Plan Overview

A Data Management Plan created using DMPonline

Title: Academic research on redox biology and selenoprotein function

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Funder: Swedish Research Council

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Project abstract:

Chemical reactions that selenocysteine (left) and cysteine (right) are involved in.

Enzymatic redox control systems, i.e. regulated reduction and oxidation processes that in turn regulate cellular functions, are crucial for life. Many, if not most, cell functions are linked either directly or indirectly to redox processes. The research carried out in our division is aimed at better understanding basic characteristics of redox biology in health and disease, from structure and function of redox active enzymes to regulation of redox signaling in living cells or organisms.

Our special focus areas of redox biology involve in-depth studies of the thioredoxin and glutaredoxin systems, selenoproteins, redox signaling cascades, cancer therapeutics and antimicrobial therapy. Our methodologies span from all aspects of enzyme and protein characterizations, biochemical assays of redox protein function, techniques of molecular biology and cell biology to animal experiments.

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Copyright information:

Academic research on redox biology and selenoprotein function

General Information

Project Title

Academic research on redox biology and selenoprotein function

Project Leader

Elias Arnér

Registration number/corresponding, date and version of the data management plan

Original generic plan for our research.

Version

1.0

Date

2022-03-08

Description of data – reuse of existing data and/or production of new data

How will data be collected, created or reused?

Data are created and collected through experiments in the laboratory and by collaborations with collaborators. The data come from experiments in biochemistry, molecular biology, microbiology, cell biology, tumor biology, animal experiments, and more.

What types of data will be created and/or collected, in terms of data format and amount/volume of data?

Data comes from experiments in biochemistry, molecular biology, microbiology, cell biology, tumor biology, animal experiments, and more. Types of data include SDS-PAGE gels, spectrophotometer scans, proteomics data, sequencing data, cellular growth curves, microscopy images and videos, fluorescence scans, protein crystallography data, chromatograms, FACS data, viability and cytotoxicity curves, high-throughput screening results, and much more.

Documentation and data quality

How will the material be documented and described, with associated metadata relating to structure, standards and format for descriptions of the content, collection method, etc.?

Protocols, experimental details and results are collected in laboratory notebooks, the Karolinska Institutet ELN system, data servers and local computers, the choice of which will depend upon type and origin of data.

How will data quality be safeguarded and documented (for example repeated measurements, validation of data input, etc.)?

Depends upon the nature of the experiments. Typically triplicates are used for quantitative measurements, with statistics analyses, but with data also being qualitative (such as results of protein purification schemes, selection of top hit compounds from high-throughput screens, crystallography structures, etc), the nature of the data will be truly variable and depending upon the type of each experiment to be documented.

Storage and backup

How is storage and backup of data and metadata safeguarded during the research process?

All data servers maintained through Karolinska Institutet have extensive backup features provided by the IT department.

How is data security and controlled access to data safeguarded, in relation to

the handling of sensitive data and personal data, for example?

The Karolinska Institutet IT department maintains the IT security. We have very little or no sensitive data, but if so the data protection legislation will be adhered to.

Legal and ethical aspects

How is data handling according to legal requirements safeguarded, e.g. in terms of handling of personal data, confidentiality and intellectual property rights?

According to applicable Swedish legislation, including adherence to GDPR.

How is correct data handling according to ethical aspects safeguarded?

According to applicable Swedish legislation. If/when human samples or animal data will to be analysed we will apply for respective ethical permits, and in case patient samples will be used this includes getting consent from study participants.

Accessibility and long-term storage

How, when and where will research data or information about data (metadata) be made accessible? Are there any conditions, embargoes and limitations on the access to and reuse of data to be considered?

If or when results are published that require data accessibility, the corresponding data will be published on data depositories according to journal guidelines.

In what way is long-term storage safeguarded, and by whom? How will the selection of data for long-term storage be made?

Any data depository servers that we use will be expected to provide storage functions. For original data generated in our laboratory, this will be stored at Karolinska Institutet servers such as through ELN or OneDrive, with the automatic feature of thus being stored for at least 10 years.

Will specific systems, software, source code or other types of services be

necessary in order to understand, partake of or use/analyse data in the long term?

Depends upon the type of data.

How will the use of unique and persistent identifiers, such as a Digital Object Identifier (DOI), be safeguarded?

Depends upon the type of data and depositories that are used.

Responsibility and resources

Who is responsible for data management and (possibly) supports the work with this while the research project is in progress? Who is responsible for data management, ongoing management and long-term storage after the research project has ended?

The PI as well as the research group staff members and collaborators being involved int he projects.

What resources (costs, labour input or other) will be required for data management (including storage, back-up, provision of access and processing for long-term storage)? What resources will be needed to ensure that data fulfil the FAIR principles?

The services and features provided by Karolinska Institutet, by depositories and by journal publishers are to be used. By having documented and stored our data according to our DMP, we will have fulfilled the FAIR principles to the best of our capabilities.