

Laboratory Notebooks



Biochemistry Boot Camp
Session #8
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Overview

- Lab notebook?
- What to include
- Maintenance & ethics

Lab notebook?

- Lab notebook is primary record of research.
- Researchers use a lab notebook to document their hypothesis, experiments and initial analysis or interpretation of these experiments.

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What to include?

- Date & time (possibly)
- Experimental details
- Print outs of data. Eg. Gels
- Protocols & calculations

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Maintenance & Ethics

- All data goes into the lab notebook
 - Even “bad” data points.
- No pages come out of the lab notebook
- Honesty is essential

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Question of the day?

- In what ways do you benefit by keeping a good lab notebook? In what ways do others benefit?

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Journal reference

first author year journal volume first page
↓ ↓ ↓ ↓ ↓
Smith, J. et al. (2010) Nature. 465: 302.

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Calculations

Example #1:

- Making 100 mL of 200 mM NaCl (1.17g), 20 mM HEPES pH 7.3 (2 mL), 10% (w/v) glycerol (10g).

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Making 100 mL of:
200 mM NaCl

100 mL	1 L	0.2 mL	55.44g	1.18g
	1000 mL	L	mol	

• **Example #2**

20 mM HEPES pH 7.3 (1M stock)

$$C_1 V_1 = C_2 V_2$$

$$(100 \text{ mL}) (20 \text{ mM}) = (x \text{ mL}) (1000 \text{ mM})$$

$$x = 2 \text{ mL}$$

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Practical considerations

- **Reagents:**
 - What exactly did you use? Who made it and how to re-order?
- **Equipment:**
 - May need to know serial #, etc.
- **Water:**
 - What water did you use? (tap, distilled, milli-Q, filtered, ...)
- Science is reproducible! Save yourself some time.

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Experiment lab spills

- Five writing tools
 - Pencil (no!)
 - Ballpoint pen
 - Gel pen
 - Sharpie
 - Lab marker
- Three solvents
 - Water
 - Ethanol
 - Acetone

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What if you make a mistake?

- Not good:

~~I measured the UV absorbance at 280 nm to be 0.325, a concentration of 75.0 uM.~~

Misread the 260 value. A_{280} is 0.531, or 123 uM.

- Better:

~~I measured the UV absorbance at 280 nm to be 0.325, a concentration of 75.0 uM.~~

Misread the 260 value. A_{280} is 0.531, or 123 uM.

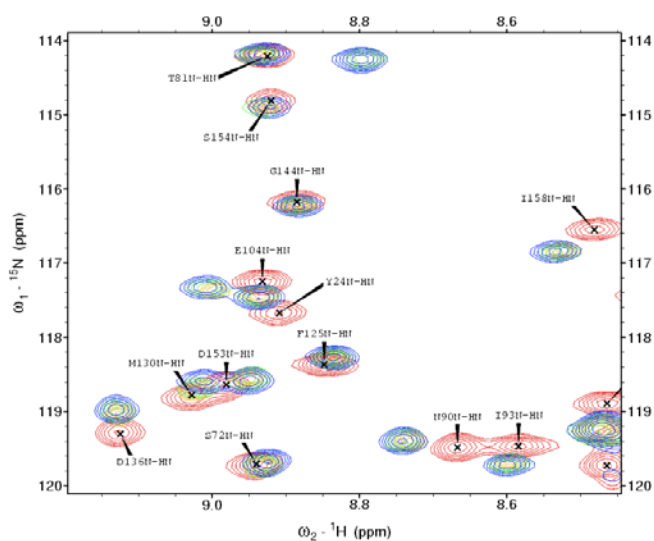
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Who owns the notebook

- The university (your research adviser)
- It should stay in the lab!
- Photocopies are okay (and encouraged)

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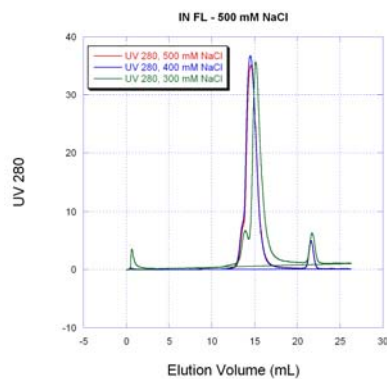
Complex Data



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Example

Chromatogram data is stored on FPLC PC with filename "20100315 Size Exclusion.dat" in the "Smith data" directory. Details given on p. 65. I collected fractions C1-C5 for further study. A_{280} trace is pasted at right.



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Thank You



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