FWO DMP Template - Flemish Standard Data Management Plan

Version KU Leuven

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	**Hojjat Alizadeh Zeinabad, ORCID: 0000-0003-1575-1803**
Contributor name(s) (+ ORCID) & roles	**Prof. Xavier Casadevall i Solvas (main supervisor, KU Leuven), ORCID: 0000-0002-3015-7178** **Dr. Anna Kabanova (co-supervisor, Toscana Life Sciences Foundation: Siena, IT), ORCID: 0000-0002-2077-472X**
Project number [1] & title	1291224N - Bottom-up manufacturing of artificial anti-tumor T cells
Funder(s) GrantID [2]	1291224N
Affiliation(s)	KU Leuven ROR identifier KU Leuven: 05f950310
Please provide a short project description	T cells play a central role in anti-tumor immune protection. While their ability to target and eliminate emerging tumor cells is increasingly recognized, fully -established tumors can efficiently evade T cell responses. Significant efforts spanning several decades of research have been made to develop T cell-based therapies manufactured from donor-derived T cells. The use of tumor-directed T cells engineered to express chimeric antigen receptors (CARs) represents, to date, one of the most successful applications for the treatment of chemoresistant cancers. However, several major drawbacks, including economic factors, suboptimal functioning, and life-threatening side effects, still hinder the full potential of T cell-based therapies. To address this issue, I aim to create Artificial T cells (ArTCells) that will mimic the anti-tumor function of T cell-based therapy but in a safer, more efficient, and less expensive product. ArTCells will incorporate cytotoxic and tumor-recognizing components of activated T cells into lipid-based vesicles. ArTCells will be characterized via cryo-EM, SEM, and confocal microscopy and their ability to target and kill tumor cells will be validated in vitro by a combination of functional assays and in vivo by high-resolution live imaging assays. These ArTCells could allow to circumvent many of the current technological limitations that hinder a more widespread applicability of T Cell-based therapies, without being subject to tumor-mediated inactivation.

2. Research Data Summary

[1] "Project number" refers to the institutional project number. This question is optional. 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.

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 [3].

				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
Cell lines	Established cell lines to express desired recombinant proteins will be stored in 1 ml cryovial tubes.	Generate new data	Physical	N/A	N/A	N/A	<200 ml
Vectors	Plasmid vectors	Generate new data	Physical	N/A	N/A	N/A	<50 ml
Proteins	Purified recombinant proteins	Generate new data	Physical	N/A	N/A	N/A	<50 ml
TEXT	Protocols, description of research results, literature studies	Generate new data	Digital	Textual	.txt	1GB	N/A
Microscopy Images	Fluorescent and Confocal microscopy of	Generate new data	Digital	Images	.tiff and .JPEG	100-200GB	N/A

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

	artificial cells (ArTCells) and their interactions with cancer cell lines. Electron microscopy (TEM and SEM) of ArTCells						
Microscopy movies	Fluorescent and Confocal microscopy capturing videos of ArTCells and their interactions with cancer cell lines.	Generate new data	Digital	Images	.avi	100-200GB	N/A
Flow cytometry	Measuring cell death after incubation cancer cell lines with ArTCells. Validation of protein expression on the CHO and HEK293 cells.	Generate new data	Digital	Numerical	.fcs	100-200GB	N/A

	Conform membrane protein insertion into the GUVs.						
Observational numerical data	Protein concentration calculation by analysing the BSA data. Analysing the fluorescence-based assays data.	Generate new data	Digital	Numerical	.xls	1 GB	N/A

GUIDANCE:
The data description forms the basis of your entire DMP, so make sure it is detailed and complete. It includes digital and physical data and encompasses the whole spectrum ranging from raw data to processed and analysed data including analysis scripts and code. Physical data are all materials that need proper management because they are valuable, difficult to replace and/or ethical issues are associated. Materials that are not considered data in an RDM context include your own manuscripts, theses and presentations; documentation is an integral part of your datasets and should described under documentation/metadata.
RDM Guidance on data

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.	N/A

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, refer to specific datasets or data types when appropriate and provide the relevant ethical approval number.	**Yes,** animal data; provide ECD reference number: Ethical approval is in progress. Additional information:
Will you process personal data[4]? If so, please refer to specific datasets or data types when appropriate and provide the KU Leuven or UZ Leuven privacy register number (G or S number).	☒ No
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 If yes, please comment: ArTCell aims to leap innovation by providing a scalable, on-demand Artificial T-Cell substitute, by equipping an artificial cell with T cell cytotoxic functionalities. With this approach, the therapeutic product could be mass-manufactured from controlled raw materials, which is the most desirable route to obtain an off-the-shelf, cost-effective and safe anti-tumor cell therapy. In fact, these substitutes produced in safe and well-controlled environments could constitute a replacement for currently suboptimal products based on T cell-, NK cell- and iPSC-derivatives.
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
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

[4] See Glossary Flemish Standard Data Management Plan

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). *RDM guidance on documentation and metadata*.	1) Protocols (containing info about both materials(setting, parameters, set-up, ...)and methods), the research progress and obtained data, what they represent and how they were generated, will be collected in an electronic notebook (eLABJournal). Here, folders are provided for all subtasks of the project. In each folder, a new file will be made for each experiment, named with the date and subject, and including information on the persons involved as well as version tracking. Each experimental file will contain a section on the objective, protocol, results (a description of results and observations rather than all raw and analysed data) and conclusions. For each experiment, all raw and analysed data files will be stored in a folder on the shared server, using the same hierarchical folder structure as the electronic labnotebook. By using the same structure on the server and in the electronic labnotebook, contextual information on the experimentally obtained data can be easily searched and used by a secondary analyst via the electronic notebook. 2) A physical sample inventory will be stored in freezers (vectors and proteins) and liquid nitrogen tank (cells) and a file with sample details will be saved on the shared server.
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 If no, please specify (where appropriate per dataset or data type) which metadata will be created: No uniform metadata standard is available for all different aspects and disciplines of this project. Therefore, we will create a uniform system ourselves to enhance the use of secondary data. As mentioned above, we will use the electronic labnotebook (eLABJournal) in which a number of predetermined topics have to be described for each experiment (objective, protocol, results and conclusion). The electronic labnotebook facilitates searching for particular metadata through a search engine. By mimicking the folder structure of the electronic labnotebook in the server based folder with the experimental data, linking of the metadata to the actual data will be facilitated.

