti Gupta***, Tran L-SP* (2023). Jasmonic acid priming augments antioxidant defense and photosynthesis in soybean to alleviate combined heat and drought stress effects. *Plant Physiology and Biochemistry* 206:108193. <https://doi.org/10.1016/j.plaphy.2023.108193> (*Corresponding Author). (IF = 6.1)
9. Sharma A, **Aarti Gupta***, Ramakrishnan M, Ha CV, Zheng B, Bhardwaj M, Tran L-SP* (2023). Roles of abscisic acid and auxin in plants during drought: A molecular point of view. *Plant Physiology and Biochemistry* 204:108129. <https://doi.org/10.1016/j.plaphy.2023.108129> (IF = 6.1) (*Corresponding Author)
10. Anik TR, Mostofa MG, Rahman MM, Khan MAR, Ghosh PK, Sultana S, Das AK, Hossain MS, Keya SS, Rahman MA, Jahan N, **Aarti Gupta**, Tran L-SP (2023). Zn supplementation mitigates drought effects on cotton by improving photosynthetic performance and antioxidant defense mechanisms. *Antioxidants* 12:854. <https://doi.org/10.3390/antiox12040854> (IF = 6.0)
11. Somaddar U, Mia S, Khalil MI, Sarker UK, Uddin MR, Kaysar MS, Chaki AK, Robin AHK, Hashem A, Allah EFA, Ha CV, **Aarti Gupta**, Park J-I, Tran L-SP, Saha G (2023). Effect of reproductive stage-waterlogging on the growth and yield of upland cotton (*Gossypium hirsutum*). *Plants* 12:1548. <https://doi.org/10.3390/plants12071548> (IF = 4.0)

12. **Aarti Gupta**, Bhardwaj M, Tran L-SP (2022) Integration of auxin, brassinosteroid and cytokinin in the regulation of rice yield. *Plant and Cell Physiology* 63:1848-1856. <https://doi.org/10.1093/pcp/pcac149> (IF = 4.0)
13. Nam H, **Aarti Gupta**, Nam H, Lee S, Cho HS, Park C, Park S, Park SJ, Hwang I (2022) JULGI-mediated increment in phloem transport capacity relates to fruit yield in tomato. *Plant Biotechnology Journal* 20:1533-1545. <https://doi.org/10.1111/pbi.13831> (IF = 10.1)
14. **Aarti Gupta**, Bhardwaj M, Tran L-SP (2021). The JASMONATE ZIM-DOMAIN family proteins are the important node in jasmonic acid-abscisic acid crosstalk in regulating plant response to drought. *Current Protein & Peptide Science* 22:759-766. <https://doi.org/10.2174/1389203722666211018114443> (IF = 1.9)
15. **Aarti Gupta**, Sinha R, Fernandes JL, Abdelrahman M, Burritt DJ, Tran L-SP (2020). Phytohormones regulate convergent and divergent responses between individual and combined drought and pathogen infection. *Critical Reviews in Biotechnology* 40(3):320-340. <https://doi.org/10.1080/07388551.2019.1710459> (IF = 8.1)
16. **Aarti Gupta**, Bhardwaj M, Tran L-SP (2020). Jasmonic acid at the crossroads of plant immunity and *Pseudomonas syringae* virulence. *International Journal of Molecular Sciences* 21:7482. <https://doi.org/10.3390/ijms21207482> (IF = 4.9)
17. Li W, **Aarti Gupta**, Tian H, Nguyen KH, Tran CD, Watanabe Y, Tian C, Li K, Yang Y, Guo J, Luo Y, Miao Y, Tran L-SP (2020). Different strategies of strigolactone and karrikin signals in regulating the resistance of *Arabidopsis thaliana* to water-deficit stress. *Plant Signaling & Behavior* 1789321. <https://doi.org/10.1080/15592324.2020.1789321> (IF = 2.8)
18. **Aarti Gupta**, Patil M, Qamar A, Muthappa SK (2020). ath-miR164c influences plant responses to the combined stress of drought and bacterial infection by regulating proline metabolism. *Environmental and Experimental Botany* 172:103998. <https://doi.org/10.1016/j.envexpbot.2020.103998> (IF = 4.5)
19. Abdelrahman M, Burritt DJ, **Aarti Gupta**, Tsujimoto H, Tran L-SP (2020). Wheat versus heat: Source-sink relationships and metabolome dynamics. *Journal of Experimental Botany* 71(2):543-554. <https://doi.org/10.1093/jxb/erz296> (IF = 5.6)
20. Dixit SK[#], **Aarti Gupta**[#], Fatima U, Muthappa SK (2019). *AtGBF3* confers tolerance to *Arabidopsis thaliana* against combined drought and *Pseudomonas syringae* stress. *Environmental and Experimental Botany* 168:103881. <https://doi.org/10.1016/j.envexpbot.2019.103881> ([#]Equal contribution) (IF = 4.5)
21. **Aarti Gupta**, Pandey R, Sinha R, Chowdhary A, Pal RK, Rajam MV (2019). Improvement of post-harvest fruit characteristics in tomato by fruit-specific over-expression of oat arginine decarboxylase gene. *Plant Growth Regulation* 88:61-71. <https://doi.org/10.1007/s10725-019-00488-0> (IF = 3.5)
22. **Aarti Gupta**, Muthappa SK (2017). Transcriptome changes in *Arabidopsis thaliana* infected with *Pseudomonas syringae* during drought recovery. *Scientific Reports* 7:9124. <https://doi.org/10.1038/s41598-017-09135-y> (IF = 3.8)
23. **Aarti Gupta**, Hisano H, Hojo Y, Matsuura T, Ikeda Y, Mori IC, Muthappa SK (2017). Global profiling of phytohormone dynamics during combined drought and pathogen stress in *Arabidopsis thaliana* reveals ABA and JA as major regulators. *Scientific Reports* 7:4017. <https://doi.org/10.1038/s41598-017-03907-2> (IF = 3.8)
24. Ramegowda V, Gill U, Sivalingam PN, **Aarti Gupta**, Gupta C, Govind G, Nataraja KN, Pereira A, Udayakumar M, Mysore K, Muthappa SK (2017). GBF3 transcription factor imparts drought tolerance in *Arabidopsis thaliana*. *Scientific Reports* 7:9148. <https://doi.org/10.1038/s41598-017-09542-1> (IF = 3.8)

