

PERSONAL PROFILE



1. Name of the Teacher : **Dr. Dhanawantari L. Singha**
2. Department : Department of Botany
3. Designation : Assistant Professor
4. Email id :ldhanawantaridevi@rtuassam.ac.in
5. Contact no. : 7002856174
6. Teaching Experience : (up to 31st December, 2023)

Class	Teaching Experience (years)	Topics
UG	5 months	Plant Physiology, Genetics
PG	5 months	Molecular Biology and Biotechnology
PhD Course work		

7. Reseach Experience :
 - a. Junior Research Fellow, 2011 to 2014, Department of Agricultural Biotechnology, AAU, Jorhat, Assam
 - b. Senior Research Fellow from 2016 to 2018, Department of Agricultural Biotechnology, AAU, Jorhat, Assam
 - c. CSIR-Research Associate, 2018 to 2019, Department of Agricultural Biotechnology, AAU, Jorhat, Assam
 - d. National Post Doctoral Fellow, 2019 to 2021, at Biotechnology Group, BSTD, CSIR-NEIST, Jorhat, Assam
8. National & State level competitive examination cleared
 - a. CSIR NET 2016, 51 Ranking in Lectureship
 - b. ICAR NET 2014
 - c. SLET 2013
 - d. GATE 2012
9. Research area of interest : Plant molecular biology; Plant genetic engineering; CRISPR/Cas Genome editing; Aromatic plant secondary metabolism.
10. Google Scholar ID : <https://dhanawantari.scholar.google.com/>
11. Vidwan ID : 463266
12. Academic activities :

a. *Seminar/Conference attended:*

Title of the paper/poster	Name of the seminar/conference	Date and Venue	Organized by	Sponsor (s)
1. Development of abiotic stress tolerant North eastern rice varieties	14th Young Investigator Meet 2022	4-12th May 2022, Online	DBT India Bioscience	DBT, India Bioscience, DST
2. Micropropagation of Withania somnifera	A national conference on current scenario in microbial biotechnology	March 2010, K.S. Rangasamy College of	Department of Biotechnology	Department of Biotechnology

		Technology, Tamil Nadu		
3. Model development on renewable resources for energy generation	Trends in renewable energy sources, application & climate change	Sathyabama University, Chennai during July, 2010	Ministry of Earth Science (Govt. Of India), New Delhi	Ministry of Earth Science (Govt. Of India), New Delhi
4. Comparison between the 3D structure of rice and pea PDH47 protein	Annual Pulse & Cassava Network Meeting	AAU, Jorhat, 7th - 9th, December, 2011	DBT	DBT
5. Development and characterization of drought stress tolerant NE rice	4th International Science Congress on the theme Global Research: Enhancement, Reforms and Commercialization,	December 8-9, 2013, Pacific University	4th International Science Congress	Pacific University, Rajasthan
6. Development and characterization of drought stress tolerant NE rice by manipulating PDH47 gene	International Symposium on Plant Biotechnology for Crop Improvement	20-21 January, 2017, IIT, Guwahati	DBT	IIT, Guwahati in collaboration with Gifu University
7. Invitro regeneration of Withania somnifera	7th International Science Congress on the theme Widespread Research: Strengthening Nations and Spreading Happiness	December 8-9, 2017, College of Science and Technology, Bhutan	International Science Congress	College of Science and Technology, Bhutan
8. Tissue specific genome editing in rice	International Conference on Engineering Sciences and Technologies for Environmental Care	Feb 20-22, 2020, CSIR-NEIST, Jorhat, Assam,	CSIR-NEIST	CSIR-NEIST
9. CRSIPR/Cas12a specific genome editing in rice	42nd Annual Meeting of PTCA(I) & International Symposium & International Symposium on "Advances in Plant Biotechnology and Genome Editing" (APBGE-2021)	April 8-10, Ranchi	ICAR, Indian Institute of Agricultural Biotechnology	ICAR, Indian Institute of Agricultural Biotechnology
10. Invitro regeneration inherent potential of Withania somnifera in different media	Bioresource Utilization special emphasis on ethnic population of North east India.	GC college	Department of Botany, GC College	DBT

