Plan Overview

A Data Management Plan created using DMPonline.be

Title: Naar gastgerichte immunotherapie en biomarkers: het dissecteren van immuunmodulatoren bij influenza-geassocieerde pulmonale aspergillose

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Affiliation: KU Leuven (KUL)

Funder: Bijzonder Onderzoeksfonds

Template: KU Leuven BOF-IOF

Project abstract:

Influenza-associated pulmonary aspergillosis (IAPA) is a severe fungal superinfection in critically ill patients with influenza. Despite the use of currently available pathogen-directed treatments, IAPA patients still have only 50% chance to survive. To date, insights in how influenza alters the fungal host immune response remain scarce, thereby limiting the development of new treatments and identification of new biomarkers. Using a unique combination of a clinically relevant imaging-based mouse model of IAPA and patient samples, I aim to further unravel IAPA immunopathogenesis. More specifically, this project will focus on: (1) identification of host-pathogen factors to pave the way for validating new host-directed immunotherapies in IAPA (2) determination of metabolomic changes driving IAPA, and (3) unravelling of the immunological specificity of influenza towards the development of IPA. Fundamental knowledge into the pathogenesis of IAPA will lead to novel immunology-based biomarkers and host-directed immunotherapies aiding in guiding personalized host-directed immunotherapy-approaches and IAPA risk stratification.

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Naar gastgerichte immunotherapie en biomarkers: het dissecteren van immuunmodulatoren bij influenza-geassocieerde pulmonale aspergillose

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.

Dataset name / ID	Description	New or reuse	Digital or Physical data	Data Type	File format	Data volume	Physical volume
		*Indicate: **N**(ew data) or **E**(xisting data)*	Indicate: **D**(igital) or **P**(hysical)	Indicate: **A**udiovisual **I**mages **S**ound **N**umerical **T**extual **M**odel **SO**ftware **O**ther (specify)		Indicate: <1GB <100GB <1TB <5TB >5TB NA	
Descriptive data	observations of clinical scores (body weight, respiratory parameter and condition) of experimental used mice	N	D	T, N	.pdf .docx .pptx .xlsx .pzfx	<100GB	
Results of standard laboratory screening	Cloning forming units (CFU) counts on lung homogenates of mice, cell counts, viral titre and pathological scoring	N	D	T,N	.pdf .docx .pptx .xlsx .pzfx	<100GB	
Imaging data	A large volume of imaging data (raw and processed data) from µCT and BLI Dynamic phagosome biogenesis assays with live imaging Immunofluorescence stainings analysed with confocal microscope IncuCyte SX5 live-cell automated system	N	D	I,N, T	.txt .tiff BMP files .png .avi .mp4 .pzfx .roi .jpeg	>5 TB	
Immunological data	-Flowcytometry data collected with BD FACS ARIA II and BD FACS SYMPHONY and analysed with BD FACS DIVA software; - Western Blot - RT-PCR - O-link Mouse cytokine panel	N	D	N, T, I	.fcs .xlsx .pptx .pzfx	<1TB	
Sequencing data	CITE-seq data generated from BAL and Lung from mice	N	D	N,T	.txt, .xlsx, .csv, .rds, .h5ad, . R, .ipynb, .html,.pdf, .tiff, .png	>5TB	

metabolomics data	lactate measurements with HPLC	N	D	N, T, I	.xlsx .txt .csv .pdf .png .pzfx	<5TB	
Influenza /RSV/ Aspergillus/mucor strain	fungal / viral strain	E	P	other: viral fungal strain	/	/	Tubes stored at -80°C
Samples	Tissue samples from human/ mice tissues, fixed samples, frozen samples	E/N	P	/	/	/	Frozen samples: Tubes stored at -80°C. Tissue for histology: fixed and stored at 4 °C
Scripts	Code written for analysis of CITE-Seq data	N	D	T	R script	<100GB	

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:

In the project new but also already acquired samples from human / mice stored in our large biobank will be used to analyse (FWO project Laura Seldeslachts: 1186121N|1186123N; FWO project Simon Feys: 11M6922N and 11M6924N)

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, human subject data (Provide SMEC or EC approval number below)
- Yes, animal data (Provide ECD reference number below)

All animal experiments were approved by the KU Leuven Ethical Committee for animal research (license P094/2022 / P187/2024). We follow the guidelines and rules from the HSE Department (Health, Safety and Environment) and the Animal Ethics Committee at KU Leuven.

The project will use already collected patient samples available in our biobanks (Prof. Joost Wauters). Study protocols were reviewed and approved by the Ethical Committee of University Hospitals Leuven, Belgium. More specifically for, BAL supernatant: Variomic study (S65588), Live BAL cells: PIAS Study (S62072), PBMCs: PIAS Study (S62072), whole blood: contagious (S63881).

Will you process personal data? 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

N.A.

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 or Data transfer agreements, Research collaboration agreements)? If so, please explain in the comment section 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 in the comment section to what data they relate and which restrictions will be asserted.

- No

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).

