VITAL: Valuable Ingredients for Thriving Aging derived from Lignin

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: **A**udiovisual **I**mages **S**ound **N**umerical **T**extual **M**odel **SO**ftware Other (specify)		Indicate: <1GB <100GB <1TB <5TB >5TB NA	
Analytical measurements	Analysis of reaction products (GC, GC-MS, NMR, HPLC, IR, DSC)	N	D	Experimental	.txt .csv .xls	<100GB	/
Stored product samples	Product samples.	N	P	/	/	/	1 shelf cupboard
Experimental data (generated) quantitative	Processing of measured, experimental, data	N	D	N,T	.xls .ppt	<100GB	
Reference data	Literature summary and organization of literature	R	D	N,T	.pdf .docx	<100GB	
Experimental samples	Tissue whole mounts and tissue sections, either fixed/frozen or subjected to immunohistochemistry (IHC)/hybridisation chain reaction (HCR)	N	P	Other: tissue samples	/	/	up to 1000 tissues & 3000 slides stored in fixative at 4°C or frozen
Microscopy images	Confocal images obtained after IHC/HCR	N	D	I	TIFF, JPEG, LIFF, OIB or CZI	<5TB	
Gene/protein expression data	Data obtained via qPCR/Western blotting	N	D	N/I	XLS, CSV, TIFF, JPEG	<100GB	
Analytical data	Graphs and statistics	N	D	N/T/I	TIFF, PNG, XLS, PZFX	<1GB	
Written protocols /progress reports/publications	Written protocols/progress reports/publications	N	P	T	/	/	yearly progress reports and up to 5 publications; up to 15 protocols
Written protocols /progress reports/publications	Written protocols /progress reports/publications	N	D	T	DOCX, RTF, PDF	<1GB	

Observational toxicity in zebrafish larva	Monitoring of zebrafish larva in time (maximum tolerated doses and concentrations, LC50, EC50)	N	D	N	numerical .xls (excel files) and graphical (Graphpad prism files)	<1GB	
Behavioral analysis - neurotoxicity (zebrafish larvae)	Locomotor recordings	N	D	N	numerical .xls and video's (by Noldus software)	<10 GB	
Assessment of endocrine disruption	Photographic documentation of fluorescent signal in zebrafish larvae	N	D	I	TIFF, JPEG	<10 GB	

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:

The literature study for this project will be compiled from existing data as DOI, URL or PDF files, and summarized in a review document (.docx, .xls).

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.

- Yes, animal data (Provide ECD reference number below)

P025/2021
P155/2023
Zebrafish larvae will be used before they are classified as animals. Breeding of adult fish is approved by the the ethical commission of KU Leuven (000/(GS1/GS2)). When applicable, additional ECD numbers will be requested for.

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

NA

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.

- Yes

This work might have potential for tech transfer and valorization. Therefore, there will be restrictions for data disclosure as it may contain IP-sensitive information. All data will be subjected for their patentability prior to any publication. If applicable, patent applications will be filled. IP management will be conducted in close collaboration with the KU Leuven Tech Transfer Office.

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

NA

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

NA

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).

1. Regular set of raw experimental data will be collected per every experiment. Experiments will be classified based on date and type of experiment.
2. Additional document (a living document, as .xls or .ppt) will contain a detailed summary of every experiment to keep track of experimental details.
3. Another overview file (ppt) explains the organization of data storage (raw files, processed files, progress report files).

OR/AND

We will maintain a record of the following per experiment (where applicable):

- Experimental design and protocol (.docx file)
- Structure of the data (.docx file)
- Steps involved in data analysis and relevant analysis scripts (R, MATLAB, Python and ImageJ scripts)
- Raw data (specific file format according to data type)
- Analysed data (specific file format according to data type)
- Index file/read me file (.txt file) for every set of experiments, linking the name, location (folder and subfolder on /server) and description of above-mentioned files.

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.

- Yes

The metadata for the data in this project entails:

- Creator of the dataset
- Name of the dataset
- File type of the dataset (depending on the employed software different file formats will be generated).
- Date of generation
- Data type (experimental or modelled)
- Software employed to generate the data (in case of modelled)

AND/OR

The experiments are unique, but the data will be standardized according to data-type across experiments to make it easier to interpret the structure.

The results of analysis will be stored in CZV or XLS data sheets with quantitative data and summary statistical analysis.

We adopted a single, well-defined file-folder structure and file-naming rules. Every data folder is accompanied by appropriate metadata files consisting of a readme.txt with info on nomenclature, file format, software and adopted data standards (from RDR KU Leuven).

Data Storage & Back-up during the Research Project

Where will the data be stored?

- Shared network drive (J-drive)
- Personal network drive (I-drive)
- OneDrive (KU Leuven)

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- Personal network drive (I-drive)
- Large Volume Storage
- Shared network drive (J-drive)

The host institute provides a secure data storage system (KU Leuven LUNA servers) with automated onsite back-up and mirroring. Generated experimental data will be stored on both the KU Leuven LUNA Large Volume Storage space (L-drive) and the internally shared network drive (J-drive). Copies will be made and kept on personal drives (I-drive). Protocols and SOPs are stored on the Shared network drive J.

