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	**Dorothy Immaculate John Robbert, 0000-0002-9791-7338**
Contributor name(s) (+ ORCID) & roles	**Principal Investigator/Promoter: Prof. Gabriele Bergers, 0000-0003-3545-5171** **Lab Manager: Kevin Feyen**
Project number[1] & title	Second-wave adaptive therapies to stimulate the immune system in cancer
Funder(s) GrantID[2]	1103823N
Affiliation(s)	☐ ☒ KU Leuven ☐ Universiteit Antwerpen ☐ Universiteit Gent ☐ Universiteit Hasselt ☐ Vrije Universiteit Brussel ☐ Other: Provide ROR[3] identifier when possible:

[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/

Please provide a short project description	Immune-checkpoint inhibitors have created a paradigm shift in cancer therapy, displaying significant life extensions, and in instances, complete cure. But only a subset of patients derives clinical benefits, and there is currently no definitive explanation of the cellular and molecular basis of this heterogeneity in response. The functional inter-regulation of tumour angiogenesis and immunosuppression has provided the rationale to combine immunotherapy with antiangiogenic therapy in the form of antiangiogenic immunotherapy combinations. This has provided superior beneficial effects in several upcoming preclinical trials and have already been translated into clinical trials in several solid tumours like HCC, RCC and TNBC. As several antiangiogenic immunotherapy combinations are currently being tested in several tumour types, it is very timely to identify the “second-wave” relapse mechanisms (relapse following antiangiogenic immunotherapy combination treatments). Taking advantage of a unique transgenic cancer mouse model that exhibits response and relapse phases during antiangiogenic immunotherapies, I will conduct single cell expression profiling and functional analyses of the tumour microenvironmental landscape, to decipher the molecular mechanisms of response and acquired resistance that affect the innate and adaptive immune systems. Our preliminary data show activation of distinct intratumoural myeloid cell-derived immunosuppressive pathways and a parallel activation of immune checkpoint molecules in T cells. We speculate that targeting these distinct and specific immunosuppressive axes will sensitise tumours to the administered antiangiogenic immunotherapies, creating effective transformative immune-oncology treatment modalities for cancer.

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
Transcriptomics	scRNA-seq, bulk-RNA-seq, spatial transcriptomics either generated from my project or downloaded from public datasets (for example, patient data)	☒ Generate new data ☒ Reuse existing data	☒ Digital ☐ Physical	☐ Observational ☒ Experimental ☒ Compiled/ aggregated data ☐ Simulation data ☐ Software ☒ Other: curated ☐ NA	☐ .por ☒ .xml ☐ .tab ☐ .csv ☐ .pdf ☐ .txt ☐ .rtf ☐ .dwg ☐ .tab ☐ .gml ☐ other: .rds ☐ NA	☐ < 100 MB ☐ < 1 GB ☐ < 100 GB ☒ < 1 TB ☐ < 5 TB ☐ < 10 TB ☐ < 50 TB ☐ > 50 TB ☐ NA	NA
Images	HE and fluorescent immunohistoch	☒ Generate new data ☐ Reuse existing	☒ Digital ☐ Physical	☒ Experimental	☒ other: .czi & .zvi	☐ < 100 MB ☐ < 1 GB ☐ < 100 GB	NA

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

	emistry stainings from mice and human tissue sections	data				☒ < 1 TB ☐ < 5 TB ☐ < 10 TB ☐ < 50 TB ☐ > 50 TB ☐ NA	
Frozen tissues	Frozen tissues from preclinical trials in mouse.	☒ Generate new data	☐ Digital ☒ Physical	☒ Experimental	☒ NA	☒ NA	Expected about 100-150 frozen tissues comprised of pancreatic neuroendocrine tumours in mice with the spleen and liver from the corresponding animal.
Computational codes	Scripts used for transcriptomic analysis	☒ Generate new data	☒ Digital ☐ Physical	☒ Experimental ☒ Compiled/ aggregated data	☐ other: .r	☐ < 100 MB ☒ < 1 GB ☐ < 100 GB ☐ < 1 TB ☐ < 5 TB ☐ < 10 TB ☐ < 50 TB ☐ > 50 TB ☐ NA	NA
Image quantifications	Quantifications of cellular parameters and	☒ Generate new data	☒ Digital ☐ Physical	☒ Experimental	☒ .xml ☒ .tab ☒ .csv	☐ < 100 MB ☐ < 1 GB ☐ < 100 GB	NA

