DMP title

Project Name C1 LGC in octopus (Internal Funds DMP) - DMP title
Project Identifier u0010929
Grant Title C14/21/065
Principal Investigator / Researcher Eve Seuntjens
Project Data Contact eve.seuntjens@kuleuven.be
Description Fundamental research project
Institution KU Leuven

1. General Information

Name of the project lead (PI)

Eve Seuntjens (lead PI)
William Schafer (co-PI)

Internal Funds Project number & title

C14/21/065 Innovative ways of fast neurotransmission in the octopus brain

2. Data description

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

- Generate new data

2.2. What data will you collect, generate or reuse? Describe the origin, type and format of the data (per dataset) and its (estimated) volume. This may be easiest in a numbered list or table and per objective of the project.

WP 1. Characterization of novel ligand-gated ion channels from Octopus

Type of data: Electrophysiological recordings on Robocyte
Format: *.r2d, *.rpf, *.r2, *.dat, *.rcd and *.accdb.
Volume: 500 GB
How created: Using an automated two-electrode voltage clamp rig we will characterize the pharmacological properties of LGICs from Octopus. This will allow us to identify agonists/antagonists for the channel, determine the ion selectivity and desensitization kinetics of the channel.

WP2. Characterisation of the expression of novel LGICs in the *Octopus vulgaris* brain

Type of data: Microscope images
Format: Tiff file
Volume: 100 GB
How created: Up-right Microscope Imaging of colorimetric *in situ* hybridization for cysLGCs

Type of data: Large Image Datasets
Format: Stack of Tiff file
Volume: 1 TB
How created: confocal imaging of hybridization chain reaction for cysLGCs on octopus sections

Type of data: Microscopy Images
Format: Tiff file
Volume: 1 TB
How created: confocal and expansion microscopy images of immunohistochemical staining for channel antibodies and pre-synaptic and post-synaptic channel

WP3 Exploring the roles of novel LGICs in Octopus behaviour

Type of data: Video
Format: mp4, avi
Volume: 1 TB

How created: Take videos of octopus paralarvae while they are under different lighting conditions, during feeding or while they are in different pharmacological compounds.

Type of data: Microscope Images
Format: Tiff file
Volume: 500 GB
How created: Confocal Imaging of CRISPR-Cas9 injected embryos

Type of data: Microscope video
Format: avi, mp4
Volume: 1TB
How created: Ca imaging of live brain sections

3. Ethical and legal issues

3.1. Will you use personal data? If so, shortly describe the kind of personal data you will use. Add the reference to the file in KU Leuven's Record of Processing Activities. Be aware that registering the fact that you process personal data is a legal obligation.

No use of personal data

3.2. 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, we will be working on animals; octopus hatchlings, Xenopus eggs and mammalian cell lines. The research will be performed under 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 was given: ECD P099/2021 Characterising Novel Ligand-Gated Ion Channels in Octopus vulgaris.

3.3. Does your research 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

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 Octopus LGICs with novel ligands. 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

3.4. 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 regarding reuse and sharing are in place?

No Third Party is involved.

4. Documentation and metadata

4.1. 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 (.docc file)
- Structure of the data (.doc file)
- Steps involved in data analysis and relevant analysis scripts (R, MATLAB, Python and ImageJ 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, in paraffin, at 4C or in freezers depending on the kind of sample. Immunohistological stained slides will be stored in appropriate boxes in a dry place or fridge.

4.2. 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

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 genomics (http://www.dcc.ac.uk/resources/metadata-standards/genome-metadata). For all other data, metadata will be created using the Dublin core (http://www.dcc.ac.uk/resources/metadata-standards/dublin-core).

5. Data storage and backup during the project

5.1. Where will the data be stored?

All Data will be stored on servers centrally managed by ICTS KU Leuven and with back-up capacities (KU Leuven OneDrive, Large Volume-Storage). We expect about 5 Tb of data to be stored.

5.2. How will the data be backed up?

We will use the back-up facilities of the KU Leuven ICTS.

5.3. 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

There is currently sufficient storage at KU Leuven ICTS.

5.4. What are the expected costs for data storage and backup during the project? How will these costs be covered?

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 the running costs on the grant.

5.5. 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. Some data files will be stored in a secure environment at NERF. All data will be password protected at the locations.

6. Data preservation after the end of the project

6.1. Which data will be retained for the expected 10 year period after the end of the project? If only a selection of the data can/will be preserved, clearly state why this is the case (legal or contractual restrictions, physical preservation issues, ...).

Digital data: We will retain all data for the expected 10 year period. For most publications we expect that we will make the data publicly available on data repositories.

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. Physical preservation

cannot be ensured for a longer period in our samples (loss of fluorescence, loss of RNA and protein integrity).

6.2. 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 10 years, conform the KU Leuven RDM policy.

6.3. What are the expected costs for data preservation during these 10 years? How will the costs be covered?

We expect the costs to gradually increase up to 2800 EUR/year. These costs have been budgeted into the project.

7. Data sharing and re-use

7.1. 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 or because of IP potential)?

No

7.2. 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 researcher 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. CIAC, CephRes, etc. Published data will be available to all. For most publications we expect that we will make the data publicly available on data repositories. Unpublished results will be made available after an embargo period (3 years; exceptionally 5 years after the project).

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

- Other (specify):

Experimental data will be made available through a data repository such as Genebank, FigShare (https://figshare.com/), Dryad (https://datadryad.org/) or https://zenodo.org/depending on the type of data. We will explore the possibilities via online repositories and will use the website www.re3data.org.

7.4. When will the data be made available?

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

The data will be made available after publication via the required link in the publications or upon request after an embargo period after publication (f.i. phenotype files, genetic data). The same holds true for unpublished data, they can be made available upon request but only after an embargo period (3 years; exceptionally 5 years after the project).

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

All team members have access as long as they are affiliated to KU Leuven. Once all files are released, anyone can use these data to generate new results, referring to the original publication and not for commercial use. Other data will be only released upon request and after an embargo period after publication. Data will be released under a CC-BY-NC reuse license.

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

The transfer costs depend on the data repository selected. Costs will be covered by project fund.

8. Responsibilities

8.1. Who will be responsible for the data documentation & metadata?

All PIs (Eve Seuntjens, William Schafer), and day-to-day managers of the C1-project; currently: Amy Courtney, Ali M Elagoz, Ruth Styfhals

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

All PIs (Eve Seuntjens, William Schafer), and day-to-day managers of the C1-project; currently: Amy Courtney, Ali M Elagoz, Ruth Styfhals

8.3. Who will be responsible for ensuring data preservation and sharing?

All PIs (Eve Seuntjens, William Schafer), and day-to-day managers of the C1-project; currently: Amy Courtney, Ali M Elagoz, Ruth Styfhals

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

The end responsibility for updating and implementing the DMP is with the supervisor (promotor).

Eve Seuntjens (promotor), William Schafer (co-promotor).