# FWO DMP Template - Flemish Standard Data Management Plan

# Version KU Leuven

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](https://www.fwo.be/media/1024841/glossary-flemish-standard-data-management-plan.pdf).

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| 1. **General Project Information** | |
| Name Grant Holder & ORCID | **Hannelore Kemps** 0000-0001-9248-1697 |
| Contributor name(s) (+ ORCID) & roles | **Aernout Luttun** (0000-0001-7902-9524), supervisor |
| Project number [[1]](#footnote-1) & title | 3M230218 - Unravelling the role of transcription factor Prdm16 in endothelial cells during the progression of ischaemic stroke. |
| Funder(s) GrantID [[2]](#footnote-2) | 1271824N |
| Affiliation(s) | X KU Leuven  ☐ Universiteit Antwerpen  ☐ Universiteit Gent  ☐ Universiteit Hasselt  ☐ Vrije Universiteit Brussel  ☐ Other:  ROR identifier KU Leuven: 05f950310 |
| Please provide a short project description | Ischaemic stroke is defined as a focal neurological deficit of vascular origin to the central nervous system. During an ischaemic event, several cerebrovascular adaptations occur, including alterations in blood-brain barrier (BBB) permeability as well as recruitment and remodelling of collateral arteri(ol)es, which are both determinant for stroke outcome. Understanding the molecular mechanisms that govern the maintenance and function of both collateral arteri(ol)es and BBB capillaries upon cerebral ischaemia is crucial to establish new effective therapies. Recently, my host lab has found that transcription factor Prdm16 in arterial endothelial cells supports arterial flow recovery during hind limb ischaemia by preserving their function. In this project, I will determine whether Prdm16 has a similar role during the progression of ischaemic stroke. My preliminary data shows a protective role for endothelial Prdm16 on ischaemic stroke lesion development. I will first elucidate whether Prdm16 limits infarct growth by preserving collateral function and/or BBB integrity upon cerebral ischaemia. Next, I will unravel the downstream targets that mediate the protective impact of endothelial Prdm16 during stroke. Finally, I will investigate the translational relevance of targeting Prdm16 or its mediators upon ageing to improve cerebrovascular function following stroke. Altogether, I expect that this project will lead to the identification of new treatment strategies for stroke patients. |

