MY PLAN (INTERNAL FUNDS DMP)

DMP TITLE

ADMIN DETAILS

Project Name: My plan (Internal Funds DMP) - DMP title
Principal Investigator / Researcher: Marion Delcroix
Institution: KU Leuven

1. GENERAL INFORMATION

Name of the project lead (PI)
Marion DELCROIX

Internal Funds Project number & title
C24E/21/032
Air pollution as a Catalyzer of defective Angiogenesis Driving chronic thromboEmbolic pulMonary hypertension progression: Insights from in vivo and in vitro Approaches_ACADEMIA

2. DATA DESCRIPTION

2.1. Will you generate/collect new data and/or make use of existing data?
Generate new data
We will use pulmonary arterial endothelial cells that we previously isolated and will further isolate. We will use plasma and pulmonary vascular tissue, which we already received and will receive from UZ-Leuven

2.2. What data will you collect, generate or reuse? Describe the origin, type and format of the data (per dataset) and its (estimated) volume. This may be easiest in a numbered list or table and per objective of the project.

WP1

Origin/Source	Type	Format	Volumes
Informed consent form	Text	Printed paper	1 per patient
Pulmonary endarterectomy (PEA) tissue	Physical samples	Human tissue	4-12 samples per patient
Swan-Ganz pulmonary arterial catheters	Physical samples	Catheter	1 catheter per patient procedure
Human blood	Physical sample	Cryopreserved sample	3 samples per patient procedure
Pulmonary arterial endothelial cells	Physical sample	Cryopreserved sample	2-3 samples per patient procedure
Plasma	Physical sample	Cryopreserved sample	2 samples per patient procedure

Extracellular vesicles	Physical sample	Cryopreserved sample	1 sample per patient procedure
Overview sample collected	Text	xlsx	0.2 GB
Cell culture growth observation	images; text	.tiff; .xlsx	2 GB
Cell phenotyping	images; text	.tiff; .xlsx	5 GB
EVOS live imaging of pulmonary arterial endothelial cells	Movie	.mp4	10 GB
Angiogenesis data	images, raw data, graphs	.tiff; .xlsx; .pzf	5 GB
pulmonary arterial endothelial cell barrier function	images	.tiff; xlsx	0.3 GB
Protein lysates, RNA, cDNA	Physical sample	Cryopreserved sample	4-6 per patient
U-plex assay	Molecular assessment	.png; .xlsx	0.5 GB
RNA, cDNA, RT^2 PCR array	Molecular assessment	.txt; .xls; .png; .pdf; .pzf	1 GB
Paraffin embedded blocks from PEA material	Embedded tissue	Room temperature preserved sample tissue	4-12 blocks per patient
Cryoblocks from PEA material	Embedded tissue	Cryopreserved sample	4-12 blocks per patient
Histological images	Images	.vsi; .tiff	10 GB

WP2

Rabbits	Animals		30
Plasma	Physical sample	Cryopreserved sample	1-2 samples per patient procedure
Protein lysates, RNA, cDNA	Physical sample	Cryopreserved sample	4-6 per animal
Angiogenesis data	images, raw data, graphs	.tiff; .xlsx; .pzf	3 GB
Paraffin embedded blocks from rabbit tissue	Embedded tissue	Preserved sample tissue	4-12 blocks per animal
Cryoblocks from rabbit tissue	Embedded tissue	Cryopreserved sample	4-12 blocks per animal
Histological images	Images	.vsi; .tiff	10 GB
Telemetry data	Raw data, graphs	.pnm; .xlsx; .pzf	15 GB
Echocardiography data	digital, raw data, graphs	.dcm; .xlsx; .pzf	15 GB
microCT data	Digital data	.tiff	20 GB

WP3

Origin/Source	**Type**	**Format**	**Volumes**
Informed consent form	Text	Printed paper	1 per patient
Pulmonary endarterectomy (PEA) tissue	Physical samples	Human tissue	4-12 samples per patient
Swan-Ganz pulmonary arterial catheters	Physical samples	Catheter	1 catheter per patient procedure
Pulmonary arterial endothelial cells	Physical sample	Human cells	2-3 samples per patient procedure
Overview sample collected	Text	.xlsx	0.2 GB

Cell culture growth observation	images; text	.tiff; .xlsx	2 GB
Cell phenotyping	images; text	.tiff; .xlsx	5 GB
EVOS Live imaging of pulmonary arterial endothelial cells	Movie	.mp4	10 GB
Angiogenesis data	images, raw data, graphs	.tiff; .xlsx;	3 GB
pulmonary arterial endothelial cell barrier function	images	.tiff; xlsx	0.5 GB
Protein lysates, RNA, cDNA	Physical sample	Cryopreserved sample	4-6 per patient
U-plex assay	Molecular assessment	.png; .xlsx	0.5 GB
RT^2 PCR array	Molecular assessment	.txt; .xls; .png; .pdf; .pzf	1 GB

3. ETHICAL AND LEGAL ISSUES

3.1. Will you use personal data? If so, shortly describe the kind of personal data you will use. Add the reference to the file in KU Leuven's Record of Processing Activities. Be aware that registering the fact that you process personal data is a legal obligation.

