

Lab notebooks are kept to document and organize your experimental plans and data. Every lab requires each researcher to keep one, and while there is no “right” way to keep a notebook, there are several important things all lab notebooks require. Here are some common elements that all lab notebooks share and some important habits you should develop in keeping your notebook. All lab notebooks should be...

### **1. Complete**

Your notebook is a place to collect descriptions of experimental goals, experimental procedures, all the data you collect, and your interpretations of results. Numerical data and calculations should be written directly into your notebook. Data in the form of photos should be taped into the notebook. Printouts and X-ray films can also be taped into your notebook or if reams of paper and large films are being collected, they can be organized in a separate binder and referenced in your notebook. If digital data is being referenced, the file name and path to the file on the hard drive need to be recorded in the notebook. There is nothing that shouldn't be included in the notebook – if in doubt, write it down.

### **2. Organized**

Some scientists arrange their notebooks by date, others by the question being tested. What works best depends on the research itself and the researcher.

### **3. Up to date**

Your notebook should be updated as soon as possible following any and all procedures you complete. It is sometimes helpful to have data tables ready or some calculations performed before you begin the experiment. “Up to date” also means leaving lab with your protocol and any amendments you made to it, data, and perhaps some interpretation entered in your notebooks. Notebooks should include a table of contents so that anyone wishing to find a particular item can find the page easily.

### **4. Permanent**

Use pen when you write in your notebooks. No exceptions.

Some other things you should know about lab notebooks

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- They are the property of the research lab itself. Researchers who join the lab after you have left will get to know you through the notebooks you have kept there. Ideally, your notebooks will reflect your most organized, clear and thoughtful side.
  - They are legal documents. Labs in industry have special rules about lab notebooks since patent disputes and court cases often hinge on lab notebook entries.
  - They are both personal and public. It is considered impolite and an invasion of privacy to read someone else's notebook without their permission. Most people are happy to show you their notebooks when asked.
  - *Nothing can be published unless someone from the outside can see how you arrived at your conclusions.*
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## Things to remember

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Remember the goal of your notebook is to help you repeat experiments with the same results. Information you should record includes

- Centrifuge settings: temperature, speed, time
- Incubator settings: temperature, time, and shaking speed if applicable
- Size and types of tubes used
- Buffers (and their pH)
- Media
- Dilutions and how they were prepared
- Concentrations
- Volumes used
- Washes: number, volumes, temperature, solutions used
- Antibody: dilutions, lot or tube #s
- Electrophoresis: Agarose or acrylamide percentages, voltages, times
- The names of people who helped you with your experiment

You should also note any changes to the protocol such as

- unexpected delays (e.g., “waterbath wasn’t ready so tubes kept on ice for one hour”),
- unanticipated conditions (e.g., “roller drum found off in AM”)
- unusual observations (e.g., “a large number of cells seemed to be floating”).