Plan Overview

A Data Management Plan created using DMPonline.be

Title: CHITILLUCENS: Subcritical Biorefinery of the Black Soldier Fly (Hermetia illucens) – Consolidating & Comprehending the Process

Creator: n.n. n.n.

Principal Investigator: n.n.

Affiliation: KU Leuven (KUL)

Template: KU Leuven BOF-IOF

Principal Investigator: n.n. n.n.

Project abstract:

Black soldier fly (BSF, Hermetia illucens) larvae are gluttonous little critters who efficiently convert low-value organic waste streams into their own biomass full of valuable lipids, proteins, and chitin. The latter is an extraordinary resource which also can be converted into chitosan, allowing to tap into a plethora of applications ranging from aerogels to wound dressings. Existing insect refinery processes, however, have significant shortcomings as these processes prove inadequate for producing high-quality products without quality deterioration and caustic waste generation. Therefore, the overarching objectives of CHITILLUCENS are 1) to tailor our cutting-edge and sustainable biorefinery process towards the production of high-quality chitin and chitosan, vastly surpassing the current state-of-the-art; and 2) to acquire fundamental understanding of how methanol and water contribute to the deproteinization and deacetylation processes occuring under subcritical conditions, using BSF larvae as model.

ID: 213291

Start date: 01-10-2024

End date: 30-09-2028

Last modified: 25-03-2025

Created using DMPonline.be. Last modified 25 March 2025

1 of 7

CHITILLUCENS: Subcritical Biorefinery of the Black Soldier Fly (Hermetia illucens) – Consolidating & Comprehending the Process

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	
Biomass	Black soldier fly larvae before and after biorefinery	N	P				30 kg
Analytical data	Chemical analyses of samples	N	D	N	.csv; .xls	< 100 GB	
Experimental results	Interpreted data	N	D	N	.csv; .xls	< 10 GB	
Observational data	Digitised version of observations during experiments	N	D	T/N	.csv; .xls	< 1 GB	
Images	SEM images, photos	N	D	I	.tiff; .jpg	< 100 GB	
Reports	Presentation and discussion of results	N	D	T/N	.doc; .pdf	< 1 GB	
Papers	Final publications will be stored	N	D	T/N	.doc; .pdf	< 1 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:

Yes, some data generated in the frame of the Chitinery project (C3/22/041) will be reused in this project.

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

No ethical issues are applicable during the present project.

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

No personal data will be processed during the present project.

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 project is a follow-up study of the Chitinery project (C3/22/041), which aimed for strengthening a patent application. The Chitiluccens project project focuses on a deeper understanding of the chemical processes taking place. Analytical and observational data may lead to a better understanding of the reactions taking place and therefore possibly support a future out-licensing. For this purpose of valorisation, we are collaborating with Dr. Ivo De Baere and Dr. Ivo Roelants of LRD.

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

No 3rd party agreements exist at this moment which could restrict exploitation of the data.

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

This project relies on a patent application filed by KU Leuven. Therefore, no legal problems are expected. Dr Ivo De Baere and Dr Ivo Roelants of LRD will be contacted if we have any concerns or questions.

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).

The necessary documentation like standard operating procedures will be digitally documented for every executed experiment, which will be placed together in a folder with the actual data files. These folders itself will be arranged/sorted according to the work packages of the project, each also containing a short description documented in a "read-me" file. Reports and publications are kept together with the above in their respective folders.

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

Analytical data of obtained products during the project will always be accompanied with a detailed description of how this particular dataset was generated. More particular, files containing calculated results will be given an extra tab containing information on, including but not limited to, type of instrument, procedure used, observations, detailed sample information, etc. Descriptive metadata will be documented in each file to make it easy to find and reuse the data generated during the project. Working documents and templates for chemical analyses will be implemented as well to ensure a uniform structure.

Data Storage & Back-up during the Research Project

Where will the data be stored?

- Sharepoint online
- Other (specify below)

Digital data like analytical and observational data as well as reports, images, and papers will be stored in a centralized Sharepoint environment of our research group. Only the PI and postdocs within our research group can provide access to this Sharepoint environment. Physical samples of biomass will either be stored at - 20 °C (fresh biomass in the freezer), 4 °C (protein-rich fractions after the biorefinery in the cool cell), or at room temperature (other, stable products) in our stockroom.

How will the data be backed up?

- Other (specify below)

A back-up is provided via automatic version management of the files in Sharepoint, maintaining up to 500 major versions.

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

At this moment, no issues are foreseen regarding the storage and backup capacity during the project. The available capacity of 1 TB of data storage greatly suffices for the expected data output of this project (max. 200 GB).

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

Only authorized persons like the PI, leading postdocs and researchers on the project will be granted access to our Sharepoint folder. If required, sensitive folders can be password protected by the PI.
Access to the folder can only be granted by the project coordinator or lab manager to safeguard the data.

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

All costs associated to data storage and backup will be carried by the central ICTS.

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...).

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

All digital data will be archived for a minimum of 10 years after project completion, in line with the KU Leuven policy. As physical data (e.g., biomass samples) will be stored in freezers, fridges, stockroom; preservation thereof for 10 years may not be possible. In any case, physical samples will be preserved for at least 1 year after the project has ended. After this year, each sample type

will be scrutinised and assessed whether it is feasible/worthwhile to keep for a longer time. For example, protein extracts kept in the fridge may lose their functionality or degrade/spoil over time, making it not worthwhile to preserve this sample type for a prolonged duration.

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

- Other (specify below)

Upon project completion, all generated data will be curated and transferred to a designated Sharepoint folder for long-term storage called "IP&P Database". Only the PI and lab manager will have access to this folder, while only the PI is able to modify user access rights.

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

The costs associated with data preservation are carried by the central ICTS.

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)

In general, the data will be made available to the broader audience by publications in scientific papers. Up until then, the data will be kept in-house only.
Data that may be important for future project applications will, however, temporarily not be made available.
Physical data (biomass and product samples) may be used in other projects or for project applications with the approval of the project coordinator.

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

Physical data like biomass samples will be made available to members of our research group, after approval by the PI.

In-house researchers may be granted access to the data upon approval of the PI.

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.

- Other (specify below)

Physical data like biomass samples can be shared within our research group or through MTA with interested companies. For this

purpose, we will contact LRD for preparing the necessary NDA and MTA documents. Data will be made available in peer-reviewed scientific publications.

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.

- Other (specify below)

No data usage licenses will be required as the data will not be deposited in a repository.

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.

- No

Upon publication of the data in peer-reviewed publications, the data will be given a PID, being the DOI of the article.

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

Lab budget will be used to cover the cost for publishing the data in scientific publciations. Higher costs will be implied if it is decided to publish the data in open access, to make them freely available for all researchers and even a broader audience.

Responsibilities

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

PhD student working on the project (Gaëtan Bitsch) and PI (Mik Van Der Borght).

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

The PI (Mik Van Der Borght).

Who will manage data preservation and sharing?

The PI (Mik Van Der Borght).

Who will update and implement this DMP?

The PI (Mik Van Der Borght).

Created using DMPonline.be. Last modified 25 March 2025

7 of 7