Role of α-tubulin acetylation in microtubule dynamics and axonal transport in C9ORF72 amyotrophic lateral sclerosis pathology

Application DMP

Questionnaire

The questions in this section should only be answered if you are currently applying for FWO funding.
Are you preparing an application for funding?

Question not answered.

Describe the datatypes (surveys, sequences, manuscripts, objects …) the research will collect and/or generate and /or (re)use. (use up to 700 characters)

Question not answered.

Specify in which way the following provisions are in place in order to preserve the data during and at least 5 years after the end of the research? Motivate your answer. (use up to 700 characters)

Question not answered.

What's the reason why you wish to deviate from the principle of preservation of data and of the minimum preservation term of 5 years? (max. 700 characters)

Question not answered.

Are there issues concerning research data indicated in the ethics questionnaire of this application form? Which specific security measures do those data require? (use up to 700 characters)

Question not answered.

Which other issues related to the data management are relevant to mention? (use up to 700 characters)

Question not answered.

For whom might your data be useful outside of the research project, e.g. researchers or other stakeholders? How will you share this data?

Question not answered.

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DPIA

DPIA

Have you performed a DPIA for the personal data processing activities for this project?

Question not answered.

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GDPR

GDPR

Have you registered personal data processing activities for this project?

Question not answered.

Role of α-tubulin acetylation in microtubule dynamics and axonal transport in C9ORF72 amyotrophic lateral sclerosis pathology

FWO DMP (Flemish Standard DMP)

1. 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.

				Only for digital data	Only for digital data	Only for digital data	Only for physical data
Dataset Name	Description	New or reused	Digital or Physical	Digital Data Type	Digital Data format	Digital data volume (MB/GB/TB)	Physical volume
		Please choose from the following options: • Generate new data • Reuse existing data	*Please choose from the following options:* • Digital • Physical	*Please choose from the following options:* • Observational • Experimental • Compiled/aggregated data • Simulation data • Software • Other • NA	*Please choose from the following options:* • .por, .xml, .tab, .csv,.pdf, .txt, .rtf, .dwg, .gml, … • NA	*Please choose from the following options:* • <100MB • <1GB • <100GB • <1TB • <5TB • <10TB • <50TB • >50TB • NA	
Lab books	Experiments are registered, documented, checked and preserved through ELN and paper notebooks	Generate new data	Digital and physical	Other	.txt .pdf .doc	<100MB	Paper notes associated with performed experiments
Stem cells							
Video files for axonal transport tracking	Live axonal transport videos + images from iPSC-derived motor neurons. Analysed by ImageJ and quantified by plug-in trackmate	Generate new data	Digital	Experimental	.TIFF	<100 GB	
Biological tissue samples	Cell pellets from iPSC lines or other cell lines frozen at -80°C	Generate new data	Physical	/	/	/	~500 tubes

Text manuscript for publications	Text files associated with submitted publications.	Generate new data	Digital	Experimental Compiled/aggregated data	.docx	<100GB	
Standard operating procedures	Written protocols for experimental procedures performed in the lab	Generate new data Reuse existing data	Digital	Experimental Compiled/aggregated data	.pdf .docx	<1GB	
Risk assessments	Written risk assessments associated with standard operating procedures for experimental procedures performed within the lab.	Generate new data Reuse existing data	Digital	Experimental Compiled/aggregated data	.pdf .docx	<1GB	
Protein samples	Samples of denatured or non-denatured proteins extracted from tissue or cells using detergents. Stored at -20° for short term storage or -80°C for long-term storage	Generate new data	Physical	/	/	/	~500 tubes
Analysis of Western blot images	Numerical data. Quantification of western blot images, performed using ImageQuant, in Microsoft Excel and GraphPad prism	Generate new data	Digital	Experimental	.xls .pzfx	<1GB	
Analysis of confocal data	Quantification of confocal image data performed using ImageJ, in Microsoft Excel and GraphPad prism.	Generate new data	Digital	Experimental	.xls .pzfx	<1GB	
Fluorescent imaging files	Raw fluorescence images from iPSC-motor neurons	Generate new data	Digital	Experimental	.TIFF	<100GB	

Stem cells and cell lines	Cell lines derived from ALS patient's fibroblasts and commercially available human cell lines	Reuse existing data	Physical	/	/	/	<10 different lines
Microscopy slides	Microscopy slides used during imaging, consisting of formaldehyde-fixed tissue or cells immunostained or dyed using chemicals.	Generate new data	Physical	/	/	/	<500 glass microscopy slides
Western blot images	Images created by developing western blot membranes containing protein samples.	Generate new data	Digital	Experimental	.TIFF .jpeg	<1GB	

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:

Risk assessments and SOPs already present in the lab.

