research project PDMT1/23/007

A Data Management Plan created using DMPonline.be

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Project abstract:
Extracellular vesicles (EVs) are produced by cells of all domains of life and recent research has shown
their involvement in communication at several levels (intercellular, interspecies and interkingdom) by
the transfer of their content. In insects, the largest and most speciose class of animals, reports on
EVs are scarce but starting to emerge. Despite the relevant advances, many aspects regarding EV
biology remain unanswered. Therefore, in this proposal, I aim to investigate the presence of specific
miRNA sequence motifs that target the miRNA to be either exported into EVs or retained into the
donor cell. In addition, I aim to unravel the proteins involved in this loading mechanism. Finally, I will
explore if modifying these motifs enables enhanced miRNA delivery to target cells. In short, I will do
this via sRNA sequencing, proteomics analysis and functional (loss-of-function) studies. By
establishing both national and international key collaborations, I have ensured the ideal conditions to
tackle the research questions in the current proposal. Given that this PDM grant lasts only one year, the focus will be on
the first part, namely on unraveling the presence of specific miRNA sequence motifs that target the miRNA to be either
exported into EVs or retained in the donor cell.

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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	
EV characterization	TEM, NTA and WB analyses of isolated EV fractions	*N*	D	I		<100GB	
sRNA seq data	Differential miRNA sequencing data of large and small EVs and cells	N	D	N T	FASTQ xlsx	<100GB	
ddPCR data	miRNA ddPCR data upon target protein KD	N	D	N T	xlsx	<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:

NA

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

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

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 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

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

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).

All experimental set-ups and data are clearly written down in labbooks. In addition to this, the same information is kept on a Network Attached Storage (NAS) system available at our lab, where it can be accessed by other team members. For each project, the following will be stored: raw data (nanodrop, ddPCR, western blots, etc.), processed data (excel spreadsheets, GraphPad files, etc.), and final results (graphs, tables, images, texts, sequences, etc.). Upon publication, the data is transferred to a secured server system of KU Leuven, where it will be preserved for at least 10 years after project expiry. At the same time, generated datasets (for example sRNA seq data) will be made public via online repositories.

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

Data Storage & Back-up during the Research Project

Where will the data be stored?

- Other (specify below)
- Large Volume Storage

All data is kept on a secured Network Attached Storage (NAS) system available at our lab. Upon publication, the data is transferred to a Large Volume Storage of KU Leuven, where it will be preserved for at least 10 years after project expiry.

How will the data be backed up?

- Other (specify below)

Data stored by the host lab is regularly backed up on a physically separated storage device in the host lab using Synology's backup software, which allows for incremental backups as well as periodic complete backups. Critical data can also be backed up on the secure cloud storage provided by the KU Leuven.

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

The host lab has acquired specialized hardware dedicated to large data storage (our lab's NAS). We therefore have plenty of storage capacity for the foreseeable future.

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

Data in the host lab is both physically as well as digitally secured: the storage devices are kept in a restricted access area in a locked storage cabinet. Digitally, the servers are only accessible through a lab-restricted LAN using a Secure Shell (SSH) protocol.

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

Since the hardware is already available and local, we do not expect significant storage costs other than those associated with running the servers.

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

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

- Large Volume Storage (longterm for large volumes)

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

Since the hardware is already available and local, we do not expect significant storage costs other than those associated with running the servers.

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.

- Other (specify below)

All data will be made publically available upon publication.

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 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)

Upon publication, the relevant data will be made available by uploading them to an open access repository according to the journal's policy.

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.

- CC-BY 4.0 (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

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

We do not expect extra cost for data sharing between partners, except for the high publication processing fees in open access journals.

Responsibilities

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

My PI and myself are responsible for data documentation and metadata during the research project.

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

The PI and myself will have the responsibility for data storage and back up during the project in consultation with our ICT department. As we are working with our NAS system for quite some time now, back ups etc are regularly made.

Who will manage data preservation and sharing?

Same as previous answer.

Who will update and implement this DMP?

The PI bears the end responsibility of updating & implementing this DMP.