DMP title

Project Name Fructans in the tree of life - DMP title

Project Identifier XXXX

Grant Title GOC4622N

Principal Investigator / Researcher Wim Van den Ende

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Description This project aims to investigate the potential roles of fructans in the entire tree of life, focusing on cold resistance in plants and microbial root colonization. The goal is to characterize the enzymes involved in a wider array of organisms in the tree of life, deciphering the long-standing linkage type and endo-exo conundrums.These mechanistic insights will pave the way to design novel enzymes for future applications. Data include sugar measurements, enzyme modelling, sugar docking.

Institution KU Leuven

1. General Information

Name applicant

Wim Van den Ende

FWO Project Number & Title

GOC4622N

The fructan syndrome in the tree of life: from structure to function

Affiliation

- KU Leuven

2. Data description

Will you generate/collect new data and/or make use of existing data?

- Generate new data

Describe in detail the origin, type and format of the data (per dataset) and its (estimated) volume. This may be easiest in a table (see example) or as a data flow and per WP or objective of the project. If you reuse existing data, specify the source of these data. Distinguish data types (the kind of content) from data formats (the technical format).

WP1:

*Molecular Docking and modelling data in .pdb/.sdf/.mol2 format, respectively, generated by bio-informatic sofware (e.g. SWISSMODEL, Alpha-fold, GOLD, MOE etc.). Estimated volume (EV) < 9 GB.

*In silico mutation analysis in .mdb format with MOE. EV < 10 GB.

*Molecular Dynamics in .gro/.ene/.pdb format, respectively, generated by Gromacs, Amber or Desmund, EV < 1 TB.

*Sugar measurements and enzyme characterization data in .xlsx format. EV < 6 GB.

*Models and crystal structures in .pdb/.cif/.dns6 format, respectively. EV < 10 GB.

WP2:

*Molecular Docking and modelling data in .pdb/.sdf/.mol2 format, respectively, generated by bio-informatic sofware (e.g. SWISSMODEL, Alpha-fold, GOLD, MOE etc.). EV < 11 GB.

*In silico mutation analysis in .mdb format with MOE. EV < 10 GB.

*Molecular Dynamics in .gro/.ene/.pdb format, respectively, generated by Gromacs, Amber or Desmund. EV < 1 TB.

*Sugar measurements and enzyme characterization data in .xlsx format. EV < 6 GB.

WP3:

*Phenotypic data from greenhouse and field experiments in .xlsx format. EV < 5 GB.

*Metabolite data from greenhouse and field experiment in .xslx format. EV < 5 GB.

WP4:

*Disease scoring data in .jpg format with Image J and quantified spot areas stored in .xlsx. files. EV < 10 GB.

*In silico mutation analysis in .mdb format with MOE. EV < 10 GB.

*Molecular Dynamics in .gro/.ene/.pdb format, respectively, generated by Gromacs, Amber or Desmund. EV < 0.4 TB.

*Molecular Docking and modelling data in .pdb/.sdf/.mol2 format, respectively, generated by bio-informatic sofware (e.g. SWISSMODEL, Alpha-fold, GOLD, MOE etc.). EV < 8 GB.

*Confocal microscopy with digital fluorescense in .czi and .jpeg format. EV < 15 GB.

WP1-4:

*Own and recently published publications and (conference) presentations in .docx/.pdf format. EV < 5 GB.

3. Legal and ethical issues

Will you use personal data? If so, shortly describe the kind of personal data you will use. Add the reference to your file in KU Leuven's Register of Data Processing for Research and Public Service Purposes (PRET application). Be aware that registering the fact that you process personal data is a legal obligation.

- No

Privacy Registry Reference:
Short description of the kind of personal data that will be used:

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, add the reference to the formal approval by the relevant ethical review committee(s)

- No

Does your work possibly result in research data with potential for tech transfer and valorisation? Will IP restrictions be claimed for the data you created? If so, for what data and which restrictions will be asserted?

