DMP title

Project Name Expression of the metabolite transporter SLC4A4 in pancreatic cancer cells promotes immune escape and resistance to immunotherapy - DMP title

Grant Title C3/21/047

Principal Investigator / Researcher Max Mazzone

Description Pancreatic ductal adenocarcinoma (PDAC) is one of the most aggressive and lethal cancer types. It is virtually resistant to any sort of therapy, including the most recent immunotherapies. These tumors are characterised by a strong hypoxic, nutrient poor, and acidic tumor microenvironment (TME), in which CD8+ T cells are excluded or absent. In the context of tumor acidity, the role of bicarbonate transporters, key regulators of pH homeostasis, has mostly been neglected so far. We recently identified SLC4A4 as the most abundant acid extruder in PDAC, expressed exclusively by ductal epithelial cell. Therefore, in this research proposal we aim to investigate whether and how SLC4A4 regulates the acidic TME and anti-tumor immunity in the context of PDAC. The success of this study might pave the way towards groundbreaking therapeutic strategies and combination regimens which are urgently required to tackle tumor resistance or refractoriness vis-Ã -vis immunotherapies.This Data Management Plan describes how data will be generated, organized, stored, and backed up throughout the duration of the project and after its completion

Institution KU Leuven

1. General Information

Name of the project lead (PI)

Massimiliano Mazzone

Internal Funds Project number & title

Research project C3/21/047

Expression of the metabolite transporter SLC4A4 in pancreatic cancer cells promotes immune escape and resistance to immunotherapy

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.

We will generate new data from mouse models and human clinical samples, more specifically data of single-cell RNA-sequencing (4-6 TB), microscopy (1-2 T)B, flow cytometry (1-2 TB), nucleotide sequences and ELISA (100-200 GB), as well as phagocytosis, cytotoxicity, antigen presentation, and T-cell suppression assays (1-2 GB). Lentiviral vectors, engineered cell lines and transgenic mouse strains will be constructed (1-2 GB). Research documentation (data analysis, standard operating procedures, ethical approvals) is kept in a lab book and in electronic formats including Graphpad Prism, MS Excel, MS Word and Adobe Portable Document Format (10-20 GB). We also aim to compile manuscripts (research articles and reviews, 1-2 GB).

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

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).

All animal experiments to be performed have been approved by the Ethical committee for Animal Experimentation (ECD) at KU Leuven, and are outlined in ECD project P226/2017 + a new additional ECD currently under approval.

Work on human clinical samples are conducted according to institutional, national and European regulations. In this case, the work performed falls under the umbrella of the MIMIPAC clinical trial (MEDI4736, UZ reference S61508).

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

Intellectual property arising from this work will be managed based on the framework agreement between VIB (VIB Tech Transfer) and KU Leuven, the two participating institutes in this study.

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?

Yes

Yes, and as above, dissemination or exploitation of the data will be managed according to the framework agreement between VIB and KU Leuven.

4. Documentation and metadata

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

Protocols and details related to data collection and processing will be recorded in physical lab books and transcribed to Word or Excel files by the applicants. Data folders containing raw and processed data will be hierarchically organized and labeled based on the source of the data, the type of experiment, the date of data generation, and the different experimental conditions analyzed. Data analysis methods and particularities (including metadata) will be described in text documents and Excel files included in these folders.

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.

No

Text documents and Excel files stored within each experiment folder will respectively contain guidelines describing data collection/analysis methods and all relevant metadata (including experimental conditions, sample keys, computational analysis pipelines and their parameters) to ensure the reusability of the data and the reproducibility of any further data generation.

5. Data storage and backup during the project

5.1. Where will the data be stored?

The institutes (KU Leuven and VIB) have sufficient and scalable storage capacity available, both during the research and during at least 10 years after the end of the research. Data storage and backup is based on a combination of internal servers and external storage with commercial providers such as Microsoft, and with public databases and repositories. Non-public data are login-protected and accessible to designated staff members only.

