FWO DMP Template

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.

1. General Information	
Name applicant	**Lien Cools**
FWO Project Number & Title	**11M3322N** **Unravelling the role of extracellular vesicles in Parkinson's pathogenesis: nano-organelles with mega impact?**
Affiliation	☒ KU Leuven ☐ Universiteit Antwerpen ☒ Universiteit Gent ☐ Universiteit Hasselt ☐ Vrije Universiteit Brussel ☐ Other:
2. Data description	
Will you generate/collect new data and/or make use of existing data?	☒ Generate new data ☐ Reuse existing data

Describe the origin, type and format of the data (per dataset) and its (estimated) volume *If you **reuse** existing data, specify the **source** of these data.* *Distinguish data **types** (the kind of content) from data **formats** (the technical format).*	Both physical and digital data will be collected. Digital data will be collected and stored in a variety of file formats (docx, excel, tiff, jpg, csv files, etc.), as detailed below. Physical data: Experimental samples will be documented and, dependent on the kind, stored in fixative or freezers. Immunohistologically stained slides will be stored in a dry place or freezer. Manuscripts: Written progress reports will be stored for internal purposes. Relevant findings will be disseminated through publication in high profile, peer-reviewed international journals, and presented on (inter)national scientific meetings. **WP 1. Proteomics study of EV cargo in a context of aSYN propagation** The differential protein cargo in EVs under conditions of aSYN propagation will be assessed using comparative proteomics. This data is mass spectrometry based proteomic data, delivered in .txt or .csv files. The comparative proteomic approach will result in a list of up-/down-regulated aSYN propagation associated proteins that will be used later on and will be stored as .mzML, which stores both the raw data and processed peak lists. Validation of differential proteins in EVs with and without aSYN will generate gene/protein expression data in excel file formal (qPCR and Western Blotting). **WP 2. Mechanistic study of the role of EVs and selected key molecules in aSYN propagation** Cell-to-cell transfer of EVs and aSYN will be visualised using time superresolution (PALM or STORM; Zeiss Elyra, PALM Olympus) microscopy, confocal imaging (Zeiss LSM880 Airyscan / Olympus FluoView1000) or light sheet (Zeiss Leightsheet Z.1) microscopy in real time of following immunohistochemistry. The resulting file format are .tiff or .czi and oib. image stacks. Each movie is ~ .25 GB resulting is a total of ~400 GB. For the characterisation of EVs, EV measurements will be performed using nanoparticle tracking analysis and ExoView affinity microarray (NanoView Biotechnologies) and results in excel compatible sample reports. **WP 3. Mechanistic study of the role of EVs and selected key molecules in aSYN-induced neuroinflammation**

	This work package encompasses a similar workflow as compared to WP 2, yet now focussing on spreading of neuroinflammation rather than spreading of aSYN. Thus, data types will be the same. **WP 4. In vivo validation studies of the role of EVs and one lead molecule in aSYN-induced neuroinflammation** In this work package, findings from the previous *ex* vivo/*in vivo* studies will be validated *in vivo* using immunohistochemistry (resulting again in resulting file format are .tiff or .czi and oib. image stacks) and ELISA resulting in excel compatible data. Analysis of data will be performed using ImageJ software, Imaris Bitplane, nanoparticle tracking analysis, ExoView, Mascot Daemon software, Ingenuity Pathway Analysis, PANTHER knowledgebase, each coming with their specific file format. The results will be stored in two forms, in excel data sheets with quantitative data and summary statistical analysis as well as in HDF5 files for more complex data structures. The resulting visualization of data are generated in : excel, graph pad prism, adobe photoshop and Indesign, and will be stored as vector graphics (.pdf and .svg).

