Tushar **Khare,** Ph.D.

60/1, Gurudwara Road, Bijalinagar, Chinchwad, Pune,
Maharashtra, India 411 033

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Prudent and disciplined researcher with a doctoral degree, seeking to continue the research in the field of biological science. Adaptive and fast learning person with particular interest in collaborating with people from different fields of life sciences to develop new skills and solve new challenges.

Education

2021 **Ph.D. in Environmental Science**
Department of Environmental Science, S. P. Pune University, Pune, India

2012 **M.Sc. in Biotechnology**
Department of Biotechnology, Modern College, S. P. Pune University, Pune, India

2010 **B.Sc. in Biotechnology**
Department of Biotechnology, Modern College, S. P. Pune University, Pune, India

Ph.D. Thesis

Title **Studies on rice responses and adaptive strategies to sodium toxicity**

Supervisor **Dr. Vinay Kumar**
Department of Environmental Science, S. P. Pune University, Pune, India

Declaration **15th November 2021**

The study was conducted to decipher the effects of excess sodium during the reproductive phase of the Indica rice using different agronomic, physiological and biochemical parameters. The milk stage of grain filling was found to be the most responsive to the sodium stress. Further, the sodium responsive microRNAs were identified from the immature grains at milk stage using small RNA sequencing. The in silico sequencing analysis revelaed the osa-miR1861e as top sodium responsive microRNA. The stress responsive targets of osa-miR1861e namely, OsGST and OsPILS7b were confirmed using RLM RACE and further functionally validated via raising microRNA overexpressing transgenic rice.

Articles

Cumulative Impact Factor: **136.458**[*]

	Article published	IF[*]
1.	Verma, C.R., Kumkar, P., **Khare, T.**, Pise, M., Kalous, L. and Dahanukar, N. (2022) *Contracaecum* nematode parasites in hillstream loaches of the Western Ghats, India. Journal of Fish Diseases. **doi**:10.1111/jfd.13711	**2.580**
2.	Kumkar, P., Pise, M., Verma, C.R., **Khare, T.**[#], Petrtýl, M. and Kalous, L. (2022) Micro-contaminant, but immense impact: Source and influence of diethyl phthalate plasticizer on bottom-dwelling fishes. Chemosphere, 306, 135563. **doi:**10.1016/j.chemosphere.2022.135563	**8.943**
3.	Tiwari, P., **Khare, T.**, Shriram, V., Bae, H., & Kumar, V. (2021). Plant synthetic biology for producing potent phyto-antimicrobials to combat antimicrobial resistance. Biotechnol Adv, 48, 107729. **doi:** 10.1016/j.biotechadv.2021.107729	**17.681**
