Data Management Plans (DMPs)

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Agenda

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1. Intro Research Data Management
2. DMP Core Topics
3. DMP Guidance
4. Best Practice

Why Research Data Management?

- Organize and manage research data
- Ensure quality and safety and reproducibility
- Comply with FAIR principles

CONCLUSION: Research data management must be designed in such a way that data can be accessed and evaluated independently of the data producer.

FAIR Principles

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Findable	Data is provided with a globally unique and persistent identifier and extensive metadata
Accessible	Ensuring long-term access to research data
Interoperable	Research data, when exchanged, should be able to be interpreted and combined with other datasets in a (semi-)automated way
Reusable	Metadata with supplementary documentation provides a detailed description and clear license for use

Research Data Policy of the MUI

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46th Research Data Policy of the Medical University of Innsbruck

At its meeting on December 7th, 2021, the Rectorate of the Medical University of Innsbruck issued the "Research Data Guidelines of the Medical University of Innsbruck". This reads as follows:

Preamble

The Medical University of Innsbruck (MUI) recognizes the fundamental importance of managing research data and accompanying records for high-quality research and scientific integrity, and strives to promote the highest standard in this regard. Correct and easily locatable research data are the basis and an essential part of every research project.

The MUI sees the responsible and scientifically appropriate handling of research data as making a significant contribution to the acquisition and dissemination of scientific knowledge in terms of safeguarding good scientific practice. The availability of research data is an aspect of good scientific practice.

The MUI recognizes that the special features of the subject cultures must be taken into account when implementing the guideline. All members of the Medical University of Innsbruck are requested to prepare the research data generated in their scientific work in accordance with the regulations and standards established in the respective subject area.

§ 1 Scope and area of application

§ 5 Verantwortlichkeiten

Die Verantwortung zur Umsetzung der Vorgaben gegenständlicher Richtlinie liegt sowohl bei den Datenverwenderinnen/Datenverwendern als auch bei der MUI.

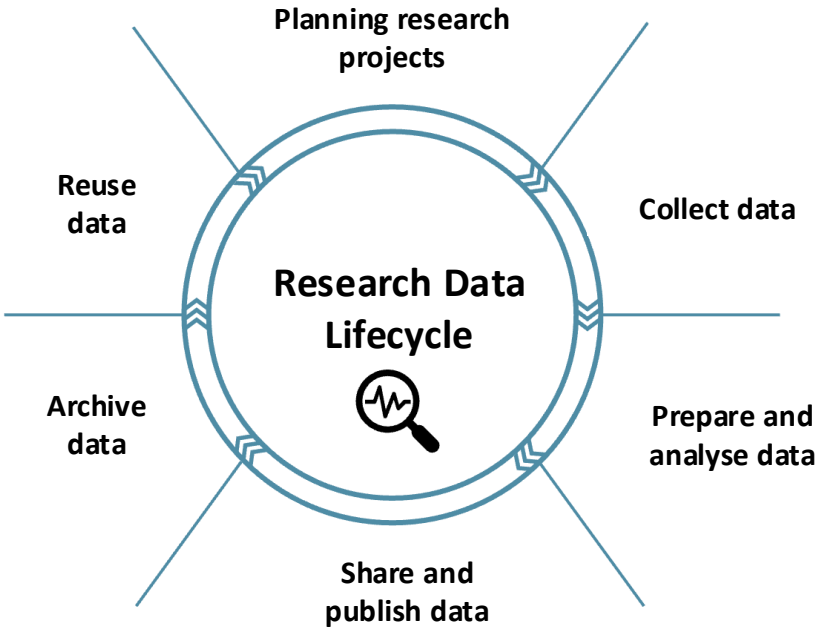
(1) Verantwortlichkeiten der Datenverwenderinnen/Datenverwender:
Die Verantwortung für das Forschungsdatenmanagement vor, während und nach einer Forschungstätigkeit liegt bei den Datenverwenderinnen/Datenverwendern, wobei jedenfalls folgende Aufgaben in den Zuständigkeitsbereich der Datenverwenderinnen/Datenverwender fallen:

a) Erstellung eines entsprechenden Datenmanagementplanes.
b) Sammlung, Dokumentation, Speicherung, allfällige Gewährleistung des Zugriffs bzw. Bereitstellung, Aufbewahrung, Archivierung oder ggf. Löschung der Forschungsdaten.
c) Berücksichtigung, Sicherstellung und Erfüllung aller organisatorischen, regulatorischen, institutionellen und sonstigen vertraglichen und gesetzlichen Regelungen.

