FWO DMP Template - Flemish Standard Data Management Plan

Project supervisors (from application round 2018 onwards) and fellows (from application round 2020 onwards) will, upon being awarded their project or fellowship, be invited to develop their answers to the data management related questions into a DMP. The FWO expects a **completed DMP no later than 6 months after the official start date** of the project or fellowship. The DMP should not be submitted to FWO but to the research co-ordination office of the host institute; FWO may request the DMP in a random check.

At the end of the project, the **final version of the DMP** has to be added to the final report of the project; this should be submitted to FWO by the supervisor-spokesperson through FWO's e-portal. This DMP may of course have been updated since its first version. The DMP is an element in the final evaluation of the project by the relevant expert panel. Both the DMP submitted within the first 6 months after the start date and the final DMP may use this template.

The DMP template used by the Research Foundation Flanders (FWO) corresponds with the Flemish Standard Data Management Plan. This Flemish Standard DMP was developed by the Flemish Research Data Network (FRDN) Task Force DMP which comprises representatives of all Flemish funders and research institutions. This is a standardized DMP template based on the previous FWO template that contains the core requirements for data management planning. To increase understanding and facilitate completion of the DMP, a standardized **glossary** of definitions and abbreviations is available via the following link.

1. General Project Information
Name Grant Holder & ORCID	**Ana Cristina Nogueira Freitas - 0000-0002-8406-6204**
Contributor name(s) (+ ORCID) & roles	**Thomas Voets – Supervisor - 0000-0001-5526-5821** **Andrei Segal Stanciu – Technical support - 0000-0002-0981-9587**
Project number[1] & title	1278323N - A TRIP TO THE DORSAL ROOT GANGLIA: UNRAVELING THE MOLECULAR CHARACTERIZATION OF THE STILL NEGLECTED SATELLITE GLIAL CELLS
Funder(s) GrantID[2]	D-2023-1841
Affiliation(s)	■ <u>KU Leuven</u> ☐ Universiteit Antwerpen ☐ Universiteit Gent ☐ Universiteit Hasselt ☐ Vrije Universiteit Brussel ☐ Other: Provide ROR[3] identifier when possible:

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[1] "Project number" refers to the institutional project number. This question is optional since not every institution has an internal project number different from the GrantID. Applicants can only provide one project number.

[2] Funder(s) GrantID refers to the number of the DMP at the funder(s), here one can specify multiple GrantIDs if multiple funding sources were used.

[3] Research Organization Registry Community. https://ror.org/

| Please provide a short project description | Despite the classical neurocentric view on pain transmission, robust emerging evidence shows the critical role of other cell types on acute and chronic pain. Satellite glia cells (SGCs), found in the dorsal root ganglion, directly influences the development of hyperalgesia. However, the specific mechanisms by which SGCs contribute to pathological pain remains poorly understood. The central aim of this project is to elucidate the role of TRP channels in the communication between SCGs and neurons in sensory ganglia and to expose how this interplay contributes to inflammatory pain. The hypothesis is that TRP channels in SGCs and neuronal somata are involved in bidirectional signaling within sensory ganglia, thereby modulating neuronal excitability and pain signaling. The project aims to study the effects of TRP channel-dependent sensory neuronal activity on the distinct gene-expression profiles and functions of adjacent SGCs and whether TRP channel-dependent signals from SGCs affect the excitability of nearby sensory neurons. The project proposes a combination of innovative and state-of-the-art approaches, including single-cell transcriptome analyses, spatial transcriptomics, in vivo imaging, and patch-clamp electrophysiology, to investigate its aims. This proposal will yield fundamentally new insights into the signaling between SGCs and sensory neurons under normal and pathological conditions. Such insights may form the basis for novel strategies to treat pain. |

2. 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[4].

