

Home

Provides various menus and submenus to navigate through SCIPDb

- **Slider:** Representative images illustrating effect combined stress in plants
- **Phenomics:** Option to mine the phenomics data.
- **Transcriptomics:** Option to mine the transcriptomics data.
- **Statistics:** Quantitative info about various data points hosted in SCIPDb.
- **Welcome to SCIP database:** Brief introduction about database, and definition of important terms, pertaining to combined stress in plants

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About

Provide various submenus listed below

- **FAQ:** Hosts important FAQs related to SCIPDb.
- **Methodology- Phenome:** Details steps for data collection, curation, and integration of phenomics data in SCIPDb.
- **Methodology-Transcriptome:** Details steps for data collection, curation, and integration of transcriptomics data in SCIPDb.
- **Applications:** List important applications of SCIPDb.
- **References & Links:** Hosts important references and links pertaining to combined stress in plants.
- **Downloads:** Hosts raw data files and references covered in this database. Also hosts teaching materials, like slides, posters, thesis.

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Search

User based to search to mine data from SCIPDb

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Search phenomics dataset: Search based on plant, stress combination, pathogen, parameter, author, year or keyword.

Search transcriptomics dataset: Search based on multiple gene ids, gene name, stress combination, pathway, plant.

SCIPDB

Relational DB

& Web server

Submit

Submit data to SCIPDb

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Submit phenomics and other omics dataset.

- Users can submit their data by making desired entries in google form hosted in this section.
- They can also use the raw data file template provided to prepare their data, and mail to us.

Connect

Details about contact information and other aspects

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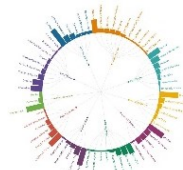
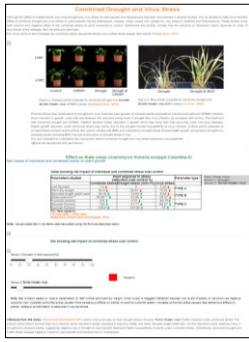
- **Reach Us:** Provides contact and information recent news and events related to combined stress in plants.
- **Team members:** Information about the team members.
- **Author repository:** Information about the scientists and researchers working in the area of combined stress.
- **SCIP social:** Link to various social networking sites that will host recent updates related to SCIP. It also hosts several videos and podcasts related to combined stress.

Help

Help pages for user's

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- **Sitemap:** Explanation about various sections of database.
- **User Guide:** Help pages for various sections of database.
- **Video resources:** Videos on various aspects of combined stress in plants.



Impact of combined stress on agriculturally important traits and crops



Global distribution of stress combinations and their impact



Stress matrix depicting impact (+ve/-ve) of stress combinations

Data pages

Phenomics
Morpho-physiological data

Visualizations

Home

Transcriptomics
RNA-seq & microarray data

DEGs table

Visualizations

Drought and nonhost pathogen stress in Thale cress
Genes common to all stresses (D, NH and DNH)
Search results matching your query

Show 10 entries

Search:

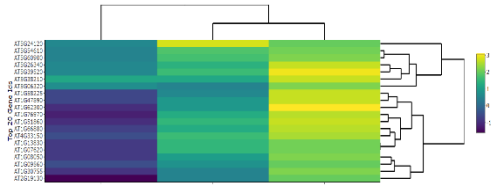
Sl.no.	Gene ID	Gene name	Transcript Fold change (FC)	Nature of change in expression	Pathway & metadata
1	AT1G62300	WRKY family transcription factor	NH:8.7; D:1.8; DNH: -2.1	Tailored response	KEGG Genes Link
2	AT5G39520	Protein of unknown function (DUF1997)	DNH: 3.1; NH: 1.50; D: 8.11	Similar expression/response under all stress	KEGG Genes Link
3	AT5G38210	Protein kinase family protein	DNH: 2.40; NH: 2.30; D: 6.68	Similar expression/response under all stress	KEGG Genes Link
4	AT1G51860	Leucine-rich repeat protein kinase family protein	DNH: 6.70; NH: 2.90; D: -1.90	Tailored response	KEGG Genes Link
5	AT1G47890	Receptor like protein 7	DNH: 6.60; NH: 1.80; D: -1.50	Tailored response	KEGG Genes Link
6	AT1G58225	NA	DNH: 6.50; NH: 1.50; D: -1.50	Tailored response	KEGG Genes Link
7	AT5G26340	Major facilitator superfamily protein	DNH: 2.70; NH: 1.50; D: 6.40	Similar expression/response under all stress	KEGG Genes Link
8	AT1G76970	Target of Myb protein 1	DNH: 6.10; NH: 2.40; D: -2.30	Tailored response	KEGG Genes Link
9	AT1G66880	Protein kinase superfamily protein	DNH: 6.00; NH: 2.50; D: -1.60	Tailored response	KEGG Genes Link
10	AT4G33150	Lysine-ketoglutarate reductase/saccharopine dehydrogenase bifunctional enzyme	DNH: 5.60; NH: 3.00; D: -1.40	Tailored response	ath00310-Lysine degradation; ath01100-Metabolic pathways; ath01110-Biosynthesis of secondary metabolites