4.	Tan, P., Du, X., Shang, Y., Zhu, K., Joshi, S., Kaur, K., **Khare, T.,** & Kumar, V. (2021) Ion transporters and their exploration for conferring abiotic stress tolerance in plants. Plant Growth Regul, 96, 1-23. **doi:** 10.1007/s10725-021-00762-0	**3.242**
5.	Jamla, M., Patil, S., Joshi, S., **Khare, T.** & Kumar, V. (2021). MicroRNAs and their exploration for developing heavy metal-tolerant plants. J Plant Growth Regul. **doi**: 10.1007/s00344-021-10476-2	**4.640**
6.	**Khare, T.**, Mahalunkar, S., Shriram, V., Gosavi, S., & Kumar, V. (2021). Embelin-loaded chitosan gold nanoparticles interact synergistically with ciprofloxacin by inhibiting efflux pumps in multidrug-resistant *Pseudomonas aeruginosa* and *Escherichia coli*. Environ Res, 199, 111321. **doi:** 10.1016/j.envres.2021.111321	**8.431**
7.	**Khare, T.,** Anand, U., Dey, A., Assaraf, G., Chen, Z. S., Liu, Z., & Kumar, V. (2021). Exploring phytochemicals for combating antibiotic resistance in microbial pathogens. Front Pharmacol, 12, 720726. **doi**: 10.3389/fphar.2021.720726	**5.988**
8.	Zhou, X., Joshi, S., **Khare, T.**, Patil, S., Shang, J., & Kumar, V. (2021). Nitric oxide, crosstalk with stress regulators and plant abiotic stress tolerance. Plant Cell Rep, 40, 1395-1414. **doi:** 10.1007/s00299-021-02705-5	**4.964**
9.	**Khare, T.**, Dange, D., Jadhav, A., Shriram, V., Gosavi, S., & Kumar, V. (2021). Nano-Boehmite induced oxidative and nitrosative stress responses in *Vigna radiata* L. J Plant Growth Regul. **doi**: 10.1007/s00344-021-10303-8	**4.640**
10.	Zhou, X., Joshi, S., Patil, S., **Khare, T.**, & Kumar, V. (2021). Reactive oxygen, nitrogen, carbonyl and sulfur species and their roles in plant abiotic stress responses and tolerance. J Plant Growth Regul. **doi**: 10.1007/s00344-020-10294-y	**4.640**
11.	**Khare, T.**, Srivastava, A. K., Suprasanna, P., & Kumar, V. (2020). Individual and additive stress Impacts of Na^+ and Cl^- on proline metabolism and nitrosative responses in rice. Plant Physiol Biochem, 152, 44-52. **doi**: 10.1016/j.plaphy.2020.04.028	**5.437**
12.	Polash, S. A., **Khare, T.,** Kumar, V., & Shukla, R. (2021). Prospects of exploring the metal–organic framework for combating antimicrobial resistance. ACS Appl Bio Mater, 4, 8060–8079. **doi:** 10.1021/acsabm.1c00832	-
13.	**Khare, T.**, Joshi, S., Kaur, K., Srivastav, A., Shriram, V., Srivastava, A. K., Suprasanna, P., & Kumar, V. (2021). Genome-wide *in silico* identification and characterization of sodium-proton (Na^+/H^+) antiporters in Indica rice. Plant Gene, 26, 100280. **doi**: 10.1016/j.plgene.2021.100280	-