				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
Single cell RNAseq	single-cell RNAseq data of satellite glial cells from wild type, TRPM3$^{-/-}$ and TRPV1$^{-/-}$ mice, both in healthy and inflamed conditions	☒ Generate new data ☐ Reuse existing data	☒ Digital ☐ Physical	☐ Observational ☒ Experimental ☐ Compiled/ aggregated data ☐ Simulation data ☐ Software ☐ Other ☐ NA	☐ .por ☒ .xml ☐ .tab ☒ .csv ☐ .pdf ☐ .txt ☐ .rtf ☐ .dwg ☐ .tab ☐ .gml ☒ other: fastq ☒ other: rds ☒ other: .R	☐ < 100 MB ☐ < 1 GB ☒ < 100 GB ☐ < 1 TB ☐ < 5 TB ☐ < 10 TB ☐ < 50 TB ☐ > 50 TB ☐ NA	Not applicable
In situ transcriptome analysis	spatial transcriptomics technology that allows high throughput	☒ Generate new data ☐ Reuse existing data	☒ Digital ☐ Physical	☐ Observational ☒ Experimental ☐ Compiled/ aggregated data ☐ Simulation	☐ .por ☒ .xml ☐ .tab ☒ .csv ☐ .pdf	☐ < 100 MB ☐ < 1 GB ☒ < 100 GB ☐ < 1 TB ☐ < 5 TB	Not applicable

[4] Add rows for each dataset you want to describe.

	transcriptomic profiling of histological sections			data ☐ Software ☐ Other ☐ NA	☐ .txt ☐ .rtf ☐ .dwg ☐ .tab ☐ .gml ⊠ other: .gem ⊠ other: rds ⊠ other: .R ⊠ other: .tiff ⊠ other: .nd2	☐ < 10 TB ☐ < 50 TB ☐ > 50 TB ☐ NA	
Calcium Imaging	Measurement of calcium responses in cell culture and *in vivo* assays (signaling between SGCs and sensory neurons)	⊠ Generate new data ☐ Reuse existing data	⊠ Digital ☐ Physical	☐ Observational ⊠ Experimental ☐ Compiled/ aggregated data ☐ Simulation data ☐ Software ☐ Other ☐ NA	☐ .por ⊠ .xml ☐ .tab ⊠ .csv ☐ .pdf ☐ .txt ☐ .rtf ☐ .dwg ☐ .tab ☐ .gml ⊠ other: .R ⊠ other: .tiff ⊠ other: .nd2 ⊠ other: .pzfx ⊠ other: .jpeg ⊠ other: .png	☐ < 100 MB ☐ < 1 GB ⊠ < 100 GB ☐ < 1 TB ☐ < 5 TB ☐ < 10 TB ☐ < 50 TB ☐ > 50 TB ☐ NA	Not applicable
Patch clamp recordings	electrophysiological experimental data	⊠ Generate new data ☐ Reuse existing data	⊠ Digital ☐ Physical	☐ Observational ⊠ Experimental ☐ Compiled/ aggregated data	☐ .por	⊠ < 100 MB	Not applicable

| | | | | ☐ Simulation data
☐ Software
☐ Other
☐ NA | ☒ .xml
☐ .tab
☒ .csv
☐ .pdf
☐ .txt
☐ .rtf
☐ .dwg
☐ .tab
☐ .gml
☒ other: .R
☒ other: .pzfx | ☐ < 1 GB
☐ < 100 GB
☐ < 1 TB
☐ < 5 TB
☐ < 10 TB
☐ < 50 TB
☐ > 50 TB
☐ NA | |
| Behavior experiments | Mechanical hyperalgesia will be accessed by using the *von Frey* method and heat-induced hyperalgesia will be accessed by the use of the hot-plate assay | ☒ Generate new data
☐ Reuse existing data | ☒ Digital
☐ Physical | ☐ Observational
☒ Experimental
☐ Compiled/ aggregated data
☐ Simulation data
☐ Software
☐ Other
☐ NA | ☐ .por
☒ .xml
☐ .tab
☒ .csv
☐ .pdf
☐ .txt
☐ .rtf
☐ .dwg
☐ .tab
☐ .gml
☒ other: .R
☒ other: .pzfx | ☒ < 100 MB
☐ < 1 GB
☐ < 100 GB
☐ < 1 TB
☐ < 5 TB
☐ < 10 TB
☐ < 50 TB
☐ > 50 TB
☐ NA | Not applicable |

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.	Not applicable
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, please describe these issues further and refer to specific datasets or data types when appropriate.	☐ Yes, human subject data ☒ Yes, animal data ☐ Yes, dual use ☐ No If yes, please describe: The use of laboratory animals in this project is covered by the already approved ECD project: - P067/2022. Extra animals, addition of new experiments and changes in experimental techniques can be submitted as an amendment to this ECD project.

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[5] These data are generated by combining multiple existing datasets.