Showing 1 to 10 of 20 entries

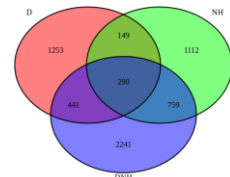
Previous 1 2 Next

Platform	Plant	Stress	GEO/SRA IDs	Publication
Gene Chip Gene 1.0ST, Cat#901915, Affymetrix, California, USA	Arabidopsis thaliana ecotype Col-0 (accession number#CS70000)	Drought - 40% FC & pathogen- Pseudomonas syringae pv. tabaci (Pta)- 3x10000000 CFU/mL, 5x10000000 CFU/mL and 2x100000000 CFU/mL	GSE79681	Choudhary et al., 2017

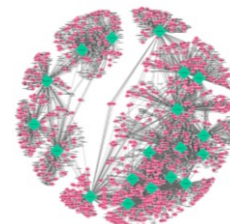
[View Heat Map](#) [View Venn diagram](#) [Download complete results](#)



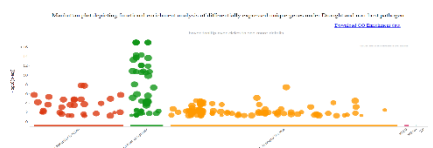
Heatmap



Venn diagram



Co-expression network



Manhattan plot

About

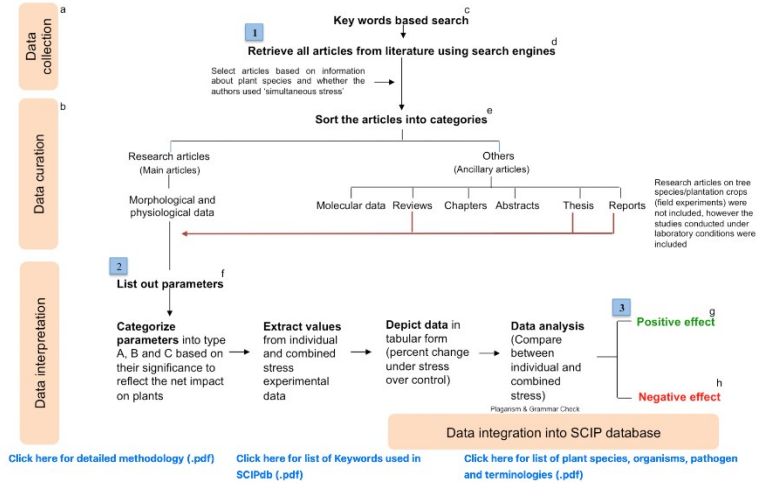
FAQ

SCIP database - FAQ

- What is SCIPdb (Stress Combination and their interaction in Plants)?
- What are the different datasets hosted in SCIPdb?
- Is the data in the SCIPdb public?
- What information does SCIPdb provide related to combined stresses?
- What can be downloaded from the database?
- How to download the data in SCIPdb?
- How is the literature mining, sorting, and data analysis done?
- Can I submit my data to SCIPdb?
- What is the copyright information about data hosted in SCIPdb?
- How to contact the authors?