Link to MUI's full research policy (German)

(Disclaimer: machine translated)

Research Data Lifecycle



Data Management Plan

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A **data management plan (DMP)** is a document that structures the handling of research data of a scientific project. This includes both activities during the research process and after the project has been completed. The plan contains all information necessary to describe and document the collection, processing, storage, archiving, and publication of research data.

Funding organizations and their DMPs

Funders	DMP necessary?	Submission	DMP template
FWF	Yes	DMP together with the FWF funding agreement. The DMP is a prerequisite for the start of the project	Template and guide
EU Horizon	Yes	DMP must be submitted within the first six months of the project	DMP requirements in Horizon Europe (TU Wien)
FFG	For certain programs	After approval, before payment of the start rate	DMP Prozess | Mobilitätsdaten Österreich (mobilitydata.gv.at)

Structure of a DMP (FWF)

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I. General Information

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- To be written in the language of the application
- Max. 10,000 characters (including spaces), keywords are sufficient
- Checklist: FWF evaluation matrix
- Project name and number
- Version/date of the DMP
- Name and e-mail address of the PI
    - Second version with the final report (highlight differences)
    - ”Research data on which the research publications of the project are based" (not: supplement)
    - Upload data to Repository/ZENODO

Example: Principal Investigator Dr.: In XYZ, email: ….@i-med.ac.at; FWF project number: 1234783z8538; DMP version: 1.0; License for this document: CC-BY- 4.0

I. General Information

- Roles and responsibilities: implementation, review and revision

> Example: Name/position is responsible for data management and the creation and updating of the data management plan. Name/position as coordinator also coordinates the data exchange between the project partners.

- Resources and costs for data management and FAIR (storage, hardware, time or repository charges)

> Example: In order to prepare and document the data according to the FAIR criteria, X staff hours are estimated for 1 Ph.D. student and Y € for the provision in a repository OR no additional resources are required.

II. Data Characteristics

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Description of existing data to be re-used and/or data to be generated

- Source of the data (e.g. experiment, repository, data center, etc.), re-use of existing data if necessary
- Data format (text document, graphic, spreadsheet, etc.), if necessary explain the proprietary format
- Data type (doc, pdf, jpeg, csv, mp3, fun, etc.)
- Justification for specific formats
- Storage requirements (GB/TB estimation)

ID	Name	Type	Format	Volume	Re-used/Produced	Comment
1	Alcohol Consumption	Spreadsheet	CSV	~ 100 GB	New data will be produced	Observation
2						
3						

II. Data Characteristics

ID	Name	Type	Format	Volume	Re-used/Produced	Comment
1	Alcohol Consumption	Spreadsheet	CSV	~ 100 GB	New data will be produced	Observation
2						
3						

Example: We will produce the following data:
- Excel files of observations in CSV format. Their size will not exceed 100 GB.

We will reuse the following data:
- Patient surveys published by XYZ, publicly available at https: //doi.org /...

They are available as PDF documents and are approximately 50 MB in size.

Example: The project uses existing data that has been published in specialist journals and is available in the XXX database. If necessary, other data from literature research and online repositories XXX will be used.
The project will also use new experimental data generated by the collaborating partners. Restrictions may apply to the reuse of data from project partners. All published results will be freely available without access restrictions. A log will be created and maintained of the origin of the data.

III. Documentation and Data Quality

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Data organization

- Naming conventions
- Clear filing/folder structures
- Version control

Metadata

- Bibliographic metadata (e.g. title, author)
- Administrative metadata (e.g. file type, access rights, licenses)
- Process metadata (e.g. methods used)
- Content-descriptive or descriptive metadata (e.g. additional information on the content and origin of the data)
- Metadata standards (e.g. at fairsharing.org)

Documentation

- README text file
- Laboratory journal, laboratory notebook
- Methodology part of the work
- Context of data collection
- Method reports, instruments, and processing of data collection
- Codebook, program code for data processing
- Theoretical description of the measurement data
- Declarations of consent

III. Documentation and Data Quality

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Data organization

Example: The file names correspond to the conventions defined in document ABC.

Metadata & Documentation

Example: We will include README files. The files contain data directories and essential contextual information, e.g. about the software used to collect/process the data and the assumptions made in the analysis.

