

Shimane University Research Data Preservation and Management Guide

The Guidelines for Research Data Preservation at Shimane University (Approved by the Trustee (academic research and industrial innovation) on April/1/2020) stipulates that research data that form the grounds of the published research discovery must be appropriately preserved so that it can be used and verified at a later date.

Examples of appropriate methods for research data management will be presented in this guide. These examples should be used as a reference for the storage of data using methods appropriate to each field of specialization, so that it can be coherently understood by third parties.

1. Data Storage Methods

In case that doubts arise concerning the published research discovery **including research papers and reports**, the data on which the findings are based need to be verified. Thus, data used for the research papers, etc. should be preserved so that it can be referenced immediately.

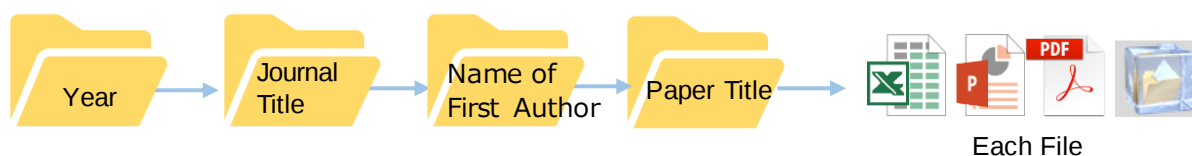
- After research findings are presented, the manuscript, etc. and all original data files shall be preserved. This includes not only data that was processed for the publication or presentation but also the original data.
- The process of data preservation and the allocation of data to a digital or physical location shall be recorded in the “Research Data Preservation and Management Records.” In addition, the data retention period and the retention period expiration date should be determined in advance and recorded.

Data Retention Period

- **As a rule, the retention period for data (documents, numerical data, images, etc.) is **ten years** after the publication of the research paper, etc.**
Although it is advisable for materials in print form to also be preserved for at least ten years, it may be disposed of within reasonable limits if the shortage of storage space arises.
- **As a rule, “objects” including samples and equipment shall be stored for **five years** after the publication of the research paper, etc.**
However, this shall not apply to objects that are difficult to preserve or store (e.g., unstable substances, materials that are expended or consumed as a part of the experiment itself, rented/leased articles) and objects for which storage would incur a significant cost (e.g., biological samples).

File and Folder Classification Rules (example)

Paper Location



- If the size of the original data is very large, the file on which the location of the preserved original data is recorded shall be preserved in the place of the original data.
- For experimental, analysis, and survey data, the “person who acquired the data,” “experimental (survey) method,” “data name,” and “data acquisition date” should be made clear in the folder and file names so it can be ascertained easily by third parties.

2. Storage Location Specifics

- The data should be managed by the research group as a whole (or an appropriate organizational unit), or by the individual researcher. It should be stored on a data storage hard drive, CD, DVD, etc. Moreover, the process of data preservation should be noted by the administrative division of each faculty/school.
- The data should be kept in one place and centralized, in other words, it should be kept on one hard drive or in one cabinet as much as possible.
- If the research data includes personal information, it should be stored in a locked room such as a private laboratory so that it cannot be seen by a third party. For digital data, close attention must be paid to the security of the computer where the data are stored and the storage medium.

3. Other Considerations

- If a faculty member leaves the university due to a transfer, mandatory retirement, or a resignation, the research data should be transferred to a new location. Information regarding the person taking over the research and the new data storage location must be entered into the Research Data Preservation and Management Records.
- There are no prescribed rules regarding how the data are to be backed up or the equipment renewed, but this should be carried out in an appropriate fashion by each research group, etc.

Research Data Preservation and Management Q&As

[Research Data Subject to Preservation]

Q1: Does all data owned need to be preserved?

A1: The purpose of research data preservation is to make the research process clear, to prove that the published findings are derived from proper procedures, and to verify the data if any dishonesty regarding the paper is suspected. The data subject to preservation are the data which form the grounds of the research discovery that have been published in the form of a research paper or report (and data for future research on the subject). It does not mean that you need to preserve all the research data you own. However, it does not preclude you from preserving independently beyond the scope of the data preservation and the retention period set by the university.

Q2: The arts and humanities field consists mainly of the study of literature. Do all relevant materials need to be preserved?

A2: If the bibliographic information and citations that form the basis of the published paper are properly written, this will suffice for the verification after the publication of the research paper, etc. Moreover, the same rule applies to materials that have already been published and which are publicly available.

Q3: Are data in relation to theses/dissertations subject to preservation?