Methodology

Outline of methodology



References & links

SCIP database- reference and links

IMPORTANT PUBLICATIONS

- Bostock et al., 2014
- Coolen et al., 2016
- Devilla et al., 2016
- Gupta et al., 2017
- Gupta et al., 2017
- Huasin et al., 1985
- Mittler Ronin, 2006
- Pandey et al., 2015
- Pandey et al., 2017
- Ramegowda et al., 2015

STEP I : CATEGORY:

Choose a Category:

STEP II: SUBCATEGORY:

Choose a Subcategory:

IMPORTANT LINKS

- Stress Combination
- STIF-DB V2
- Plant stress website
- Journals special issue**
 - Frontiers in plant science special issue- "Biological Mechanisms of Plant Interactions With a Combination of Biotic and Abiotic Stresses"
 - Journal of experimental botany special issue: "The Interface Between Abiotic and Biotic Stress Responses"
 - MDPI special issue "Intersection Between Abiotic and Biotic Stresses in Plants"

This section comprises entire list of research articles used in developing data page along with other related articles such as reviews, thesis and reports and this will be updated periodically. It provides comprehensive information on each stress combinations and can help identifying most prominent stress combination affecting crop growth. It also helps the researchers in ranking the stress combination based on their prominence and intensity of occurrence. Desired articles can be accessed either by selecting particular stress combination and crop directly from the main tab or by using key word based search tab given on the page. Articles which are freely accessible a 'Pub-Med' link is provided to download and for non-free articles, link is provided at the end of each article through which request can be placed to us. Important web links of labs and scientists working in the area of combined stress, important books and articles pertaining to combined stress are provided separately.

A customised keyword-based option for search within references is can be done from [here](#). Users can use this option to pull-out the desired article by entering specific keywords like author name, year of publishing, stress name and others.

Downloads

SCIP database- downloads

This section catalogs entire list of raw data files and references covered in this database. It acts as a comprehensive resource for scientific community working in the area of combined stress. From plant breeders point of view, studies related to genotypes characterization under stress are provided under each stress sections. A compiled study material is also provided separately which can be used for teaching purpose.

Research materials (Included as omics dataset in SCIP)

- Combined stress (Simultaneous)
 - Raw data files
 - References
 - Genotype study
- Combined stress (Sequential)
 - Raw data files
 - References
 - Genotype study
- Transcriptome: Mutant studies
 - Transcriptome analysis of Arabidopsis mutants suggests a crosstalk between ABA, ethylene and GSH against combined cold and osmotic stress
[Download raw data files](#)
 - Transcriptomic Profiling of Arabidopsis thaliana Mutant pad2.1 in Response to Combined Cold and Osmotic Stress
[Download raw data files](#)
 - Dual impact of elevated temperature on plant defence and bacterial virulence in Arabidopsis
[Download raw data files](#)

Academic teaching materials (Referred in SCIP)

- Thesis
 - Evaluation of combined effects of heat and drought stress during seed filling in lentil lens culinaris medik genotypes
 - Physiology of mungbean [Vignaradiata(L.)Wilczek] under salt and high temperature stress condition
 - Impact of climate related multiple stresses on Soybean
 - Physiological Responses Of Indian Mustard (Brassica Juncea L.) To Interactive Effects Of Water Deficit And Salt Stress
 - Effect of waterlogging, salinity and their interaction on growth, oxidative and carbohydrate metabolism in pigeonpea (Cajanus cajan L. Millsp.) genotypes
 - Physiological Studies On The Interactive Effects Of Waterlogging And Alkalinity On Growth And Development Of Wheat (Triticum Aestivum L.)
- Other materials
 - Posters
 - Protocols
 - Slides
 - Author's repository

Search

This section provides extensive search options for users to mine the phenomics and transcriptomics data hosted in SCIP database.

Search Phenomics dataset

Select category: Plant

Enter data:

Submit

Search Transcriptomics dataset

Select category: Gene Id

Enter data:

Submit

Help

SCIP database- Help pages

This section provides user's with a detailed tutorial on browsing and mining combined stress data from Stress Combination and their Interaction in Plants (SCIP) database.

Tutorial

1. How to search and mine phenomics data?
2. How to navigate and understand the visualizations of phenomics data?
2. How to search and mine transcriptomics data?
4. How to navigate and understand the visualizations of transcriptomics data?
5. How to navigate through various menus of SCIPDb?