FAIRsharing.org: MIQE; Minimum Information for Publication of Quantitative Real-Time PCR Experiments, DOI: 10.25504/FAIRsharing.mxz4jy, Last Edited: Monday, January 31st 2022, 9:18, Last Editor:delphinedauga,Last Accessed: Tuesday, May 16th 2023, 14:00

III. Documentation and Data Quality

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Data quality control

- Repetition of samples or measurements
- Calibration
- Standardized data collection
- Data entry validation
- Peer review of data
- Representation with controlled vocabularies (e.g. ISO)
- Etc.

Example: The data quality is checked, e.g. consistency of the designations, logical errors in the data, data maintenance, and version control.

IV. Storage, Sharing, and Long-Term Preservation

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Data storage and Backup

- Network drives (personal, organizational unit/institute, entire university)
- OX drive
- Nextcloud
- GitLab
- Backup systems (Veeam)
- Repositories
- Science Storage, CEPH

Storing data on your own laptops, standalone hard drives, thumb drives, etc. should **not be an option**.

Example: During the project, the data will be stored on institute drives, a central and redundant network drive with daily backups and regular snapshots provided by ICT (the Department of Information and Communication Technology) of the MUI.

IV. Storage, Sharing, and Long-Term Preservation

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Repository

- Immediate access for data underpinning research papers: – „comply or explain"
- Persistent identifiers and license
- Specific tools or data transfer agreements
- Restrictions on the re-use of data*
    - Zenodo/MUI community
    - http://www.re3data.org/

Example: Data underpinning research papers will be made available for reuse in repository XX at the time of the publication of the article.

*https://www.dsb.gv.at/recht-entscheidungen/gesetze-in-oesterreich.html, https://www.i-med.ac.at/datenschutzkoordinator/intranet/unterlagen.html

V. Legal and Ethical Aspects

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- Protection of personal data

Example: Personal data is collected for this project. Before the data is collected, the patients are informed in accordance with the data protection regulations and, in particular, of their rights under Art. 13 and 14 DSGVO. The data collected is stored in an encrypted system to which only designated individuals who have signed a non-disclosure agreement have access. For evaluation, the data is pseudonymized by the collecting body and only passed on to the consortium partners in pseudonymized form. The data used for publication purposes will be anonymized.

V. Legal and Ethical Aspects

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- Use in the project (particularly access rules, consortium agreement)
- IPR: special matters e.g. database rights, software rights
- Restrictions on the re-use of third-party data
- Use by others after the end of the project (“as open as possible, as closed as necessary” license)
- Standard: Creative Commons with attribution; Special cases: CC-0, CC-ND-SA; MIT/BSD License
- Choose a license: https://choosealicense.com/

Example: The rights to the data collected remain with the respective partners who created the data. Access to the research data is regulated by the respective partner/a contractually agreed steering committee. Through the consortium agreement, the project partners grant each other free access and usage rights to the data for the duration of the project (possibly information on data transfer).
Possible industrial property rights (e.g. patents) are secured before the publication of the data (if necessary jointly). Further use of the **data on which the scientific publications of the project are based** is permitted under the following license: CC-BY- 4.0 International OR under the XYZ license (pre-existing usage restriction).

V. Legal and Ethical Aspects

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- Ethical aspects of storing data
- Possibly ethics review
- Codes of Conduct (e.g. Good Scientific Practice, provenance of materials)

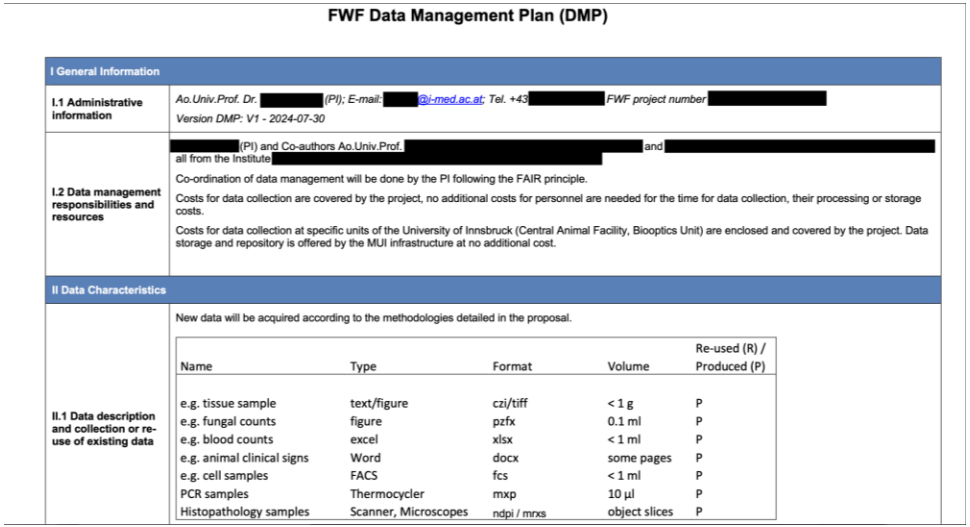
Example:

