Growing as a Research Professional

Data Management and Laboratory Notebooks

Faculty Orientation

University of Tennessee

Adapted from Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty (2nd Edition)
Topics to be discussed:

• Importance of day-to-day record keeping
• Good practice for laboratory notebooks
• Developing a system to track and store information
• Data management system selection
The Lab Notebook

Thursday, 6/28

To do - Fix & sequence all assays
- Check & finish - T. echinata
- Find out which new species to look at
- Collect more
- Get Ibex to look @ some HJ and cut leaf & flower
- Get a jar of Erica
- Get all fungi
- Organize more
- Move out E. he all photos in data
- Look through notebooks

- Call K. Rausch

6/1

1. Section #2 describes (this is the one look in bold - cellule - from field - on base) - it had a much
2. Section #1
3. Section #2
4. Section #3

hatching after 2 weeks later.
The Lab Notebook

• Each lab worker should keep detailed records of experiments conducted each day

• Lab notebooks
  – Serve as an accurate, original, permanent record
  – Help establish good work practices
  – Can be valuable teaching aids
  – Help meet contractual requirements
  – Serve as a corrective to fraud
  – Help defend patents

• For patent purposes an “original” is the first human-readable form (e.g., a printout of a measurement) — dated, signed, and filed
General Rules for Lab Notebooks

- Permanently bound book; sign and date entries consecutively; employ witnesses when appropriate
- Use loose-leaf notebooks for computer-key logs: consecutively number, date, and sign
- Record entries chronologically
- Each entry should “stand on its own”
- Organize material with sections and headings
- Identify / describe reagents and specimens; record the sources of materials
- Enter instrument serial numbers and calibration dates
General Rules for Lab Notebooks

- Proper nouns for items; all entries in the first person; explain nonstandard abbreviations
- Draw a line through blank pages or spaces
- Permanently glue any attachments; date and sign both attachment and notebook
- Outline new experiments, their objectives and rationale
- Include periodic factual summaries of status and findings
- Enter ideas and observations immediately; summarize discussions and ideas
• About witnesses
  – Under some circumstances, having a record signed by a witness is desirable
  – If you think you have an invention or idea that has intellectual property value, that date is when you want a witness
  – Also, the date the idea is put into actual practice ("reduction to practice") again a witness is desirable
  – Individuals with a sound grasp of the science but should not be a co-inventor
  – Different people to witness pages containing different ideas may be needed
General Rules for Lab Notebooks

• Care of Notebooks:
  – Store in a safe area
  – Completed notebooks should be indexed and kept in a central repository
  – Originals can be checked out and returned
  – Notebooks may be moved to a storage facility at least 5 years after funding for the study ends
  – For anything patented, keep for life of the patent plus 6 years
Data Management Systems

• Create plan to track and store data generated by the people in your lab; should include:
  – Ability to sort and search
  – Consistency
  – Ability to update records

• Executed the data management plan
  – Put quality assurance measures in place
  – Make sure everyone knows what to store, where to store it, how to do it, and who needs to log in that information
Data Management Systems

• What to store?
  – Lab protocols
  – Primary data (including images)
  – Lists of specimens and reagents
  – Information about instruments

• Where to store it and how?
  – Printed records
  – Electronic records
  – Lab protocols
  – Reagents
  – Instrument histories
Selecting a Data Management System

• Questions to ask when selecting a suitable program?
  – Is the software really needed?
  – Is the system compatible with existing software and hardware?
  – Will it interface with your instruments?
  – Are other users satisfied?
  – What kind of support is available from the vendor?
  – How much flexibility does the system offer and can it be configured to suit your needs?
  – How much training will be required?
  – How stable is the company that sells the software?
Selecting a Data Management System

• Types of programs
  – Databases
  – Laboratory Information Management Systems (LIMS)
  – Archival software