3. Ethical and legal issues	
Will you use personal data? If so, shortly describe the kind of personal data you will use AND add the reference to your file in your host institution's privacy register. *In case your host institution does not (yet) have a privacy register, a reference is not yet required of course; please add the reference once the privacy register is in place in your host institution.*	☐ Yes ☒ No If yes: - 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 ☐ No If yes: We will use experiments on animals, both teleost fish and mice. The research will be performed under normal laboratory safety rules. All necessary safety measures for laboratory and animal work will be taken. We follow the guidelines and rules from the HSE Department (Health, Safety and Environment) and the Animal Ethics Committee at KU Leuven. Ethical permission for animal work were given for following ECDs - P069/2020 - P089/2020 - P187/2020
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 ☐ No If yes, please comment: The project largely contains fundamental research that will generate insights for possible future valorisation. It holds a potential to medical translation or application in the clinic but only on the long run. There might be IP depending on the obtained results. This may involve the identification of molecules that are involved in modulating aSYN propagation an neuroinflammation. If mechanisms or molecules being identified in the project are novel and promising for clinical application, possible IP protection will be considered, which will then be performed in consultation with LRD and VIB.
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?	☐ Yes ☒ No If yes, please comment: **Newly identified molecules/pathways will first have to be screened to determine any possible pre-existing IP. Dissimination or exploitation of the data is managed according to the framework agreement between KU Leuven/LRD and VIB.**

4. Documentation and metadata

What documentation will be provided to enable understanding and reuse of the data collected/generated in this project?	**Digital data:** We will maintain a record of the following for every WP (where applicable): -Experimental design and protocol (.docx file) -Abbreviations used (.docx file) -Structure of the data (.docx file) -Steps involved in data analysis and relevant analysis scripts (R, MATLAB, Python, ImageJ and Imaris Bitplane scripts) -Raw data (specific file format according to data type) -Analysed data (specific file format according to data type) -Index file/read me file (.txt file) for every WP, linking the name, location (folder and subfolder on /server) and description of above-mentioned files. **Physical data:** Samples taken from experiments will be documented and stored for up to three years after the end of the project. Storage will be in fixative or in freezers depending on the kind of sample. Immunohistological stained slides will be stored in appropriate boxes in a dry place or freezer.
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.	☐ Yes ☒ No If yes, please specify: The experiments are unique, but the data will be standardized according to data-type across experiments to make it easier to interpret the structure. Below, we list the metadata standards applicable to this project: Metadata standards will be used for proteomics (http://www.dcc.ac.uk/resources/implementations/pride-proteomics-identificationsdatabase). For all other data, metadata will be createdusing the Dublin core (http://www.dcc.ac.uk/resources/metadata-standards/dublin-core)

5. Data storage & backup during the FWO project

Where will the data be stored?	We will utilise our institute's secure data storage system (KU Leuven LUNA servers) with automated onsite back-up and mirroring. All data will be examined and kept in a coded format, with each participant assigned a unique anonymous identification. Since I will perform part of my research at UGent, this data will be stored on the UGent servers and shared via OneDrive. For other (inter)national collaborations, we will use the OneDrive share as well. For active use of the data during the project, OneDrive will ensure data transfer between computers, and will also be stored on the KU Leuven LUNA Large Volume Storage space. Data that is already published and can be archived, will be thoroughly cleaned up and stored on the KU Leuven LUNA Archive drive. General data and Standard Operating Procedures shared within the lab will be stored on the KU Leuven LUNA Shared drive. Biological samples will be taken, and stored in labelled fridges, freezers and closets in the lab. The inventory of all locations is shared on the KU Leuven LUNA Shared drive.
How will the data be backed up?	The data will be stored on the secure data storage system (KU Leuven LUNA servers) with automated onsite back-up and mirroring.
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: There is currently sufficient KU Leuven storage available. However, we expect to need more back-up storage than we have now at KU Leuven, yet this can be expanded at hoc.
What are the expected costs for data storage and backup during the project? How will these costs be covered? *Although FWO has no earmarked budget at its disposal to support correct research data management, FWO allows for part of* ***the allocated project budget*** *to be used to cover the cost incurred.*	Back-up cost per Tb (KU Leuven ICTS): 295€/year Expected amount of data (5 Tb). Digital vault for private data: windows server (KU Leuven ICTS): 1302 €/year. The costs will be covered by part of the allocated project budget.
Data security: how will you ensure that the data are securely stored and not accessed or modified by unauthorized persons?	All network storage is hosted in the KU Leuven ICTS data center, with a mirror in the second ICTS center, to provide disaster recovery and additional back-up capacity, thus guaranteeing long-term data availability. Access to data is conditioned by KU Leuven security groups. All data will be password protected.

