

## Data Management Standard Operating Procedure (DMSOP) Guidance for Institutionally-Approved Shared Resources

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Data are the foundation of scientific discovery and future research. Consequently, it is important that each Shared Resource generate a good working plan for how to manage their data workflow and how to communicate that plan with new personnel, to ensure that the data remain intact and accessible. The scope of this Shared Resource Data Management Standard Operating Procedure (DMSOP) includes the Shared Resource Scientific Advisory, Shared Resource manager, research staff, and Shared Resource Endpoint users, and defines both data governance and data management practices to create a cohesive and specific plan for each shared resource that facilitates data collection, analysis, processing, and sharing.

### **SECTION 1: ACCOUNTABILITY AND RESPONSIBILITIES**

### **SECTION 2: DATA DESCRIPTION AND COLLECTION**

### **SECTION 3: DATA SHARING**

### **SECTION 4: RESEARCH INTEGRITY/CULTURE**

### **SECTION 5: TRAINING**

### **SECTION 6: OPTIONAL SECTIONS**

#### **SECTION 1: ACCOUNTABILITY AND RESPONSIBILITIES**

- a) What is the purpose of a Data Management Plan at the level of a Shared Resource group?
  - Explain why consistent data management strategies should be followed by everyone contributing to the Shared Resource group.
- b) Who is responsible for carrying out the data management plan described herein?
  - Explain that all staff and the Shared Resource leader should follow the guidelines within this data management plan as contributing members of this Shared Resource.

#### **SECTION 2: DATA DESCRIPTION AND COLLECTION**

- a) Where should the data and analyses be recorded?
  - Data notebooks and primary data are the property of Duke University and should not leave Duke without appropriate requests and discussions.
- b) How should research notebook entries be written?
  - Explain the required elements that will allow any skilled person to follow the research notebook entry (e.g. dating each entry, include a short introduction/title/results, conclusion for each experiment, any technical problems that arose during experimentation, record steps in sufficient detail so that key reagents, protocols, and methods are referenced if not written out entirely, how to link analyses in the notebook to the primary data when the primary data are located on a separate entry or outside of the notebook)
- c) What types of data does your Shared Resource generate?
  - Describe typical data formats that this Shared Resource expects to generate, including raw data.
  - People should always edit copies of primary data, and never the primary data.
- d) Are there particular file naming conventions to follow?
  - Include file naming conventions, common/universal naming strategies in general or for particular data sets (such as dating files YYYYMMDD), and an example of a file/folder name.
- e) How are the data stored?
  - Specifically indicate where the data are located (what server), how and when they are backed up, who is responsible for those storage spaces and the back-up settings, a procedure for how to store data once the Shared Resource has exceeded their server storage space, etc.
  - Discuss how data will be managed between the Shared Resource and the endpoint users. When will data be the responsibility of the endpoint users and no longer held by the Shared Resource?

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- f) Does your Shared Resource generate and/or receive samples/materials?
- Resource management (if applicable) should be outlined to explain the management workflow, including any Shared Resource specific databases to record sample information, physical/experimental considerations in storage, handling, sharing, Duke Core facilities integrated into the process. Address process/plans for returning unused samples/materials to an end-point user.
  - If your Shared Resource works on multiple diverse offerings for end-point users, consider developing separate project-specific data management plans as well to sufficiently describe some of the project specific data management processes.

### SECTION 3: DATA SHARING

- a) Discuss data ownership and sharing with Shared Resource Users.
- Specifying when delivery of data between Shared Resource and End-user takes place (ie; after run, after collection of payment info or after collection of payment)
  - Policy on publication (ie; how are you notified that your work is being acknowledged in a publication) and how do you verify your work is not altered
- b) If the Shared Resource data is expected to be included in publications, how should the primary data and analyses underpinning publications be stored and organized?
- Where and How to organize primary data (a specified location to store all primary data that contribute to publication).
  - List of materials and reagents created for the publication and where they are stored (ideally in a central database, but detailed somewhere).
  - Outline of who will review these publication materials before publication?
- b) Is there a specific plan for how departing Shared Resource members will organize their research materials before they leave?
- Include a strategy for how they will organize materials, research files before they leave.
  - Consider including a data archive plan, considering file formats for long-term accessibility and personnel turnover.
- c) How to formally share data/resources through repositories?
- d) Are there any restrictions/considerations on informal data/resource sharing prior to publication?

### SECTION 4: RESEARCH INTEGRITY / CULTURE

- a) How do you encourage culture of openness?
- Reference departmental Science Culture Accountability Plan (SCAP) (where it is located), group meetings, seminars, etc.
- b) How should Shared Resource members proceed if research ethics concerns arise?

### SECTION 5: TRAINING

- a) What is your method for ensuring that all new Shared Resource members read and understand this Data Management Standard Operating Procedure?
- Discuss who will be in charge of training new people and how the process will be documented.
  - Consider ongoing verifications, discussions about notebooks as projects expand, contract, and change in terms of types of data collected?

### SECTION 6: OPTIONAL SUBJECT-SPECIFIC SECTIONS

(Consult <https://guides.library.duke.edu/research-data-management>):

- Human Subjects Research/PHI/GCLP
- Animal Subjects Research
- Other ethical/privacy/ sensitive material considerations
- Storage of presentation materials