

ADMIN DETAILS

Project Name: Peripheral disease triggers and disease progression in multiple system atrophy

Project Identifier: 3M210535 (onderzoeksportaal)

Grant Title: 12Y8822N

Principal Investigator / Researcher: Wouter Peelaerts

Project Data Contact: Wouter Peelaerts, wouter.peelaerts@kuleuven.be

Description: Lower urogenital symptoms such as urinary tract infections are a common deferral that are linked with progressive neurodegenerative diseases including Parkinson's disease (PD) and multiple system atrophy (MSA). MSA is a rare disease with an unknown cause, but it is hypothesized that MSA could be influenced by environmental triggers that increase disease risk. The prodromal involvement of the urogenital system and the high susceptibility of MSA patients to develop recurrent urinary tract infections has led to the idea that MSA could be triggered peripherally via bacterial infections. The overarching hypothesis of this project is that infections or inflammation in visceral organs can trigger synucleinopathy leading to brain pathology related to MSA. I will identify and characterize the pathogen-related triggers that impact MSA pathogenesis and study the interaction of the peripheral immune system on brain pathology. By identifying the molecular mechanisms underlying disease triggers, I will also develop a novel drug screening method that focuses on inhibiting and preventing downstream pathogenic events. The outcome of this project could lead to i) a better understanding of how MSA originates, ii) how MSA progression can be influenced, iii) the identification of new disease targets and iv) the development of innovative therapies for MSA and related synucleinopathies

Institution: KU Leuven

1. GENERAL INFORMATION

a. Name applicant

Wouter Peelaerts

b. FWO Project Number & Title

FWO project number: 12Y8822N

Title: Peripheral disease triggers and disease progression in multiple system atrophy

c. Affiliation

- KU Leuven

2. DATA DESCRIPTION

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

- Generate new data

b. 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.

WP	Dataset	Purpose	Type	Subtype	Format	Size	Unit
1	Flow cytometry	Examine the infiltration of different immune cell types during urinary tract infection and determine the expression levels of α -synuclein	Experimental (new)	Cytometry data	Flow cytometry standard (.fcs)	100	MB
1	Western blot data	Detection of protein expression levels <i>in cellulo</i> and <i>in vivo</i>	Experimental (new)	Western blotting	Uncompressed TIFF (.tif/.tiff)	100	MB
1	Microscopy data	Identification of immune cells in urine samples	Experimental (new)	Cytospin	Written summary and MS Excel (.xls/xlsx)	1	GB
1	E. coli bacterial colonies	Quantification of infectivity	Experimental (new)	Colony forming units	Biological samples, written summary and MS Excel (.xls/xlsx)	1	GB
1	Microscopy data	Detection of various markers <i>in cellulo</i> and <i>in vivo</i>	Experimental (new)	Microscopy and confocal digital images	Uncompressed TIFF (.tif/.tiff), .nd2, JPEG (.jpg), JPEG 2000 (.jp2), Adobe	1000	MB

					Portable Document Format (.pdf),		
2	Scanned brain slides	Whole brain and spinal cord slides with pathological markers (brightfield)	Experimental data (new)	Digital images	Digital images, compressed, .svs	1000	GB
2	Scanned brain slides	Whole brain and spinal cord slides with pathological markers (immuno-fluorescent)	Experimental data (new)	Digital images	Digital images, uncompressed, .nd2 and .tiff	500	GB
2	Analyzed brain slides	Whole brain and spinal cord slides with pathological markers (brightfield)	Experimental data (from existing, scanned slides)	Digital images stored in the Aiforia Cloud	Digital images, compressed and annotated, .svs	1000	GB
2	Scanned urinary bladder slides	Detection of expression of pathological markers in infected urinary bladders	Experimental data (new)	Digital images	Digital images, compressed, .svs	100	GB
2	Microscopy data	Detection of various markers <i>in vivo</i>	Experimental (new)	Microscopy and confocal digital images	Uncompressed TIFF (.tif/.tiff), .nd2, JPEG (.jpg), JPEG 2000 (.jp2), Adobe Portable Document Format (.pdf),	1000	MB
2	Behavioral analysis	Characterization of the behavioral response during disease progression	Experimental (new)	Written research documentation and recorded movies	Text files: Rich Text Format (.rtf), plain text data (Unicode, .txt), MS Word (.doc/.docx), eXtensible Markup Language (.xml), Adobe Portable Document Format (.pdf), LaTeX (.tex) format; movies (.avi)	1	GB
3	Scanned brain slides	Whole brain and spinal cord slides with pathological markers (brightfield)	Experimental data (new)	Digital images	Digital images, compressed, .svs	1000	GB
3	Scanned brain slides	Whole brain and spinal cord slides with pathological markers (immuno-fluorescent)	Experimental data (new)	Digital images	Digital images, uncompressed, .nd2 and .tiff	500	GB
3	Analyzed	Whole brain and spinal	Experimental data	Digital images	Digital images, compressed	1000	GB

	brain slides	cord slides with pathological markers (brightfield)	(from existing, scanned slides)	stored in the Aiforia Cloud	and annotated, .svs		
3	Microscopy data	Detection of various markers <i>in vivo</i>	Experimental (new)	Microscopy and confocal digital images	Uncompressed TIFF (.tif/.tiff), .nd2, JPEG (.jpg), JPEG 2000 (.jp2), Adobe Portable Document Format (.pdf),	1000	MB
3	Scanned urinary bladder slides	Detection of expression of pathological markers in infected urinary bladders	Experimental data (new)	Digital images	Digital images, compressed, .svs	100	GB
3	Behavioral analysis	Characterization of the behavioral response during disease progression	Experimental (new)	Written research documentation and recorded movies	Text files: Rich Text Format (.rtf), plain text data (Unicode, .txt), MS Word (.doc/.docx), eXtensible Markup Language (.xml), Adobe Portable Document Format (.pdf), LaTeX (.tex) format; movies (.avi)	1	GB
4	Manuscript	Dissemination of results	Compiled data	Manuscript	Text files: MS Word (.doc/.docx), Adobe Portable Document Format (.pdf)	50	MB
4	Presentation	Dissemination of results	Compiled data	Presentation	Presentation files, keynote (.key)	200	MB

3. LEGAL AND ETHICAL ISSUES

a. 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

b. 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 commission reference: P008/2021 (approved)

c. 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?

