

**Yale University**  
**Department of Molecular, Cellular,  
Developmental and Biology**



**Graduate Student Handbook:  
Procedures and Information Guide**

**Ph. D. Degree**

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## INTRODUCTION

Welcome to the Department of Molecular, Cellular and Developmental Biology. This Handbook is designed to help you navigate your way through graduate studies in MCDB. It tells you what the Department requires of you, and what you can expect from the Department. In addition, it contains a lot of practical information, such as addresses and phone numbers, the academic calendar, and necessary forms. It also indicates where you can find additional information, and where to turn in case problems arise.

This information in this Handbook is supplementary to information contained in the Graduate School of Arts and Sciences Programs and Policies Bulletin of Yale University. Programs and Policies Bulletin the general requirements of the Graduate School, as well the specific requirements of individual Departments. All students are responsible for knowing what is required of them and for meeting all requirements on time. The Programs and Policies bulletin of the Graduate School of Arts and Sciences (<http://www.yale.edu/graduateschool/policies/index.html>), which is updated annually, is the definitive source of information about academic rules and regulations as well as general policies that apply to all graduate programs.

Although the MCDB Department is large, we hope that you will feel well integrated and at home. We hope that the information presented here will be useful and will help you through a very stimulating and rewarding graduate education.

Christine Jacobs-Wagner  
Director of Graduate Studies  
Molecular, Cellular and Developmental Biology

## **THE BBS**

The main functions of the Combined Program in the Biological and Biomedical Sciences (BBS) are recruiting students and guiding students through the first year of study. Prospective students apply to one of seven tracks in the BBS, rather than to individual Departments. Applicants to each Track are evaluated by an admissions committee made up of faculty affiliated with the Track and are admitted to the BBS, as opposed to individual Departments.

## **THE MCDG TRACK**

The MCDB Department, in conjunction with the Department of Cell Biology and the Department of Genetics, administers the Molecular Cell Biology, Genetics & Development Track (MCGD) of the BBS. Faculty members in the three sponsoring Departments share an interest in elucidating the molecular basis of biological processes and structures, using a combination of genetics, biochemistry, molecular biology and cell biology.

## **FIRST YEAR**

### **Course Requirements**

1. GENE/MBB/MCDB 625a: Basic Concepts of Genetic Analysis
2. CBIO 602a: Molecular Cell Biology
3. MCDB/MBB 630b: Biochemical & Biophysical Approaches in Molecular and Cellular Biology
4. MCDB/CBIO/GENE 900a: First-Year Introduction to Research: Grant Writing and Scientific Communication
5. MCDB/CBIO/GENE 901b: First-Year Introduction to Research: Ethics: Scientific Integrity in Biomedical Research

### **Rotations**

The primary purpose of the research rotations is to identify a laboratory in which dissertation research will be carried out. Rotations should therefore be performed in laboratories that are being considered as possible homes. Rotations allow the student to find out what particular laboratories and faculty members are like, and give the faculty a chance to assess how well a particular student fits into the laboratory. Rotations also serve to introduce students to a variety of techniques and scientific approaches. Therefore, the three-rotation requirement will not be waived because a student has already made a final decision concerning a dissertation laboratory.

## **Joining a lab for the dissertation research**

The single most important decision made by a graduate student is the selection of a dissertation advisor and laboratory. The best way to assess a laboratory and one's "fit" to it is to carry out a research rotation in that laboratory. Students should talk to the current members of the laboratory: Are they happy and productive? What is the experience of the faculty member in having students successfully complete a dissertation? A student should consider whether he/she wants a big lab with lots of activity or a smaller lab with more day-to-day contact with the advisor. Some students prefer a lab with a high-profile director and potentially more visibility, whereas others thrive with a more junior faculty member who is more accessible and who has a more recent memory of graduate student concerns. Other useful sources of information are more advanced students, the DGS, and other faculty. A student should discuss candidly with a potential advisor his or her goals and interests, and request the advisor to outline realistic potential projects. However, it is important to realize that a student is selecting an advisor and a laboratory, not a project, because several shifts of project may occur before a workable one is identified. The DGS must approve the selection of a laboratory. Occasionally an advisor may decide not to admit a student into a laboratory for any of a variety of reasons, such as lack of space, concerns about funding, or the belief that a particular student would fit in better in a different laboratory. Although students and potential thesis advisors are encouraged to discuss possibilities at any time, they are requested not to make a final commitment to each other for thesis research until the end of the last rotation.

On rare occasions, students switch dissertation laboratories after dissertation research has begun. When such a switch is contemplated, this should be discussed with the DGS as soon as possible, so that all options can be considered in a timely fashion.