Will you process personal data[6]? If so, briefly describe the kind of personal data you will use. Please refer to specific datasets or data types when appropriate. If available, add the reference to your file in your host institution's privacy register.	☐ Yes ☒ No If yes: - Short description of the kind of personal data that will be used: - Privacy Registry Reference:
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 ☒ No If yes, please comment:
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 to what data they relate and what restrictions are in place.	☐ Yes ☒ No If yes, please explain:
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 to what data they relate and which restrictions will be asserted.	☐ Yes ☒ No If yes, please explain:

[6] See Glossary Flemish Standard Data Management Plan

3. 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 data generated follow a standardized protocol. Data are stored in equipment-specific files on the KU Leuven Large Volume storage, with names that include Date, MouseID and experiment number. The folder structure is organized according to Experimenter name / Experimenter unumber / Project number (i.e. WP1, WP2, WP3) / Equipment / Raw Data and the date of acquisition. Metadata files generated by the equipment itself are saved on the KU Leuven Large Volume Storage in the folder corresponding to the date of acquisition. Metadata generated by the researcher and / or technical staff at the time of data collection are stored in hard copy lab notebooks and uploaded and saved in the electronic lab notebook under the acquisition date and tagged with "equipment that is used" and "project number". Having all metadata uploaded and tagged in the electronic lab notebook makes sure the contextual value to interpret the datasets correctly is present and thereby enables reuse of the data.
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. *REPOSITORIES COULD ASK TO DELIVER METADATA IN A CERTAIN FORMAT, WITH SPECIFIED ONTOLOGIES AND VOCABULARIES, I.E. STANDARD LISTS WITH UNIQUE IDENTIFIERS.*	☐ Yes ☒ No If yes, please specify (where appropriate per dataset or data type) which metadata standard will be used: If no, please specify (where appropriate per dataset or data type) which metadata will be created: The electronic lab notebook is used to store text files and tables that contain the experimental design, ethical approvals and protocols. Each experimental dataset has a metadata file that includes the following elements: - Project title - Start date and time reference - Goal (Text explaining the content of the data, the contextual information used to interpret the data and the goal) - Collaborators (Last name, First name, Organization) - Project design (Text explaining the experimental protocol) - Key words (Used in the electronic labnotebook for classification)

	- Biological sample (Table with mouse ID, strain, sex, cage number, ECD approval, injections prior to imaging, anaestesia used, surgical procedures) - Reagents used (product name, company, working concentration, stock concentration and storage place) - Equipment (Table with details about all the experimental settings) - Control (Text explaining the positive and negative control experiments that were performed) - Data (Table with individual file names, file format and file volume) - Storage (Link to the stored Raw and Analyzed data) - Results (Table with Software [including version number] used to analyse the data) - Conclusion (Text with concluding remarks and future perspectives). An OVERVIEW file per project (i.e. WP1, WP2, WP3), stored in the top level directory of the dataset on the applicant's personal computer, as well as on the electronic lab notebook lists all the dates and experiments for a specific project/experiment.

4. Data Storage & Back-up during the Research Project	
Where will the data be stored?	Data are temporally stored on the internal storage of equipment-specific computers. After acquisition, raw data are saved on the KU Leuven Large Volume Storage and duplicated on external hard drives on a monthly base.

How will the data be backed up? *What storage and backup procedures will be in place to prevent data loss? Describe the locations, storage media and procedures that will be used for storing and backing up digital and non-digital data during research.[7]* *Refer to institution-specific policies regarding backup procedures when appropriate.*	Data are saved on the KU Leuven Large Volume Storage and backed up on external hard drives on a monthly base.
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 ☐ No If yes, please specify concisely: The KU Leuven Large Volume Storage has a capacity of 6 PB. If necessary, more space will be purchased in blocks of 5 TB. If no, please specify:
How will you ensure that the data are securely stored and not accessed or modified by unauthorized persons? *Clearly describe the measures (in terms of physical security, network security, and security of computer systems and files) that will be taken to ensure that stored and transferred data are safe. [7]*	Raw data are stored on the KU Leuven Large Volume Storage service and secured by KU Leuven security groups. Analyzed data are stored on password-protected KU Leuven personal computers and hard drives.
What are the expected costs for data storage and backup during the research project? How will these costs be covered?	Expected costs for data storage are estimated at 1500 euro/3 years. These costs will be covered by the host lab.

