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	**Lore Kerkhofs 0000-0002-1863-3995**
Contributor name(s) (+ ORCID) & roles	**Nicolas Verhaert (0000-0002-3512-1334), PI** **Tristan Putzeys (0000-0002-0690-3636), Co-Promotor** **Carmen Bartic (0000-0001-9577-2844), Co-Promotor**
Project number[1] & title	Tessla: The Secondary Spiral Lamina in intracochlear mechanics: A natural hearing protection against high-frequency hearing loss?
Funder(s) GrantID[2]	11DN5723N
Affiliation(s)	☒ KU Leuven ☐ Universiteit Antwerpen ☐ Universiteit Gent ☐ Universiteit Hasselt ☐ Vrije Universiteit Brussel ☐ Other: Provide ROR[3] identifier when possible:
Please provide a short project description	During this project, we will investigate the role of the secondary spiral lamina in intracochlear mechanics by means of anatomical research, using optical coherence tomography (OCT) and Contrast-enhanced micro-computed tomography and by means of functional-mechanical research using OCT Vibrometry. The motion of this structure will be captured and compared in both human (ex-vivo) and gerbil (in-vivo) cochleae since the active processes of the cochlea can have a significant impact on the motion of the intracochlear structures.

[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/

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
Anatomical OCT	Anatomical Investigation of the Secondary Spiral Lamina	☒ Generate new data ☒ Reuse existing data	☒ Digital	☐ Observational ☒ Experimental ☐ Compiled/ aggregated data ☐ Software	☒.oct ☒.jpg	☐ < 100 MB ☐ < 1 GB ☒ < 100 GB ☐ < 1 TB ☐ < 5 TB	
Vibrational OCT	Mechanical investigation of the Secondary Spiral Lamina	☒ Generate new data	☒ Digital	☒ Experimental ☒ Software	☒ .oct ☒ .txt ☒ .m ☒ .xls	☐ < 100 GB ☒ < 1 TB	
MicroCT	Anatomical Investigation of the Secondary Spiral Lamina & will be used as a reference for comparison of the OCT images.	☒ Generate new data ☒ Reuse existing data	☒ Digital	☒ Experimental	☒ TIFF ☒ .pca ☒ .jpg	☒ < 5 TB	
Histology	OCT and CECT lack the resolution to	☒ Generate new data	☒ Digital ☒ Physical	☒ Experimental	☒ TIFF	☒ < 100 MB	5 Histological Slices of Biological

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

	image the organ of Corti accurately, also for a reference of OCT and CECT to identificate the SSL	☒ Reuse existing data					Samples
Samples	Used samples for the OCT, microCT and histology data, both human and gerbil cochleae	☒ Generate new data ☒ Reuse existing data	☒ Digital ☒ Physical	☒ Experimental	☒ .docs ☒ .xlsx	☒ < 100 MB	15 human Biological Samples 30 Gerbils
Segmentations of microCT data	Segmentations to quantify intracochlear structures in human and gerbil cochleae	☒ Generate new data ☒ Reuse existing data	☒ Digital	☒ Experimental	☒ .am	☒ < 1 GB	

GUIDANCE:

DATA CAN BE DIGITAL OR PHYSICAL (FOR EXAMPLE BIOBANK, BIOLOGICAL SAMPLES, …). DATA TYPE: DATA ARE OFTEN GROUPED BY TYPE (OBSERVATIONAL, EXPERIMENTAL ETC.), FORMAT AND/OR COLLECTION/GENERATION METHOD.

EXAMPLES OF DATA TYPES: OBSERVATIONAL (E.G. SURVEY RESULTS, SENSOR READINGS, SENSORY OBSERVATIONS); EXPERIMENTAL (E.G. MICROSCOPY, SPECTROSCOPY, CHROMATOGRAMS, GENE SEQUENCES); COMPILED/AGGREGATED DATA[5] (E.G. TEXT & DATA MINING, DERIVED VARIABLES, 3D MODELLING); SIMULATION DATA (E.G. CLIMATE MODELS); SOFTWARE, ETC.

EXAMPLES OF DATA FORMATS: TABULAR DATA (.POR,. SPSS, STRUCTURED TEXT OR MARK-UP FILE XML, .TAB, .CSV), TEXTUAL DATA (.RTF, .XML, .TXT), GEOSPATIAL DATA (.DWG,. GML, ..), IMAGE DATA, AUDIO DATA, VIDEO DATA, DOCUMENTATION & COMPUTATIONAL SCRIPT.

DIGITAL DATA VOLUME: PLEASE ESTIMATE THE UPPER LIMIT OF THE VOLUME OF THE DATA PER DATASET OR DATA TYPE.