The selection of a lab marks the assignment of a student from a BBS track to an academic department. Many MCGD students join the Department of MCDB. Students electing to be in the Department of MCDB but who join laboratories headed by faculty without appointments in the Department are expected to participate fully in the academic life of the Department. This includes attendance at research in progress talks, MCDB seminars, and the annual retreat. In addition, all academic requirements such as attendance at graduate student seminar must be met. As for all scientists at Yale, students are also encouraged to broaden their scientific knowledge and to attend activities that are relevant to their particular scientific interests.

## **MCDB GRADUATE PROGRAM**

Graduate study in the MCDB Department is planned as a full-time, five- to six-year doctoral program. The first two years are spent laying a foundation for the dissertation through research, course work, independent reading, and preparation of a research proposal.

In the event that a student has not completed the program within the 6<sup>th</sup> year, the student, after consulting their Thesis Advisor, must file a Petition for Extended Registration. The student must draft an explanation and an update on the work and plans for completion to the DGS. Before this extension is granted, the student will also be required to meet with the School of Arts and Sciences Assistant or Associate Graduate Dean. The graduate school policy is to only provide stipends for students until their 7<sup>th</sup> year.

The academic requirements that must be satisfied in the Ph.D. program are the following: (i) Honors grades in at least two courses, (ii) presentation of an acceptable research proposal (the Prospectus), (iii) satisfactory performance at the Qualifying Exam, (iv) serving as a Teaching Fellow in two courses, (v) continuing progress in dissertation research as judged by annual Thesis Advisory Committee meetings, (vi) submission and defense of a dissertation judged acceptable by the faculty of the Department. These requirements are outlined in detail below.

### **Registration**

Students must register with the Graduate School every term for the duration of the degree program, whether they are engaged in course work, preparation for the Qualifying Exam, or dissertation research.

Graduate-level courses are graded as Honors, High Pass, Pass and Fail. The Graduate School requires Ph.D. students to obtain at least two Honors grades in the first two years. A student who has not met this requirement by the end of the fourth semester of study will not be permitted to register for a fifth term. Students are always encouraged to take additional coursework.

In addition to completing your honors requirement, Students must sign up for the following coursework:

### **Second year**

Fall:	MCDB 902 Advanced Graduate Seminar MCDB 950 Second Year Research
Spring:	MCDB 903 Advanced Graduate Seminar MCDB 951 Second Year Research QUAL 999 Prepare for Qualifying Exam

### **Third year through completion**

Fall:           MCDB 902 Advanced Graduate Seminar  
                  DISR 999 Dissertation Research

Spring:        MCDB 903 Advanced Graduate Seminar  
                  DISR 999 Dissertation Research

### **Research in Progress (RIP) series**

MCDB902 (Fall); MCDB903 (Spring) Advanced Graduate Seminar

This course will allow students to present their dissertation work annually giving them practice in presenting their work. Students will be required to present every year beginning their third year in the MCDB program. However, students who are defending their dissertation during a RIP class semester are not required to present, but must still attend. Each MCDB graduate student will be required to attend at least 80% of the class sessions in order to receive a Pass in this course. Two faculty members will co-direct the course, attend the seminars, and provide feedback to the students.

### **THESIS ADVISORY COMMITTEE**

In the beginning of the second year, the student, in consultation with the Thesis Advisor, must identify faculty to serve on his/her Thesis Advisory Committee. The Committee must consist of at least four faculty members (including the Thesis Advisor), and at least two of these Committee members (one of whom may be the Thesis Advisor) must hold a primary appointment in the MCDB Department. Although the Thesis Advisor is present at the Qualifying Exam, they are not expected to participate. The Chair of the Committee should be selected prior to or at the first Committee meeting; the Chair must hold a primary appointment in MCDB and may not be the Thesis Advisor. The student should discuss the composition of the Committee with the Thesis Advisor before asking individual faculty to serve on the Committee.

The main function of the Thesis Advisory Committee is to provide guidance to the student throughout the course of dissertation research. The Committee is expected to provide advice regarding research methods, experimental strategies, interpretation of data, and the overall direction of research. The student must meet with the Thesis Advisory Committee at least once per year (see below), but meetings may be held more often when needed. The student is encouraged to consult with individual members of the Committee whenever their advice might prove helpful.

The student should choose faculty members who are knowledgeable in the chosen area of research and/or are familiar with the methods and strategies being employed. The availability of Committee members is a factor that should be taken into consideration when assembling a Committee. Students should schedule Committee meetings three months in advance.

If the student has a concern or problem that he/she is not comfortable discussing in the presence of the Thesis Advisor, the student should discuss it privately with the Chair of the Committee (or

another Committee member, if preferred) and/or with the Director of Graduate Studies.

