Plan Overview

A Data Management Plan created using DMPonline.be

Title: C14/24/081 Long-distance phloem-mediated ethylene gas transport steers systemic stress resilience in plants.

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Template: KU Leuven BOF-IOF

Project abstract:

Plants use the volatile hormone ethylene to regulate all kinds of important developmental processes and to respond to a variety of (a)biotic stressors. It is generally accepted that ethylene gas rapidly diffuses out of the plant tissue where it is synthesized. However, based on preliminary calculations and experimental data, we believe that ethylene gas can also be transported over longer distances via the phloem vasculature. This hypothesis is corroborated by historical experiments using radiolabeled ethylene gas, which showed that ethylene can travel long distances in plants. In this proposal, we want to provide experimental evidence that phloem-mediated long-distance ethylene gas transport exists and leads to a systemic ethylene response. Besides showing the proof-of-concept, we also want to investigate the role and function of this new transport phenomenon. We believe that (a)biotic stress at a particular leaf, can trigger long-distance ethylene gas transport, to activate ethylene responses in remote leaves. This will be investigated using a variety of molecular and genetic techniques, to establish the role of long-distance ethylene gas transport in mediating systemic stress resilience in plants.

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Research Data Summary

List and describe all datasets or research materials that you plan to generate/collect or reuse during your research project. For each dataset or data type (observational, experimental etc.), provide a short name & description (sufficient for yourself to know what data it is about), indicate whether the data are newly generated/collected or reused, digital or physical, also indicate the type of the data (the kind of content), its technical format (file extension), and an estimate of the upper limit of the volume of the data.

Dataset name / ID	Description	New or reuse	Digital or Physical data	Data Type	File format	Data volume	Physical volume
		Indicate: *N(ew data) or E(xisting data)*	Indicate: D(igital) or P(hysical)	Indicate: Audiovisual Images Sound Numerical Textual Model SOftware Other (specify)		Indicate: <1GB <100GB <1TB <5TB >5TB NA	
1.	GC data	N	D	N	.xlsx, .pdf	<1GB	N/A
2.	Nano-PALDI MS images	N	D	I	.jpg, .png, .tif	<100GB	N/A
3.	qRT-PCR data	N	P and D	N	.xlsx	<1GB	Samples will be stored in 1.5 ml tubes in -20 C freezer boxes
4.	Reporter images	N	P and D	I	.jpg, .png, .tif	<100GB	Fixed reporter tissue will be stored at room temperature in a dedicated cabinet
5.	Biotic stress images	N	D	I	.jpg, .png, .tif	<100GB	N/A
6.	Phloem rescue lines	N	P	Seed			Seed will be stored in individual 1.5 ml tubes dry at 4C in a dedicated cabinet
7.	RNA seq data	N	P and D		.xlsx	<1GB	N/A

If you reuse existing data, please specify the source, preferably by using a persistent identifier (e.g. DOI, Handle, URL etc.) per dataset or data type:

N/A

Are there any ethical issues concerning the creation and/or use of the data (e.g. experiments on humans or animals, dual use)? If so, refer to specific datasets or data types when appropriate and provide the relevant ethical approval number.

- No

Will you process personal data? If so, please refer to specific datasets or data types when appropriate and provide the KU Leuven or UZ Leuven privacy register number (G or S number).

- No

Does your work have potential for commercial valorization (e.g. tech transfer, for example spin-offs, commercial exploitation, …)?
If so, please comment per dataset or data type where appropriate.

- No

Do existing 3rd party agreements restrict exploitation or dissemination of the data you (re)use (e.g. Material or Data transfer agreements, Research collaboration agreements)? If so, please explain in the comment section to what data they relate and what restrictions are in place.

- No

Are there any other legal issues, such as intellectual property rights and ownership, to be managed related to the data you (re)use? If so, please explain in the comment section to what data they relate and which restrictions will be asserted.

- No

Documentation and Metadata

Clearly describe what approach will be followed to capture the accompanying information necessary to keep data understandable and usable, for yourself and others, now and in the future (e.g. in terms of documentation levels and types required, procedures used, Electronic Lab Notebooks, README.txt files, codebook.tsv etc. where this information is recorded).