b. *Workshops attended:*

Name of the Workshop	Date	Venue	Organized by	Sponsor
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1. DBT –AAU centre Workshop –I: Current progress and future strategy of the DBT – AAU centre for Agricultural Biotechnology	26th -28th February, 2012.	DBT –AAU centre, Assam Agriculture University	Assam Agriculture University	DBT
2. DBT –AAU centre Workshop –II: Current progress and future strategy of the DBT – AAU centre for Agricultural Biotechnology, organised by	26th -28th September, 2012.	DBT –AAU centre, Assam Agril. University, Jorhat	Assam Agriculture University	DBT
3. North East life science entrepreneurship	March 2012.	Polo Tower, Shillong,	ABLE India	DBT
4. 20th ADNAT Convention on "CRISPR/Cas9: robust tool for genome editing"	19-25 February, 2017.	KIIT University, Bhubaneswar	KIIT University, Bhubaneswar	DBT
5. AICTE sponsored short term course on "Tools for bioresource conservation"	July, 2011	Department of Biotechnology, at IIT Guwahati	Department of Biotechnology, at IIT Guwahati	DBT
6. Hands on workshop on Proteomics 2016	20-21 January, 2016.	Bioinformatics Centre, IASST, Guwahati	Bioinformatics Centre, IASST, Guwahati	DST

c. Details of publications in **UGC recognized/Peer reviewed/Indexed journals**:

[Name of author (s), Title of Research Paper, Name of Journal (Name of Publisher) Volume (issue), Page No., Year of publication, DOI (if available)]

1. **Singha DL**, Yogita NS, Debajit D, Naimisha C, Monica C, Jitendra M & Chikkaputtaiah C*. 2022. Harnessing tissue-specific genome editing in plants through CRISPR/Cas system: Current state & future prospects. **Planta**. 255: 28. <https://doi.org/10.1007/s00425-021-03811-0>.
2. **Singha DL**, Tuteja N, Dimple B and Singh S*. 2017. Heterologous expression of PDH47 confers drought tolerance in indica rice. **Plant Cell Tissue Organ Culture**. 130: 577–589. <https://doi.org/10.1007/s11240-017-1248-x>.
3. **Singha DL**, Maharana J, Panda D, Dehury B, Modi MK & Singh S*. 2020. Understanding the thermal response of rice eukaryotic transcription factor eIF4A1 towards dynamic temperature stress: Insights from expression profiling and molecular dynamics simulation. *Journal of Biomolecular Structure and Dynamics*. 39(7): 2575-2584. doi: 10.1080/07391102.2020.175129.
4. **Singha DL**, Sarma S & Singh S. 2020. Understanding the mode of regulation of proline biosynthesis for drought tolerance in transgenic rice overexpressing PDH47 gene. *Indian Journal of Biotechnology*. 19(2): 73-81. <http://nopr.niscair.res.in/handle/123456789/55657>.
5. Debbarma J, Saikia B, **Singha DL**, Das D, Keot AK, Maharana J, Velmurugan N, Arunkumar P, Reddy PS, Chikkaputtaiah C. 2023. CRISPR/Cas9 mediated mutation in XSP10 and SISAMT genes impart genetic tolerance to Fusarium wilt disease of to-mato (*Solanum lycopersicum* L.). *Genes* 2022, 12, x. <https://doi.org/10.3390>.
6. Debajit Das, **Singha DL**, Ricky Raj Paswan, Naimisha Chowdhury, Monica Sharma, Palakolanu Sudhakar Reddy, Channakeshavaiah Chikkaputtaiah*. 2022. Recent advancements in CRISPR/Cas technology for accelerated crop improvement. *Planta*. 255:109. <https://doi.org/10.1007/s00425-022-03894-3>.