User guide

SCIP database - Sitemap

Home

Provides various menus and submenus to navigate through SCIPDb

- [Slider](#)
- [Phenomics](#)
- [Transcriptomics](#)
- [Statistics](#)
- [Welcome to SCIP database](#)

Representative images illustrating effect combined stress in plants.
Option to mine the phenomics data.
Option to mine the transcriptomics data.
Quantitative info about various data points hosted in SCIPdb.
Brief introduction about database, and definition of important terms, pertaining to combined stress in plants.

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Provide various submenus listed below

- [FAQ](#)
- [Methodology- Phenome](#)
- [Methodology- Transcriptome](#)
- [Applications](#)
- [References & Links](#)
- [Downloads](#)

Hosts important FAQs related to SCIPDb.
Details steps for data collection, curation, and integration of phenomics data in SCIPDb.
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Submit data to SCIPDb

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- [Submit other omics dataset](#)

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Connect

Details about contact information and other aspects

- [Reach Us](#)
- [Team members](#)
- [Author repository](#)
- [SCIP social](#)

Provides contact information and information about recent news and events related to combined stress in plants.
Information about the team members.
Information about the scientists and researchers working in the area of combined stress.
Link to various social networking sites that will host recent updates related to SCIP. It also hosts several videos and podcasts related to combined stress.

Help

Help pages for user's

- [Sitemap](#)
- [User Guide](#)
- [Video resources](#)

Explanation about various sections of database.
Help pages for various sections of database.
Videos on various aspects of combined stress in plants.

[Click here for SCIP database tutorial \(.pdf\)](#)

Video resources

SCIP database- Video Resources

Videos: 23: Role of Bioinformatics in understanding combined stress tolerance in plants

Combined stress in Plants

Role of bioinformatics in understanding combined stress tolerance in plants

Contributed by: Piyush Priya and Muthappa Senthil-Kumar*

Piyush Priya

Muthappa Senthil-Kumar

National Institute of Plant Genome Research,
Arava Araf Ali Marg, New Delhi
Contact: piyush@nipgr.ac.in
<http://www.nipgr.ac.in/~piyush@nipgr.ac.in>

Watch on YouTube

Video 1: Role of Bioinformatics in understanding combined stress tolerance in plants

Videos: 5: Shifting focus from single stress studies to studying stresses in combination

Shifting focus from single stress studies to studying stresses in combination

Contributed by

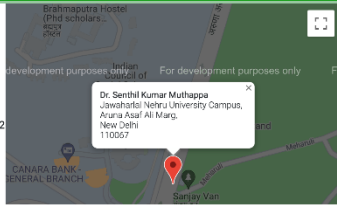
Video 2: The need for shifting focus from single stress studies to studying stresses in combination

Connect

Reach us

Contact Us

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Website : Lab Page
Link : <http://www.nipgr.ac.in/scipdb.php>



NEWS and EVENTS

- Research grants**
 - "Stress combination: Bridging the gap between Arabidopsis stress research and agriculture".
 - "Impact of heat and drought stress on sorghum and wheat grain composition and chemistry".

[Find us on Facebook](#) [Find us on Scoop.it](#) [Follow us on Youtube](#) [Follow us on Twitter](#) [Follow us on Researchgate](#)

SCIP social

SCIP database- social networking sites

This section provides the users to listen to our podcasts and connect with us through below mentioned social networking sites and get the latest updates, highlights and news related to SCIP database.

Connect with us on



Listen to our podcasts

SKMLAB_Podcasts - State of plant-stress interaction and combined stress-related research in India-Part 4
 SKMLAB_Podcasts - SWEET transporters in plants
 SKMI_AB_Podcasts - State of plant-stress interaction and combined stress-related research in India-Part 3



Team members

Team Members

This database is developed and maintained by Muthappa Senthil-Kumar research group at National Institute of Plant Genome Research (NIPGR), New Delhi, India.