4. Data Storage & Back-up during the Research Project	
Where will the data be stored? *Consult the interactive KU Leuven storage guide to find the most suitable storage solution for your data.*	☐ Shared network drive (J-drive) ☐ Personal network drive (I-drive) ☒ OneDrive (KU Leuven) The time-stamped digital data will be stored in a project folder on the shared drive (J:) of KU Leuven. The time-stamped digital metadata will be stored on the server of the electronic labbook (eLABJournal), and .pdf exports will be made on a weekly basis to be saved on the shared drive (J:) and OneDrive (KU Leuven). The folder will be open for the members participating in this FWO project and is secured and backed-up by the ICTS service of KU Leuven. Copies can be made and kept on personal devices. An additional back up will be stored on the shared drive (K:) of KU Leuven and will be updated on a yearly basis.
How will the data be backed up? *WHAT STORAGE AND BACKUP PROCEDURES WILL BE IN PLACE TO PREVENT DATA LOSS?*	☒ Standard back-up provided by KU Leuven ICTS for my storage solution The digital data will be stored on the university's central servers with automatic daily back-up Procedures.
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 provides sufficient storage and back-up capacity during and after the project. A dedicated folder will be made for the project on which the collaborators will work jointly and store data files.
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.* *Guidance on security for research data*	The network drive for the FWO project folder and the large volume storage folder are secured by the ICTS service of KU Leuven with a mirror copy. Only other lab members, will have access to the shared folder. Unauthorized persons do not have access to this system.

What are the expected costs for data storage and backup during the research project? How will these costs be covered?	There are no expected costs for data storage. OneDrive for business is free for staff and students of KU Leuven. However, in the event that a paid service is necessary to store data during the retention period, the bench fee of the researcher will be used.

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...). *Guidance on data preservation*	☒ All data will be preserved for 10 years according to KU Leuven RDM policy
Where will these data be archived (stored and curated for the long-term)? *Dedicated data repositories are often the best place to preserve your data. Data not suitable for preservation in a repository can be stored using a KU Leuven storage solution, consult the interactive KU Leuven storage guide.*	☒ KU Leuven RDR ☐ Large Volume Storage (longterm for large volumes) ☐ Shared network drive (J-drive) ☐ Other (specifiy): **1) The digital data will be stored on the university's central servers (with automatic backup procedures) for at least 10 years, conform the KU Leuven RDM policy.** **2) The physical data will be stored in freezers and liquid nitrogen tank in the host lab for up to 10 years after the project.** **3) The accompanying metadata will be stored in the electronic lab notebook (eLABJournal).**

What are the expected costs for data preservation during the expected retention period? How will these costs be covered?	There are no expected costs for data storage. OneDrive for business is free for staff and students of KU Leuven. However, in the event that a paid service is necessary to store data during the retention period, the bench fee of the researcher will be used.

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, as open data ☒ Yes, as embargoed data (temporary restriction) ☐ Yes, as restricted data (upon approval, or 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.	The data will be embargoed for three years while the researcher will be working on the project outputs and then opened (open access) once the publications are out.
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, intellectual property rights If yes, please specify:

Where will the data be made available? If already known, please provide a repository per dataset or data type.	☒ KU Leuven RDR All digital data will be stored and be available for lab members using a shared network drive and large volume storage provided by the KU Leuven. In addition, the relevant data will be made available to external people upon request by mail.
When will the data be made available?	☒ Upon publication of 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.* *Check the RDR guidance on licences for data and software sources code or consult the License selector tool to help you choose.*	☒ CC-BY 4.0 (data) ☒ Data Transfer Agreement (restricted data) ☐ MIT licence (code) ☐ GNU GPL-3.0 (code) ☐ Other (specify)
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, a PID will be added upon deposit in a data repository ☐ My dataset already has a PID ☐ No
What are the expected costs for data sharing? How will these costs be covered?	The expected data sharing costs are minimal and covered by university services.

7. Responsibilities

Who will manage data documentation and metadata during the research project?	The postdoctoral researcher (Hojjat Alizadeh Zeinabad)) will be responsible for the data collection, documentation and metadata. Supervisor (Prof. Xavier Casadevall i Solvas) will manage the data storage facilities.
Who will manage data storage and backup during the research project?	The postdoctoral researcher (Hojjat Alizadeh Zeinabad) will be responsible to store the data on the appropriate accommodation provided by KU Leuven. The ICTS service of KU Leuven is responsible for the back-up of the network drives at KU Leuven. The folders will be managed by the supervisors.
Who will manage data preservation and sharing?	While the project is ongoing, the postdoctoral researcher (Hojjat Alizadeh Zeinabad) will manage the data preservation. Prof. Xavier Casadevall i Solvas, the promoter, will take care of the preservation after the completion of the doctoral dissertation. The researcher will manage the sharing of the data.
Who will update and implement this DMP?	The researcher (Hojjat Alizadeh Zeinabad) will update and implement the DMP.