The polyamine transport system as modulator of mitochondrial iron and polyamine homeostasis driving melanoma cancer progression

A Data Management Plan created using DMPonline.be

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Project abstract:

Polyamines are essential for normal cell function, and its metabolism is strongly induced in cancer cells. Polyamines can also be taken up and, recently, the hosting lab characterized two key members of the polyamine transport system (PTS): ATP13A2 and ATP13A3. Although they represent possible therapeutic targets, their relative involvement in cancer is unclear, and based on their distinct endosomal localization they may exert distinct functions. Melanoma progression is marked by gradual differences in the PTS with a shift from ATP13A2 to ATP13A3, making it a perfect model to study the relative role of ATP13A2 to ATP13A3. We will focus on a process called "phenotype switching" that is associated with the acquisition of resistance to current therapy. By modulating expression of ATP13A2 and ATP13A3 in isogenic, therapy sensitive/resistant melanoma cells, we will determine their relative impact on polyamine levels, proliferation/migration and therapy resistance. Since polyamine and iron homeostasis are intimately linked, we will also study the role of ATP13A2 versus ATP13A3 on iron distribution between lysosomes and mitochondria, which may rely on lysosomal/mitochondrial membrane contact sites. This project will reveal the relative role of ATP13A2 and ATP13A3 in polyamine/iron homeostasis and melanoma progression to define their potential as drug targets in melanoma.

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DPIA

DPIA

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

- No

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GDPR

GDPR

Have you registered personal data processing activities for this project?

- No

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Application DMP

Questionnaire

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

The data types include the following:
- files of raw data and accompanying data analysis of biochemical, mass spectrometry, flow cytometry and cell function experiments
- microscopy images of cells and tissue
- reports of statistical analysis of raw data
- metabolomics datasets
- published manuscripts, with accompanying data summary figures and tables
- interim project reports and data summaries
- master and PhD thesis manuscripts and rotation student reports
- abstracts and poster communications
- presentation files for scientific conferences, lab or business meetings.

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)

1. Designation of responsible person (If already designated, please fill in his/her name.)

A senior lab technician, Marleen Schuermans is appointed as data manager of the lab.

2. Storage capacity/repository

- during the research
- after the research

Collected data are stored on personal folders on the lab J-drive (100 Mb) that is accessible for review by the principal investigator and data manager. Data on these directories is automatically backed-up. Large data sets (microscopy) are stored on the L-drive. Once a manuscript is accepted for publication, all original data and summary/report files are grouped and collected at the K-drive of the lab and archived for minimal five years (automated backup in place).

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)

No deviation is requested. We will comply with the principle of preserving the data for a minimum of five years.

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)

No

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

NA

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FWO DMP (Flemish Standard DMP)

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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	
Raw data files	Cell-based assays (FACS, toxicity assays, cellular marker quantifications etc)	Newly generated	Digital	Experimental	.xlsx .fcs (Flow cytometry)	<100 GB	
Prism Graphpad	Graphics and statistical analyses of raw data files	Newly generated	Digital	Experimental	.prism	<100 MB	
Microscopy pictures	Fluorescent markers in cells and tissues	Newly generated	Digital	Experimental		<100 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:

Data will be newly generated

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.

- No

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).

Physical lab notebook used day-to-day to make calculations.
Electronic lab notebooks (onenote) including the protocols that were used and the eventual deviations from the protocol will be indicated and saved on the J-drive.
After departures of lab members, all these files are moved for long-term storage on the K-drive (1TB).

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

Relevant information such as the date, type of data, type of biological model used and the experimental conditions will be linked to every raw data file.

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

Where will the data be stored?

Data will be stored in personal folders on the lab J-drive (100 Mb) that is accessible for review by the principal investigator and data manager. Data on these directories is automatically backed-up. Large data sets (microscopy) are stored on the L-drive. Once a manuscript is accepted for publication, all original data and summary/report files are grouped and collected at the K-drive of the lab and archived for a minimum of ten years (automated backup in place).

How will the data be backed up?

Standard back-up is provided by the organisation's IT service (KU Leuven).

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

Large files (such as flow cytometry .fcs and microscopy files) will be stored on a separate large drive (L-drive) which will provide sufficient storage capacity. There is 1TB available currently with the possibility to increase it if needed thanks to the IT service of KU Leuven.

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

Data stored on personal folders can only be accessed by the researcher or the lab's data manager and principal investigator.

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

503.66 euros/TB/year. Currently the total would be 503.66 euros for the J-drive/year and 2518,3 euros for the L-drive (5TB capacity). These costs are covered by the lab's funds.

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...).

All original data and summary/report files linked to an accepted publication.

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

Yes, a special repository (the K-drive, 1TB capacity) exist where data will be archived for minimal five years.

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

503.66 euros/TB/year so 503.66 euros per year as the K-drive has currently a 1TB capacity, which can eventually be increased if needed.

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

Only published datasets (linked to a scientific article) will be made available.

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

NA

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.

- No

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

We will publish datasets on the free-to-use Zenodo.

When will the data be made available?

After publication

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

Public domain mark (PD)

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

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

It's free on Zenodo.

6. Responsibilities

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

The researcher (Youri Fayt)

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

Data manager (Marleen Schuermans) and ICT (KU Leuven)

Who will manage data preservation and sharing?

The PI (Peter Vangheluwe)

Who will update and implement this DMP?

The PI (Peter Vangheluwe)