- No

We do not exclude that the proposed work could result in research data with potential for tech transfer and valorisation. Together with our valorization manager, KU Leuven has a policy to actively monitor research data for such potential. If there is substantial potential, the invention will be thoroughly assessed, and in a number of cases the invention will be IP protected (mostly patent protection or copyright protection). As such the IP protection does not withhold the research data from being made public. In the case a decision is taken to file a patent application it will be planned so that publications need not be delayed. Further research beyond the scope of this project may be necessary for developing a strong IP portfolio.

d. 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

4. DOCUMENTATION AND METADATA

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

All information regarding this study will be kept on central secured drive of the KU Leuven and will be updated every time measurements take place. Metadata will be documented by the research and technical staff at the time of data collection and analysis, by taking careful notes in the electronic laboratory notebook (E-notebook) and/or in hard copy lab notebooks that refer to specific datasets. Clear and detailed descriptions of these protocols will be stored in our lab protocol database, and published along with the results.

b. 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.

- Flow cytometry data: <https://www.flowjo.com/>

5. DATA STORAGE AND BACKUP DURING THE FWO PROJECT

a. Where will the data be stored?

Digital files will be stored either on KU Leuven servers (Large Volume Drive) or in shared laboratory folders of an off-site online backup service. The researchers working on the project will have copies of the data files as well as of the derived and compiled data stored on their personal computers.

AI models (Aiforia) for automated image and pathology detection will be stored in Aiforia Cloud and is accessible to a restricted number of researchers in the lab.

Bacterial stocks are stored in -80°C in glycerol stocks and a second vial will be available for backup.

b. How is backup of the data provided?

The data will be stored on KU Leuven drive servers with automatic daily back-up procedures that allow for disaster recovery.

c. 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

KU Leuven drive servers allows for sufficient (unlimited) data storage

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

Data storage and backup costs are included in general lab costs. Our lab has a yearly subscription to an online backup service paid from the general budget of the laboratory and a second online cloud service via Aiforia. The yearly cost of the service is 10.000 euros. This cost includes unlimited data storage, not only the data belonging to the present project.

Electricity costs for the -80° and -20° freezers and refrigerators present in the labs as well as the cost of liquid nitrogen cryostorage are included in general lab costs.

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

All notebooks and physical data are stored in the labs. Entry to the lab requires ID-card and key. Access to the digital data is u-number and password controlled.

6. DATA PRESERVATION AFTER THE FWO PROJECT

a. 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, ...).

After the end of the project, all data will be retained for the 5-year period expected by KU Leuven.

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

As a general rule, datasets will be made openly accessible, whenever possible via existing at the latest at the time of publication. For all other datasets, long term storage will be ensured as follows:

- Digital datasets will be stored on storage space of an online data-backup service.
- As a general rule at least two independently obtained clones will be preserved as a bacteria glycerol stock (-80°C).

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

Electricity costs for the -80° freezers in the labs are included in general lab costs. The cost of the laboratory's professional subscription to the online data backup service is 10.000 Euros per year (50.000 Euros for 5 years). This cost includes unlimited data storage, not only the data belonging to the present project. Data storage and backup costs are included in general lab costs.

7. DATA SHARING AND REUSE

a. 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)?

- No

b. Which data will be made available after the end of the project?

Data will only be made available in case of publications that require the publication/disclosure of the dataset. Participants to the present project are committed to publish research results to communicate them to peers and to a wide audience. All research outputs supporting publications will be made openly accessible. Depending on their nature, some data may be made available prior to publication, either on an individual basis to interested researchers and/or potential new collaborators, or publicly via repositories (e.g. negative data). We aim at communicating our results in top journals that require full disclosure upon publication of all included data, either in the main text, in supplementary material or in a data repository if requested by the journal and following deposit advice given by the journal. Depending on the journal, accessibility restrictions may apply. Physical data (e.g. cell lines) will be distributed to other parties if requested.

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

- Upon request by mail

d. When will the data be made available?

- Upon publication of the research results

Data will only be made available to other researchers after publication of the research results.

e. Who will be able to access the data and under what conditions?

As stated above, only requests via mail will be answered. Privacy and legal experts will be consulted when sharing data with researchers outside of the research group.

f. What are the expected costs for data sharing? How will the costs be covered?

None.

8. RESPONSIBILITIES

a. Who will be responsible for data documentation & metadata?

Prof. Dr. Veerle Baekelandt

Dr. Wouter Peelaerts

Brigitte Verheyden

b. Who will be responsible for data storage & back up during the project?

Prof. Dr. Veerle Baekelandt

Dr. Wouter Peelaerts

Brigitte Verheyden

c. Who will be responsible for ensuring data preservation and reuse?

Prof. Dr. Veerle Baekelandt

Dr. Wouter Peelaerts

Brigitte Verheyden

d. Who bears the end responsibility for updating & implementing this DMP?

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