

Molecules, Cells and Organisms Ph.D. Program

Department of Molecular and Cellular Biology
Academic Requirements & Advisor Expectations

Coursework

Required coursework in the Molecules, Cells and Organisms (MCO) Ph.D. Program is normally completed by the end of the first year. Occasionally, students who are unable to complete required courses in the first year will finish their coursework in the second year. The minimum standard for satisfactory work in the Graduate School of Arts and Sciences is a B average in each academic year. Students who have not maintained satisfactory grades are required to take additional coursework.

Responsible Conduct of Research

All students in the MCO Ph.D. Program are required to take a course on the responsible conduct of research in science. This course is ordinarily completed during the first year of study. The program offers an RCR course taught by training program faculty, supplemented by university administrators. There are additional RCR courses offered at the University, including at Harvard Medical School. Some students may also be required to take additional refresher courses in RCR. Students are required to complete an RCR Refresher Course every 4 years or at every career level (post-doc; faculty). Therefore, students in the 5th year are expected to complete an RCR Refresher Course.

Fellowship Application

All eligible graduate students are required to prepare and submit a fellowship application (such as the NSF) in the G1 or G2 year unless they have already received outside funding upon entry. More advanced students (G3+) are highly encouraged to explore additional funding opportunities for which they may be uniquely qualified. The MCB Department is available to assist students in finding fellowship opportunities and there are resources available within the Graduate School of Arts and Sciences to assist students with Fellowship proposals.

Teaching Requirement

Ordinarily, the teaching requirement (one course) is completed in the G2 year. The intent is to make sure students receive exposure to teaching either an introductory undergraduate course with a good amount of independent section teaching or a course that is more discussion-based, containing more advanced material. Typically, students will teach either in the fall or spring of their G2 year. Students retain 50% of their teaching salary (in addition to their monthly stipend) when undertaking required teaching. As an added incentive for Fellowship recipients, students who have procured a substantial outside fellowship may retain all of their teaching compensation. Any additional teaching beyond the requirement must receive approval from the dissertation advisor, thesis committee chair and the MCO program. Students on academic probation or who have not passed the GSAS English Language Requirement may not be eligible to teach and should speak with the Director of Graduate Studies to make arrangements on how to fulfill the teaching requirement.

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Graduate Program Retreat

Each spring the MCO Graduate Program holds a student-organized, one-day Retreat that is specifically focused on graduate students and their training. At the Retreat, students make presentations on their current research projects and present posters. In addition, faculty members from outside institutions are invited to give lectures. The invited speakers also act as outside reviewers of the program and meet with the students and report back to the training program faculty of the current pulse of the student body and satisfaction with their training program. **Advisors of MCO students who are themselves members of the MCO Training Program/Grant are expected to participate in this annual retreat. All G4 MCO students are required to do an oral presentation of their research at the retreat.**

G2 Candidacy Examination

The purpose of the Candidacy Examination is to assess a student's qualification for independent research leading to the Ph.D. degree and typically occurs during the fall semester of the second year. The Candidacy Exam is an opportunity for both the candidate and faculty to identify a serious mismatch between the student's qualifications or commitment to research and Ph.D. training. The assessment of the student's qualification encompasses various scholarly abilities:

- (1) *A solid background knowledge;*
- (2) *Familiarity with established ideas and open challenges in the chosen discipline; and*
- (3) *The ability to design experiments and to critically interpret their outcomes.*

In the MCO Ph.D. program, **assistance and input from the advisor is expected**. With advice and assistance from the advisor, the student prepares a Dissertation Research Proposal that outlines the plan for Ph.D. research. The advisor is not a member of the Candidacy Examination Committee and does not attend the exam itself but should be present before the exam begins in a pre-exam session without the student. At this time, the advisor informs the committee about the student's proposal and work.

Faculty composition of both the Candidacy Examination and Dissertation Advisory Committees should meet the following guidelines: The committee must consist of at least 3 members; at least 2 members must be from the MCO program and the Committee Chair must also be a senior (tenured) faculty member from the MCO program.

Following the Candidacy Examination, the committee chair is responsible for providing a written report to the student and advisor, on behalf of the committee, along with the outcome. The 3 possible outcomes include: Pass; Pass with Conditions; and Fail. A conditional pass may be met in a variety of ways, and a timeline for completion of conditions should be outlined on the Candidacy Exam report. A student who fails the Candidacy Exam may repeat the exam only once, and a timeline for this should also be provided by the committee on the Candidacy Exam report.

After successful completion of the candidacy exam, students must then complete Part 2 (G2 DAC) of their PhD candidacy requirement by June 30 of their G2 year (~ 6 months post Part 1). Because the qualifying exam does not require supporting experimental results, this first DAC in Part 2 is critical for students to get off on the right foot as they formulate their thesis projects. Students can advance to PhD candidacy after successful completion of Part 2. Students that have not advanced to candidacy are not eligible to teach or to receive travel awards without approval from the program.

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Dissertation Advisory Committee

Graduate students report their progress to a Dissertation Advisory Committee (DAC) at least **once annually at the beginning of each academic year**, following successful completion of the Candidacy Exam and G2 DAC meeting. The DAC may require more frequent meetings depending on the student's progress, especially in the final completion phase. The DAC has 3-4 members who are invited by the student, but the composition must meet the student's training program guidelines (outlined above).

The advisor is not a member of the DAC. However, it is critical prior to each progress meeting and at any point in between, that the advisor briefs the DAC on the student's activities. The DAC has four main missions:

- (1) *To serve as an **advisory committee** that will provide professional advice on all aspects of the thesis project, from experimental paradigms to project feasibility and timing, to the scientific impact of the work.*
- (2) *To help **monitor** the student's progress and ensure that major objectives and standards for completion of the thesis are being met. In this capacity, the DAC determines whether the student's research meets the requirements of the program and when the student may begin writing the thesis.*
- (3) *To help **resolve** any conflict between student and advisor or other lab members.*
- (4) *To serve as **liaison** to the department and training program leaders as well as graduate administration.*

All Training Program/Grant faculty members are expected to participate in student thesis committees.

Dissertation Defense

The average time to completion for students in the MCO Ph.D. program is 5 ½ years. A student may proceed with a dissertation defense with permission from the Dissertation Advisory Committee at the final DAC meeting. This is indicated by the committee "checking the box" on the final DAC report. All students in the Molecules, Cells and Organisms Ph.D. program receive their degree from the Department of Molecular and Cellular Biology, regardless of home lab affiliation. Students may receive their degree in one of two subjects: either "Biology" or "Biochemistry" and the subject is determined at the final DAC meeting.