Yes,

Personal data include demographic information (age, gender, length, body weight, home address...), medical information (hemodynamics, exercise capacity, echocardiography) and general health status (smoking behavior, pulmonary embolism history) and therapy (medical treatment). Data are exported from UZ Leuven medical record.

Pulmonary vascular material is collected via the ethical approval S57114. Cellular composition and specific in vitro experiments will be addressed on pulmonary vascular endothelial cells (S57114) isolated from this material.

3.2. 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).

Yes

Ethical approval (P047/2022) related to the animal model has already been obtained for this project.

3.3. Does your research 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

3.4. 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 regarding reuse and sharing are in place?

No

4. DOCUMENTATION AND METADATA

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

Standard experimental procedures (SOPs) and practices will be fully documented as word and PDF, and saved on GBW-0098_Pulmonary Circulation J-drive.
Those SOPs include:
- Pulmonary endarterectomy tissue collection and isolation pulmonary arterial endothelial cells
- Swan-Ganz catheter collection and isolation pulmonary arterial endothelial cells
- Blood collection and isolation of extracellular vesicles
- Culture procedures for pulmonary vascular endothelial cells
- Procedures to prepare the organ on-chip devices
- Procedures for in vitro assays (endothelium barrier function; angiogenesis)
- Sampling procedure and experimental protocol for live imaging, immunostaining, RNA studies and protein assays
- For microscopic image, dimensions, image type, bit-depth, pixel sizes and microscope settings will be noted and the methodology and protocol will also be described in detail.
- Surgical and interventional procedures regarding the animal model (telemetry and catheter implantation, echocardiography, right heart catheterization, microCT)
Raw experimental data will be collected per experimental test, and will include a text file with a clear description of what the data represent and how they were generated. This description will be documented in notebooks (with page numbers), in electronic format (word files) and/or in One Note.
The name of the folder will always contain the date, name of the experiment and the name of the person who performed the experiment.
Each individual file with experimental data will contain information on the study design, the origin of the samples, and all necessary information for an independent analyst to use or reuse the data accurately and efficiently.

4.2. Will a metadata standard be used? If so, describe in detail which standard will be used. If not, state in detail which metadata will be created to make the data easy/easier to find and reuse.
No
For raw data, a meta datafile of the experimental settings will be created in a software-dependent format according to methodology. Metadata scheme using excel sheet with locked row and column will be used for other metadata related to experiments and will include data, name of the investigator, type of experiments and link to data documentation.
For each manuscript, an excel file, statistical file (GraphPad prism), PowerPoint file and word file will be provided in order to allow reconstruction and reanalyze of the data of each manuscript.
All files will be stored on GBW-0098_Pulmonary Circulation J-drive.

5. DATA STORAGE AND BACKUP DURING THE PROJECT

5.1. Where will the data be stored?
Digital files of research data (raw data, figures, excel files, textual files, results from rabbit experiments etc.) will be stored on local KU Leuven PCs, and will be backed up on the shared KU Leuven GBW-0098_Pulmonary Circulation J-drive. Images from microCT and echocardiography will be saved on external hard drives.
Paper lab notebooks will be kept in locked closets in the labs of the PIs.

Physical samples are stored in the laboratory in histology room, fridges, freezers (-20°C and -80°C), cryo-freezer (-150°C) or in liquid nitrogen, depending on the kind of sample.
A detailed overview list of all samples is available.

5.2. How will the data be backed up?

We will use the back-up facilities of the KU Leuven IT services. Backups of project data are made using "snapshot" technology, which is the online storage of incremental data changes. The standard backup regime is as follows:

- *An hourly backup (at 8 AM, 12 PM, 4 PM and 8 PM) with the last 6 being stored on our server*
- *A daily backup at midnight, the last 6 being stored on our server*
- *A weekly backup each Saturday at midnight, the last 12 being stored on our server*

The end user can use his own Windows PC to restore files to an older version using the "previous versions" function. According to the above backup scheme, it is possible to go back in time up to 12 weeks.
For the purpose of "business continuity" or "disaster recovery", a mirror (exact copy) of all data is created in a second datacenter where the data are copied every hour. In the event that the primary storage unit is corrupted, the ICTS team can get this copy online within an hour.
Back-ups from microCT and echocardiography images will be taken manually when images are collected.

