The multidisciplinary battle against antimicrobial resistance: linking bacterial mechanics to emergent biofilm architecture

DPIA

DPIA

Have you performed a DPIA for the personal data processing activities for this project?

- Not applicable

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GDPR

GDPR

Have you registered personal data processing activities for this project?

- Not applicable

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FWO DMP (Flemish Standard DMP)

1. 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.

				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
AFM curves	mechanical measurements of interbacterial adhesion and friction	• Generate new data	• Digital	• Experimental	.csv, .jpk	• <100MB	
CFU counts	Colony count data from wetlab experiments	• Generate new data	• Digital	• Experimental	.csv	• <100MB	
Flow cytometry output	Resistance tracking from FCS	• Generate new data	• Digital	• Experimental	.fcs	• <100GB	
DEM simulation scripts	Agent-based modeling scripts	• Generate new data	• Digital	• Software	.py	• <100MB	
Confocal Microscopy images	Structural characterization of 3D biofilm architecture	• Generate new data	• Digital	• Experimental	.czi	• <5TB	

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)? Describe these issues in the comment section. Please refer to specific datasets or data types when appropriate.

- No

Will you process personal data? If so, briefly describe the kind of personal data you will use in the comment section. Please refer to specific datasets or data types when appropriate.

- 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.

- 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 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

2. 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).

For all wetlab experiments, there is a generalized README.txt file that describes the practical information of the experiment (e.g. strain, growth temperature, inoculation density, etc.). In addition, the metadata of the AFM experiments is automatically saved in the .jpk file format by the respective software. Similarly, the microscopy images (.czi) automatically use and store the metadata using the Open Microscopy Environment (OME).
For the simulations, a README.txt file describing the goal, how to run the scripts and output of scripts, will be added to the repositories.

Will a metadata standard be used to make it easier to find and reuse the data? If so, please specify (where appropriate per dataset or data type) which metadata standard will be used. If not, please specify (where appropriate per dataset or data type) which metadata will be created to make the data easier to find and reuse.

- Yes

The OME format will be used for the microscopy metadata.

3. Data storage & back-up during the research project

Where will the data be stored?

The generated data will be saved on a collective sharepoint for duration of the project. The collective sharepoint is backed up automatically 3 times per day. In view of the size of the raw microscopy data

(>1TB), this will be exempt from the sharepoint. The extracted data sets of the raw microscopy data will be included in the sharepoint.

How will the data be backed up?

In addition to the automatic back-ups of the collective sharepoint, the data will be stored on the central storage facilities (J and K drives) of the KU Leuven. Finally, we also allow local copies on personal devices and on the KU Leuven ManGo platform for active data processing.

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

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

The sharepoint will be open solely to core members of the project (active researchers and principal investigators). Potential collaborators will get access to the specific data sets necessary for collaboration.

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

The sharepoint online site is free for KU Leuven staff. Both collaborating research groups already have access to both the J-drive and K-drive, which are currently covered by the departmental budget of both respective groups

4. 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.

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

The data will be stored on the university's central servers (K-drive, with automatic backup procedures), conform the KU Leuven RDM policy.

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

The costs for the K-drive (5TB) for a 5-year period are estimated to be around €500 per research group and ware currently covered by the departmental budgets of both respective research groups.

5. Data sharing and reuse

Will the data (or part of the data) be made available for reuse after/during the project? In the comment section please explain per dataset or data type which data will be made available.

- Yes, in an Open Access repository
- Yes, in a restricted access repository (after approval, institutional access only, …)

Processed data will be published concurrent with eventual research publication. Given the size of the raw microscopy data it will be made available upon reasonable request.

If access is restricted, please specify who will be able to access the data and under what conditions.

N.a.

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 in the comment section 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.

The processed data will be submitted as a Zenodo repository upon publication.

When will the data be made available?

Upon publication of research results or in case of the raw microscopy data upon request.

Which data usage licenses are you going to provide? If none, please explain why.

We will use the default Zenodo Creative Commons Attribution 4.0 International (CC-BY) license.

Do you intend to add a PID/DOI/accession number to your dataset(s)? If already available, you have the option to provide it in the comment section.

- Yes

The DOI will be automatically generated with the creation of the Zenodo repository

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

Zenodo is free to use for scholarship.

6. Responsibilities

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

The responsible persons are the researcher and the technical staff of the research group.

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

The responsible persons are the researcher and the technical staff of the research group.

Who will manage data preservation and sharing?

The responsible persons are the principle investigators and the technical staff of the research group.

Who will update and implement this DMP?

The responsible persons are the researcher, the principle investigators and the technical staff of the research group.