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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 [[3]](#footnote-3). | |
| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  | | | | *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-nuclei RNA sequencing raw data sets | Acquired from single-cell core facility | Generate new data  Reuse existing data | Digital  Physical | Audiovisual  Images  Sound  Numerical  Textual  Model  Software  Other: | .fastq files, .gz files, .bam files | < 1 GB  < 100 GB  < 1 TB  < 5 TB  > 5 TB  NA |  | | Single-nuclei RNA sequencing processed datasets | Processed data allowing downstream analysis of single-cell results | Generate new data  Reuse existing data | Digital  Physical | Audiovisual  Images  Sound  Numerical  Textual  Model  Software  Other: | .xls files, .jpeg files, .pdf files, .txt files, .cvs files | < 1 GB  < 100 GB  < 1 TB  < 5 TB  > 5 TB  NA |  | | Microscopic images of immuno-fluorescence and histochemical stainings | Images from mouse tissues | Generate new data  Reuse existing data | Digital  Physical | Audiovisual  Images  Sound  Numerical  Textual  Model  Software  Other: | .jpeg files, Zen .zvi files, .czi files, .tiff files | < 1 GB  < 100 GB  < 1 TB  < 5 TB  > 5 TB  NA |  | | Macroscopic images of coronal brain sections | Images for ischaemic lesion size assessment | Generate new data  Reuse existing data | Digital  Physical | Audiovisual  Images  Sound  Numerical  Textual  Model  Software  Other: | .jpeg files, .pdf files | < 1 GB  < 100 GB  < 1 TB  < 5 TB  > 5 TB  NA |  | | Mouse genotyping gel pictures | Genotyping results from gel electrophoresis | Generate new data  Reuse existing data | Digital  Physical | Audiovisual  Images  Sound  Numerical  Textual  Model  Software  Other: | .jpeg files | < 1 GB  < 100 GB  < 1 TB  < 5 TB  > 5 TB  NA |  | | Electron microscopic images | Images from mouse tissues | Generate new data  Reuse existing data | Digital  Physical | Audiovisual  Images  Sound  Numerical  Textual  Model  Software  Other: | .jpeg files, .tiff files | < 1 GB  < 100 GB  < 1 TB  < 5 TB  > 5 TB  NA |  | | Ultrafast ultrasound images | Images from functional ultrasound imaging and ultrasound localisation microscopy | Generate new data  Reuse existing data | Digital  Physical | Audiovisual  Images  Sound  Numerical  Textual  Model  Software  Other: | .tiff files | < 1 GB  < 100 GB  < 1 TB  < 5 TB  > 5 TB  NA |  | | Laser Speckle Contrast images | Images acquired from Laser Speckle Contrast Imaging | Generate new data  Reuse existing data | Digital  Physical | Audiovisual  Images  Sound  Numerical  Textual  Model  Software  Other: | .psfx files, .png files | < 1 GB  < 100 GB  < 1 TB  < 5 TB  > 5 TB  NA |  | | Fluorimetric analyses | Files generated from fluorimetric measurements (ELISA, BCA protein assay, tracer leakage experiments) | Generate new data  Reuse existing data | Digital  Physical | Audiovisual  Images  Sound  Numerical  Textual  Model  Software  Other: | .xls files | < 1 GB  < 100 GB  < 1 TB  < 5 TB  > 5 TB  NA |  | | Morphometric analysis data |  | Generate new data  Reuse existing data | Digital  Physical | Audiovisual  Images  Sound  Numerical  Textual  Model  Software  Other: | .xls files | < 1 GB  < 100 GB  < 1 TB  < 5 TB  > 5 TB  NA |  | | Statistical analysis |  | Generate new data  Reuse existing data | Digital  Physical | Audiovisual  Images  Sound  Numerical  Textual  Model  Software  Other: | Prism .pzfx files, R package .r files | < 1 GB  < 100 GB  < 1 TB  < 5 TB  > 5 TB  NA |  | | Composition figures, digital images | Figures for abstracts, posters and publications | Generate new data  Reuse existing data | Digital  Physical | Audiovisual  Images  Sound  Numerical  Textual  Model  Software  Other: | .eps files, Acrobat .pdf files, Adobe Indesign .indd files, Adobe Illustrator .ai files, .tiff files, .jpeg files, .png files | < 1 GB  < 100 GB  < 1 TB  < 5 TB  > 5 TB  NA |  | | SOPs | Staining, qPCR, Genotyping, nuclei isolation, *etc.* | Generate new data  Reuse existing data | Digital  Physical | Audiovisual  Images  Sound  Numerical  Textual  Model  Software  Other: | Word .doc files | < 1 GB  < 100 GB  < 1 TB  < 5 TB  > 5 TB  NA |  | | Sample inventories |  | Generate new data  Reuse existing data | Digital  Physical | Audiovisual  Images  Sound  Numerical  Textual  Model  Software  Other: | .xlsx files | < 1 GB  < 100 GB  < 1 TB  < 5 TB  > 5 TB  NA |  | | quantitative (q)RT-PCR data |  | Generate new data  Reuse existing data | Digital  Physical | Audiovisual  Images  Sound  Numerical  Textual  Model  Software  Other: | .cvs files | < 1 GB  < 100 GB  < 1 TB  < 5 TB  > 5 TB  NA |  | | Tissues | Paraffin embedded mouse tissues | Generate new data  Reuse existing data | Digital  Physical | Audiovisual  Images  Sound  Numerical  Textual  Model  Software  Other: |  | < 1 GB  < 100 GB  < 1 TB  < 5 TB  > 5 TB  NA | Approximately 300 tissue blocks | | Paraffin sections | Mouse origin | Generate new data  Reuse existing data | Digital  Physical | Audiovisual  Images  Sound  Numerical  Textual  Model  Software  Other: |  | < 1 GB  < 100 GB  < 1 TB  < 5 TB  > 5 TB  NA | 30 drawers of 100 slides | | Snap frozen tissues | Mouse origin, stored at -80°C | Generate new data  Reuse existing data | Digital  Physical | Audiovisual  Images  Sound  Numerical  Textual  Model  Software  Other: |  | < 1 GB  < 100 GB  < 1 TB  < 5 TB  > 5 TB  NA | 2 boxes of samples stored in -80°C freezer | | Cryo embedded tissues | Mouse origin, stored at -80°C | Generate new data  Reuse existing data | Digital  Physical | Audiovisual  Images  Sound  Numerical  Textual  Model  Software  Other: |  | < 1 GB  < 100 GB  < 1 TB  < 5 TB  > 5 TB  NA | 8 boxes of samples stored in -80°C freezer | | Cryo sections | Mouse origin | Generate new data  Reuse existing data | Digital  Physical | Audiovisual  Images  Sound  Numerical  Textual  Model  Software  Other: |  | < 1 GB  < 100 GB  < 1 TB  < 5 TB  > 5 TB  NA | 15 boxes of slides stored in -20°C freezer | | Protein/RNA/cDNA | Mouse origin | Generate new data  Reuse existing data | Digital  Physical | Audiovisual  Images  Sound  Numerical  Textual  Model  Software  Other: |  | < 1 GB  < 100 GB  < 1 TB  < 5 TB  > 5 TB  NA | 3 boxes of samples stored in -80°C freezer | | |
| *Guidance:*  *The data description forms the basis of your entire DMP, so make sure it is detailed and complete. It includes digital and physical data and encompasses the whole spectrum ranging from raw data to processed and analysed data including analysis scripts and code. Physical data are all materials that need proper management because they are valuable, difficult to replace and/or ethical issues are associated.* *Materials that are not considered data in an RDM context include your own manuscripts, theses and presentations; documentation is an integral part of your datasets and should described under documentation/metadata.*  [*RDM Guidance on data*](https://www.kuleuven.be/rdm/en/guidance/data-standards) | |
| 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. | Yes, human subject data; provide SMEC or EC approval number:  Yes, animal data; provide ECD reference number: ECDN°P140/2023 and ECDN° Creation Luttun/2023  Yes, dual use; provide approval number:  No  Additional information: |
| Will you process personaldata*[[4]](#footnote-4)*? 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). | Yes (provide PRET G-number or EC S-number below)  No  Additional information: |
| 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: |