14.	Jamla, M., **Khare, T.**, Joshi, S., Patil, S., Penna, S., & Kumar, V. (2021). Omics Approaches for Understanding Heavy Metal Responses and Tolerance in Plants. Current Plant Biol, 27, 100213. **doi:** 10.1016/j.cpb.2021.100213	-
15.	Wani, S. H., Kumar, V., **Khare, T.**, Guddimalli, R., Parveda, M., Solymosi, K., Suprasanna, P., & Kishor, P. K. (2020). Engineering salinity tolerance in plants: progress and prospects. Planta, 251, 1-29. **doi**: 10.1007/s00425-020-03366-6	**4.540**
16.	Shaikh, S., Shriram, V., **Khare, T.**, & Kumar, V. (2020). Biotic elicitors enhance diosgenin production in *Helicteres isora* L. suspension cultures via up-regulation of CAS and HMGR genes. Physiol Mol Biol Plant, 26, 593-604. **doi:** 10.1007/s12298-020-00774-6	**3.023**
17.	Nanekar, V., Shriram, V., **Khare, T.**, & Kumar, V. (2020). Nrf2/HO-1 Mediated Antioxidant Activities, Cytotoxicity Analysis and LCESI/MS Profiling of *Eulophia nuda* L. Natur Prod J, 10, 69-79. **doi**: 10.2174/2210315509666190215101646	-
18.	Zhou, X., **Khare, T.**, & Kumar, V. (2020). Recent trends and advances in identification and functional characterization of plant miRNAs. Acta Physiol Plant 42, 25. **doi**: 10.1007/s11738-020-3013-8	**2.736**
19.	Wani, S. H., Kumar, V., **Khare, T.**, Tripathi, P., Shah, T., Ramakrishna, C., Aglawe, S., & Mangrauthia, S. K. (2020). miRNA applications for engineering abiotic stress tolerance in plants. Biologia, 75, 1063–1081. **doi**: 10.2478/s11756-019-00397-7	**1.653**
20.	Yu, Z., Tang, J., **Khare, T.**, & Kumar, V. (2020). The alarming antimicrobial resistance in ESKAPEE pathogens: Can essential oils come to the rescue? Fitoterapia, 140, 104433. **doi**: 10.1016/j.fitote.2019.104433	**3.204**
21.	Yang, B., Tang, J., Yu, Z., **Khare, T.**, Srivastav, A., Datir, S., & Kumar, V. (2019). Light Stress Responses and Prospects for Engineering Light Stress Tolerance in Crop Plants. J Plant Growth Regul, 38, 1489-1506. **doi**: 10.1007/s00344-019-09951-8	**4.640**
22.	Kumar, V., Shriram, V., Bhagat, R., **Khare, T.**, Kapse, S., & Kadoo, N. (2019). Phytochemical profile, anti-oxidant, anti-inflammatory, and anti-proliferative activities of *Pogostemon deccanensis* essential oils. 3 Biotech, 9, 31. **doi**: 10.1007/s13205-018-1560-0	**2.893**
23.	Xu, J., Hou, Q. M., **Khare, T.**, Verma, S. K., & Kumar, V. (2018). Exploring miRNAs for developing climate-resilient crops: A perspective review. Sci Total Environ, 653, 91-104. **doi**: 10.1016/j.scitotenv.2018.10.340	**10.753**
24.	Kumar, V., **Khare, T.**, Sharma, M., & Wani, S. H. (2018). Engineering Crops for the Future: A Phosphoproteomics Approach. Curr Prot Pept Sci, 19, 413-426. **doi**: 10.2174/1389203718666170209152222	**3.118**
25.	Shriram, V., **Khare, T.**, Bhagwat, R., Shukla, R., & Kumar, V. (2018). Inhibiting bacterial drug efflux pumps via phyto-therapeutics to combat threatening antimicrobial resistance. Front Microbiol, 9, 2990. **doi**: 10.3389/fmicb.2018.02990	**6.064**
26.	Kumar, V., **Khare, T.**, Shriram, V., & Wani, S. H. (2018). Plant small RNAs: the essential epigenetic regulators of gene expression for salt-stress responses and tolerance. Plant Cell Rep, 37, 61-75. **doi**: 10.1007/s00299-017-2210-4	**4.964**
27.	Kumar, V., & **Khare, T.** (2016). Differential growth and yield responses of salt-tolerant and susceptible rice cultivars to individual (Na^+ and Cl^-) and additive stress effects of NaCl. Acta Physiol Plant, 38, 170. **doi**: 10.1007/s11738-016-2191-x	**2.736**
28.	Shriram, V., Kumar, V., Devarumath, R. M., **Khare, T.**, & Wani, S. H. (2016). MicroRNAs as potential targets for abiotic stress tolerance in plants. Front Plant Sci, 7, 817. **doi**: 10.3389/fpls.2016.00817	**6.627**
29.	**Khare, T.**, Kumar, V., & Kishor, P. K. (2015). Na^+ and Cl^- ions show additive effects under NaCl stress on induction of oxidative stress and the responsive antioxidative defense in rice. Protoplasma, 252, 1149-1165. **doi**: 10.1007/s00709-014-0749-2	**3.186**