Raw data collected using instruments will always be saved automatically with accompanying metadata. Instrument settings will also be preserved in digital and physical lab notebooks, and a digital readme file will be kept alongside the raw data files. After data is published in scientific articles, the RNAseq data will be deposited in public repositories (eg NCBI BioSample and SRA database).

Will a metadata standard be used to make it easier to find and reuse the data?
If so, please specify which metadata standard will be used.

If not, please specify which metadata will be created to make the data easier to find and reuse.

- No

There is no suitable metadata standard for this project. We will keep a digital metadata folder, along with raw data (including metadata from instruments).

Data Storage & Back-up during the Research Project

Where will the data be stored?

- Sharepoint online
- Large Volume Storage
- Shared network drive (J-drive)

RNAseq data will be deposited at NCBI BioSample and SRA database.

How will the data be backed up?

- Standard back-up provided by KU Leuven ICTS for my storage solution

Is there currently sufficient storage & backup capacity during the project?

If no or insufficient storage or backup capacities are available, explain how this will be taken care of.

- Yes

How will you ensure that the data are securely stored and not accessed or modified by unauthorized persons?

Data stored on the sharepoint is only accessible to the research group. Data stored in public repositories can only be modified by the author.

What are the expected costs for data storage and backup during the research project? How will these costs be covered?

The archive and large data storage drive (K drive) charges 113 euro/TB/year. Data storage costs are covered by other lab incomes.
Other costs of physical data storage (maintenance of freezers, seed cabinet) will be paid by other project incomes, as these facilities will be used by other active users.

Data Preservation after the end of the Research Project

Which data will be retained for 10 years (or longer, in agreement with other retention policies that are applicable) after the end of the project?

In case some data cannot be preserved, clearly state the reasons for this (e.g. legal or contractual restrictions, storage/budget issues, institutional policies...).

- All data will be preserved for 10 years according to KU Leuven RDM policy

Where will these data be archived (stored and curated for the long-term)?

- KU Leuven RDR
- Large Volume Storage (longterm for large volumes)

What are the expected costs for data preservation during the expected retention period? How will these costs be covered?

The archive and large data storage charge 113 euro/TB/year. Data storage costs are covered by other lab incomes. Costs of maintenance of freezers and seed cabinet will be paid by other project incomes, as these facilities will be used by other active users.

Data Sharing and Reuse

Will the data (or part of the data) be made available for reuse after/during the project?
Please explain per dataset or data type which data will be made available.

- Yes, as restricted data (upon approval, or institutional access only)
- Yes, as open data

Publications and RNAseq data will be made publicly available. Other data will be available to third parties outside the research group upon agreement by the PI (Bram Van de Poel).

If access is restricted, please specify who will be able to access the data and under what conditions.

Third parties may access data upon agreement by the PI (Bram Van de Poel).

Are there any factors that restrict or prevent the sharing of (some of) the data (e.g. as defined in an agreement with a 3rd party, legal restrictions)?

Please explain per dataset or data type where appropriate.

- No

Where will the data be made available?

If already known, please provide a repository per dataset or data type.

- KU Leuven RDR (Research Data Repository)
- Other data repository (specify below)

NCBI BioSample and SRA database

When will the data be made available?

- Upon publication of research results

Which data usage licenses are you going to provide?

If none, please explain why.

- CC-BY 4.0 (data)

Do you intend to add a persistent identifier (PID) to your dataset(s), e.g. a DOI or accession number? If already available, please provide it here.

- Yes, a PID will be added upon deposit in a data repository

What are the expected costs for data sharing? How will these costs be covered?

There are no costs as we will use free online depositories.

Responsibilities

Who will manage data documentation and metadata during the research project?

PhD student Joao Ferreira

Who will manage data storage and backup during the research project?

PhD student Joao Ferreira

Who will manage data preservation and sharing?

PI Bram Van de Poel and co-supervisor John Vaughan-Hirsch

Who will update and implement this DMP?

PI Bram Van de Poel and co-supervisor John Vaughan-Hirsch