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Research associate II
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We sincerely acknowledge the inputs made by the following lab members

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Vishnu S Babu Project Assistant I, NIPGR	Rahul Kumar Tiwari Honing scientist, Scientist (Plant Pathology), ICR	Reena Prajapati Junior Research Fellow, NIPGR	Siva Shanmugam NR Post graduate Trainee, NIPGR
Jyoti Singh Senior research associate, NIPGR	Priya Chandra Post graduate Trainee	Arya Das Post graduate Trainee, NIPGR	Anugam Paramanatham Junior Research Fellow, NIPGR
ZAHOOR AHMAD Visiting Scientist, NIPGR, Assistant Professor (Biol. Science), SKUAST-4 (J & K)	Christina Nilsfer Project Assistant I, NIPGR		

For further details : Visit Lab Website

Author repository

SCIP database- author repository

This section catalogs information about various scientist and researchers working in the area of combined stress worldwide.

Sl.no.	Corresponding author	Email ID	Contact address	Stress combination	Category	Type of article	Published Year
1	Ron Mittler	ron.mittler@unt.edu	Department of Biological Sciences, College of Arts and Sciences, University of North Texas, , Denton, TX, 7620375017 USA http://biol.unt.edu/~rmittler/index.htm	Drought & heat	Abiotic-abiotic	Review	2014
2	Changzhou Wei	czwei@shzu.edu.cn	Key Lab of Oasis Ecology Agriculture of Xinjiang Production and Construction Group, Shihezi University, Shihezi, P. R. China	Salt & heat	Abiotic-abiotic	Research	2016
3	Ming Gong	Gongming@public.km.yn.cn	Department of Life Sciences, Yunnan Normal University, Kunming 650092, Yunnan, P.R. China	Salt & heat	Abiotic-abiotic	Research	2001
4	J. A. G. Silveira	silveira@ufc.br	Laboratório de Metabolismo de Plantas, Departamento de Bioquímica e Biologia Molecular, Universidade Federal do Ceará, CP 6004, Fortaleza, CE CEP 60451-970, Brazil	Salt & heat	Abiotic-abiotic	Research	2011 & 2013
5	Nobuhiro Suzuki	n-suzuki-cs6@sophia.ac.jp	Department of Materials and Life Sciences, Faculty of Science and Technology, Sophia University, 7-1 Kioicho, Chiyoda-ku, 102-8554, Tokyo, Japan	Salt & heat	Abiotic-abiotic	Research	2016
6	Sven-Erik Jacobsen	johannesg@bio.ku.dk	Department of Plant and Environmental Sciences, Faculty of Science, University of Copenhagen, Højbakkevej Allé 13, 2630 Taastrup, Denmark	Salt & heat	Abiotic-abiotic	Research	2017
7	Rosa M. Rivero	rmrivero@cebas.csic.es	Centro de Edafología y Biología Aplicada del Segura, Campus Universitario de Espinardo, Espinardo,	Salt & heat	Abiotic-abiotic	Research	2014

Submit

SCIP database- submit combined stress data

This section provides users with an option to submit combined stress data pertaining to Phenome and Transcriptome to Stress Combination and their Interaction in Plants (SCIP) database. Submitter's will be duly acknowledged.

Options to submit data to SCIP


1. Prepare and submit your data using following google form

Please submit your dataset using this [data submission form](#).

2. Prepare your data using following template (optional)

You can prepare your dataset [this template](#).

- 1) Download the [blank template file](#) (xlsx format).
- 2) Prepare tables according to the template. If you have any question related to dataset preparation, please contact us (scipdatabase@nipgr.ac.in).
- 3) Please send your dataset to (scipdatabase@nipgr.ac.in).




Submission of new data pertaining to combined stress

This form is designed to encourage and enable enthusiastic researchers in the field of combined stress to present their interesting observations and research papers related to combined stresses on SCIPdb platform. Users can choose to upload their research paper and related data or images to enrich the database. Their contribution to the database will help in the growth of database and enrich the knowledge of combined stress for the scientific fraternity. The purpose of this activity is to help enhance sharing of scientific knowledge for the benefit of the scientific community.

The name and photo associated with your Google account will be recorded when you upload files and submit this form

*** Required**

SCIPdb_ share and grow



Email of the submitter *

Your answer _____

Title of Publication *

Your answer _____

Name of the plant species studied *

Please provide the details of the cultivars, if available.

Your answer _____