An ethics vote by the MUI ethics committee is available. The part of the statute for ensuring good scientific practice at the Medical University of Innsbruck (Good Scientific Practice)", published in the bulletin of the Medical University of Innsbruck on January 19, 2016, the academic year 2015/2016, 12th item, no. 49, last amended in the bulletin of the Medical University of Innsbruck from 08/26/2020, the academic year 2019/2020, 58 pieces, no. 201 is observed. The consent of the patients was obtained by means of a declaration of consent; the data is only stored in pseudonymized form.

There are no ethical issues to consider because…

Example: Institute of Hygiene and Medical Microbiology of the Medical University of Innsbruck

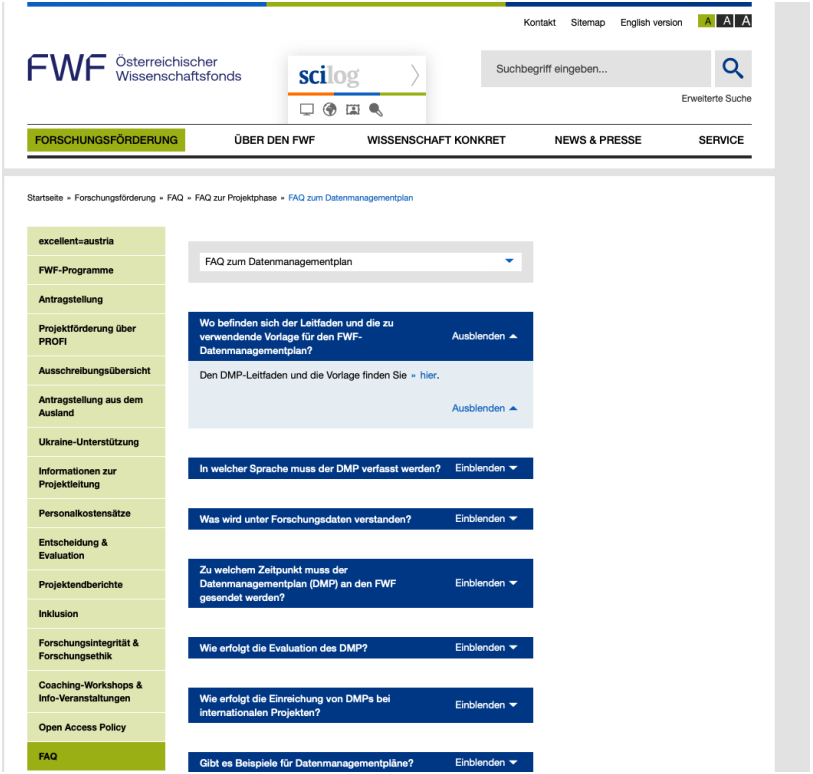
- FWF DMP
- Accepted by FWF



FWF Data Management Plan (DMP)

I General Information	
I.1 Administrative information	*Ao.Univ.Prof. Dr. [redacted] (PI); E-mail: [redacted]@i-med.ac.at; Tel. +43[redacted] FWF project number [redacted]* *Version DMP: V1 - 2024-07-30*
I.2 Data management responsibilities and resources	[redacted] (PI) and Co-authors Ao.Univ.Prof. [redacted] and [redacted] all from the Institute [redacted] Co-ordination of data management will be done by the PI following the FAIR principle. Costs for data collection are covered by the project, no additional costs for personnel are needed for the time for data collection, their processing or storage costs. Costs for data collection at specific units of the University of Innsbruck (Central Animal Facility, Biooptics Unit) are enclosed and covered by the project. Data storage and repository is offered by the MUI infrastructure at no additional cost.
II Data Characteristics	
II.1 Data description and collection or re-use of existing data	New data will be acquired according to the methodologies detailed in the proposal.

