

## **NSCI 6820: Seminar in Neuroscience**

NGP Journal Club 2023-2024

1 Credit

### **Faculty Advisor:**

Tony Morielli

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### **Course Objectives:**

- Improve public speaking and scientific presentation skills
- **Develop the critical reading skills necessary to perform rigorous analysis of primary scientific literature**
- Increase exposure to scientific concepts, techniques, model systems, and analysis methods
- Integrate information from scientific literature and student presentations to form questions and critiques of published data.

### **General Guidelines:**

Prepare an approximately 45-minute PowerPoint style presentation following the presentation format indicated below. Presentations should be on a primary research article. Senior students (4<sup>th</sup> and 5<sup>th</sup> years), with prior approval from me, can present a hybrid presentation that focuses on a journal article but incorporates some of their dissertation work.

### **Paper Selection:**

Selected papers should focus on an aspect of the neurosciences. Papers published within about the past 3 years will be of greatest interest to all concerned. The same is true for papers that would seem to have the potential for being high impact in the long-term. Selecting papers from higher impact research journals could help with that and should be prioritized.

While even a single figure paper can have high impact (e.g. <https://doi.org/10.1038/171737a0>), a study that uses a variety of approaches is typically better suited for the course objectives described above, and is highly encouraged. While this need not be the primary consideration for choosing a paper, it should be part of the mix.

Article selections must be approved by Tony approximately 2 weeks in advance of your scheduled presentation so that the final choice can be sent to the group 1 week in advance. Please add this date to your schedule as soon as you know your presentation date.

### **Presentation format:**

Presentations should be in the traditional journal club style.

All presentations must have an original title (not the title of the paper, if applicable) which should be sent to the NGP office at least 1 week before the scheduled presentation along with your pre-approved paper. Presentations should be about 40-50 minutes long to allow adequate time for questions and discussion.

The general format of the presentation is as follows:

1. Show a slide with the title of the paper
2. Make a statement of their general hypothesis
3. Make an initial assessment of whether the authors succeeded in their stated goals for the study
4. Provide a general background section focusing on the main concepts. The level of detail provided is up to your judgment of what the group will need to get the most out of your presentation. Give the group a perspective on where the paper fits in terms of the question the authors are trying to address in the field.
5. If relatively uncommon methods are used, or if there is something that you find unclear in the methods section, please be sure to talk a bit about that. Understanding the methods used to collect data is key to understanding the data.
6. Take a “concept” based approach to analyzing the results and author interpretations. Present the data in each figure or group of figures that cover that concept. Implicit in this is the idea that you don’t have to present every detail of every figure. Instead, explicitly state what the authors are trying to show and then focus on the data that does (or doesn’t do) that. Obviously, this approach works best if everyone has read the article beforehand.
7. I would like to re-emphasize the need to not only present the data, but to explicitly address strengths and weaknesses in experimental design, analysis and interpretation. The NIH defines scientific rigor as “the strict application of the scientific method to ensure robust and unbiased experimental design, methodology, analysis, interpretation and reporting of results.” They also emphasize the need to pay close attention to biological variables such as sex: “sex is a biological variable that is frequently ignored in animal study designs and analyses, leading to an incomplete understanding of potential sex-based differences in basic biological function, disease processes and treatment response.” So please consider these things in preparing your presentation. This will go a long way towards helping us as a group understand whether the author's conclusions are well supported by their data.

Be rigorous in assessing factors that could make it difficult to interpret data. Irregularities in the figures (e.g. incorrect or re-used western blot images) do not necessarily indicate anything other than editorial error, but such things should be noted when they occur.

Likewise, be sure to comment on the appropriateness of the statistical analyses. Most scientists understand statistics to the extent that they need for their own research. But, not being actual statisticians, most scientists lack the broad expertise required to fully understand the wide range of use cases one might find across publications even in a given field. So, if you're not sure about the stats, it is perfectly OK. In those cases, feel free to seek out input from others. It's also fine to open it up to the group for discussion.

8. End with a group discussion preferably laden with new questions and a group assessment of whether the authors achieved their stated goals.

All students will have the option of obtaining feedback prior to their presentations from faculty (Tony Morielli and Jom Hammack). These advisory meetings must be scheduled by the student at least two weeks in advance of the presentation.

**Weekly Expectations:**

Everyone is expected to have read the articles ahead of each presentation.

**Grading:**

All students in the NGP will be taking journal club each fall and spring semester. Students not enrolled in Continuous Registration will take for 1 credit. Once a student has reached 75 credits, Journal Club will not be taken for credit, though it is still a requirement and grades will be reflected in their GRAD 90X. As a result, students must meet the following criteria to receive credit:

- Attend at least 80% of all scheduled journal clubs per semester. Excused absences for scientific meetings, university sanctioned events, or illness/personal will not count against student attendance, but must be communicated to Tony.
- Prepare and deliver one presentation over the course of the academic year.
- Have your approved paper to the group 1 week in advance.
- Participate by asking questions or joining in active group discussions.

Satisfying the above criteria will earn a grade of A for those students under 75 credits and a Satisfactory (S) for those students over 75 credits. Failure to satisfy the above criteria will result in a grade of B, C or F for students under 75 credits or a Unsatisfactory (U) for those students over 75 credits.

All presenters will receive thoughtful and professionally toned student and faculty evaluations at the completion of their journal club presentation as a way of enhancing their presentation skills.