Suggestions for preparing and giving scientific talks in Journal Club

First and foremost, the best way to become proficient at Journal Club is to **attend Journal Club meetings regularly**. Please remember that Human Genetics graduate students are expected to attend ALL Journal Club and RIP meetings during the year. Listen to what the speaker is doing right and wrong – how might you modify your own presentation style? Importantly - ask questions! Journal Clubs are a dialog in which the audience has to participate with the speaker. Speak up if something is not clear from a figure. Did the authors forget a critical control? Is the conclusion not justified based on the data? It is always a challenge to ask good questions, no matter how good or bad the presentation is.

1. **Choose your paper carefully.** Your topic should be something you want to learn more about, but it should not be too close to your own research. Your topic should also be of interest to others in Journal Club (your audience). Consider broader areas of genetics, such as bioinformatics, evolution, epigenetics, or population genetics. Also, the faculty urge you to look outside **Science, Nature, and Cell** papers, which tend to cater to popular topics, but not necessarily the best science. Read your paper over (more than once if necessary); be sure you are convinced the data are compelling and the conclusions are important. Ideally, you will go over your choice with colleagues and your faculty advisor. It is hard to do well in journal club if your starting point is a bad (or boring) paper.

2. **Read your paper(s) thoroughly.** To help you to understand your chosen paper, read broadly in the subject area. Look for (and read) good recent papers that are relevant to your subject; these supporting papers will build the foundation for the research you will discuss and will take the form of primary research articles as well as reviews. The latter are particularly important. There are reviews all over the place; try to focus on those in major sources such as: **Annual Reviews** (of Cell Biology, Genetics, Biochemistry, etc.), the **Trends in…** series (e.g. Trends in Genetics), **Nature Reviews**… (e.g. Nature Reviews Cell Biology), etc... In addition, a number of journals have excellent mini-reviews. If necessary, look up basic facts in a textbook. Look up references that will help you understand a technique or any important detail that is central to understanding the work you are discussing. These are usually found in the “Materials and Methods” section of the paper. Although this can be time consuming, it really pays off to know this information to address possible pitfalls in the work and to interpret the experiments presented.

3. **If you still have questions about the data, get help from colleagues.** After you have read the papers and can discuss the topic with some knowledge, talk to faculty and students who have expertise in the area. Sometimes it is helpful to email the first or last author of the paper with any questions you may have.

4. **Plan out your talk carefully.** **Your talk should be organized into five major sections:** (1) an introduction to the subject, (2) the data and results (3) a final model(s) if possible, (4) major conclusions, (5) proposed future experiments (you are now the expert, after all!). For your **introduction**, plan on 4-5 slides (about 10 minutes). Introduce the general topic you will be discussing. What are the key experiments that preceded this study and set it up? What is the intellectual framework for this study? What central question(s) does this paper aim to address?
Ideally, you should try to foreshadow something you will present later – perhaps aspects of the model you will show at the end. By showing the model at the beginning and then showing a more complete version at the end – adding the new results from your paper – you can pull your talk together into a unified presentation (come full circle). The data and results section usually consists of some bullet diagrams (with as little text as possible) and figures from the paper. Extract the figures from the PDF file of the paper. You should feel free to separate and annotate the figures from the paper to increase the effectiveness of your presentation. Many paper figures are highly complex because of journal space considerations; they can, however, be easier to understand if you split them up into related groups. For each figure that you will present: (1) clearly state what question is being asked or what hypothesis is being tested; (2) explain the experiment and the methods used, mentioning each lane of a gel, panel of data, and relevant details of the experiment so everyone will understand it; (3) present the data as well as alternative interpretations of the data (along with concerns you may have), and (4) finally, state a conclusion from the experiment. What does this show us? Do this for each of the figures. Give an overall summary of the data at the end of each general area in the paper, if possible. For your conclusion, discuss the significance of the data to the field and to other fields of work. State what implications the data have for future research. If possible, refer back to your introduction by showing the audience how you have extended what was known before this paper. Try to keep yourself focused on the key highlights of the paper. If you want to digress a bit into some esoteric or interesting, but not essential point(s), then do so - but let your audience know how it fits in with the subject at hand. By the same token, sometimes a figure in the paper is tangential to the story your are telling. It might be possible to skip this figure altogether and not lose the meaning of the study.

5. PRACTICE!!! Once your slides are prepared and your talk is ready, you are only halfway done. Leave plenty of time to get your talk finalized by practicing the talk out loud in a room. Normally, your first attempt to do this will be a disaster, but this is the only way to see what you know and what you don’t know. Reread as necessary for a better understanding of your weak points; figure out how to better convey your message and understanding. Then, practice your talk again. It should be improved. Then do it again, and again … You should practice your whole talk at least three times on your own. Try adopting a split personality - listen to your talk for content and clarity, and then ask yourself: “Did I explain that clearly?” Try to anticipate questions that your audience might have. This is where some background reading really makes you shine in the eyes of the audience. Remember that you should be in good command of the research that is presented. Finally, and ideally, you will give your practice talk to peers and you will receive feedback on how to improve your presentation even more.

6. Try to relax as much as possible. Giving a good talk takes experience and is a learning process. You will get better with practice (guaranteed!). The more you practice your talk ahead of time, the more relaxed you will be in front of your audience. Try to pace yourself – a common mistake is to proceed at too rapid a pace without telling your audience where you are going. It is better to get only a few major points across and take the time to really explore a few interesting experiments in depth. If you are absolutely terrified about giving an oral presentation or if you need some help, see a faculty member for advice. This is especially important for your first few presentations.