Name	Type	Format	Volume	Re-used (R) / Produced (P)
e.g. tissue sample	text/figure	czi/tiff	< 1 g	P
e.g. fungal counts	figure	pzfx	0.1 ml	P
e.g. blood counts	excel	xlsx	< 1 ml	P
e.g. animal clinical signs	Word	docx	some pages	P
e.g. cell samples	FACS	fcs	< 1 ml	P
PCR samples	Thermocycler	mxp	10 µl	P
Histopathology samples	Scanner, Microscopes	ndpi / mrxs	object slices	P



https://www.fwf.ac.at/foerdern/faq

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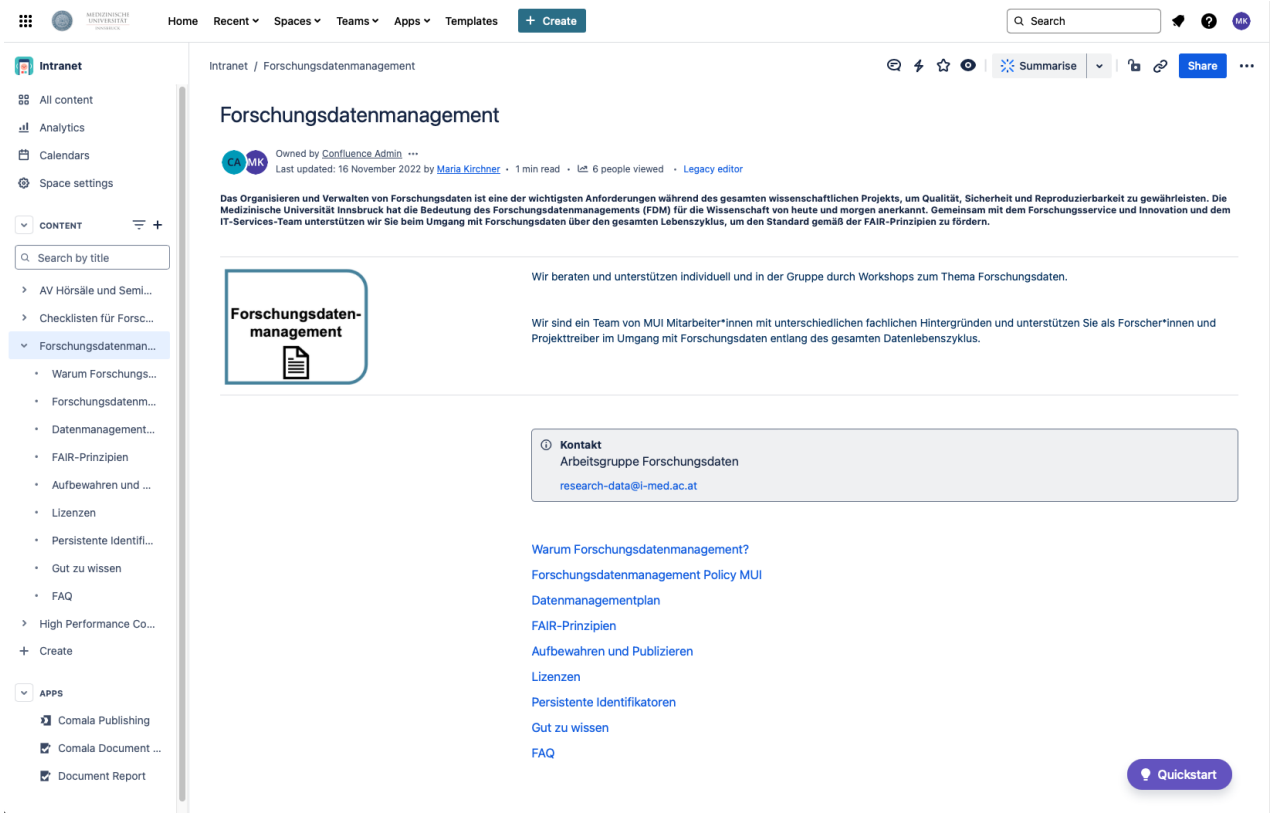

https://meduni-ibk.atlassian.net/wiki/spaces/Intranet/pages/86605826/Forschungsdatenmanagement

Request: Data Clearing Stelle - data.clearing@i-med.ac.at

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Discussion round

Contact

MEDIZINISCHE UNIVERSITÄT INNSBRUCK

research-data@i-med.ac.at

Wiki link - **Further reading documentation**