Are there any ethical issues concerning the creation and/or use of the data (e.g. experiments on humans or animals, dual use)? Describe these issues in the comment section. Please refer to specific datasets or data types when appropriate.

- No

Will you process personal data? If so, briefly describe the kind of personal data you will use in the comment section. Please refer to specific datasets or data types when appropriate.

- 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.

- Yes

We do not exclude that the proposed work could result in research data with potential for tech transfer and valorisation. VIB has a policy to actively monitor research data for such potential. If there is substantial potential, the invention will be thoroughly assessed, and in a number of cases the invention will be IP protected (mostly patent protection or copyright protection). As such the IP protection does not withhold the research data from being made public. In the case a decision is taken to file a patent application it will be planned so that publications need not be delayed.
The use of material obtained within this project will be subjected to the terms

described in their respective MTAs.

Do existing 3rd party agreements restrict exploitation or dissemination of the data you (re)use (e.g. Material/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

2. 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).

Data will be generated following standardized protocols. Metadata will be documented by the research and technical staff at the time of data collection and analysis, by taking careful notes in the electronic laboratory notebook (E-notebook) and/or in hard copy lab notebooks that refer to specific datasets.
Cryotubes of biological samples (bacterial and yeast strains) stored at -80°C will be labelled with a reference number that links to an entry in or strain database.
All datasets will be accompanied by a README.txt file containing all the associated metadata (see more details below).
The data will be generated following standardized protocols. Clear and detailed descriptions of these protocols will be stored in our lab protocol database, and published along with the results.

Will a metadata standard be used to make it easier to find and reuse the data? If so, please specify (where appropriate per dataset or data type) which metadata standard will be used. If not, please specify (where appropriate per dataset or data type) which metadata will be created to make the data easier to find and reuse.

- Yes

Where available accepted metadata standards will be employed. See table below:

Type of Data	Metadata standard
Confocal images	OME-TIFF
Western blot images	OME-TIFF, JPEG
Live-cell microscopy	OME-TIFF
...	

While specific data types might require particular metadata, as a general rule the metadata will be based on a generalized metadata schema such as Dublin Core or DataCite. The following information will be stored:

- Title: free text
- Creator: Last name, first name, organization
- Date and time reference
- Subject: Choice of keywords and classifications
- Description: Text explaining the content of the data set and other contextual information needed for the correct interpretation of the data, the software(s) (including version number) used to produce and to read the data, the purpose of the experiment, etc.

- Format: Details of the file format
- Resource Type: data set, image, audio, etc.
- Identifier: DOI (when applicable)
- Access rights: closed access, embargoed access, restricted access, open access.

The final dataset will be accompanied by this information under the form of a README.txt document. This file will be located in the top level directory of the dataset and will also list the contents of the other files and outline the file-naming convention used. This will allow the data to be understood by other members of the laboratory and add contextual value to the dataset for future reuse.

3. Data storage & back-up during the research project

Where will the data be stored?

All other electronic files (text documents, images, sequences): will be stored on KU Leuven servers, with hourly on-site backup and mirroring or stored on a cloud-based service offered by KU Leuven (OneDrive). In addition data will be regularly backed -up and stored on an external harddrive.

How will the data be backed up?

