

**BIO 650/Thesis I - 4 Credits.**

The purpose of BIO 650 is to allow MCB students to conduct their Master's thesis research. After successfully completing Thesis Independent Study (BIO 649), students must register for BIO 650 Thesis I ("Thesis Form" must be obtained from the Director's or Program Coordinator's office). BIO 650 is considered the data collection phase of the thesis project. It is expected that you will complete a considerable amount of your research during Thesis I. For a 4 credit experience, students should be expected to be in the lab working about 12-14 hours per week. At the end of BIO 650, you will present a progress report (oral and written) to your committee (typically during the last 2 weeks of classes or Finals week). The format will be similar to that used in BIO 649 for your proposal (see below for details). The committee will decide if you may progress to Thesis II.

Goals as defined in the MCB Thesis Handbook:

1. To continue to perform research related to your thesis question.
2. Schedule a meeting with the Thesis Advisory Committee near the end of the semester and secure a room reservation with appropriate audio/visual equipment.
3. Write your thesis progress report and obtain approval for distribution to your Thesis Committee.
4. Distribute copies of your Progress Report at least one week before the Thesis Committee meeting.
5. Successfully present your progress and answer any questions raised by the Thesis Advisory Committee. The presentation should last approximately 30-35 minutes and cover background, all experiments completed to date and a proposed timeline for finishing up the thesis.
6. Obtain Thesis Advisory Committee approval to continue on to BIO 651 Thesis II. If approval is not obtained, you may not continue with a thesis masters and must switch to the non-thesis track. Your grade for BIO 650 will be determined by the grading rubric established by the Thesis Advisor as well as your oral and written performance in consultation with the Thesis Advisory Committee. A final grade will be submitted to the registrar by your Thesis Advisor or the MCB Program Director (if the Thesis Advisor is not affiliated with QU).

Written Proposal Guidelines

The BIO 650 written document is an extension of the BIO 649 proposal. Typically, this means incorporating any changes or edits recommended by the Thesis Advisory Committee during your first meeting and research progress you've made. If any aims have changed, these would be noted in the document. The timeline presented at the end of BIO 649 should be updated to indicate which tasks that have been completed, which are in progress and which still need to occur. Finally, a Progress or Results section should be added where new data is presented and discussed. This document should be approximately 15 pages long, double spaced. Please include the following sections:

- Introduction: This is an introduction to your project and includes the background research you did in Independent research (Bio 649). This section will be similar to what you wrote for your independent research thesis proposal. It can include diagrams to illustrate the background concepts.

- Background: approximately a page where you introduce the specific background ideas of your project and your general hypotheses. This section focuses on the relevance of your studies.
- Aims: these are broken down by each area of research you will be pursuing.
- Expected outcomes: This section may be 1- 1 1/2 pages long and includes the general way you will test each aim and the expected outcomes.
- Methods: A list and description of the methods and assays you will use to study each aim. You should include specific antibodies, primers, etc that will be used.
- Timeline: This is a list of the general timeline to your project. It is a compilation of which aims you have completed and which aims are still outstanding. You should also include how long you anticipate it will take to complete any outstanding aims.
- Progress: This section is where you describe the data you have generated so far. This section will have figures and include a detailed description of what you have accomplished. This is the most important part of the Thesis I written document.

#### Thesis Advisory Committee Meeting

The student should schedule a minimum of one Thesis Advisory Committee Meeting, generally towards the end of the semester. A written progress report should be distributed to the Thesis Advisory Committee at least 1 week prior to the Thesis Advisory Committee Meeting. This thesis meeting will begin with a formal oral presentation. The oral presentation for Thesis I will include the background information from BIO 649 and the specific aims. The focus should be on presenting the data you have collected so far. You want to highlight the experiments and results you, specifically, have done and provide an update on where the research progression is in terms of the timeline approved at the first committee meeting. You should also include a discussion on the experiments you will perform to finish up your research during Thesis II. This presentation should last approximately 30-40 minutes.

Upon completion of the proposed presentation, the thesis committee will discuss the student's data and progress to date and ask the student questions. With the completion of the thesis meeting, the Thesis Committee will counsel the student on how to proceed. The Thesis Committee, in consultation with the thesis advisor, will assign a grade for BIO 650. If a grade of a B or higher is earned, then the student will be permitted to continue on with a thesis masters and register for Thesis II (BIO 651). If a grade of a B- or lower is earned, the student will not be permitted to continue on with a thesis masters, and will be switched to a non-thesis masters. Additionally, the committee may decide that the student would benefit from an additional "interval" meeting before their oral defense – to be scheduled about 1 months into Bop651 (Thesis II). The committee would establish clear goals for the student to accomplish before this interval meeting – and to ensure that student is making clear progress towards their thesis.