25. Choudhary A[#], **Aarti Gupta**[#], Ramegowda V, Muthappa SK (2017). Transcriptomic changes under combined drought and nonhost bacteria reveal novel and robust defenses in *Arabidopsis thaliana*. *Environmental and Experimental Botany* 139:152-164. <https://doi.org/10.1016/j.envexpbot.2017.05.005> (#Equal contribution) (IF = 4.5)
26. Sinha R, **Aarti Gupta**, Muthappa SK (2017). Concurrent drought stress and vascular pathogen infection induce common and distinct transcriptomic responses in chickpea. *Frontiers in Plant Science* 8:333. <https://doi.org/10.3389/fpls.2017.00333> (IF = 4.1)
27. **Aarti Gupta**, Sarkar A, Muthappa SK (2016). Global transcriptional analysis reveals unique and shared responses in *Arabidopsis thaliana* exposed to combined drought and pathogen stress. *Frontiers in Plant Science* 7:686. <https://doi.org/10.3389/fpls.2016.00686> (IF = 4.1)
28. **Aarti Gupta**, Dixit SK, Muthappa SK (2016). Drought stress predominantly endures *Arabidopsis thaliana* to *Pseudomonas syringae* infection. *Frontiers in Plant Science* 7:808. <https://doi.org/10.3389/fpls.2016.00808> (IF = 4.1)
29. Sinha R, **Aarti Gupta**, Muthappa SK (2016). Understanding the impact of drought on foliar and xylem invading bacterial pathogen stress in chickpea. *Frontiers in Plant Science* 7:902. <https://doi.org/10.3389/fpls.2016.00902> (IF = 4.1)
30. Pandey R[#], **Aarti Gupta**[#], Chowdhary A, Pal RK, Rajam MV (2015). Over-expression of mouse *ornithine decarboxylase* gene under the control of fruit-specific promoter enhances fruit quality in tomato. *Plant Molecular Biology* 87:249-260. <https://doi.org/10.1007/s11103-014-0273-y> (# Equal contribution) (IF = 3.9)
31. Madhulatha P[#], **Aarti Gupta**[#], Gupta S, Kumar A, Pal RK, Rajam MV (2014). Fruit-specific over-expression of human *S-adenosylmethionine decarboxylase* gene results in polyamine accumulation and affects diverse aspects of tomato fruit development and quality. *Journal of Plant Biochemistry and Biotechnology* 23:151. <https://doi.org/10.1007/s13562-013-0194-x> (# Equal contribution) (IF = 1.6)
32. **Aarti Gupta**, Pal RK, Rajam MV (2013). Delayed ripening and improved fruit processing quality in tomato by RNAi-mediated silencing of three homologs of *l-aminocyclopropane-l-carboxylate synthase* gene. *Journal of Plant Physiology* 170:987-995. <https://doi.org/10.1016/j.jplph.2013.02.003> (IF = 4)