## **QUALIFYING EXAM**

### **Overview and Timing**

The Qualifying Exam is a general exam, separate from course work, designed to test the student's preparedness for dissertation research. In the MCDB Department, there are two phases to the Qualifying Exam. The first is a so-called Pre-Prospectus meeting, the function of which is to provide the student with advice regarding the reading and writing that must be done in advance of the Qualifying Exam. The second phase is an oral exam that tests the student's understanding of the proposed research and his/her knowledge of the relevant scientific literature.

The Qualifying Exam may be held any time during the 3rd or 4th semester of study, but must be completed by the end of the 4th semester. The Pre-Prospectus meeting should be scheduled six to eight weeks in advance of the oral exam to allow time for reading and writing. Both pre-prospectus and exam should be scheduled 3-4 months in advance.

It must be emphasized that there is no requirement for the student to generate experimental data in advance of the Qualifying Exam. The Qualifying Exam is not intended as a test of the student's technical competence or productivity at the bench (that test will come later). The Qualifying Exam is designed to test the student's ability to (i) identify interesting and important questions, (ii) plan a project with well-defined goals and carefully considered experimental strategies, (iii) anticipate potential problems and devise alternative approaches, (iv) master the relevant scientific literature and have a clear understanding of where the proposed research fits into the "big picture. The Committee assumes that if a student can do these things successfully for one project, then he/she will be able to do the same for another project, should it become necessary to switch to a different research project. It is not uncommon for students to end up working on a project very different from the one proposed at the time of the Qualifying Exam.

### **Pre-Prospectus Committee Meeting**

The Pre-Prospectus meeting is usually the student's first meeting with the full Thesis Advisory Committee. The function of this meeting is to help the student prepare for the upcoming Qualifying Exam. In advance of the Pre-Prospectus meeting, the student, in consultation with the Thesis Advisor, should come up with a plan for the dissertation research project. The student should prepare a summary of this plan, approximately 1200 words in length, to be submitted to Committee members at least one week prior to the Pre-Prospectus meeting. The document should include background information, a clear statement of the question(s) to be addressed, a brief outline of proposed experiments, and a bibliography (not counted in the 1200-word recommendation).

The Pre-Prospectus meeting is usually about one hour in duration. The Committee begins

with a brief "executive session", during which the student is asked to leave the room so that Committee members may consult privately with the Thesis Advisor regarding the student's strengths and weaknesses, and make note of any particular problems that need to be addressed. The Committee should select a Chairperson, if this has not been done in advance.

After the executive session, the student will give a 15-20 minute oral outlining the plans for dissertation research including background information, any relevant results that the student has already obtained, the goals of the project, and the methods to be employed. Committee members are free to ask questions and comment any time during this presentation. After the presentation, the Committee will discuss whether the project proposed is a suitable thesis project. The student, the Thesis Advisor, and Committee members should all participate freely in this discussion. The Committee may suggest additional experiments to improve the plan or alternative methods that might give clearer results. They might feel that the project is too broad or overly ambitious and suggest that it be narrowed in scope. By the end of the meeting, there should be general agreement among Committee members, Thesis Advisor and student as to the nature of the project that will be described in the proposal to be submitted to the Committee in advance of the Qualifying Exam.

The other function of the Pre-Prospectus meeting is to identify four or five broad topic areas in which the student is expected to be knowledgeable by the time of the Qualifying Exam. These are scientific areas with which the student ought to be familiar in order to carry out the proposed research. They are directly related to the research proposal, but broad in scope in order to ensure that the student understands the relationship between the proposed research and the field at large. The student and Thesis Advisor should identify appropriate topic areas in advance of the Pre-Prospectus meeting and present a list to the Committee for approval or revision. The Committee may wish to add, subtract or substitute topics, or they may choose to broaden or narrow the scope of the topics selected. One of the topics is often Relevant Methods, to ensure that the student understands the theory behind, and the limitations of, any techniques that will be used. Though the assigned topic areas should be broad, the Committee must be realistic, recognizing there is a limit to how much literature the student can master in about six weeks of full-time study. The Committee may wish to select certain broad topics and then specify particular areas of emphasis (e.g., cell cycle regulation, with emphasis on mitosis and the spindle checkpoint) to help guide the student's reading.

Each topic will be assigned to the Committee member most knowledgeable in that area. The reading list for each topic will be generated by the student in consultation with individual Committee members; these lists will be distributed to the full Committee in advance of the Qualifying Exam. In this way, the Committee and the student can be confident that the student is spending his/her time on the most pertinent and important papers in the field. In addition, members of the Committee can come to the Qualifying Exam with realistic expectations as to what the student should know.

Between the time of the Pre-prospectus meeting and the oral Exam, the student should feel

free to consult with Committee members, regarding either the reading topics or the proposed plan of research.