7. Debbarma J, Saikia B, **Singha DL**, Maharana J, Velmurugan N, Dekaboruah H, Arunkumar KP & Chikkaputtaiah C. 2021. XSP10 and SISAMT, Fusarium wilt disease responsive genes of tomato (*Solanum lycopersicum* L.) express tissue specifically and interact with each other at cytoplasm in vivo. *Physiol Mol Biol Plants*. 27(7): 1559-1575. doi: 10.1007/s12298-021-01025-y.
8. Saikia B, Debbarma J, Maharana J, **Singha DL**, Velmurugan N, Dekaboruah HP, Arunkumar KP & Chikkaputtaiah C*. 2020. SIHyPRP1 and DEA1, the multiple stress responsive eightcysteine motif family genes of tomato (*Solanum lycopersicum* L.) are expressed tissue specifically, localize and interact at cytoplasm and plasma membrane in vivo. *Physiology and Molecular Biology of Plants*. Springer Nature Publishers. 26(5): 857-869. <https://doi.org/10.1007/s12298-020-00913-z>.
9. Johny D, Sarki YN, Saikia B, Boruah HPD, **Singha DL*** & Chikkaputtaiah C*. 2019. Ethylene Response Factor (ERF) Family Proteins in Abiotic Stresses and CRISPR–Cas9 Genome Editing of ERFs for Multiple Abiotic Stress Tolerance in Crop Plants: A Review. *Molecular Biotechnology*. 61: 153-172. doi: 10.1007/s12033-018-0144-x.
10. Baruah I, Baruah G, Sahu J, **Singha DL**, Boruah HD, Velmurugan N and Chikkaputtaiah C. 2019. Transient Sub-cellular Localization and In Vivo Protein-Protein Interaction Study of Multiple Abiotic Stress-Responsive AteIF4A-III and AtALY4 Proteins in *Arabidopsis thaliana*. *Plant Molecular Biology Reporter*. 38: 538–553. <https://doi.org/10.1007/s11105-020-01219-w>.
11. Debbarma J, Saikia B, **Singha DL**, Das D, Keot AK, Maharana J, Velmurugan N, Arunkumar KP, Reddy PS, Chikkaputtaiah C. 2023. CRISPR/Cas9-Mediated Mutation in XSP10 and SISAMT Genes Impart Genetic Tolerance to Fusarium Wilt Disease of Tomato (*Solanum lycopersicum* L.). *Genes*, 14(2):488. <https://doi.org/10.3390/genes14020488>.

e. *Publication of Chapter(s) in Books:*

[Name of author(s), “Chapter Title”, Title of Book, ISBN, Name of Editor(s), Name of Publisher, Publication Date, Page no., DOI (if available)]

1. Debajit D, Sanjeev K, Saradia K, Chikkaputtaiah C, **Singha DL***. 2022. Genome Editing for Developing Abiotic Stress-Resilient Plants. The CRC Press from Taylor & Francis publishing group. DOI: 10.1201/9781003159636-15.
2. **Singha DL**, Das D, Paswan RR, Chikkaputtaiah C*, Kumar S*. 2021. Novel approaches and advanced molecular techniques for the crop improvement. The CRC Press from Taylor & Francis publishing group. DOI: 10.1201/9781003171416-1.
3. **Singha DL**, Baldodiya GM, Chikkaputtaiah C. In: Roychoudhury A. (2020). Targeting Metabolic Pathways for Abiotic Stress Tolerance Through Genetic Engineering in Rice (eds). *Rice Research for Quality Improvement: Genomics and Genetic Engineering*. Springer, Singapore. https://doi.org/10.1007/978-981-15-4120-9_26.
4. Sarki YN, Marwein R, Singh S, Dekaboruah H, **Singha DL**, Chikkaputtaiah C* (2020). Understanding the Mechanism of Host-Pathogen Interaction in Rice Through Genomics Approaches. In: Roychoudhury A. (eds) *Rice Research for Quality Improvement: Genomics and Genetic Engineering*. Springer, Singapore. https://doi.org/10.1007/978-981-15-5337-0_1
5. Das D, Konwar T, Sarma S, Baldodiya GM, Chikkaputtaiah C.*, **Singha DL*** Transgenic Strategies to Develop Abiotic Stress Tolerance in Cereals. In: Roychoudhury, A., Aftab, T., Acharya, K. (eds) *Omics Approach to Manage Abiotic Stress in Cereals*. Springer, Singapore. https://doi.org/10.1007/978-981-19-0140-9_9
6. Chowdhury N., Das D., Sarki Y.N., Sharma M., **Singha D.L.***, Chikkaputtaiah C.* 2021. Genome editing and CRISPR-Cas technology for enhancing abiotic stress tolerance in cereals. (Submitted invited book chapter from Springer, Singapore)
7. Keot A.#, Borgohain V.#, Bhattacharjee M., Singha P., **Singha D.L.**, Chikkaputtaiah C.* 2021. (Submitted Invited book chapter from Springer, Singapore)