KU Leuven drives are backed-up according to the following scheme:
- data stored on the "**L-drive**" is backed up daily using snapshot technology, where all incremental changes in respect of the previous version are kept online; the last 14 backups are kept.
- data stored on the "**J-drive**" is backed up hourly, daily (every day at midnight) and weekly (at midnight between Saturday and Sunday); in each case the last 6 backups are kept.
- data stored on the digital vault is backed up using snapshot technology, where all incremental changes in respect of the previous version are kept online. As standard, 10% of the requested storage is reserved for backups using the following backup regime: an hourly backup (at 8 a.m., 12 p.m., 4 p.m. and 8 p.m.), the last 6 of which are kept; a daily backup (every day) at midnight, the last 6 of which are kept; and a weekly backup (every week) at midnight between Saturday and Sunday, the last 2 of which are kept.

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

There is sufficient storage and back-up capacity on all KU Leuven servers:
- the "L-drive" is an easily scalable system, built from General Parallel File System (GPFS) cluster with NetApp eseries storage systems, and a CTDB samba cluster in the front-end.
- the "J-drive" is based on a cluster of NetApp FAS8040 controlers with an Ontap 9.1P9 operating system.

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

Both the "L-drive" and "J-drive" servers are accessible only by laboratory members, and are mirrored in the second ICTS datacenter for business continuity and disaster recovery so that a copy of the data can be recovered within an hour.

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

The total estimated cost of data storage during the project is based on the following costs:
- The costs of digital data storage are as follows: €173,78/TB/Year for the "L-drive" and €519/TB/Year for the "J-drive".
. All published lines will be preserved for the remainder of the PI's research career. All unpublished lines will be preserved for a minimum of 5 years after the end of the project.
- Electricity costs for the -80° freezers present in the labs are included in general lab costs.

- Data storage and backup costs are included in general lab costs.

4. Data preservation after the end of the research project

Which data will be retained for at least five 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...).

The minimum preservation term of 10 years after the end of the project will be applied to all datasets. All datasets will be stored on the university's central servers with automatic back-up procedures for at least 10 years, conform the KU Leuven RDM policy.

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

As a general rule, datasets will be made openly accessible, whenever possible via existing platforms that support FAIR data sharing (www.fairsharing.org), at the latest at the time of publication.

For all other datasets, long term storage will be ensured as follows:
- Digital datasets: files will be stored on the “L-drive”.
- Novel transgenic zerbrafish lines will be stored locally in the laboratory.
- Biological samples (protein, RNA, cDNA etc.) will be stored locally in the laboratory.
- Other biological and chemical samples: storage at 4°C and/or as frozen samples in cryovials as appropriate.

Following publication, the results associated with each study will also be deposited
in the Dryad repository, where they will be preserved indefinitely.

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

-The costs of digital data storage are as follows: 173,78€/TB/Year for the “L-drive” and 519€/TB/Year for the “J-drive”.
-Electricity costs for the -80° freezers present in the labs are included in general lab
costs.
-Data storage and backup costs are included in general lab costs.

5. Data sharing and reuse

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

- Yes, in an Open Access repository
- Yes, in a restricted access repository (after approval, institutional access only, …)
- Other, please specify:

Also, upon request by e-mail.
As a general rule, datasets will be made openly accessible via existing platforms that support FAIR data sharing (www.fairsharing.org). Sharing policies for specific research outputs are detailed below:

- Cell lines: All human pluripotent cell lines supporting publications will be registered in hPSCreg, the European human embryonic stem cell registry supported by the European Commission (https://hpscreg.eu/). Information about the deposited lines (including donor information, derivation method, availability and characterization) will also be made accessible. Registration of cell lines in hPSCreg will provide visibility, confirm ethical procurement and facilitate comparison with other hiPSC lines. The PI will remain the distributor of the pluripotent cell lines.
- Other digital datasets that support publications (including image, video or audio files, spectroscopy data and simulation data) will be made publicly available via an open research data
platform such as Mendeley Data or Zenodo.

