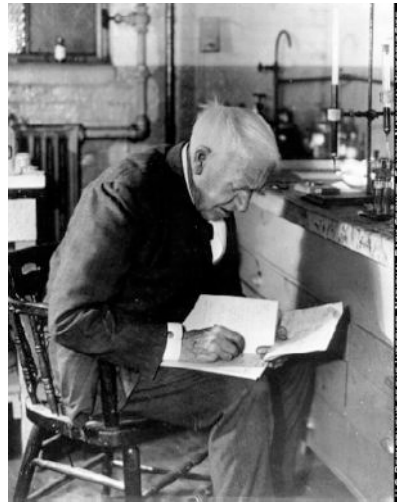




Keeping a laboratory notebook



Lab notebook is the **property of your employer** (the lab).
It should be stored safely for **a minimum of six years**.

2/3/2009

Why to keep a laboratory notebook?



- 1) **Legal document of your work**
- 2) **Good Laboratory Practice (GLP)**
- 3) **Part of the University Quality Assurance System**
(TKK:n laadunhallintajärjestelmä)

2/3/2009

Why to keep a laboratory notebook?



Lab notebook

- 1) Provides a means of ensuring that all **work is done according to agreed procedures**
- 2) A **permanent record** of research protocols and results
→ information availability and knowledge preservation
- 3) Provides **support for publications**; evidence against possible claims of scientific misconduct
- 4) Is a way to comply with sponsored-research audit requirements
- 5) Provides documentary evidence when determining claims of discoveries ('First to Invent' practice in the US)

2/3/2009

How to keep a laboratory notebook?



What kind of a notebook:

- 1) Paged should be **bound**. No pages should be removed or added!
- 2) Pages should be **numbered**.
- 3) Good **paper quality** to store the notes long enough (6 yrs)



2/3/2009



Electronic lab notebook??

The keeping of laboratory notebooks entirely electronically is generally **not advisable, as computer records and dates of entry are easily alterable.**

If the notebook is computer-generated, each page should be printed, dated and permanently affixed to successively numbered pages of a permanently bound laboratory notebook, signed, dated and **witnessed**. Preferably, the computer printout should be smaller than the bound notebook page and the witness should write and sign across the join.

Electronic lab notebook (ELN) software programs designed to replace the paper lab notebooks.

Important: Security, audit trails, witnessing, prevention of unauthorized changes

2/3/2009

How to keep a laboratory notebook?



- 1) Leave **first page empty** for table of contents
- 2) **Date and time**
- 3) Entries with **permanent ink**
- 4) Entries should be **legible** and **factually complete**. The notebook must be understandable to others: colleagues, patent attorneys, judges, jurors and potential licensees.
- 5) Entries should be **consistent** and **continuous**
- 6) **No spaces / blank pages** (draw lines through unused areas)

2/3/2009

How to keep a laboratory notebook?



What to report and add in your notebook?

- 1) Report only **facts**, not opinions
- 2) Report used **procedures** and **equipment, conditions** of experiments, **calculations**, sketches and drawings
- 3) Add **supportive documents permanently** with glue, staples: photos, tables, gels, diagrams etc.
- 4) Make **corrections** clearly visible and struck through with a **single line**

2/3/2009

How to keep a laboratory notebook?



- 1) Report only **facts**, not opinions

YES: factual, quantitative, and qualitative entries; all novel concepts and ideas relating to the work

NO: slang, abbreviations, technical jargon or statements like “the experiment failed”, “the idea is obvious”, “I think it is unpatentable”

2/3/2009

How to keep a laboratory notebook?



- 2) Report used **procedures** and **equipment, conditions** of experiments, **calculations**, sketches and drawings
 - Describe **purpose** and **objectives**
 - Include **detailed experimental protocols**
 - Annotate all **calculations**
 - Give full details for **experimental organisms**
 - Record **reagent** and **solution** details
 - Record names of people providing **assistance**
 - **Drawings** of e.g. set-ups or recording areas can be helpful
 - Detail also **mistakes** and **problems**

2/3/2009

How to keep a laboratory notebook?



- 3) Add **supportive documents permanently** with glue, staples: photos, tables, gels, diagrams etc.

If raw data cannot be added to the notebook itself, then **reference** to them should be consistent (e.g. file name and location) and they should be **stored** in an orderly, readily retrievable manner.

2/3/2009

How to keep a laboratory notebook?



4) Make **corrections** clearly visible and struck through with a **single line**

2/3/2009

30
Caron Smith
152L-A

Volumetric Chloride

9/26/90
Preparation of AgNO_3 solution

Dry AgNO_3 110°C In 1:00pm out 2:15pm (1 hr 15 min)

AgNO_3 + vial	12.584 g	
vial	8.059 g	
AgNO_3	4.625 g	4.525 g (miscalc)

Dissolved in DW, transferred to 250-ml vial flask,
diluted to mark with DW.

$$M_{\text{AgNO}_3} = \frac{4.525 \text{ g AgNO}_3}{165.9 \text{ g AgNO}_3} \times \frac{1 \text{ mol AgNO}_3}{165.9 \text{ g AgNO}_3} \times \frac{1}{0.2500 \text{ L sol'n}} = 0.1065 \text{ M}$$

10/3/90

Unknown sample.

Dry at 110°C In 1:00pm out 2:00pm (1 hour)

Trial #1

UNK + vial	23.062 g (bal. not zeroed)
	22.743 g
Remain unk	22.589 g
UNK spde	0.154 g

Titration: Final reading ~~25.88~~ 15.88 (mist read) mL Buret filled with AgNO_3 solution
 Initial 0.23 mL
 Delivered 15.65 mL



2/3/2009