Book chapters

1. **Aarti Gupta**, Muthappa S-K (2017). Concurrent stresses are perceived as new state of stress by the plants: Overview of impact of abiotic and biotic stress combinations. In book "Plant tolerance to individual and concurrent stresses", Springer India, Pages 1-15, ISBN:978-81-322-3706. doi="10.1007/978-81-322-3706-8_1.
2. Dixit SK, **Aarti Gupta**, Muthappa S-K (2018). Current understanding of the regulation of GBF3 under abiotic and biotic stresses and its potential role in combined stress tolerance. In book "Metabolic adaptations in plants during abiotic stress", Taylor & Francis (CRC Press), USA, Chapter 23, Pages 6, ebook ISBN 9781315165349.
3. **Aarti Gupta**, Kamalachandran D, Longchar B, Muthappa S-K (2018). Impact of soil moisture regimes on wilt disease in tomato: current understanding. In the book "Biochemical, physiological and molecular avenues for combating abiotic stress tolerance in plants", Elsevier (Academic Press), Pages 73-82, ISBN 9780128130667.

Research Projects (Major Grants/Research Collaboration)

1. **Co-PI: United Soybean Board: SmithBucklin Corporation, USA (106,671 USD), 2024-2025**
2. **Co-PI: The Texas Tech Support Committee and Cotton Incorporated, Texas, USA (25000 USD), 2023-2024**
3. Completed project as **N-PDF** fellow, Funding Agency: Scientific Engineering and Research Board, 2016-2018

Research Collaborations

- IGCAS, Department of Plant and Soil Science, TTU, Lubbock, TX, USA
- Henan University, China
- RIKEN, Japan
- Patuakhali Science and Technology University Dumki, Bangladesh

Awards

1. **Outstanding Reviewer Award (2023), International Journal of Molecular Sciences**
2. **JSPS Invitational Fellowships for Research in Japan (JSPS) (2020), Japan (not availed)**
3. **Young Researcher fund (2018)** from the Institute of Plant Genetics, Polish Academy of Sciences, Poznan, Poland to pursue a training program in metabolomics
4. **CSIR-Senior Research Associateship (SRA) under the scientist pool scheme (2018).** Received fellowship awarded by Council for Scientific and Industrial Research, Government of India
5. **Best poster award (2018) on *Dissection of miRNA regulating unique tolerance mechanisms under concurrent drought and bacterial pathogen stress in Arabidopsis through MIR VIGS*** from SERB-American Chemical Society (ACS) held online poster competition, India.
6. **International travel support (2017)** from the Science and Engineering Research Board (SERB), Government of India, to attend 2nd Agriculture and climate change conference held at Sitges, Spain, 26th to 28th March 2017
7. **National Postdoctoral Fellowship (NPDF), (2016), SERB-Department of Science and Technology (DST), Government of India**

- 8. Department of Biotechnology (DBT), Government of India-Research Associateship** (2014) for pursuing an early research career in India, sponsored by DBT-IISc, Bangalore
- 9. 2009- CSIR-Senior Research Fellowship** in Life Sciences, for pursuing Ph. D. in India.
- 10. 2007- CSIR-Junior Research Fellowship** in Life Sciences, for pursuing Ph. D. in India.

Scientific Services

Editor

- Editorial Board Member: BMC Plant Biology (2023-present)
- Editorial Board Member: Scientific Reports (2024-present)
- Editorial Board Member: Journal of Plant Growth Regulation (2024-present)
- Editorial Board Member: Peer J (2024-present)
- Review editor at Frontiers in Plant Science (2021-present)
- Guest Associate Editor at Frontiers in Plant Science (2022-2023)

Reviewer

Plant and Cell Physiology, Physiologia Plantarum, International Journal of Molecular Sciences, Experimental and Environmental Botany, Scientific Reports, Plant Science, Frontiers in Plant Science, Environmental Pollution, Plant Physiology and Biochemistry, Indian Journal of Plant Physiology, Plant Molecular Biology Reporter, Sustainability, Plants, Plant Growth Regulation, Planta, Seed, Vegetos

Compered at the IGCAST Symposium, Texas Tech University, Texas, USA, Nov' 2023