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| 1. **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).  [*RDM guidance on documentation and metadata*](https://www.kuleuven.be/rdm/en/guidance/documentation-metadata)*.* | Main results and methods will be published in peer-reviewed journals (open access as required by FWO regulations) and all publications will be archived in Lirias, the digital KU Leuven document repository.  All **digital data** generated in the project for each WP and associated metadata will be archived digitally and a searchable database format (Excel or Access) will be implemented. Electronic lab note books will be used and templates have been designed for writing protocols/SOPs, for excel spreadsheets for raw data and (statistical) analysis. When raw data are uploaded on repositories, keywords will be affixed along with readme files containing the needed information for reuse. In the final stage of the project, a master index file with the combined metadata for each WP will be generated and archived on a non-editable drive of the host institution KU Leuven (‘K drive’).  All **physical data** collected during the course of the project will be stored at designated storage places (at room temperature or frozen) and location and preservation method of the biological samples (tissues, tissue sections, blood plasma, genetic material) will be documented digitally (.xlsx files). |
| 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:  Metadata will be a combination of machine-generated and manually generated metadata. Metadata of raw images (file size, pixel number, acquisition date, settings, etc.) and qRT-PCR are captured automatically and saved on the server together with the corresponding data files. Other metadata (on quantification procedures, biochemical analysis, *etc.*) are mostly captured manually and logged in lab notebooks or in searchable Excel/Access databases. For these metadata, we will progressively design own metadata standards using http://dublincore.rog/. We will also consider archiving our data using general data repositories (https://figshare.com/ and https://zenodo.org/). RNAseq data will be uploaded to the GEO repository which uses the MIAME standard.  If no, please specify (where appropriate per dataset or data type) which metadata will be created: |

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| 1. **Data Storage & Back-up during the Research Project** | |
| Where will the data be stored?  *Consult the*[*interactive KU Leuven storage guide*](https://icts.kuleuven.be/storagewijzer/en)*to find the most suitable storage solution for your data.* | Shared network drive (J-drive)  Personal network drive (I-drive)  OneDrive (KU Leuven)  Sharepoint online  Sharepoint on-premis  Large Volume Storage  Digital Vault  Other:  During the project, **digital data** will be stored at different locations, depending on the type of data and accessibility. Data will be stored on the researchers’ computers, on the KU Leuven network editable drives where the principal investigator has reserved dedicated space for this project (the J drive for data that needs to be accessible daily and is exchangeable between KU Leuven-affiliated project participants and the L drive for longer-term storage of large data files that do not need to be frequently accessed).  All **physical data** collected during the course of the project will be stored at designated storage places. An inventory of each storage place is available. |
| How will the data be backed up?  *What storage and backup procedures will be in place to prevent data loss?* | Standard back-up provided by KU Leuven ICTS for my storage solution  Personal back-ups I make (specify):  All of the data and documents on the researcher’s computer are automatically synchronized to the KU Leuven Onedrive cloud with a capacity of up to 2TB per user. In addition, data will be stored in a designated folder on an external hardware disk (8TB).  Other (specify): |
| 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 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.*  [*Guidance on security for research data*](https://icts.kuleuven.be/storagewijzer/en) | **Digital data**: The KU Leuven network servers allow for secure storage of data. The access to the KU Leuven server is u-number and password controlled. KU Leuven ICTS services provide the option to control data access for authorised persons only (in this case, KU Leuven affiliated research lab members involved in this project).  All **physical data**, printed forms and notebooks are stored in the labs in locked cabinets. Access to the lab is secured and badge controlled. |
| What are the expected costs for data storage and backup during the research project? How will these costs be covered? | Costs for digital data storage and back-up during the project have been included in the research budget of the project. The current cost rate for the KU Leuven network drives are: 52€/y/100Gb block (J) and 5.7€/y/100Gb block (K), 569.2€/y/5Tb block (L). |

