# SDU

# Open Science Policy Guidelines

## Department of Biology
## University of Southern Denmark

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# Content

# 1   Introduction

This policy describes the implementation of the SDU Open Science Policy at the Department of Biology, thus showing how research staff at the Department will handle research data and publications in order to comply with the overall SDU Open Science policy decided by the university. The Department of Biology supports the San Francisco declaration on research assessment (DORA, https://sfdora.org/) and the Sorbonne declaration on open data and research data rights (https://www.sorbonne-universite.fr/sites/default/files/media/2020-01/data-Sorbonne-declaration.pdf).

The policy covers all research carried out as research affiliated with the Department. It does not cover administrative data, nor does it cover legal issues.

# 2   Open access to research data and storage

Open science includes transparent methods and public access to results, including publications, data, codebooks related to the data sets, and syntaxes in statistics programs (e.g. SPSS syntaxes, STATA do-files, R code) for data management as well as statistical analyses.

The purposes of the SDU Open Science Policy are to:

- Help researchers to increase their scientific impact by making publications open and data publicly

available.

- Help researchers to find and use existing infrastructures, resources and tools in the most efficient way and leading them to the right support for data management.
- Ensure that all research data are managed in line with requirements from funding agencies and journals, and compliant with the Danish Code of Conduct for Research Integrity, current legislation and ethical protocols.
- Ensure that primary materials and research data are available to support research findings and to contribute to other research projects, where possible.
- Enable Open Science by making data **FAIR** - **F**indable, **A**ccessible, **I**nteroperable (accessible and usable across disciplines and methods) and **R**eusable.

    **F**indable means that others can discover your data

    **A**ccessible means that your data can be made available to others directly by download or through contact with the author. Thus at least the metadata should be available online

    **I**nteroperable means that your data can be integrated with other data – at least available in a standardized format

    **R**e-usable means that your data can be used for new research, so the data should be available with an end user license, like Creative Commons or other.

    More information on FAIR at
    - www.force11.org/group/fairgroup/fairprinciples

The Department encourages researchers to use data management and storage solutions available at SDU, whenever possible. If this is not the possible, external solutions can be used instead. The data should be retained for a period of a minimum of 5 years after publication of the results, as stated in the Danish code of conduct for research integrity. Whenever in doubt, researchers can consult the SDU Research Data Management Support for inquiries about the best solution for their needs (rdm-support@bib.sdu.dk).

## 2.1 Scope

The policy applies to:

- Staff, visiting researchers, and honorary and adjunct appointees undertaking or supporting research activities at all SDU locations and external research locations (in the following referred to as researchers).
- Research data that are collected and/or used during SDU research activities, including materials, data, records and datasets, held in all formats and media.
- Research publications that are written while the author or authors are affiliated with SDU.

# 3 Communication and implementation of the procedures

The guidelines must be communicated by the research group leaders to all employees and to PhD

students by their supervisor.

# 4 What is research data?

Research data refer to any information that has been collected, observed, generated or created, for purposes of analysis to produce original research results. Research data can be generated for different purposes and through different processes and can be divided into different categories. Each category may require a different type of data management plan.

- **Observational**: data captured in real-time, usually irreplaceable. For example, sensor data, survey data, sample data, neurological images.
- **Experimental**: data from lab equipment, often reproducible, but can be expensive. For example, gene sequences, chromatograms, data from cruises and field trips.
- **Simulation**: data generated from test models where model and metadata are more important than output data. For example, climate models, ecosystem models, population models.
- **Derived or compiled**: data is reproducible but expensive. For example, text and data mining, compiled database, 3D models.
- **Reference or canonical**: a (static or organic) conglomeration or collection of smaller (peer-reviewed) datasets, most probably published and curated. For example, gene sequence databanks, chemical structures, or spatial data portals.

Research data may include all of the following:
- Text or Word documents, spreadsheets
- Laboratory notebooks, field notebooks, diaries
- Questionnaires, transcripts, codebooks
- Audiotapes, videotapes
- Photographs, films
- Slides, artifacts, specimens, Data files
- Database contents including video, audio, text, images
- Models, algorithms, scripts
- Contents of an application such as input, output, log files for analysis software, simulation software, schemas
- Methodologies and workflows
- Standard operating procedures and protocols

Research data is described by example categories. Staff and students are encouraged to propose a single, logical definition of research data for use with the Open Science Policy, based on their knowledge of their fields of research.

## 4.1 Data exempt from the Open Science Policy

- Administrative data.
- Publicly available data, data from third parties, data repositories and administrative registers with conditions limiting reuse, publication and dissemination.
- Studies included in systematic reviews and meta-analyses. The exemption does not apply to documentation of searches, selection of studies for review and analyses in tables, figures and

similar supplementary material routinely published online with re-views.

# 5 Data Management Plan

When commencing a research project, it is necessary to plan for collecting, processing, analysing, storing, preserving/disposing of and disseminating the research data that is used in the project. Researchers are required to make a data management plan (DMP) for some type of research projects, such as: projects involving personal data; projects where the verification or reproducibility of the results rely on collected or produced data sets; projects involving external partners or collaborators who require a DMP; and externally funded projects where a DMP is a requirement from the funding agencies. If in doubt about the necessity of a DMP, the research staff should contact the SDU RDM Support. For a project requiring a DMP, this should be developed before the project begins and updated whenever necessary throughout the project. Should a DMP be required by funding agencies or external collaboration partners, a DMP template might be provided. A number of standard templates for DMP are available online[1].