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[7] Source: Ghent University Generic DMP Evaluation Rubric: https://osf.io/2z5g3/

5. 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 digital data (raw, processed and metadata) will be retained for at least 5 years after the end of the project in a safe, secure & sustainable way for purposes of reproducibility, verification, and potential reuse.
Where will these data be archived (stored and curated for the long-term)?	Data are stored on labelled external hard drives within the research facility and on the university's central servers (with automatic back-up procedures) for at least 10 years, conform the KU Leuven RDM policy.
What are the expected costs for data preservation during the expected retention period? How will these costs be covered?	Expected costs for data storage are expected to be 1500 euro for 3 years. For backup, the current KU Leuven tariffs are around 175 euro/TB/year. These costs will be covered by the hosting lab.

6. 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. *Note that 'available' does not necessarily mean that the data set becomes openly available, conditions for access and use may apply. Availability in this question thus entails both open & restricted access. For more information:* https://wiki.surfnet.nl/display/standards/info-eu-repo/#infoeurepo-AccessRights	☐ Yes, in an Open Access repository ☒ Yes, in a restricted access repository (after approval, institutional access only, …) ☐ No (closed access) ☐ Other, please specify: All the virtual data will be made available for members of the host lab. The decision to share the content and/or reuse of the data by external researchers will be made by the supervisor of the project. After publication of the research results, data will be fully available upon request.
If access is restricted, please specify who will be able to access the data and under what conditions.	Professor Thomas Voets
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.	☐ Yes, privacy aspects ☐ Yes, intellectual property rights ☐ Yes, ethical aspects ☐ Yes, aspects of dual use ☐ Yes, other ☒ No If yes, please specify:

Where will the data be made available? If already known, please provide a repository per dataset or data type.	-In a restricted access repository. -Upon request by mail Data are available upon request after publication. The corresponding author (supervisor of the project) is indicated on each publication.
When will the data be made available? *THIS COULD BE A SPECIFIC DATE (DD/MM/YYYY) OR AN INDICATION SUCH AS 'UPON PUBLICATION OF RESEARCH RESULTS'.*	-Data is made available to members of the host laboratory during the project. -For external researchers/groups, data will be made fully available upon publication of the research results.
Which data usage licenses are you going to provide? If none, please explain why. *A DATA USAGE LICENSE INDICATES WHETHER THE DATA CAN BE REUSED OR NOT AND UNDER WHAT CONDITIONS. IF NO LICENCE IS GRANTED, THE DATA ARE IN A GREY ZONE AND CANNOT BE LEGALLY REUSED. DO NOTE THAT YOU MAY ONLY RELEASE DATA UNDER A LICENCE CHOSEN BY YOURSELF IF IT DOES NOT ALREADY FALL UNDER ANOTHER LICENCE THAT MIGHT PROHIBIT THAT.* *EXAMPLE ANSWER: E.G. "DATA FROM THE PROJECT THAT CAN BE SHARED WILL BE MADE AVAILABLE UNDER A CREATIVE COMMONS ATTRIBUTION LICENSE (CC-BY 4.0), SO THAT USERS HAVE TO GIVE CREDIT TO THE ORIGINAL DATA CREATORS." [8]*	Data from the project that can be shared will be made available under a creative common's attribution license (cc-by 4.0), so that users have to give credit to the original data creators.

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[8] Source: Ghent University Generic DMP Evaluation Rubric: https://osf.io/2z5g3/

Do you intend to add a PID/DOI/accession number to your dataset(s)? If already available, please provide it here. *INDICATE WHETHER YOU INTEND TO ADD A PERSISTENT AND UNIQUE IDENTIFIER IN ORDER TO IDENTIFY AND RETRIEVE THE DATA.*	☐ Yes ☒ No If yes:
What are the expected costs for data sharing? How will these costs be covered?	Minimal/no costs are expected.

7. Responsibilities	
Who will manage data documentation and metadata during the research project?	Ana C N F Peigneur is responsible for data documentation and metadata.
Who will manage data storage and backup during the research project?	Andrei Segal Stanciu is responsible for data storage and back up of the data.
Who will manage data preservation and sharing?	Andrei Segal Stanciu is responsible for data preservation. Prof. Thomas Voets is responsible for data reuse/sharing.
Who will update and implement this DMP?	Ana C N F Peigneur is responsible for day-to-day implementation of this DMP. Ana C N F Peigneur and Prof. Thomas Voets are responsible for adjustments and updates to the DMP.