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| **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...).  [*Guidance on data preservation*](https://icts.kuleuven.be/storagewijzer/en) | ​​ All data will be preserved for 10 years according to KU Leuven RDM policy  All data will be preserved for 25 years according to CTC recommendations for clinical trials with medicinal products for human use and for clinical experiments on humans  Certain data cannot be kept for 10 years (explain)  All **digital data** and metadata will be retained for 10 years after the project (per the requirements of Research Data Management policy of the KU Leuven). The same term will be applied to **physical data**. |
| Where will these data be archived (stored and curated for the long-term)?  [*Dedicated data repositories*](https://www.kuleuven.be/rdm/en/policy)*are often the best place to preserve your data. Data not suitable for preservation in a repository can be stored using a KU Leuven storage solution, consult the*[*interactive KU Leuven storage guide*](https://www.kuleuven.be/rdm/en/guidance/data-sharing)*.* | KU Leuven RDR  Large Volume Storage (longterm for large volumes)  Shared network drive (J-drive)  Other (specify):  For KU Leuven, digital data will be archived on the KU Leuven K drive for storage of read-only data. |
| What are the expected costs for data preservation during the expected retention period? How will these costs be covered? | For KU Leuven, cost rate for storage on the K drive is 5.7€/year/100Gb. To store a total of 5 Tb for 10 years, the estimated cost hence is 2,850 €. Costs will be allocated to the project budget. |

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| **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*](https://wiki.surfnet.nl/display/standards/info-eu-repo/#infoeurepo-AccessRights) | Yes, as open data  Yes, as embargoed data (temporary restriction)  Yes, as restricted data (upon approval, or institutional access only)  No (closed access)  Other, please specify:  Main findings of the research with all supporting processed data will be made available through publication in peer-reviewed journals with open access policies (as required by FWO). All manuscripts will also be deposited in the KU Leuven Lirias digital repository. Raw RNAseq data will be made available publicly upon acceptance of the manuscript. Other raw data related to published manuscripts may be available upon specific request as will be stated in a data availability statement included in the published manuscripts. |
| If access is restricted, please specify who will be able to access the data and under what conditions. | All KU Leuven-affiliated researchers involved in the project will have access to the data on the KU Leuven servers through their u-number and accompanying personal password. |
| 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. | KU Leuven RDR  Other data repository (specify): Open Access repository  Other (specify): Raw RNAseq data will be made available publicly through the GEO repository upon acceptance of the manuscript. |
| When will the data be made available? | Upon publication of research results  Specific date (specify)  Other (specify): Other data will be made available upon request, where considered appropriate, following publication. |
| 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.*  *Check the*[*RDR guidance on licences*](https://www.kuleuven.be/rdm/en/rdr/licenses)*for data and software sources code or consult the*[*License selector tool*](https://ufal.github.io/public-license-selector/)*to help you choose.* | CC-BY 4.0 (data)  Data Transfer Agreement (restricted data)  MIT licence (code)  GNU GPL-3.0 (code)  Other (specify) |
| 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, a PID will be added upon deposit in a data repository  My dataset already has a PID  No |
| What are the expected costs for data sharing? How will these costs be covered? | For sharing digital data, no sharing costs are foreseen. For sharing physical data, Material Transfer Agreements will have to be put in place which will be mutually signed. Shipping costs would be covered by either party (through the FWO budget in case of the provider) as long as the costs are low, however, significant sharing costs will be expected to be borne by the requestor. Costs related to open access publication are included in the FWO project budget. |

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| **7. Responsibilities** | |
| Who will manage data documentation and metadata during the research project? | The supervisor (A. Luttun)/the grant holder (H. Kemps). |
| Who will manage data storage and backup during the research project? | The supervisor (A. Luttun)/the grant holder (H. Kemps). |
| Who will manage data preservation and sharing? | The supervisor (A. Luttun)/the grant holder (H. Kemps). |
| Who will update and implement this DMP? | The supervisor (A. Luttun)/the grant holder (H. Kemps). |

1. “Project number” refers to the institutional project number. This question is optional. Applicants can only provide one project number. [↑](#footnote-ref-1)
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. [↑](#footnote-ref-2)
3. Add rows for each dataset you want to describe. [↑](#footnote-ref-3)
4. See Glossary Flemish Standard Data Management Plan [↑](#footnote-ref-4)