30.	Kumar, V., & **Khare, T.** (2015). Individual and additive effects of Na^+ and Cl^- ions on rice under salinity stress. Archives of Agronomy and Soil Science, 61, 381-395. **doi**: 10.1080/03650340.2014.936400	2.242

#: corresponding author
***: 2021 Impact Factor by Journal Citation Reports® (Clarivate Analytics)**
https://scholar.google.com/citations?user=-lF7qfwAAAAJ&hl=en

Book chapters

	Book chapters published in peer reviewed books
1.	Kumar, V., **Khare, T.**, Srivastav, A., Surekha, C., Shriram, V., & Wani, S. H. (2019). Oxidative Stress and Leaf Senescence: Important Insights. In Senescence Signalling and Control in Plants (pp. 139-163). Academic Press. **doi**: 10.1016/B978-0-12-813187-9.00009-3
2.	Kumar, V., Datir, S., **Khare, T.**, & Shriram, V. (2019). Advances in Biotechnological Tools: Improving Abiotic Stress Tolerance in Rice. In Advances in Rice Research for Abiotic Stress Tolerance (pp. 615-632). Woodhead Publishing. **doi**: 10.1016/B978-0-12-814332-2.00030-7
3.	Kumar, V., **Khare, T.**, Shaikh, S., & Wani, S.H. (2018). Compatible solutes and osmotic stress tolerance in plants. In Metabolic Adaptations in Plants During Abiotic Stress (pp. 235-245). CRC Press
4.	Srivastav, A., **Khare, T.**, & Kumar, V. (2018). Systems Biology Approach for Elucidation of Plant Responses to Salinity Stress. In Salinity Responses and Tolerance in Plants, Volume 2 (pp. 307-326). Springer, Cham. **doi**: 10.1007/978-3-319-90318-7_13
5.	Kumar, V., Sharma, M., **Khare, T.**, & Wani, S. H. (2018). Impact of Nanoparticles on Oxidative Stress and Responsive Antioxidative Defense in Plants. In Nanomaterials in Plants, Algae, and Microorganisms (pp. 393-406). Academic Press. **doi**: 10.1016/B978-0-12-811487-2.00017-7
6.	**Khare, T.**, Shriram, V., & Kumar, V. (2018). RNAi Technology: The Role in Development of Abiotic Stress-Tolerant Crops. In Biochemical, Physiological and Molecular Avenues for Combating Abiotic Stress Tolerance in Plants (pp. 117-133). **doi**: 10.1016/B978-0-12-813066-7.00008-5
7.	**Khare, T.**, Srivastav, A., Shaikh, S., & Kumar, V. (2018). Polyamines and Their Metabolic Engineering for Plant Salinity Stress Tolerance. In Salinity Responses and Tolerance in Plants, Volume 1 (pp. 339-358). Springer, Cham. **doi**: 10.1007/978-3-319-75671-4_13
8.	**Khare, T.**, & Kumar, V. (2018). Potent Avenues for Conferring Salinity Tolerance in Rice. In Rice Science: Biotechnological and Molecular Advancements (pp. 29-52). Apple Academic Press
9.	Kumar, V., **Khare, T.**, Arya, S., Shriram, V., & Wani, S. H. (2017). Effects of toxic gases, ozone, carbon dioxide, and wastes on plant secondary metabolism. In Medicinal Plants and Environmental Challenges (pp. 81-96). Springer, Cham. **doi**: 10.1007/978-3-319-68717-9_5
10.	Kumar, V., **Khare, T.**, Sharma, M., & Wani, S. H. (2017). ROS-induced signaling and gene expression in crops under salinity stress. In Reactive Oxygen Species and Antioxidant Systems in Plants: Role and Regulation under Abiotic Stress (pp. 159-184). Springer, Singapore. **doi**: 10.1007/978-981-10-5254-57
11.	**Khare, T.**, Srivastav, A., & Kumar, V. (2020). Calcium/Calmodulin activated protein kinases in stress signaling in plants. In Protein Kinases and Stress Signaling in Plants: Functional Genomic Perspective (pp. 266-280). John Wiley & Sons
12.	Oak, O. & **Khare, T.** (2022). Nanoparticle Functionalization: Approaches and Applications. In Nano-Strategies for Addressing Antimicrobial Resistance (pp. xxx-xxx). Springer, Cham

Citations

	Total citations	h-index	i10-index
Google scholar	1354	18	28
Web of Science ID: P-1647-2017	743	13	

Editorial/Reviewer role

Editor for

Frontiers in Plant Sciences [Review Editor]
Section: Plant Abiotic Stress

Frontiers in Genetics [Review Editor]
Section: Plant Genomics

Frontiers in Pharmacology [Associate Editor]
Section: Experimental Pharmacology and Drug Discovery

Reviewed Manuscripts for

Archives of Agronomy and Soil Sciences
Frontiers in Agronomy
Journal of Plant Growth Regulation
Plant Gene
Frontiers in Plant Sciences
Physiologia Plantarum
Heliyon
Frontiers in Microbiology
PLOS One
Frontiers in Pharmacology
Biocatalysis and Agricultural Biotechnology
Frontiers in Cellular and Infectious Microbiology

