The Neuroscience Junior Independent Work in the Spring Semester

One major product: Students’ Spring Independent Work culminates with the submission of a research proposal. This proposal will serve as the basis for your senior thesis work. As is typical of research proposals, the document will include a short survey of the literature. You should expect to meet with your advisor ~5 times during the semester to formulate the project and discuss the literature.

For 2015-2016 academic year, the proposal will be due on May 10th. This is the Dean’s Date for submission of written work. You should turn in your proposal to your advisor by 5:00 PM of the deadline. Your proposal will be read and graded by your advisor and a second faculty reader.
Junior Spring Independent Work Guidelines and Structure

In the spring term, you will carry out a second program of independent work with a faculty advisor. Typically, this is the faculty with whom you will eventually do your Senior Thesis. The spring Junior independent work takes the form of a research proposal.

You should typically meet ~5 times with your advisor during the course of the semester to develop ideas and get feedback.

Format of the Research Proposal and Other Tips

The proposal part (for both the experimental and the non-experimental) should be no more than 15 pages in length (double-spaced, 12-pt font, 1-inch margins) and be structured as follows:

Abstract, maximum 200 words (often the last thing you write, but the first thing that the reader will see in the final document)

• Include a brief summary of the topic & significance (~1-2 sentences)
• Set up the question or hypothesis you are researching (~1 sentence)
• Provide a concise road map of how you plan to make progress (~1-2 sentences)
• Cover all of the main points of your proposal
• Abstracts typically do not have references
• Should stand alone as an effective summary for the proposal

Background and Significance, ~2-3 pages

• Provide the reader with insight into the significance of the research – explain why the reader should care about your research.
• Identify the key findings that have led to the current line of inquiry. Become proficient with the major databases for finding relevant papers (Web of Science, BIOSIS, PubMed, Scopus, and Google Scholar).
• Provide an overview of the relevant primary literature – this should not be extensive, but rather is aimed at giving the reader enough information to understand the problem your research addresses.
• Synthesize the material to make an accurate, original and comprehensive contribution – tell an interesting “story” providing the logical flow of the science – not necessarily the chronological order of the findings.

An important criterion for evaluating the Background and Significance concerns the Scholarship:

• Reference each fact presented with the primary source, not a review. The citation is typically included at the end of a sentence; however sometimes citations appear within a sentence.
• Rely on recent reviews to point the reader to a more extensive source of information about a field. The style of citation is the same as for a primary literature citation; however the citation should be proceeded by, “reviewed in…”, or “… and the references therein”.

Research Goals – ~1 page describing the specific goal(s) of your study (often written first and revised throughout)

• Include a very brief summary of the topic and significance (one or two sentences). State the question or hypothesis you are researching.
• Write each goal followed by a brief description of how you plan to achieve it.
• This section should be concise, thorough, explicit and clear.

*Detailed Description of the Proposed Research*, ~7-10 pages

This is the main part of your proposal where you provide the rationale and experimental procedures, as well as predicted results. **Note: If you’ve already done some experimental work related to your proposal, then you would include analyses of the data in the appropriate section.**

• Break the proposal into sections reflecting the various components of your goal(s)
• Explain “why” you are proposing each aim followed by “how” you are going to accomplish the aim.
• Write for a scientist not familiar with your research so that the rationale and experimental methods are widely accessible.
• Include a general description of the methods that will be used.
• For each experiment describe the specific controls that will be needed to evaluate whether the experiment is providing meaningful data.
• For each experiment describe the expected outcomes and how they would be interpreted. Include mention of the statistical tests or analyses that you plan to perform. Discuss potential problems, alternative strategies, and benchmarks for success.

*References*

• At least 10 primary sources
• Only list articles that you cite in the document
• Detail each citation in the end in the reference section
• Use the format of a published journal
• Learn to use RefWorks or Endnote (both are free and the library gives tutorials)

*Submission and Grading*

Students should turn in their junior papers to their advisors by 5:00 PM of the deadline for spring junior independent work (May 10th). Each Junior Paper will be read by the advisor and a second faculty reader. Students will receive written comments on the junior paper as well as a grade. Students are encouraged to discuss drafts of the written proposal with their faculty advisor. That is, although the advisor grades the paper, the work does not have to be done without their input.