5.3. 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.

Since storage place is still expandable, no storage or backup troubles are expected. Our data will be stored at the KU Leuven secure environment, of which daily backup are made by the ICT to secure the data. Storage will occur on the shared KU Leuven GBW-0098_Pulmonary Circulation J-drive.
For storage of microCT and echocardiography images, we will acquire a 4TB external hard disk.
For storage of samples we have currently sufficient storage space in fridges and freezers.

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

Costs for large file storage (telemetry, echocardiography, microCT) have been estimated as 500 euros per year including the shared KU Leuven GBW-0098_Pulmonary Circulation J-drive (52 euros/100 GB/year) and a 4TB external hard disk (600 euros).

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

The digital data are securely stored on the shared KU Leuven GBW-0098_Pulmonary Circulation J-drive. Access to the server and to "One Note" files is restricted to the research group members only and secured by a strict access right management controlled by the PI. The access to the KU Leuven server and One Note files is u-number and password controlled.
All physical data, printed forms and notebooks are stored in the labs in locked cabinet. Access to the lab is secured and badge controlled.

6. DATA PRESERVATION AFTER THE END OF THE PROJECT

6.1. Which data will be retained for the expected 10 year period after the end of the project? If only a selection of the data can/will be preserved, clearly state why this is the case (legal or contractual restrictions, physical preservation issues, ...).
In accordance to the KU Leuven policy we will retain all data for at least 5 years after the end of a research project of after the end of a PhD dissertation or after a publication.

6.2. Where will these data be archived (= stored for the long term)?
The research data (digital raw data, figures, excel files, textual files, results from rabbit experiments etc.) will be stored on the shared KU Leuven GBW-0098_Pulmonary Circulation J-drive and on external hard drives.
Paper notebook will be stored in the offices of the PIs.
Plasma samples and primary cells from patients and healthy subjects will be stored in locked -80°C and -150°C freezers.
Biological samples will be stored in fridges and freezers in the BREATHE lab.

6.3. What are the expected costs for data preservation during these 10 years? How will the costs be covered?
Expected costs for data preservation over the 5-year period retention are about 10.40 euros. This will be covered by running projects or eventually by the department CHROMETA, which reserves for each separate group an annual budget, which should be sufficient to cover the costs of basic storage.

7. DATA SHARING AND RE-USE

7.1. 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 or because of IP potential)?
No

7.2. Which data will be made available after the end of the project?
All data that published in international peer-reviewed journals will be available.

7.3. Where/how will the data be made available for reuse?
Publicaitions will be made available through Lirias, taking into account the embargo period for the specific Journals.
Full anonymized dataset will be uploaded in open repositories such as Zenodo (in .cvs format)

7.4. When will the data be made available?
Upon publication of the research results.
Published data will be made available at the time of publication in case of open access or upon request for other publications.

7.5. Who will be able to access the data and under what conditions?
***During the time frame of the project**: all researchers involved in the project with access via u-number and password controlled.*
***During the post-project trajectory**: all researchers involved in the project with access via u-number and password controlled. External users upon request with contact via LRD.*

7.6. What are the expected costs for data sharing? How will these costs be covered?
We do not expect any costs associated with data sharing since we plan to use the free platform provided by Lirias.

8. RESPONSIBILITIES

8.1. Who will be responsible for the data documentation & metadata?
The PI (Marion Delcroix) and Co-PI (Rozenn Quarck) will be responsible for documentation of data and metadata.
PhD students and technicians will have the daily responsibility of record keeping of all data (digital, paper and biological samples). They will also be responsible for a correct and accurate data entry and recording of metadata.

8.2. Who will be responsible for data storage & back up during the project?
PhD students and technicians will have the daily responsibility of record keeping of all data (digital, paper and biological samples). They will also be responsible for a correct and accurate data entry and recording of metadata. The PI (Marion Delcroix) and Co-PI (Rozenn Quarck) will be responsible for data storage and back-up during the project.

8.3. Who will be responsible for ensuring data preservation and sharing?
The PI (Marion Delcroix) and Co-PI (Rozenn Quarck).

8.4. Who bears the end responsibility for updating & implementing this DMP?
The PI (Marion Delcroix) and Co-PI (Rozenn Quarck).