8. Ajay K. Keot^{1,2†}, Abhik Gogoi^{3,†}, Naimisha Chowdhury¹, Rashmi R Boruah⁴, **Dhanawantari L. Singhal*** 2024. CRISPR plants against fungal diseases: Methods and applications (In preparation)
9. Ajay K. Keot^{1,2}, Sangeeta Sarma³, Abhik Gogoi⁴, Asha Sharma⁵, Chetna Sarma⁶, **Dhanawantari L Singha***⁵, 2023. CRISPR/Cas9 genome editing technique as potential agricultural strategy, Cambridge Publication. (Submitted).

f. *Publication of Books (only those considered for API Score):*

[Name of author (s), Name of Book, Year of Publication, Name of Publisher, ISBN.]

1. Author and Editors: G. Narahari Sastry, Channakeshavaiah Chikkaputtaih, Dhanawantari L. Singha, Authors: Ajay Kumar Keot, Debajit Das, Yogita n. Sarki, Banashree Saikia. 'Fundamentals and advancement of crispr/cas-based genome editing system'. Excel India Publisher, ISBN: 978-93-91355-37-1.

g. *Patents* : NIL

Name of the Patent	Patent Number	Date of Grant	Granting authority

h. *Research Projects* :

(i). Completed

Principal Investigator/ Co-Investigator (s) and Department (s)	Title of the project	Funding Agency	Duration	Amount(Rs.)
Principle Investigator	"Genome-wide identification, characterization and validation of drought -responsive microRNAs in transgenic rice overexpressing PDH47 gene" at Department of Agricultural Biotechnology, Assam Agricultural University, Jorhat, Assam. CSIR-Research Associateship. File no. 09/1118(0001)/2018-EMR-I.	CSIR	1 year	4.14 Lakh
Principle Investigator	"Sustainable Improvement of Grain Filling Trait in Inferior Spikelets of Rice Through CRISPR-Cas9/Cpf1 Genome Editing System" at Biological Group, CSIR-North East Institute of Science and Technology, Jorhat as DST-SERB National Post Doctoral Fellow. File no. PDF/2018/002632.	DST-SERB	2 years 4 months	19.75 Lakh

(ii). Ongoing

Principal Investigator/ Co-Investigator (s) and Department (s)	Title of the project	Funding Agency	Duration	Amount(Rs.)
NIL				

i. *Number of citations received in the year* : 185

j. *h-index (based on Scopus/Web of science)* : 5

- k. *Awards/Fellowship/Recognition at State/National/International level from Government/Recognized bodies* :

Name of the Award/Fellowship/Recognition	Conferring agency
National Post Doctoral Award	DST-SERB
Research Associate	CSIR

1. *Abroad visit:* NIL

Name and address of the institute/ academic society	Purpose	Period

- m. *Extension Activities/Outreach programme conducted in collaboration with industry / community / NGOs /through NSS/NCC/Red Cross/ Youth Red Cross etc:*

Title of the activity	Organising unit / agency / Collaborating agency	Number of teachers coordinated In the activity	Number of students participated
Invited Resource Person	Invited as a resource person for two days hands on training at North Lakhimpur College on the topic "Hands on training in CRISPR/Cas" on 27th June, 2019.	1	70
Invited Talk	Invited to deliver a talk on Celebration of "Vigyan Utsav" as a part of "Azadi ka Amrit Mahotsav organise by DST, GoI by Nagaland Science & Technology (NASTEC) on 22nd October, 2021.	15	50
Invited speaker	Invited as a speaker in Madras Christian College, Chennai in the Department of Botany on the topic "CRISPR/Cas technology: present & future technology" on 23rd May 2022.	3	80
Invited speaker	Invited for a webinar at Guru Charan College, Silchar on the topic "CRISPR/Cas9 genome editing: The present & future technology" on 27th May 2021.	4	30

- n. *Any other achievements:*

- Voluntarily donated one unit of blood to Jorhat Medical College & Hospital Blood Bank on 9th April 2015.
- Participated in society cleanliness program in AAU Campus, Assam, India.

L. Dhanawanti Singh.

Signature of Teacher in full.....