



## Department of Cell and Systems Biology

### PhD Proposal/Transfer Examination

The Proposal Examination must be held within the first 13-20 months of entry into the PhD program. The purpose of the Proposal Examination is to ensure that the research proposal is sound and that the study has every expectation of being completed within the time indicated. It also serves to determine if the student has sufficient knowledge in the field to pursue the proposed research. It provides a forum for discussion and suggestions from members of the department that may enhance the quality of the work and the achievements of the student.

The PhD Proposal Examination involves three components: 1) preparation of a written research proposal; 2) presentation to the department and questioning by the public at a Departmental PhD Proposal seminar; and, 3) *in camera* questioning by a PhD Proposal Examination Committee immediately following the presentation. Please check the CSB website (<http://www.csb.utoronto.ca/graduate>) for "PhD Proposal Examination Instructions".

**The emphasis at the proposal examination will be on the theory and proposed approach, rather than on progress to date.** The public presentation will normally be held at the students' home campus with members of the department and the Proposal Examination Committee in attendance. The PhD Proposal Examination may serve as a Supervisory Committee meeting for that term, subject to agreement between the student and Supervisory Committee.

The Graduate Office will remind students that a proposal is due and the student will make arrangements to schedule the presentation and examination. The student should give the title of their presentation and a list of committee members to the Graduate Office at least two weeks before the examination. Failure to provide the information within the required timeframe can result in the student being prohibited from undertaking the PhD Proposal Examination.

#### *Composition of the PhD Proposal Examination Committee*

**The PhD Proposal Examination Committee will have five members.** Four of the members of the Proposal Examination Committee are appointed by the student and supervisor, and approved by the CSB Associate Chair for Graduate Studies. These four members are as follows: the supervisor; two members of the candidate's supervisory committee (at least one of which must hold their primary faculty appointment in CSB); and one graduate faculty member who has SGS graduate faculty status or equivalent, who has not collaborated with the supervisor, and who can be from either CSB or from a department other than CSB. **These four members must be in attendance in order to fulfill SGS requirements for quorum. An additional member who holds a graduate appointment with CSB can be invited to join the PhD Proposal Committee to ensure that quorum is met.**

The fifth member of the PhD Proposal Examination Committee will be the non-voting Chair of the PhD Proposal Examination Committee, appointed by the CSB Graduate Office. The fifth member will be a graduate faculty member from CSB, who is not a member of the student's Supervisory Committee, and who has served in some capacity for a previous or current Graduate Studies Committee (e.g., Examination Chair, Examination Committee Member, etc.). The Chair of the PhD Proposal Examination is a non-voting member of the committee.

## *Written Report and Presentation for the PhD Proposal Examination*

At least two weekends prior to the PhD Proposal/Transfer Examination, the student should provide committee members with a written report. **Failure to provide the PhD Proposal report within the required timeframe can result in the student being prohibited from undertaking the PhD Proposal Examination.**

### **WRITTEN REPORT**

#### Format:

- Recommended length of 4,000 - 8,000 words, not including abstract, figures, tables, legends and references.
- Font 12-point Times New Roman or 11-point Arial.
- Double or 1.5 line spacing, pages numbered.
- Use active voice whenever possible.
- Figures & tables can be either included in-line with text or at the end.

#### Sections:

1. Title, name, abstract, list of abbreviations:
  - Abstract is approximate 200 words in length.
    - Your abstract should summarize all aspects of your proposal.
    - Avoid excess jargon when possible.
2. Introduction & Literature Review:
  - Introduction to the research topic
    - Place your work into a broader biological context using language appropriate for an educated but non-specialized audience.
  - Relevant background literature
    - Discuss important background, key developments, and relevant controversies.
    - Cite primary sources where possible. Do not simply cite review papers.
  - Overall goal and objectives
    - Objectives are questions you want to answer.
    - You can have both long-term and short-term objectives to help position your work within the larger biological problem.
    - Note that objectives are different than aim. The former are biological questions, while the latter are methodological approaches.
    - State your objectives clearly and unambiguously, e.g. "My objectives are..."
  - Hypothesis or hypotheses
    - Propose specific, testable hypotheses.
    - Overly broad hypotheses (e.g. "I propose that some genes will be up-regulated under water stress") are useless and should be avoided.
    - State your hypotheses clearly and unambiguously, e.g. "My hypotheses are..."
  - Significance, uniqueness
    - Discuss where your proposed research goals fit with the field.
    - How will your study advance the field and our understanding of an important biological process?
    - Avoid overly broad and ambitious statements (e.g. "This work will save starving people").
3. Progress to date (follow a format similar to research publications)
  - Text describing preliminary results, including methods used, discuss appropriate controls
  - Present figures and/or tables of your data
  - Figures and tables need to be prepared to a publication quality standard even if they don't have all of the components required for publication yet.
  - Figures & Tables should be numbered in the order they appear in the text and given titles. Make sure to make reference to each figure and table in the text.