Note, while students are outside the scope of these Departmental guidelines, we strongly encourage students to follow the recommendations here, especially in respect to establishing a data management plan.

# 6 Long-term preservation/archiving

All data should be stored for a minimum of five years after publication of the research (required permissions should be obtained or extended, including from the Danish Data Protection Agency). Beyond this minimum requirement, several types of research data should be preserved for long term access and reuse, including (the list is not exhaustive):

- If it would be unethical to subject humans or animals to unnecessary repetition of experiments, trials, observations or other research activities.
- If it would be unethical or indefensible to waste research funds and human resources that could be put to better use (i.e. prevention and cure of disease) on unnecessary repetition of experiments and observational research.
- Data and materials that is impossible or hard to reproduce.
- Data and materials that is costly to produce, in terms of funding, time or human resources.
- Data and materials that can be reused in new projects, serve as benchmarks, as reference or are of public interest.
- Data and materials underlying publications.

## 6.1 When someone leaves the Department

Rules for maintaining access to data when someone leaves the Department:

- When a project is discontinued, and the person responsible for the data leaves the Department or

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[1] Several tools are available to generate DMPs from templates, such as DMP Online (Danish installation): https://dmponline.deic.dk/.

PhD project, the data is archived.
- When a project is continued, and the person leaves the Department, as a routine part of the termination procedure, the person must confirm that the data the person is responsible for is taken care of in one of the following ways, if a project using this data is either discontinued or to be continued at the department:
    - **If the project is discontinued**: Archived
    - **If the project is to be continued at the Department**: Transferred to a person at the Department, who will be responsible for the data once it has been transferred, after the necessary permissions have been obtained.

# 7   Data storage options for active projects

Consult the IT-vejledninger [webpage](#) or Research Data Management support (rdm-support@bib.sdu.dk).

# 8   Open access to publications

PURE should be used to record all research publications. To support the goal of having open and free access to all publications, researchers are encouraged to obtain open access from the publisher whenever this is feasible. When this is not the case, researchers should, if possible, publish a copy of the manuscript, as close as possible to the final publication in a suitable open archive, also known as Green Open Access[2]. Researchers are also encouraged to store a pdf-version of their publications in PURE.

All researchers employed at BIOLOGY are recommended to obtain an ORCID id[3] and to link it to their PURE database[4]. We also recommend that each researcher's ORCID profile be made visible to everyone[5].

Information about open access publishing: [https://www.sdu.dk/en/forskning/forskningspublicering](https://www.sdu.dk/en/forskning/forskningspublicering) and publishing agreements: [https://www.sdu.dk/en/forskning/forskningspublicering/open+access](https://www.sdu.dk/en/forskning/forskningspublicering/open+access).

## 8.1   Type of Open Access recommended

- All members of staff are encouraged to publish all their articles as Green Open Access if permitted by the journal. The green way to Open Access includes articles published in traditional subscription journals – that are not Open Access – but allow a version of the article ("final author version approved"), after publication, to be placed in an Open Access institutional repository, which at SDU is PURE. This is also referred to as 'self-archiving', which is done by the author him- or herself.
- Provided that funding is procured externally, publishing in Full or Gold Open Access publications is recommended, as readers have access to these publications immediately and without restrictions (i.e., no subscriptions, no fees, etc.). This type of publication is typically funded via 'article processing charges' paid by the author.
- Provided that funding is procured externally, there is a variant of Gold Open Access called Hybrid

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[2] See Sherpa Romeo for publisher or journal policies and definitions of open access levels: [http://www.sherpa.ac.uk/romeo/index.php](http://www.sherpa.ac.uk/romeo/index.php).

[3] See [https://orcid.org/](https://orcid.org/).

[4] The easiest way is to register with ORCID through Pure, see [https://www.sdu.dk/da/forskning/forskningspublicering/orcid](https://www.sdu.dk/da/forskning/forskningspublicering/orcid).

[5] Edit the "Visibility preferences" in the "Account settings" in ORCID.

Open Access, where the authors publish in traditional subscription journals but offer Gold Open Access to articles by paying the 'article processing charges'. This option is not recommended by the Department.

## 8.2   Funding of Open Access publications

- The Department of Biology does not provide any funding for publishing Open Access.
- Open Access publications can be funded via external grants, provided that this was applied for in the budget and is supported by the funding agency.

## 8.3   Where can we publish with open access?
- See: Directory of Open Access Journals ([www.doaj.org](http://www.doaj.org)), the journals and publishers SDU has agreements with ([https://www.sdu.dk/en/forskning/forskningspublicering/open+access/publiceringsaftaler](https://www.sdu.dk/en/forskning/forskningspublicering/open+access/publiceringsaftaler))  or contact the university library at [open-access@bib.sdu.dk](mailto:open-access@bib.sdu.dk).

# 9   Acknowledgement

The content of the document is primarily an adaptation of the document Guidelines for the Department of Psychology: Implementation of the Open Science Policy written by Robin Kok, Malcolm Bang, and Susanne S. Pedersen in collaboration with Asger Væring Larsen and Evgenios Vlachos and of the document Open Science Policy Guidelines written by Peder Thusgaard, Department of Technology and Innovation and by Martin Svensson, IMADA. We thank for permission to use their work as the main foundation for this document. Revisions were made by Gary Banta with input from the Department management group.

# 10  Revision

The department will ensure that the policy is revised every second year at minimum, the next time being early 2023. This is the responsibility of the HoD