**Syllabus for MGG Journal Club**

**Faculty:** Heather Lawson (lawson@wustl.edu), Joe Dougherty (jdougherty@wustl.edu)

**When/Where:** Class is weekly, Mondays from 1:00-2:00 PM, 6001D Couch Building

**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 for their future careers.
    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.
4. Become well versed in the publication and peer review process, and become competent to professionally both submit and review papers.

**Participants:**
Obligate participants are the 2nd and 3rd semester MGG students. However, as the papers we are discussing might be of interest to many other students and researchers in our departments, as well as others that might need training in genetics and genomics as part of training grants, fellowships, professional development, etc. we will also run this as an open journal club and advertise each week's paper to MGG associated labs. First year students will take the lead on presentations, and select the papers and topics for each semester to match their interests.

**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 synthesize data in fields you care about. Also, this 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 on the paper. The presenter emails the paper a week or more before presenting so that it can be posted to the course website:

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

**Format of Standard Discussions:**
First, the presenter introduces the paper - what is the background of this work and the group producing it? This is their opportunity to practice Synthesis (objective 2). 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 then describes, evaluates, and guides the discussion of the first figure in 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.

Then as a group we will discuss each additional figure in turn. Overall, this exercise is how we are training you for objectives #1 and #3. We will draw on the expertise of all participants to parse these papers as a team. 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.

**Meet the Author Discussion:**
To help train you for your own submissions in the future, 1-2 times a year we will also invite a senior graduate student to come present their recently published work. Like a standard journal club you will all be required to read and review a paper - but this time it will be a first submission of a paper they recently published. You will write your own review, as if you were a reviewer (see rubric for guidance also on the website). After that, you will read the actual reviews the student received, as well as their response to the reviews and the final manuscript that resulted. Then, in class, you will have the opportunity to discuss both the science of the project with the student, as well as their experiences with the process of peer review. What was their strategy to respond to reviews? Did they find some comments helpful? Some unfair? How did they change their paper as a result of the process? What would they do differently in the future and what did they learn from the process? These discussions are designed to help you with objective #4.

**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.

Because our only metric for evaluating this P/F class is participation, **attendance is mandatory for enrolled students.** We encourage students to self-organize ahead of time on who will take what figure, but this is up to you. Note, if you don't have a figure, we 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 the student submits a *written peer-review style review* within a week before or after the absence. Guidelines for this more extensive write-up is posted on the course website. This is meant to replicate the experience of the in-depth review of a paper that would occur during journal club. **More than two absences will result in you repeating the JC an additional semester.**