	counts from images.					☐ < 1 TB ☐ < 5 TB ☐ < 10 TB ☐ < 50 TB ☐ > 50 TB ☐ NA	
Flow Cytometry data	Data containing information on the captured cells under each antibody gating per sample.	☒ Generate new data	☒ Digital ☐ Physical	☒ Experimental	☐ other: .fcs	☐ < 100 MB ☐ < 1 GB ☒ < 100 GB ☐ < 1 TB ☐ < 5 TB ☐ < 10 TB ☐ < 50 TB ☐ > 50 TB ☐ NA	NA
Preclinical trials	Data on details containing the drugs administered to mice, also recording their significant discordant behaviours and weights for dosing. Information on tumour burden	☒ Generate new data	☒ Digital ☐ Physical	☒ Experimental	☒ .xml	☒ < 100 MB ☐ < 1 GB ☐ < 100 GB ☐ < 1 TB ☐ < 5 TB ☐ < 10 TB ☐ < 50 TB ☐ > 50 TB ☐ NA	NA

	after sacrifice and resection will also be recorded.						

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).

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.	We plan to use published datasets from repositories, and when we do, we can record in detail the sources.

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

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 ☐ Yes, dual use ☐ No If yes, please describe: The ethics committee that deals with my application is the Ethical Committee for Animal Experimentation of KU Leuven (Belgium). My initial trials were approved under ECD number 170/2016, and will now be reapplied for, which is under processing. I will update this information as soon as approval has been achieved.
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 ☒ No If yes: - Short description of the kind of personal data that will be used: - Privacy Registry Reference:
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:

[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.	☐ Yes ☒ No If yes, please explain:

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).	All the research data generated that is described in section 2 will be saved on the L-Drive (shared drive accessible by everyone in the lab) and will be regularly updated. Descriptions will accompany the data stored. Experiments will also be recorded in the lab notebook, with observations and results. Every experiment will be accompanied by an experiment number. The specific protocols will be recorded and saved in the shared drive for reproducibility.
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: An tabular format file will be created to list and describe all the available data and will If no, please specify (where appropriate per dataset or data type) which metadata will be created:

4. Data Storage & Back-up during the Research Project	
Where will the data be stored?	Data will be stored on the L-drive (large storage network), a shared drive managed by the ICTS-IT department. In addition, a cloud-based KU Leuven storage is available for each research group to secure storage and share documents. An unlimited storage space is available and maintained by the ICTS-IT department.
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.*	The data will be backed up in two ways. Automatic back-up (every 24 hours) of the network L-drive is controlled by the ICTS KU Leuven department. Additionally, every researcher's computer is equipped with the Druva Cloud Platform that allows to back up even every 5 minutes (managed individually).
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 yes, please specify concisely: An unlimited storage space is available and maintained by the ICTS-IT department. If no, please specify:

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

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]	Research data are stored and managed by the KU Leuven IT department and are accessible only by the researchers working on the project.
What are the expected costs for data storage and backup during the research project? How will these costs be covered?	Back-up costs of 1 TB (KU Leuven ICTS) 104.42 euros/year. The lab budget will cover storage and back-up costs.

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 generated data will be retained for at least 5 years after the end of the project. For publication purposes, our data will be publicly available on data repositories and published articles that have an open access status.
Where will these data be archived (stored and curated for the long-term)?	Data will be stored on the archive K-drive, which is also managed by the ICTS KU Leuven department.

What are the expected costs for data preservation during the expected retention period? How will these costs be covered?	Yearly storage costs of 1TB data on the K-drive: 56,92 euros. Costs will be covered by internal lab funding.

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:
If access is restricted, please specify who will be able to access the data and under what conditions.	
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.	The data will be made available in an Open Access repository. Data will be published using open access publications and will be available at dedicated data repositories. Unpublished research data will be accessible to the PI's group and all scientific collaborators involved in the project.
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'.*	The data will be made available upon pre-publication archiving online and/or upon 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.* *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 usage license for reusing data upon providing credit will be in place. Therefore, a creative commons attribution license (CC-BY 4.0) will be provided.

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

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: This will be performed after submission to bioarchive or other repositories or after submission to a journal.
What are the expected costs for data sharing? How will these costs be covered?	Submission in repositories and data sharing are not expected to create any costs.

7. Responsibilities	
Who will manage data documentation and metadata during the research project?	Data documentation and metadata will be managed by the PhD candidate and grant holder, Dorothy John Robbert during the research project. It will also be overseen by the promoter (Prof. Gabriele Bergers) and the lab manager (Kevin Feyen).
Who will manage data storage and backup during the research project?	Data storage, back up and reuse: VIB IT-manager (Urbain Schepereel) and ICTS-IT department (KU Leuven).
Who will manage data preservation and sharing?	The Promoter (Prof. Gabriele Bergers) and lab manager (Kevin Feyen) will manage data preservation and sharing.
Who will update and implement this DMP?	The Promoter (Prof. Gabriele Bergers) will update and implement this DMP.