For active use of the data during the project, OneDrive will ensure data transfer between computers.

We expect max 10 Tb of data to be stored.

The physcial data, consisting of (immuno)histologically stained tissue sections, biochemical samples (protein extracts, mRNA), western blots, etc. will be stored in freezers/fridges and closets in the lab. Also unstained paraffin/cryo sections will be stored at a dry/cold place for possible future use. The inventory of all locations is shared on the KU Leuven LUNA Shared drive.

Will any of you implement MANGO, if yes, it has to be mentioned !! (For us CSCE, No)

How will the data be backed up?

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

The data will be stored on the secure data storage system (KU Leuven LUNA servers) with automated onsite back-up and mirroring.

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?

All network storage is hosted in the KU Leuven ICTS data center, with a mirror in the second ICTS center, to provide disaster recovery and additional back-up capacity, thus guaranteeing long-term data availability.

Access to data is conditioned by KU Leuven security groups. All data will be password protected at the locations.

For OneDrive, we only share folders with relevant involved persons.

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

Expected amount of data : 10 Tb.

The costs will be covered by part of the allocated project budget.

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
- Certain data cannot be kept for 10 years (explain below)

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We will retain all digital data as well as manual notebooks for the expected 10-years, conform the KU Leuven RDM policy.
Due to physical preservation issues and storage limitations, we can only keep the fixed/frozen samples and stained sections for max up to 3 years.
For most publications we expect that we will make the data publicly available on data repositories.
Retained data:

- Publications (experimental manuscripts, review papers, PhD) stored in Lirias.
- Regular progress and final reports (as ppt and doc files)
- Processed experimental data (as xls files)

Not retained data:

- Raw experimental data (as csv, txt, xls,.. format) - easy and low cost reproducibility
- Samples taken from experiments will be documented and stored for up to three years after the end of the project. Storage will be in fixative or frozen depending on the kind of sample. IHC/HCR stained slides will be stored in appropriate boxes in a dry place or in the freezer.

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

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

The data will be stored on the university's central servers (K-drive of CSCE, K:\SET-CSCE-Archive-Data-D0771) with automatic back-up procedures for at least 10 years, conform the KU Leuven RDM policy
Notebooks will be kept in the lab for at least 10 years, conform the KU Leuven RDM policy.

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

K-drive long-term storage costs covered by project budget

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
- Yes, as embargoed data (temporary restriction)

The data will be immediately available for internal use within the research groups.
Written progress reports will be stored for internal purposes and can be accessed by KU Leuven researchers upon request.
Relevant findings will be disseminated through publication in high profile, peer-reviewed international journals within the life science field. The data will be made available after publication via the required link in the publications or upon request after an embargo period after publication. The same holds true for unpublished data, they can be made available upon request but only after an embargo period and prior to evaluation on a per case basis.

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

Only research personnel of the contributing labs can access the data and metadata.
After Open Access publication, corresponding analytical and imaging datasets data will be shared on open platforms (e.g. KU Leuven Research Data Repository (RDR), NCBI-SRA and the Open Science Framework (OSF)). We will explore the possibilities via online repositories and will use the website www.re3data.org.
Unpublished data will only be shared under strict conditions. Therefore, terms will be set on beforehand in an MTA (Material Transfer Agreement).

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.

- Yes, intellectual property rights

This work might have potential for tech transfer and valorization. Therefore, there will be restrictions for data disclosure as it may contain IP-sensitive information.

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)

After Open Access publication, corresponding analytical and imaging datasets data will be shared on open platforms (e.g. KU Leuven Research Data Repository (RDR), NCBI-SRA, and the Open Science Framework (OSF)). We will explore the possibilities via online repositories and will use the website www.re3data.org.
The data and insights will be, later, made available via publications or patents, which are accessible via LIMO (KU Leuven) and search engines like patentscope. More detailed information and data can be shared upon request by mail and approval by responsible PI (main data owner).

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.

- Data Transfer Agreement (restricted 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

Once the research results will be published, the DOI will be linked to the dataset including the project results.

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

Publications in specific sources might be a subject of additional costs that will be payed from the project budget or additional running projects.

Responsibilities

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

The postdocs and PhD students will manage their own data and data documentation during the project based on mutual agreements about data sets. They will be assisted by the professors and project managers.

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

The professors (Lut Arckens, Lieve Moons) will take a helicopter view on data management (assign roles, specify access permissions etc.). The project managers (Laura Trullemans, Caroline Zandecki) will be backed-up by other group members involved in project management (IOF valorization managers: Bert Lagrain, Annelii Ny).

Who will manage data preservation and sharing?

Data documentation, data storage & backup during the project is the responsibility of all researchers working on this project, and will be managed by the project managers (Laura Trullemans, Caroline Zandecki, Bert Lagrain, Annelii Ny) as well as the PIs (Lut Arckens, Lieve Moons).

Who will update and implement this DMP?

The end responsibility for updating and implementing the DMP is with the supervisor (promotor) and project managers.