- Figure legends should clearly explain how to interpret the figure and summarize the main findings. Avoid excessive descriptions of the results in the legend. These belong in the body of the text.
  - Tables do not get legends, but explanatory information can be presented as numbered notes below the table.
4. Proposed Research / Specific Aims
- Propose research to address your basic biological questions (i.e. to address your hypothesis, specific objectives).
  - Suggested format for this section:
    - Specific Aim 1
      - Rationale
        - Very briefly explain what question are you addressing and your expectations. Refer back to your hypotheses.
      - Methodology
        - How will you carry out the experiment?
        - This is one of the most difficult parts of the proposal because you have to provide enough detail to convince reviewers that you know what you are doing without overloading them with minutia (don't forget controls).
      - Potential Pitfalls & Alternative Approaches
        - Use this subsection to make it clear you know what potential complications may arise and how you will deal with these. You should also briefly describe alternate approaches in case your original plan doesn't progress as expected.
    - Specific Aim 2 ...
  - Remember, this is your research plan for the remainder of your PhD. Does it make sense? Can you finish it in an appropriate amount of time? Will the research make important new contributions to your field?
5. Discussion
- Integrate all of the previous sections.
  - Discuss how your aims derive from your progress to date.
  - Discuss the significance of your current data and expected contributions of your proposed PhD research.
  - Explain how your research contributes / impacts / advances knowledge to the basic biological processes in your research field? In other words, place your project in the context of your field of research.
6. Timetable
- Gantt chart preferred
  - Make realistic expectations for completion of each aim.
7. References
- You are free to use any format for in-text citations.
  - References must list all authors and full titles.

## **ORAL PRESENTATION**

- 20-25 minutes in length + 5 minutes for questions (CSB Grad office will set the times)
- Explain your research to an educated but non-specialized audience.
- Everyone in CSB should be able to understand what you are doing and why it is significant.
- Suggested structure (should mirror your written proposal)
  - Introduction to the research topic, background, significance, uniqueness
  - Overall goal and objectives
  - Hypothesis or hypotheses
  - Progress to date
  - Specific Aims

- Discussion of results/progress to date and expected contributions of your proposed research
- Concise timetable (Gantt chart preferred) for completion of work related to each objective

**Goals of Oral Presentation, Written Report, and Exam:**

- To establish that you have a firm grasp of the underlying principles and concepts associated with the study.
- To ensure that the proposed research, methods and techniques are appropriate, and that there is every expectation of completing the study as indicated.
- To make suggestions for the improvement of your research program.

**What will you be examined on?**

- The steps in the proposed program, including, where appropriate, details of the aims and the feasibility of their successful execution
- Background knowledge directly related to the proposed research program, this may include general questions about your field of research
- The development of research skills directly related to the proposed research program
- Anticipated completion dates for the steps in the proposed program
- Keep in mind:
  - Your proposed research must address key outstanding biological questions, and not simply be a list of techniques.
  - Your proposed research must make sense to an educated but non-specialized examiner.
  - There must be a reasonable expectation that the research can be completed in the proposed time.
  - Know the limitations of your approaches that you are proposing and how to address them
  - You should have a backup plan if one or more of your research aims doesn't work as expected.

Note that your proposal should allow the examining committee to envision the Chapters of your PhD thesis (even if they are likely to change) and reassure them that it will be successful.

The outcome for a PhD **proposal** exam will be:

- Pass and proceed in PhD program
- Fail: the student has shown a considerable lack of background knowledge and poor development of research skills and will be asked to leave the program
- Incomplete: the student has demonstrated some of the required skills and knowledge but has not satisfied the committee. The student will be asked to repeat the proposal process within 3 months at which time the student will either pass or fail. The re-examination may or may not include the public seminar component, at the discretion of the examining committee.

The outcome for a PhD **transfer** exam will be:

- Pass and proceed in PhD program
- Transfer is not acceptable, and the student will be required to complete the MSc program. (Note that a transfer examination may **NOT** be adjourned and then reconvened)