Paper Selection Guideline

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This is just a general guideline intended to assist you in choosing articles to present, not a grading rubric. There will be some other auxiliary documents about how to make scientific representations. Take advantage of these, and you can certainly devise your own way in choosing and presenting. Be creative. Have fun.

1) Which Journal?

There are a lot of neuroscience journals out there, so be careful about legitimacy and quality. Generally, good choices include but not limited to:

- Nature
- Science (these two are very compressed and often hard to read)
- Cell
- Neuron
- Neuroscience
- Nature Neuroscience
- Journal of Comparative Neurology

2) Area of interest

Neuroscience is huge. It would be easier for you to choose something that interests you the most by screening the subdivisions of Neuroscience. Some common topics include:

- Cell/molecular approaches
- Systems (sometimes broken into sensory perception and motor systems)
- Circuits
- Cognitive (a lot of fMRI and PET scans of human or animal brains)
- Behavioral
- Developmental
- Clinical

(But the boundaries have been blurring and many times papers have work at many different levels and involve collaborations.)

3) Choosing an article

- Browse the abstracts first, and see which ones attract your attention that you can understand, and then read the whole thing.
- While reading the articles, do not become bogged down by the many facts. Focus on the big picture. You might also want to look at other articles/resources if you see something in the paper you don't understand
- The article is intended for an audience of CU students like you, i.e. students who may or may not have a background in neuroscience and other Biology fields. So don't choose something that even you find it really hard to read, but not too easy to lose its scientific merits as well
- Examine the basic logic of the paper, and its significance like breakthrough (see general study questions), see whether it is worth reading

4) Presenting an article

- After you have fully understood the article, plan out how you would like to present it
- The next part is written by Dr. Fetcho about how to present a paper:

1. You need to begin by giving some background so the people know what motivated the work in the paper.

a. Include what is the general area of the paper, why is it important, what is known and what is the MAJOR important unanswered question that the paper attacks.

b. You can include background slides if it helps you, but it is important even without them that everyone know enough to understand how the work fits into what has come before and what new issue it addresses.

2. Give a broad sense of how the problem will be attacked... what animal, what behavior, what approach, so they know where you are headed. Not much detail yet, just give a feeling for what is to come.

3. After this the approach is very stereotypical. (all of this should be CLEAR in your head and in notes before hand)

a. What question will the first experiment/data speak to? b. How will they address the question or get the data? c. What are the data? Walk them through the data figure! Point to things and talk loud and at the audience. What are the axes on the graph or any labels on it? All data figures should be carefully explained so everyone knows what they are seeing. Do not assume they know anything about the figure!

d. What do they conclude from the evidence? Is the conclusion valid in your view and, if not, why not. Could they do it in a better way?

E Wrap up with... so conclusion of this experiment/data is. The transition into the next question. Hopefully it follows as a next logical question. If not then you need to explain what motivated it.

4 . Do next figure/ data, same pattern as in 3. Loop back to 3 until figures are done.

5. So if we go back to the big question at the outset, tell how this paper has moved things forward. What do we know of significance now that we did not before and why is it significant?

6. Where might things go next? What are the next big unresolved questions?

- Explain cogently and clearly to the intended audience. Be sure to define any terms that the hypothetical audience is not likely to know.
- Same principle with figures and data, carefully and succinctly explain them, so as other things that are considered confusing or requires some background knowledge (you may mark down those facts that you don't understand when you first read the article, it is possible that other students find them confusing as well)
- Presentation tips can be found online and also the other documents on the course website.

4) General Study Questions

- To understand the paper
    - The big picture and take home message of the article
    - Carefully explanation of the methods, and think about why they are appropriate for the specific research
- Be critical
    - Do the experiments answer the question asked?
    - Do they rule out alternatives? i.e. do they have control group?

  - Does the evidence allow them to reach the important conclusions they would like to reach?
- How did we come here and where can we go from here?
  - Past work and other people's result that is related to the experiment, in this case review articles are very helpful
  - What would future directions be for this work, related to the big questions in neuroscience?
- Why is the work important?
  - Does it change our thinking and how?
  - Does it discover something new?
  - Does it introduce a new technique that allows for answers to questions that have not been attacked before, and so on