

NEUROSCIENCE JUNIOR THESIS PROPOSAL FORM

For 6th semester students (typically junior spring) considering writing a thesis

***** NOTE: DO NOT USE THIS FORM IF YOU ARE ENROLLED IN NEURO 91 *****

Please complete this 2-page form and attach your thesis proposal as described on page two. Email your proposal to the Advising Office (James Poolner: jp@mcb.harvard.edu) by **5 PM Tuesday, May 5, 2020**. You must also send a copy of your report to your lab director.

The Head Tutor and the Concentration Advisor will review your proposal, and you will be notified over the summer with feedback. This form should be submitted if you are considering writing a thesis but does **not** obligate you to do so.

If you have any questions, contact Dr. Ryan Draft or Dr. Laura Magnotti, Neuroscience Concentration Advisors (draft@fas.harvard.edu , magnotti@fas.harvard.edu).

Part A. Complete the following sections:

Student Name:	HUID:
Thesis Title: (May be tentative – Be sure to review title with your research director before submitting.)	
Harvard Email:	

Research Lab Director: (<i>GRADUATE STUDENTS OR POST-DOCTORAL MENTORS SHOULD NOT BE LISTED HERE.</i>) (Please print)	
Address:	
Telephone:	Email:
Director's Electronic Signature**: (<i>GRADUATE STUDENTS OR POST-DOCTORAL MENTORS SHOULD NOT SIGN HERE.</i>)	

Daily lab supervisor (if not Research Lab Director): (Please print)
Email:

** if you research director cannot provide an electronic signature, please have her/him email us the completed form directly to acknowledge her/his approval of your thesis project.

Part B. Attach your thesis proposal to this form (as a .docx file if possible).

Because in-person research was curtailed this semester due to the coronavirus, this report has been reconfigured to focus on the development of your introduction (literature review) and aims and de-emphasize your data collection and actual results.

- **Introduction:** 6-8 pages (double spaced).

The Introduction should present an overall framework for your research by reviewing the literature, discussing what is currently known about the particular subject (as well as perhaps how this knowledge may have evolved historically), identifying relevant questions or debates that exist in the field, and detailing the specific question/s that you investigate in the thesis. The Introduction often reads like a mini review article on your topic. It should be very obvious to the reader what specific scientific questions you aim to address with your work. If you introduce the background well, the reader should also understand why your specific experiments are an important and obvious next step for your particular field or laboratory.

You should end your introduction by clearly stating (or perhaps restating) your objectives and rationale for the thesis. This provides a starting point for the thesis and tells the reader what to expect in the forthcoming sections. For example, your Introduction may end with something like the following: “This thesis investigates the role of calcium waves in the development of the embryonic mammalian cortex. Specifically, we will 1) use calcium imaging techniques to characterize the morphology and frequency of calcium waves that occur spontaneously in embryonic cortical slice preparations; 2) demonstrate that we can invoke calcium waves with extracellular stimulation; 3) demonstrate pharmacologically that calcium waves are dependent upon ATP receptors; and 4) use a cell proliferation assay in embryonic brain slices to demonstrate that calcium waves are crucial to embryonic neurogenesis.” Try your best to list these items in a logical order that walks the reader through your ‘story’.

Throughout the introduction you should supply sufficient information to allow the reader to understand the forthcoming results without her/him needing to read previous publications. Assume that your audience has the background of a general neuroscientist but not necessarily one that knows your field well. (This means that you don’t have to describe what an “axon” is, but you should explain things like “presenilin”, “connexins”, “synapsin”, “iPS cells”, or “glioma”.) When in doubt, explain briefly. Include schematic figures or diagrams in your Introduction that illustrate the details you are introducing, e.g., important brain regions you are discussing or a complex biochemical pathway. If it is something crucial for the reader to understand, a figure is always a good idea. It improves your overall presentation and also helps the reader to focus on the important points they must understand for the remainder of the thesis. Many authors feel that one figure should be included for every main point in a scientific paper.

Throughout the Introduction, you should include in-text citations of all relevant published work. References serve multiple purposes. Beyond their most important role in giving credit to previous work, references also serve as resources for the reader to learn where s/he might find further reading on a particular subject. Be sure to include relevant reviews or even textbook chapters that you found helpful as you learned about your topic.

- **References:** (*not included in the page count*). Provide key references regarding the background and experimental design of your project. Provide complete reference information (authors, year, title, journal, volume, pages numbers, etc.).
- **Joint Concentrators:** If you are a joint concentrator, your thesis proposal must demonstrate how you will integrate both of your concentrations into an interdisciplinary thesis. This means you must show how approaches from both fields will be applied to your work and how both provide essential contributions to further your central thesis question. Your proposal will be reviewed by the Neuroscience Standing Committee (and also your joint concentration) to determine if it meets the standards for a coherent and integrated project. This checkpoint is a requirement to continue to pursue a joint concentration.

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5 PM on Tuesday, May 5

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(jp@mcb.harvard.edu)

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