

Formatting and Peer Reviewing Strategies

Formatting

The formatting of scientific papers is fairly straightforward, but a short list of common rules follows:

- Abbreviations should be spelled out the long way first and then be followed by the abbreviation in parenthesis. Once you've done this once, you can use the abbreviation for the rest of your paper.
 - quantitative trait loci (QTL)
- For genes and gene products (proteins), the general rule is that genes should be italicized and all lowercase while proteins should be non-italicized and the first letter should be capitalized. Enzymes should be italicized with no spaces.
 - *fur* (gene) and Fur (gene product/protein)
 - *EcoRI*, *XhoI*, (enzymes)
- For measurements, using just the abbreviated form of the measurement is fine. You do not need to spell out the measurement first.
 - micro liters should be μl or ul
 - grams should be g
- For references, the in-text reference should be the first author's last name, followed by *et al.* if there are more than three authors, and the year of publication. If there are only one or two authors, both last names should be included.
 - 3 or more authors: (Johnson *et al.*, 2004)
 - 2 authors: (Johnson and Johnson, 2004)
 - 1 author: (Johnson, 2004)
- For the list of references, any style of listing citations that can be found in a scientific article is acceptable—use the papers that your mentor has given you as an example or use the example below.
 - Johnson, R. Q., A. Smith, and L. E. Jones. 2004. "Title of paper goes here in quotation marks." *Journal of Knowledge* 5: 34-41.
- When listing components of a solution or other lab "recipe," you should use the final concentrations, not how much of a particular reagent that you added. You don't have to list water.
 - "I made a solution containing 65 mg/ml oxytetracycline in 50% Triton-X."
 - Not, "I added 0.325 grams of oxytetracycline to 25 mls of water and 25 mls of Triton-X."

If you have specific questions about formatting, ask your mentor, tutor, or other lab members.

Peer Reviewing

The purpose of peer reviewing is to help you think critically about your goals, to consider how an audience might respond to key points and evidence, and to examine the impact of organizational and visual elements of writing. Peer reviewing is not about correcting grammar or copy-editing papers. There are three global concerns that should be addressed when performing peer-tutoring: organization, clarity, and flow.

Organization: We have already discussed the overall organization of a scientific paper, but organization doesn't stop there. In addition to organizing the whole paper, each paragraph and sentence should also have a clear, logical order. Also make sure that as you write each paragraph, you fully explain every new concept before or immediately after introducing it. Instead of dumping all your results into one paragraph and then explaining them all, try to explain each individual result or set of results immediately after reporting them.

Flow: Flow is a concept that you are all familiar with, although you may not realize it. Papers that are very hard to read frequently have flow issues, where the writing seems choppy and somewhat disorganized. To avoid flow problems in your writing, use transition words or phrases whenever possible. Examples include the use of words such as "next", "finally", and "interestingly", and phrases such as "in conclusion" and "this result indicates". Transition words and phrases such as these provide cues to the reader about order and importance.

Clarity: Clarity refers to the quality of being clear and easy to perceive or understand. While the information in your paper may be very clear to you, you must make sure that others reading your paper can also understand the information. Therefore, be sure to explain all concepts and experiments in your paper as thoroughly as possible. This is why you are reading each others' one-page summaries; you should all be writing a paper that will be comprehensible to the other students in the program.

Tips for revising/editing papers:

- Read your whole paper out loud to yourself—this will help you catch grammar and phrasing errors as well as flow issues on your own.
- If you are having organizational issues throughout your paper, then do an outline and try moving your topics/paragraphs around until you find a better order. Then you can simply cut and paste your text as needed. This also works for sentences in a paragraph, if you are having trouble in just a small area.
- Switch papers with a classmate and have them read it. If s/he has questions about things they don't understand, you will know where you need to explain more or clarify your writing. Mentors and tutors have the tendency to glaze over things that we already know (like if your explanation of PCR is not clear, we wouldn't notice because we are familiar with PCR and can read between the lines, i.e. we can figure out what you mean to say).

The majority of cataracts are age-related. Cataracts occur when crystallins clump together, making the lens cloudy. This causes the light hitting by the lens to be scattered rather than finely focused on the retina. There is increasing evidence that age-related cataract has a strong genetic component (Hammond et al., 2000).

Our lab collected DNA from a family with an autosomal dominant inherited posterior polar cataract. They used linkage analysis to map the family's disease to chromosome 1p36. I looked at the gene Q9UKB5 because it codes for hypothetical protein MOT8. MOT8 may be a member of the aldehyde dehydrogenase family of enzymes. ALDH is similar to omega-crystallin (Piatigorsky). We think that this gene is important for cataracts because it is similar to a protein found in scallop's eyes.

I sequenced the gene Q9UKB5. There are 5 exons. We did this using wild type DNA and DNA from two affected individuals. I used the polymerase-chain reaction (PCR) to amplify the exons. I used 2 microliters of DNA and 1 microliter of primer. I then ran a gel to look at the polymerase chain reaction product. It was sequenced with the ABI machine using the method. I printed out the data and looked at it to see if there were any mutations. If there was a mutation, there would be two peaks. I screened 3 exons. I didn't find any mutations. This project isn't finished because we need to sequence the rest of the exons.

References:

Piatigorsky J, Kozmik Z, Horwitz J, Ding L, Carosa E, Robison WG, Steinbach PJ, Tamm ER. 2000. Omega -crystallin of the scallop lens. A dimeric aldehyde dehydrogenase class 1/2 enzyme-crystallin. *J Biol Chem.* 275(52): 41064-73.

Hammond CJ, Snieder H, Spector TD, Gilbert CE. Genetic and environmental factors in age-related nuclear cataracts in monozygotic and dizygotic twins. 2000. *N Engl J Med.* 342(24): 1786-90.