DMP title

Project Name FKM (FWO DMP) - DMP title

Project Identifier 18B2122N

Grant Title 18B2122N

Principal Investigator / Researcher Rik Lories

Project Data Contact Rik Lories

Description Rheumatic and musculoskeletal diseases (RMDs) are characterized by pain and a reduction in the range of motion and function of the skeleton. RMDs represent some of the more burdensome chronic conditions affecting our society. Their high prevalence and disabling consequences impose an enormous burden on individuals and on our societies, in terms of work and productivity loss, and of costs for health care and social security systems. My research focuses on osteoarthritis and spondyloarthritis, two common and often severe RMDs. In this project my team will further explore the molecular mechanisms that determine the balance between the maintenance of joint homeostasis and the development of joint disease. We will focus on key pathways and processes in the joint such as Wnt signaling and biomechanical stress. By modulating such pathways and their regulators and by advancing the novel concept of micro-rehabilitation of the chondrocyte's cell memory, we aim for novel breakthroughs and new therapeutic targets for these diseases.

Institution KU Leuven

1. General Information

Name applicant

Rik Lories

FWO Project Number & Title

Maintaining and restoring joint homeostasis in chronic arthritis (3M210511)

Affiliation

- KU Leuven

This project is a large team effort and features **a 5-year plan for the research team of which I am the senior principal investigator (PI).** My research group (Laboratory of Tissue Homeostasis and Disease (THD)) is currently managed by me and junior PI **Prof. Silvia Monteagudo.** In addition, the THD lab also welcomes **Prof. Ilse Jonkers** and **Prof. Barbara Neerinckx** as co-PIs on a part-time basis.

2. Data description

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

- Generate new data
- Reuse existing 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).

Data used in this project will mostly be **new data** . Existing data of interest are transcriptome datasets from the research team, available from the GEO repository (https://www.ncbi.nlm.nih.gov/gds/), under accession numbers GSE108036, GSE77916 and GSE33656.

New data are **quantitative and qualitative experimental data including raw data, derived and compiled data.** Overall, data will be from biological (molecular, biochemical) experiments, from animal model experiments, from metabolic assays including the Seahorse analyser and radio-active labelled tracer experiments. Qualitative raw data (photos, images) will be stored in investigator hard-copy notebooks and in digital formats (TIFF, PDF). Original data files outputs from quantitative experiments will be collected in Excel datasheets. For data sharing across platforms, data will be additionally stored in csv and txt formats. Data anaysis files will be pfzx files (Prism), sav files (SPPS) and R-project files with outputs stored as txt and csv files. Animal experiment data are registered into KU Leuven's animal experiment LAIS system

and compiled in excel and text files. Data from animal experiments are both qualitative and quantitative as above (tissue sections, images) and processed data such as scoring of cartilage damage. Data will be stored in notebooks and in digital format as above. For the metabolic and siRNA screening assays, raw data will be stored long-term together with processed and portable data (Excel, csv, txt) as above. For bioinformatics analyses, data will be stored as portable txt files as well as word and excel files. Masterdata files will be write-protected after entering all data.

Data will be structured per experiment performed (Exp identifier) with structured subsets: 1. raw data (txt - csv) 2. analyses (txt - csv) 3. images (various formats) 4. "readme" txt information files. Additional structured datasets will be stored per derived manuscript.

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)

- Yes

The fellowship builds on different project with funding. All experiments have been approved by the Ethical Committee for Animal Research at KU Leuven and - where applicable - the Ethical Committee for Clinical Research at UZ Leuven.

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?

- Yes

Data may be considered to claim intellectual property rights on the advise of Leuven R&D's valorisation team. LRD will be responsible for patent management and eventual licensing. Data may be used for industrial collaborations and will then be defined as KU Leuven background by LRD in good faith.

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

No, there are no restrictions on our data at this stage.

4. Documentation and metadata

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

The following documentation will be provided: (1) a table of content (excel file and csv) with all project-related experiments including experiment number, date of implementation and name of the researcher who stored the experiment, (2) a brief description of the goal of the experiment and related work package (word and txt file), (3) a detailed protocol or link to an existing standard protocol (SOP) which will enable other researcher to repeat the experiment, (4) all data or link to another file with the (raw) data, (5) in case of animal work: a list of the used animals with details such as age, sex, housing and link with LAIS system information, (5) samples that are generated during the experiments and will be stored and listed in an excel file, (6) if appropriate, illustrations of the data with legends and statistical analysis. In case that documentation is written or available in notebooks or stored on other files a link will be provided. (7) Read-me text files providing information about definitions used in the dataset files.

With the help of these documentations every authorized researcher will be able (1) to look up all the information of the performed experiments and (2) to repeat the experiment in exactly the same way.

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

Our anticipated data collection does not involve setups for which a metadata standard and specific repository exists. Data will therefore maximally be stored in portable formats such as txt, csv and pdf.

5. Data storage and backup during the FWO project

Where will the data be stored?

The data will be stored on the university's central servers with automatic daily back-up procedures, including ICTS Luna storage. The KU Leuven servers are secure online servers. Individual investigators participating in the project can keep copies on personal devices within a KU Leuven controlled cloud environment (Box - OneDrive via KU Leuven).

How is backup of the data provided?

The data will be stored on the university's central servers with automatic daily back-up procedures, including ICTS Luna storage. The KU Leuven servers are secure online servers.

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

Sufficient storage and backup capacity are available at KU Leuven

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

Terabyte level storage is anticipated. Although FWO has no earmarked budget at its disposal to support research data management, FWO allows for part of **the allocated project budget** to be used to cover the cost incurred.

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

All data will be stored in a protected environment. Research data can only be accessed by a login following KU Leuven's policy for identifier and with pasword.

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 research data will be kept at minimum 5 years after the end of the project

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

KU Leuven ICTS data storage center. As much as possible full datasets are also part of the publications from the group.

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

For this project data storage of 1Tb is anticipated, resulting in a cost of 520 euro per year, that can be covered by the grant and beyond.

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)?

- Yes. Specify:

IP protection and valorisation initiatives may restrict sharing of the data.

Which data will be made available after the end of the project?
All data will be made available after appropriate IP protection if this is applicable

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

- In an Open Access repository
- In a restricted access repository
- Upon request by mail

The main output of the project will be original scientific research papers. These will adhere to KU Leuven's and FWO's Open Access policy.
In the context of Open and accessible science, original datasets will be made available with publication, either as supplementary files or using datasharing platforms such as figshare or Zolondo using a CC-BY licence.
Upon reasonable and specific request, any data subset and analysis can be made available.
For data transfer filesharing via KU Leuven Box or Belnet transfer (secure) will be used.

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When will the data be made available?

- After an embargo period. Specify the length of the embargo and why this is necessary
- Upon publication of the research results

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- Upon publication of the research results

Data will be made available upon publication unless specific IP protections remain to be set.

Who will be able to access the data and under what conditions?
In principle any researcher upon reasonable request or through the data repositories.

What are the expected costs for data sharing? How will the costs be covered?
minimal costs expected (<500$ per year)

8. Responsibilities

Who will be responsible for data documentation & metadata?
Rik Lories - Silvia Monteagudo

Who will be responsible for data storage & back up during the project?
Rik Lories - Silvia Monteagudo

Who will be responsible for ensuring data preservation and reuse ?
Rik Lories - Silvia Monteagudo

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