A3: If the data in question are in relation to theses/dissertations written as a part of postgraduate study, they do not need to be preserved. However, if a relevant paper is published in an academic journal etc., the research data that formed the grounds of such papers shall be subject to preservation¹.

Q4: What is the procedure in instances where the experimental materials are difficult to preserve, or where a large storage space is required?

A4: Items that are difficult to preserve or store (e.g., unstable substances, materials that are expended or consumed as a part of the experiment itself) and objects for which storage would incur a significant cost (e.g.: biological samples) will not be preserved or stored. In addition, materials in print form that are obviously difficult to store due to the high cost it would incur or the space it would require do not need to be preserved or stored.

Points to note in relation of various areas of research on the preservation of material are outlined as follows²:

<Reference: Example characteristics of research areas in relation to the preservation of research materials, etc.>

○Biological sciences

“Biological samples” and “substances separated/extracted from biological samples” are subject to the conditions stipulated earlier with regard to the state in which they are preserved, depending on the characteristics of the sample and its possible use in the future. Preservation through drying treatment or liquid immersion can be used for specimens. Although cryopreservation in liquid nitrogen is widely used for tissues, cells, and “substances separated/extracted from biological samples,” it may become very expensive to preserve large quantities of such samples. Moreover, necessary measures related to biological hazards must conformed with the regulatory standards. The preservation of samples of human origin requires special consideration in accordance with the “Ethical guidelines for medical

¹ Questions and answers (FAQ) pertaining to “Guidelines on responding to research misconduct” Q3-4 (http://www.mext.go.jp/a_menu/jinzai/fusei/1352820.htm : Accessed on 11 July 2019)

² Science Council of Japan “Response to Improving the integrity of scientific research (6 March 2015)” p. 28

research involving human subjects.” It is advisable that the preservation of biological science research materials/samples should be compliant with the GLP (Good Laboratory Practice) and GCP (Good Clinical Practice) Ordinances of the Ministry of Health, Labor and Welfare. Moreover, rules regarding the preservation of original sources and the editing of images, an issue that has been raised at academic conferences, must be explicitly stated.

○Material Science

Although storage space issues might seem to be the only obstacle faced while preserving samples of stable substances, the preservation of some samples/materials may be subject to certain stringent conditions. For example, samples prepared in an ultra-high vacuum condition such as surface nano materials can only be cleanly preserved for a very short period of time; thus, there are research objects that must be handled in situ. Generally, phases of matter in a non-equilibrium state change with time. To inhibit the changes to the sample quality, techniques such as preservation in very low temperatures are required. Moreover, the preservation of active substances (e.g., substances that are responsive to atmospheric oxygen and moisture) may require measures such as desiccator storage or preservation in an inert atmosphere or vacuum lock, depending on the responsiveness and retention period. Furthermore, the preservation of samples that fall under the categories of radioactive materials or poisonous substances must comply with the relevant legislative regulations.

○The open science / open data relationship

Open science is the movement that offers experimental and observation data in an open form on the Internet as common property, in areas such as high-energy physics, astronomy, earth and planetary science, environmental science, genomics, and health care. Researchers can freely access and analyze this material. Open data are promoted within a context different to that of the restoration of research activities as discussed here. It is a movement that has attracted attention from the viewpoint of developing informational techniques involving the handling of vast amounts of computerized information and the systematic preservation and application of scientific data.

Q5: Are data concerning jointly authored papers also subject to preservation?

A5: The first author, or corresponding author if the first author is not the corresponding author, shall be responsible for preserving the data.

[Preservation Subject / Methods]

Q6: Who is responsible for research data preservation?

A6: The guidelines ask that researchers at this university preserve their research data for a given period of time so that he/she is able to prove the validity of his/her own activities in case of any suspicions of research dishonesty, as the university is striving for appropriate and effective application of these guidelines. The university does not wish to burden its administrative staff with the responsibility of preserving vast quantities of data from individual researchers’ day-to-day research activities. In order to appropriately and effectively apply these guidelines, each faculty/school shall decide a responsible unit (laboratory or individual researcher) corresponding to the actual respective day-to-day research activities, and the research ethics administrator (Trustee) shall carry out inspections of the state of preservation as needed. However, even when the data are preserved by the individual researcher, the process of data preservation must be recorded by the administrative division of each faculty/school.

Q7: With regard to research that requires ethical consideration, what should I do if the research data retention time limit and disposal methods are designated by the research ethics committee, etc.?

A7: Please comply with the research ethics committee guidelines.