- Antibodies, synthetic and recombinant compounds: samples will be stored as appropriate in the laboratory. Within availability, they will be shared with interested researchers upon request.
- Research documentation: All protocols used to generate published data will be described in the corresponding manuscript(s), and the related documentation will be included as supplementary information. These data and all other documents (daily logs, raw data) are accessible to the PI and the research staff, and will be made available upon request.
- Manuscripts: All scientific publications will be shared openly. Manuscripts submitted for publication will be deposited in a pre-print server such as bioRxiv, arXiv, Nature Precedings or ASAPbio). At the time of publication, research results will be summarized on the PI's website (add website address) and postprint pdf versions of publications will be made available there if allowed by copyright agreements, possibly after an embargo as determined by the publisher. Before the end of the embargo or in cases where sharing the post-print is not allowed due to copyright agreements, a pre-print version of the manuscript will be made available. Publications will also be automatically listed in our institutional repository, Lirias 2.0, based on the authors name and ORCID ID.
- Data that do not support publication will be either deposited in an open access repository or made available upon request by email.

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

Whenever possible, datasets and the appropriate metadata will be made publicly available through repositories that support FAIR data sharing. These repositories clearly describe their conditions of use (typically under a Creative Commons CC0 1.0 Universal (CC0 1.0) Public Domain Dedication or an ODC Public Domain Dedication and License, with a material transfer agreement when applicable). Interested parties will thereby be allowed to access data directly, and they will give credit to the authors for the data used by citing the corresponding DOI. For data shared directly by the PI, a material transfer agreement (and a non-disclosure agreement if applicable) will be concluded with the beneficiaries in order to clearly describe the types of reuse that are permitted.

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 in the comment section per dataset or data type where appropriate.

- Yes, Intellectual Property Rights

We aim at communicating our results in top journals that require full disclosure of all included data. Biological material will be shared upon simple request following publication, unless we identify valuable IP, in which case we will first protect commercial exploitation, either through patenting or via an MTA that restricts the material from commercial use.

Where will the data be made available? If already known, please provide a repository per dataset or data type.

In an Open Access respository, in a restricted access repository, upon request by mail.

When will the data be made available?

As a general rule all research outputs will be made openly accessible at the latest at the time of publication. No embargo will be foreseen unless imposed e.g. by pending publications, potential IP requirements – note that patent application filing will be planned so that publications need not be delayed - or ongoing projects requiring confidential data. In those cases, datasets will be made publicly available as soon as the embargo date is reached.

Which data usage licenses are you going to provide? If none, please explain why.

Datasets and the appropriate metadata will be made publicly available through repositories that support FAIR data sharing. These repositories clearly describe their conditions of use (typically under a Creative Commons CC0 1.0 Universal (CC0 1.0) Public Domain Dedication or an ODC Public Domain Dedication and License, with a material transfer agreement when applicable). Interested parties will thereby be allowed to access data directly, and they will give credit to the authors for the data used by citing the corresponding DOI. For data shared directly by the PI, a material transfer agreement (and a non-disclosure agreement if applicable) will be concluded with the beneficiaries in order to clearly describe the types of reuse that are permitted.

Do you intend to add a PID/DOI/accession number to your dataset(s)? If already available, you have the option to provide it in the comment section.

- Yes

Manuscripts: Metadata information will be submitted alongside the final version of the manuscript, including the names, titles, email addresses, ORCIDs and affiliations of all authors. Upon publication, this metadata information will also be submitted to bibliographic databases such as Medline. All manuscripts will be assigned a unique Digital Object Identifer (DOI) by the publisher. Manuscripts will be given a descriptive title, and will be accompanied by keywords provided by the authors in order to maximize their findability.

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

It is the intention to minimize data management costs by implementing standard procedures e.g. for metadata collection and file storage and organization from the start of the project, and by using free-to-use data repositories and dissemination facilities whenever possible. Data management costs will be covered by the laboratory budget.

6. Responsibilities

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

Metadata will be documented by the research and technical staff at the time of data collection and analysis, by taking careful notes in the laboratory notebook that refer to specific datasets, and additionally compiling applicable metadata along with the data in the manner described above.

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

The research and technical staff will ensure data storage and back up, with support from René Custers and Alexander Botzki for the electronic laboratory notebook and from Raf De Coster for the KU Leuven drives.

Who will manage data preservation and sharing?

The PI is responsible for data preservation and sharing, with support from the research and technical staff involved in the project, from René Custers and Alexander Botzki for the electronic laboratory notebook and from Raf De Coster for the KU Leuven drives.

Who will update and implement this DMP?

The PI is ultimately responsible for all data management during and after data collection, including implementing and updating the DMP.