PHYSICAL VOLUME: PLEASE ESTIMATE THE PHYSICAL VOLUME OF THE RESEARCH MATERIALS (FOR EXAMPLE THE NUMBER OF RELEVANT BIOLOGICAL SAMPLES THAT NEED TO BE STORED AND PRESERVED DURING THE PROJECT AND/OR AFTER).

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

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.	External hard drives stored at the lab + Large volume storage: - OCT - CEmicroCT
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 If yes, please describe: Reference to the formal approval by the ethical review committee for animal data: P087/2022 Reference to the formal approval by the ethical review committee for human subject data: S-65502
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 - Short description of the kind of personal data that will be used: The data of human temporal samples will maintain anonymous, the only available information will be the gender, age and freezing/thawing time of the samples.
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.	☒ No
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.	☒ No

[6] See Glossary Flemish Standard Data Management Plan

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.	☒ No

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).	Protocols and guidelines for experiments will be available as .pdf and .docs files. The details of each experiment and an overall overview of the conducted experiments will be stored in an xls. file. To provide an overview of the OCT images, a ReadMe.txt document will be added to the folder containing corresponding OCT images, with an explanation of what is visible and the relevance of the images. For the samples used in each experiment, a different file with information about the sample (anatomical remarks, mechanical remarks, information about freezing of the sample) will be stored as .xls files, both for human and animal data. The digitized histological sections are saved as .TIFF files and contain metadata such as voxel sizes. Segmentations are accompanied by a detailed Word Document on the exact methodology applied to generate the segmentation.
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.*	☒ No

4. Data Storage & Back-up during the Research Project	
Where will the data be stored?	The data will be stored on KU Leuven administered drives (large volume storage and OneDrive). In order to be able to easily analyze the data, some files will need (temporarily) to be stored an external or laptop hard drive.
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.*	Since the data are stored on KU Leuven storage, the general ICT back-up Policy is applied. Once every month additional backups are made on a physical external hard drive (encrypted).
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 If yes, please specify concisely: Yes. Since the data are stored on KU Leuven servers, and these drives are expandable in blocks, the backup capacity is technically not an issue. Storage & backup capacity: OneDrive 2TB - External Hard Drives 5 TB - Laptop Hard drive 0.5 TB The reused CECT and OCT data is available on the large volume storage drive and on three external hard drives, each consisting a storage capacity of 5 TB.
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]	The lab policy is that the researchers have only access to the data from the project they are involved in. Furthermore, the data for long-term storage are kept on large-volume storage drives with limited access (only authorized persons have access).

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

What are the expected costs for data storage and backup during the research project? How will these costs be covered?	The OneDrive (including version history) has sufficient capacity and is available without any costs. External Hard Drive has been purchased before with bench fee. The KU Leuven Large volume storage is covered through PI's project funding. Donor samples is covered through the Vesalius Institute and sample are stored and managed through the faculty of Medicine.
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 data, except for the human cadaveric specimens, will be retained the expected 5 year period. The designated responsible person is Nicolas Verhaert. Due to legal and ethical restrictions, the human cadaveric specimens can only be stored for a limited time (2-3 months) before the specimens will be collected for a funeral with other pieces of the cadaver.
Where will these data be archived (stored and curated for the long-term)?	On OneDrive, as this data storage is still accessible by the promotor if the researcher has left the lab it can be considered long-term storage and the external hard drives which remain in the lab (secure environment).
What are the expected costs for data preservation during the expected retention period? How will these costs be covered?	None, as OneDrive is not paid by the researcher and the external hard drive will remain property of the 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: At this moment, no data will be made available at the end of the project, only upon request
If access is restricted, please specify who will be able to access the data and under what conditions.	PhD and post-docs working under the supervision of Prof. Verhaert can access the data.
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 ☒ No
Where will the data be made available? If already known, please provide a repository per dataset or data type.	Data will be available upon request by email.
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 will be available on request after the 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 commons attribution license (cc-by 4.0), so that users have to give credit to the original data creators.
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?	No costs expected.

7. Responsibilities	
Who will manage data documentation and metadata during the research project?	The researcher, when her contract has ended the responsibility shifts towards Prof. Verhaert to ensure data preservation and reuse.
Who will manage data storage and backup during the research project?	The researcher, when her contract has ended the responsibility shifts towards Prof. Verhaert to ensure data preservation and reuse.

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

Who will manage data preservation and sharing?	The researcher, when her contract has ended the responsibility shifts towards Prof. Verhaert to ensure data preservation and reuse.
Who will update and implement this DMP?	The researcher bears the end responsibility of updating & implementing this DMP.