

Syllabus for MGG Journal Club – Fall 2022

Faculty: Heather Lawson (lawson@wustl.edu)

When: Class is weekly, Mondays from 1:00-2:00 PM

Where: Couch Bldg, room 6001B

Learning Objectives:

Through active participation, deep reading, and thoughtful discussion, students will meet the following objectives:

- 1) Learn how to critically evaluate scientific literature to determine whether the data robustly support the conclusions of the paper.
- 2) Learn how to synthesize conclusions across papers to highlight discrepancies in the field, allow published work to guide and influence their own work, and to generate novel hypotheses and models for genetics and genomics.
- 3) Become familiar with interpreting published data from current methods in genetics and genomics.
 - a) Understand a variety of methods sufficiently to understand the kinds of conclusions that can be drawn from them, and the controls required to interpret them.
 - b) Become conversant in how different data types might be displayed, and identify strong and weak ways of presenting data.
 - c) Gain an understanding of which statistics are appropriate for different kinds of data, and how to design well powered and controlled studies with a given method.

Overall Organization:

The first meeting is organizational. We will choose 4 topics to be covered over the semester. You are picking the topics because it is more fun to discuss data in fields you care about. This also allows us to work on synthesis across papers for objective 2. Students will sign up within these topics, choose an appropriate paper, and lead the discussion of the paper. The presenter emails the paper a week before presenting so that I can post it to the course website:

<http://lawsonlab.wustl.edu/journal-club/>

Format of Discussions:

First, the presenter introduces the paper - what is the background of this work and the group producing it? How does this paper build off of prior work from this group and others? What is the key question it is meant to address? How did this question emerge, and why is it important?

Next, the presenter describes, evaluates, and guides the discussion of the first figure in the paper, summarizing it's overall point at the end.

Then as a group we will discuss each additional figure in turn. Overall, this exercise is how you are training for objectives 1 and 3. Our discussions draw on the expertise of all participants to parse these papers as a team, and together summarize the main point of each figure. It is okay to describe and work your way through a figure you don't understand. If you are able to articulate why you don't understand it, you may be pointing out a key flaw in the paper. Or perhaps it will solicit input from an expert in the room. Either way, well-articulated questions about a figure often guide the best discussions.

As you go through the paper, ask yourself: What are the researchers trying to accomplish? Is it important (addressing an unknown, discovering something new, significantly improving a method)? Are the data/ methods sufficient? Why or why not? If not can you think of an alternative? Did the researchers accomplish their goals? Are you convinced? Why or why not? Is it well presented, or confusing? Please keep in mind that our goal is to have a discussion about the paper, not to restate figure legends.

Participation Expectations:

In addition to in-class participation, a short bulleted write-up addressing the major findings, questions, and concerns of each paper should be emailed Sunday night before class. A template for the write-up is posted on the course website.

The only metric for evaluating this P/F class is participation. **Attendance is mandatory.** I encourage students to self-organize ahead of time on who will take what figure (e.g. over Slack), but this is up to you. Note, if you don't have a figure, I still expect some participation in discussion, raising key questions, sharing your relevant experience and expertise, etc.

Up to two absences can be excused in the semester, provided you submit your write-up within a week before or after the absence. **More than two absences will result in you repeating the JC an additional semester.**