Transparent data management and proper logging is applied. We will provide the following structure for the documentation: (1) for each experiment a separate folder is made with the name of the experiment. Each experiment folder contains subfolders with planning, protocol, experimental notes, data-analyses, ordered mice.
The planning folder contains a Word file with a brief description of the goal of the experiment, the experimental planning & design (scanning time points, sacrifice, …), the different groups with the number of mice per group.
The protocol folder contains different detailed protocols which will be used for the experiment and which can be used by other researchers to repeat the experiment (Word, Excel, PowerPoint).
The experimental notes consist out of Word files for body weight, clinical scores, … which will be filled in on paper and achieved in a map for different experiments and later stored in excel files.
Ordered mice folder consists out of pdf and Word document of the ordered mice used during experiment. Data-analyses folder consists out of steps involved in data analysis and all data analysis files (statistics, figures, …) used for analysing raw data of the experiment (Excel, GraphPad prism xml, Word, PowerPoint, = specific file format according to data type). Raw data is stored on network drives with the same experimental name (specific file format according to data type)
With the help of these documentations every researcher will be able to look up all the information of the performed experiments and to repeat the experiment in the same way.
Protocols are written on paper (lab book) or made digital in MS office files (Word and Excel files, few megabytes) as described above

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.

- No

Data Storage & Back-up during the Research Project

Where will the data be stored?

- Large Volume Storage
- Personal network drive (I-drive)
- OneDrive (KU Leuven)
- Other (specify below)

Acquired data is stored on protected data servers with a foreseen storage for 10 years (for raw) and unlimited storage capacity managed by KULeuven ICT (MoSAIC/GBioMed) (used storage = 3 TB, available storage = unlimited). Network drive read and/or write access is strictly regulated, thereby creating a restricted environment. Physical data will be stored for five years after publication and if necessary longer for future research. Copies are made and kept on personal devices and external storage device. Biological samples, Influenza and fungal strains are stored in -80°C freezer.

How will the data be backed up?

- Standard back-up provided by KU Leuven ICTS for my storage solution
- Personal back-ups I make (specify below)

Imaging data/ Flowcytometry raw data: acquired data on protected data servers is automatically backed up (mirrored) managed by KULeuven ICT (GBioMed). Non-raw data (manuscripts, data-analysis, …) is backup-ed on external hard drives and protected data servers.

Is there currently sufficient storage & backup capacity during the project?

If no or insufficient storage or backup capacities are available, explain how this will be taken care of.

- Yes

unlimited storage capacity managed by KULeuven ICT (MoSAIC/GBioMed), UZ Leuven secure large-volume storage (100 GB, expandable), and KU Leuven OneDrive Business.

How will you ensure that the data are securely stored and not accessed or modified by unauthorized persons?

All notes are present in the labs, secured by badge-controlled access to building, building sections and locked rooms. All computers are password secured, managed by KU Leuven ICT. Network drives are strictly regulated thereby creating restricted environment to read and/or write access to data [u-number and password controlled].

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

Costs for data server storage (113.84 euro / Tb according to cost model KU Leuven ICT), external HD, … are taken into account in the projects' budget proposal and are covered by bench fee supplemented with additional project funding acquired by the PIs. Sample storage (such as in cold room, freezer, sample storages boxes …) are covered by project funding and overhead

Data Preservation after the end of the Research Project

Which data will be retained for 10 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 will be preserved for 10 years according to KU Leuven RDM policy

In agreement with the KU Leuven data management policy and European Regulation 2016/679 (the General Data Protection Regulation), we will preserve: data (digital/biological samples) crucial for verification of research results, data that cannot be

reproduced, data obtained at large cost of time and money, data of scientific value to ourselves and others.

Where will these data be archived (stored and curated for the long-term)?

- Large Volume Storage (longterm for large volumes)

Acquired data will be automatically stored on protected data servers with a foreseen storage for 10 years (for raw) and unlimited storage capacity managed by KULeuven ICT (MoSAIC/GBioMed). Physical data will be stored after publication.

What are the expected costs for data preservation during the expected retention period? How will these costs be covered?

Costs for data server storage/preservation (113.84 euro / Tb according to cost model KU Leuven ICT), external HD, … are taken into account in the projects' budget proposal and are covered by bench fee supplemented with additional project funding acquired by the PIs. Sample storage/preservation (such as in cold room, freezer, sample storages boxes …) are covered by project funding and overhead project fund.

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.

- Yes, as open data

Relevant findings will be disseminated through publications in peer reviewed international journals. All articles will be published Open Access under Creative Commons licenses (CC BY 4.0)
Data will be presented on (inter)national scientific field specific meetings (like, ECCMID, GRC, FEBS, AAAM, TIMM). All (original) data will be made available upon reasonable request with the PI.

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.

- No

Where will the data be made available?

If already known, please provide a repository per dataset or data type.

- Other (specify below)

upon reasonable request with the PI and in an Open Access repository

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.

- CC-BY 4.0 (data)

Do you intend to add a persistent identifier (PID) to your dataset(s), e.g. a DOI or accession number? If already available, please provide it here.

- Yes, a PID will be added upon deposit in a data repository

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

Costs for data sharing are taken into account in the projects' budget proposal and are covered by bench fee supplemented with additional project funding acquired by the PIs.
Costs will be considered ad hoc with the requester depending on the requested data/sample format / amount

Responsibilities

Who will manage data documentation and metadata during the research project?

Laura Seldeslachts, Prof. Greetje Vande Velde (Corresponding supervisor), Joost Wauters, Stephanie Humblet-Baron

Who will manage data storage and backup during the research project?

Laura Seldeslachts, Prof. Greetje Vande Velde (Corresponding supervisor), Joost Wauters, Stephanie Humblet-Baron

Who will manage data preservation and sharing?

Laura Seldeslachts, Prof. Greetje Vande Velde (Corresponding supervisor), Joost Wauters, Stephanie Humblet-Baron

Who will update and implement this DMP?

Laura Seldeslachts, Prof. Greetje Vande Velde (Corresponding supervisor), Joost Wauters, Stephanie Humblet-Baron