Conferences/Seminars/Workshops

- Participated in **Hands on Training Programme** by ATG lab Pune. (Hands on Biotechnology workshop entitled "**Polymerase Chain Reaction and DNA sequence analysis for Bacterial identification by 16s rRNA and rpoB gene**")
- Participated in **National Conference** on Recent Trends In Life Science at Annasahebh Magar Mahavidyalaya, Pune.
- Participated in "BIOZONE" (2011); **Hands-on Training Programme** by Chromus Biotech, Bangalore. (Hands on training in "Advanced Technique in Biotechnology"; including techniques **mRNA isolation, Gene cloning, DNA sequencing-chromatogram analysis, RTPCR**)
- Participated in "BIOZONE" (2012); **Hands-on Training Programme** by Chromus Biotech, Bangalore. (Hands on training in "Advanced Technique in Biotechnology"; including techniques **In vitro transcription, SNP Detection, GMO Detection, IgG purification**)
- Participated and Presented Poster in **National Seminar of Plant Physiology** held at

Acharya N. G. Ranga Agricultural University, Hyderabad, India (Dec. 12-14, 2012).

- Completed two days intensive **workshop on Mass Spectrometry** with Hands on Session/Theory Session, jointly organized by Bio-Analytical Tech. and Venture Center, Pune, India (March 8-9, 2013).
- Participated and Presented Poster in **International Conference on Advances in Biotechnology and Bioinformatics**, ICABB-2013 held at Hotel Le Meridian, Pune, India (Nov. 25-27, 2013).
- Participated and Presented Poster in **7th International Conference on Molecular Signaling** at National Centre for Cell Science, Pune, India (Jan. 23-25, 2019).
- Participated and successfully completed **Hands-on training in Chemo-informatics and computer aided drug designing**, at RASA Life Sciences Informatics, Pune.
- Successfully completed the **Journal Citation Reports (JCR) Certification series** July 2021, organized by Clarivate analytics, Web of Science.
- Successfully completed the three-part series of the **Web of Science Certification Program** 2022 held in January 2022.
- Successfully completed the hands-on workshop on **R for Omics Data Analysis**, July 2022, organized by Dept. of Statistics and Dept. of Biotechnology, S. P. Pune University.

Internship

Completed **one month Internship Program** at **National Institute for Basic Biology (NIBB), Okazaki, Aichi, Japan.**

Tenure of internship	:	**5th November 2012** to **4th December 2012**
Name of the Supervisor	:	**Prof. Jun Minagawa**
Place of Work	:	Division of Environmental Photo-biology
Title of the work	:	Analysis of LHCSR3 expression and Non-Photochemical Quenching in *Chlamydomonas reinhardtii* C-13, under different culture conditions.

Work Experience

2012-2015 Worked as a **Project Assistant** on a project entitled **"Investigating the individual roles and relative importance of Na^+ and Cl^- in NaCl-induced salt stress and in the activation of antioxidant machinery in-response"**

Funding Agency: DST-SERB (Sanction No. SR/FT/LS-93/2011)
(Fast Track scheme for Young Scientists awarded to Dr. Vinay Kumar)

Principal Investigator: Dr. Vinay Kumar

2016-2017 Worked as **Assistant Professor** at Department of biotechnology, P. E. Society's Modern College of Arts, Science and Commerce, Ganeshkhind, Pune. (*Affiliated to University of Pune*)

2017-2021 Worked as **Senior Research Fellow** (SRF) on a project entitled **"Identification of novel and conserved sodium-responsive miRNAs and their target genes modulating salinity stress during reproductive phase in rice cultivars"**

Funding Agency: DST-SERB (Sanction No. EMR/2016/003896)
(Extra mural research project grant sanctioned to Dr. Vinay Kumar)

Principal Investigator: Dr. Vinay Kumar

Language proficiencies

English	**Proficient on English language** IELTS overall band score : 7.5 (Listening: 7.5, Reading: 8.0, Writing: 7.0, Speaking: 7.0) CEFR Level: C1 [Test Report Form No.: 15IN018797KHAT100A (***Score expired***)]
Japanese	Completed certificate course in Japanese from S.P. Pune University
Marathi	Mother Tongue
Hindi	National Language

Personal Information

Date of Birth	**13th November 1989**
Place of Birth	Chinchwad, Pune, India
Nationality	Indian

Dr. Tushar Khare
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