6. Data preservation after the end of the FWO project FWO expects that data generated during the project are retained for a period of minimally 5 years after the end of the project, in as far as legal and contractual agreements allow.	
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, ...).	Digital data: We will retain all data for the expected 5 year period. For most publications we expect that we will make the data publicly available on data repositories. Proteomics data will be submitted to public databases , where they will be permanently archived to preserve access to the public. Physical data: Freezer stocks of histological slides will be available upon request. After the conclusion of the project samples will be stored for up to three years after the end of the project. Storage will be in fixative or in freezers depending on the kind of sample.
Where will these data be archived (= stored for the long term)?	We will use the back-up possibilities as proposed by KU Leuven ICTS, with servers centrally managed by the ICTS to store all digital data. Note books will be kept in the lab for at least 5 years, conform the KU Leuven RDM policy.
What are the expected costs for data preservation during these 5 years? How will the costs be covered? *Although FWO has no earmarked budget at its disposal to support correct research data management, FWO allows for part of* ***the allocated project budget*** *to be used to cover the cost incurred.*	We expect about 1200 EUR/year.

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 ☒ No If yes, please specify:

Which data will be made available after the end of the project?	Written progress reports will be stored for internal purposes and can be accessed by KU Leuven reseracher upon request. Relevant neurobiological findings will be disseminated through publication in high profile, peer-reviewed international journals within the life science field. The data will be presented on (inter)national scientific field- specific meetings, e.g. ARVO, EVER, SfN FENS meetings, etc. Published data will be made available before the end of the project. For most publications we expect that we will make the data publicly available on data repositories. Proteomics data will be submitted to public databases, where they will be permanently archived to preserve access to the public. Requests for unpublished data will be transferred to evaluated on a per case basis and will be made available.
Where/how will the data be made available for reuse?	☒ In an Open Access repository ☐ In a restricted access repository ☒ Upon request by mail ☐ Other (specify):
When will the data be made available?	Upon publication of the research results
Who will be able to access the data and under what conditions?	Only research personnel of the lab can access the data and metadata. After Open Access publication, corresponding data will be shared in an Open Access repository such as Genebank, FigShare (https://figshare.com/), Dryad (https://datadryad.org/) or https://zenodo.org/ depending on the type of data or upon request by mail. We will explore the possibilities via online repositories and will use the website www.re3data.org. Unpublished data will only be shared under strict conditions, therefore, terms will be set on beforehand in an MTA (Material Transfer Agreement).
What are the expected costs for data sharing? How will these costs be covered? *Although FWO has no earmarked budget at its disposal to support correct research data management, FWO allows for part of **the allocated project budget** to be used to cover the cost incurred.*	The expected cost for data sharing will be low, since the use of OneDrive is free for KU Leuven members up to 1TB. We do not expect to exceed this and if we would, part of the project budget would be allocated to data sharing.

8. Responsibilities	
Who will be responsible for the data documentation & metadata?	Responsibility for ensuring data preservation and sharing, as well as the end responsibility for updating and implementing the DMP is with the supervisors (Lieve Moons, Lies De Groef, Roos Vandenbroucke).
Who will be responsible for data storage & back up during the project?	Data documentation, data storage & back up during the project is the responsibility of all researchers working on this project, including Lien Cools.
Who will be responsible for ensuring data preservation and sharing?	Lieve Moons, Lies De Groef, Roos Vandenbroucke
Who bears the end responsibility for updating & implementing this DMP? *Default response: The PI bears the overall responsibility for updating & implementing this DMP*	Lieve Moons, Lies De Groef, Roos Vandenbroucke