Introduction to Data Management

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Sarah C. Williams
Heidi Imker
Data Management Workshop Series

• **Introduction to Data Management**
  - Feb 10\(^{th}\) 4PM – 5PM
  - Apr 6\(^{th}\) 1PM – 2PM

• **Documentation and Organization for Data and Processes**
  - Feb 17\(^{th}\) 4PM – 5PM
  - Apr 13\(^{th}\) 1PM – 2PM

• **Making Research Data Public: Why, What, and How**
  - Feb 24\(^{th}\) 4PM – 5PM
  - Apr 20\(^{th}\) 1PM – 2PM
Intro to Data Management Objectives

1. Learn the benefits of data management
2. Learn the components of data management
3. Identify gaps in your current practices
4. Know where to find help
Data Management Practices

- complete records
- find
- understand
- back-up
- migrate
Data Management Practices

• I’ve lost two patent claims because we didn’t have complete records in lab notebooks.

• I panic every time I try to find my students’ data.

• I know I won’t be able to publish anything after my grad student leave because it’s too hard to understand what he/she did.

• We don’t have the assay results with substrate X, because I didn’t back-up my computer. And we’re out of substrate X.

• The only reason I was able to do the analysis was because on a whim I decided to migrate some of my data off of floppy disks to CDs back in the 90s. I wish I had done all of it.
Benefits of Good Data Management

- Better understand your data now and in the future
- Access your data in the future
- Save time and effort
- Meet funder and publisher requirements
What are the elements of good data management?
Plan
Data Management Planning Basics

- **Data Management Plans (DMPs)**
  - What data produced, how will you make it accessible, how will you preserve it, what restrictions are there on access

- **NSF - 2011**
- **NIH - 2003 (>500K)**
- **DOE - 2014**
DMPTool – http://www.dmptool.org/
Organize
Organization

- Distinguish Raw Data
- Be Consistent in File Naming and Directory Structures
- Define and Exercise Version Control
**PUBLIC SERVICE ANNOUNCEMENT:**

Our different ways of writing dates as numbers can lead to online confusion. That’s why in 1988 ISO set a global standard numeric date format.

This is the correct way to write numeric dates:

2013-02-27

The following formats are therefore discouraged:

02/27/2013 02/27/13 27/02/2013 27/02/13 20130227 2013.02.27 27-02-13 27.2.13 2013 II 27 27/2-13 2013.158904109

MMXIII-II-XXVII MMXIII IVXLIII CVII 1530300800

((3×3)×(11+1)-1)×3/3-1/3³ 2013

10/11/1101 02/27/20/13 0123456789

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**Date Tip**

BAM Co-Exp Run 01 20140904.txt
BAM Co-Exp Run 02 20140904.txt
BAM Co-Exp Run 03 20140904.txt

vs.

Run 1 B anth meth Sept 4 .txt
BAM Rxn 2 2014_09_04.txt
20140904_meth_3.txt
Describing Data

• Enables someone unfamiliar with your data to find, evaluate, understand, and reuse your data
• Helps YOU to remember details about your data after time has passed

Examples

ReadMe File: http://goo.gl/eOzQ0O
Data Dictionaries: Page 4-1 of this User Guide http://goo.gl/Ugqi0o
Codebook: http://www.icpsr.umich.edu/icpsrweb/ICPSR/help/cb9721.jsp
Basic Documentation

• Generic Information:
  • title, key dates, creators, subjects, rights, files, formats, versions, project & funder

• Additional Information:
  • source of the data, how analyzed, software and hardware requirements, resulting publications
Storage & Backup
Storage & Back-Up Best Practices

- Security
- Robustness
- Number of copies
- Location of copies
- Scheduling
- Efficacy
## Considerations for Sensitive Data

<table>
<thead>
<tr>
<th>Sensitive Data Type</th>
<th>Contingent on Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protected Human Information (PHI)</td>
<td>FERPA/HIPAA/IRB regulations</td>
</tr>
<tr>
<td>Personally Identifiable</td>
<td>Ability to de-identify</td>
</tr>
<tr>
<td>Proprietary Data</td>
<td>Campus IP regulations</td>
</tr>
<tr>
<td>Classified Data</td>
<td>Campus Export Control</td>
</tr>
<tr>
<td>Local Sensitivity</td>
<td>Lab/Collaboration Culture</td>
</tr>
</tbody>
</table>
Archive
Anticipate the Long Term

- What happens to your data in...
  - 2 years?
  - 5 years?
  - 20 years?
- Will the formats be valid?
- Will the hardware be defunct?
- Will anyone know where it is?
Anticipate the Long Term

- More Control
  - More Responsibility
- Less Control
  - Higher Potential Impact

Keep Private vs. Make Public

http://databib.org/
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Contact

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visit:
310-312 Main Library

call:
(217) 300-3513

website:
researchdataservice.illinois.edu
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Scholarly Commons
http://www.library.illinois.edu/sc/index.html

Library Home Page
http://www.library.illinois.edu/

Bonus Tips!

Paste DOI here.
No VPN needed for access to full text (just netid/password)!
Useful?
Tell your friends and colleagues!

Not Useful?
Tell us!