5.2. How will the data be backed up?

Data storage and backup is managed by KU Leuven IT services. Specifically, mirror copies of the stored data are made immediately upon upload, for safety backup purposes. All drives options are directly accessible from ANYWHERE AFTER starting a Pulse Secure VPN-A connection. Long-term storage, is ensured by the L-drive (stored data can NOT be modified or deleted. This, will guarantee the preservation of data over the minimum term of 10 years. Regular computer backups through the inSync platform (unlimited storage) secure the recovery of unsaved data.

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, the KU Leuven L-Drive (unlimited size) has sufficient storage capacity for the outlined project.

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

The annual cost of storage is approximately 569.2 € per 5TB of storage space per year. This cost

and capacity include the performance of mirror copies of the stored data, for safety backup purposes. We expect that 15 TB will be sufficient to store all data generated as part of the project. These costs will be covered by the budget of the project leaders.

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

Dat stored are are login-protected and accessible to designated staff members only.

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, ...).

As a general rule, data will be preserved for a minimum term of 10 years. Datasets collected in the context of clinical research, which fall under the scope of the Belgian Law of 7 May 2004, will be archived for 25 years, in agreement with the University Hospital policies and the European Regulation 536/2014 on clinical trials of medicinal products for human use.

6.2. Where will these data be archived (= stored for the long term)?

Long term storage and backup is based on a combination of internal servers (i.e., L-Drive) and external storage with commercial providers such as Microsoft and with public databases and repositories.

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

The annual cost is approximately 569.2 € per 5TB of storage space per year. We expect that 15 TB will be sufficient for long-term storage of all data generated as part of the project. These costs will be covered by the budget of the project leader.

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

Data may be shared externally upon reasonable requests from collaborating scientists, which will be reviewed and approved on a case-by-case basis by the project leaders. We do not exclude that the proposed work could result in research data with potential for tech transfer and valorization. The partner institutes have 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 any delay to publications is minimal.

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

The key findings of the project and their interpretation will be made available through publication of journal articles in established, peer-reviewed (non-predatory) academic journals. Relevant raw data will be made publicly available through upload to well-established open-access data repositories.

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

- In an Open Access repository
- In a restricted access repository
- Upon request by mail

All requests and approvals for reuse of data other than those deposited in open-access repositories will be assessed on a case-by-case basis by the project leaders.

7.4. When will the data be made available?

- Upon publication of the research results

Publications (journal articles in reputable academic journals) including key findings and their interpretation will be available upon completion of the project or its main milestones. Relevant raw data will at that same moment be made available in well-established open-access data repositories.

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

Data not deposited in open-access repositories will in principle only be accessible to members of the lab. Other collaborations and sharing are possible with staff and students within the VIB–KU Leuven Center for Cancer Biology, as well as within the KU Leuven Department of Oncology, upon reasonable request. Any user can place reasonable requests data for non-commercial purposes, and these requests will be assessed on a case-by-case basis by the project leaders. Commercial-based requests will be navigated in coordination between KU Leuven/VIB Tech Transfer team.

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

Costs for data sharing will be discussed with collaborators on a case-by-case basis.

8. Responsibilities

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

The lab manager (Jens Serneels, lab of Tumor Inflammation and Angiogenesis) and the project leaders of this consortium will share the responsibility of updating & implementing the DMP.

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

The lab manager (Jens Serneels), will be primarily responsible for collecting data, and for correct documentation and upload onto the L-Drive storage space. The KU Leuven IT department will be responsible for maintenance and back up of the L-Drive data storage space.

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

The lab manager (Jens Serneels, lab of Tumor Inflammation and Angiogenesis) and the project leaders of this consortium will share the responsibility for ensuring data preservation and sharing.

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

The lab manager (Jens Serneels, lab of Tumor Inflammation and Angiogenesis) and the project leaders of this consortium will share the responsibility of updating & implementing this DMP.