- No

Very unlikely, this is expected to be the case in follow up trajectories

Do existing 3rd party agreements restrict dissemination or exploitation of the data you (re)use? If so, to what data do they relate and what restrictions are in place?

- No

4. Documentation and metadata

What documentation will be provided to enable reuse of the data collected/generated in this project?

Lab protocols are available as .docx. Hired fellows are dedicated to keep an electronic lab notebook which is clearly linked to data stored on network drive **J** – KU Leuven. The Biology Department at KU Leuven has migrated to LUNA where every researcher has his/her own ‘Personal’, ‘Shared’ and ‘Archive’ drive.

Will a metadata standard be used? If so, describe in detail which standard will be used. If no, state in detail which metadata will be created to make the data easy/easier to find and reuse.

- No

5. Data storage and backup during the FWO project

Where will the data be stored?

The data will be primarily stored where they are generated, either at KU Leuven or at NMBU. Data produced in Germany will be immediately transferred to KU Leuven. OnDrive ensures the flexibility of data sharing between the partners. At KU Leuven, storage capacity is foreseen by personal (I) and shared (J) network file storage. At NMBU, data are transferred to the Norwegian

Centre for Research Data through the UNINETT file transfer system.

How is backup of the data provided?

Automatic backup - network drive J - KU Leuven. Similar system at NMBU.

Is there currently sufficient storage & backup capacity during the project? If yes, specify concisely. If no or insufficient storage or backup capacities are available then explain how this will be taken care of.

- Yes

50 GB storage space is already available for free for every researcher. At any time storage capacity can be updated.

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

50 GB free storage is foreseen for every researcher. Storage capacity can be updated for an annual fee of 175 Euro/TB but this price may change in the near future. Extra costs will by covered by lab budget. In Norway the costs are centrally covered by the NMBU.

Data security: how will you ensure that the data are securely stored and not accessed or modified by unauthorized persons?

Data are safe in the KU Leuven and nMBY data centres. Only researchers with allocated rights can acces them through the action of a loc IT representative.

6. Data preservation after the FWO project

Which data will be retained for the expected 5 year period after the end of the project? In case only a selection of the data can/will be preserved, clearly state the reasons for this (legal or contractual restrictions, physical preservation issues, ...).

All data will ber retained during 5 years, both at KU Leuven and NMBU

Where will the data be archived (= stored for the longer term)?

The KU Leuven Network Drive K is used for this purpose. A similar system exists at NMBU, Norway.

What are the expected costs for data preservation during the retention period of 5 years? How will the costs be covered?

Annual fee of 150 Euro / TB will be covered by lab budgets.

7. Data sharing and reuse

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

- No

In principle not, although some data may be subject to a patenting process

Which data will be made available after the end of the project?

All data on which publications were based will be publicly available

Where/how will the data be made available for reuse?

- In an Open Access repository

Useful data will be released to the great public during publishing in academic peer reviewed journals. Raw data will be delivered in depositories associated with most open access journals. We have foreseen FWO project budgets to be able to publish in open access journals to enhance the visibility of our research.

When will the data be made available?

- Upon publication of the research results

Who will be able to access the data and under what conditions?

Only researchers participating in the project will be able to access the data before publishing. After publishing the data will be available to the broad audience as publications in peer reviewed journals.

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

Data sharing costs equal open access publication costs covered by FWO project budgets, as explained above.

8. Responsibilities

Who will be responsible for data documentation & metadata?

The PI, Wim Van den Ende is end responsible (but assisted by IT Biology KU Leuven).

Who will be responsible for data storage & back up during the project?

The PIs Siri Fjellheim (NMBU) and Wim Van den Ende (KULeuven) are responsible for the storage and back up of the data generated at their home universities, with support of their IT departments.

Who will be responsible for ensuring data preservation and reuse ?

The PIs Siri Fjellheim (NMBU) and Wim Van den Ende (KULeuven) are responsible, with support of their IT departments.

Who bears the end responsibility for updating & implementing this DMP?

The PIs Siri Fjellheim and Wim Van den Ende bear the end responsibility of updating & implementing this DMP.