## **The Prospectus**

Prior to the oral exam, the student must submit to Committee members a written proposal (i.e., the Prospectus) describing the research planned. This proposal should be 5,000-7,000 words in length. Figures and Tables are encouraged wherever they may serve to clarify the information presented. Figures, Tables, the cover page and references are not included in the word limit.

The proposal should be organized into the following sections:

1. Cover page. The cover page must include (i) the title of your project, (ii) your name, (iii) the name of your Thesis Advisor, (iv) the names of the members of the Thesis Committee, (v) the name of the Chairperson of the Committee, and (vi) the date, time and place of the meeting.

2. Abstract. The student should briefly outline the background behind the project, indicate the question/problem being addressed, and summarize succinctly the research proposal. The abstract should not exceed 250 words.

3. Background and Significance. This section should provide a general introduction to the area of research, and explain the rationale for the proposed research. It should also provide a context for the proposed experiments and describe the experimental system in a manner intelligible to a non-specialist. It should include a critical evaluation of the relevant literature and a clear explanation of how the proposed research will advance knowledge in the field. This section should represent approximately one quarter of the overall proposal (~ 1,500 words).

4. Specific Aims. The explicit goals of the proposal should be listed. Specific aims should be numbered for future reference. Each specific aim should be summarized in one or two sentences (~200-300 words overall).

5. Preliminary Data (optional). Any relevant data and their interpretation should be summarized (~1,000 words or less).

6. Experimental Design and Methods. This section should be subdivided with one section for each of the Specific Aims stated, with the sub-sections numbered accordingly. For each Specific Aim, there should be a description of (i) the goal and rationale, (ii) proposed experiment(s), (iii) the technique(s) to be employed, (iv) anticipated results and interpretation, and (v) possible caveats and alternative approaches. At the end of the Experimental Design and Methods section, a timetable should be provided. If there are multiple experiments that can be carried out in parallel, you should indicate your priorities. If the sequence of events depends on the outcome of certain experiments, it may also be useful to include a flowchart (e.g., indicating that experiment B will be done only if

experiment A generates a particular result, or approach X will be used only if approach Y does not work).

7. References, including titles, for any papers cited in the proposal.

8. Figures (optional, but desirable).

9. Tables (optional).

The final version of the Prospectus should be distributed to all Committee members at least one week in advance of the date of the oral Exam. When the Prospectus is distributed, the student should also give each of the Committee member a list of the reading topics assigned at the Pre-Prospectus meeting, as well as the reading lists that were generated through consultation with individual Committee members (designated at the time of the Pre-Prospectus).

### **The Oral Exam**

The oral Exam is usually two and a half hours in duration. When scheduling the Exam, the student should ensure that the Committee members set aside this amount of time on their schedule. As is the case for the Pre-Prospectus meeting, the committee may wish to begin with a brief executive session, especially if any members in attendance were not present at the time of the pre-prospectus.

The first half of the Exam will test the student's knowledge of the assigned reading topics. The questions asked should test both the student's knowledge of the "facts" of the field as well as his/her understanding of the methods used to arrive at these conclusions. Questioning should assess the student's ability to read the literature critically and distinguish established facts from mere speculation. It is the responsibility of the Committee Chair to ensure that the student is questioned in each of the topic areas designated at the time of the Pre-Prospectus. The Chair should also make sure that the meeting proceeds smoothly and efficiently, without spending an undue amount of time on any particular question or topic and not dwelling overly long on questions on which the student gets "stuck". After ~75 minutes, the Chair should offer the student and other Committee members the opportunity to take a quick (~5 minute) break, before moving on to the second half of the Exam.

The second half of the Exam will explore in depth the proposed plan of research described in the Prospectus. The student will begin with a brief (no more than 20 minutes!) presentation, outlining the proposed research. The Committee may interrupt with questions. Here again, it is the responsibility of the Committee Chair to make sure that the meeting proceeds smoothly, without spending too much time on any particular question.

Throughout both parts of the Qualifying Exam, the Thesis Advisor acts simply as an observer, not an active participant. Questions should come from other Committee members and should be answered by the student, not by the Thesis Advisor. However, the Advisor

may answer particular questions, or participate in a particular aspect of the discussion, if requested to do so by another Committee member.

After the questioning period, the Chair will ask the student and the Thesis Advisor to leave the room while the Committee deliberates. The Committee may reach one of three decisions: Pass, Fail or Decision Pending Additional Work. Additional work might include one or more of the following: (i) rewriting the Prospectus, (ii) retaking the oral Exam, (iii) writing a paper on a specified topic, (iv) additional reading of the literature in a particular area followed by meeting with some or all Committee members. In case of a Decision Pending Additional Work, the Committee must specify a deadline for completing the additional work. Ideally, this deadline should be within one to two months of the date of the oral Exam. In cases where the Committee is not unanimous in its decision, a vote should be taken. The final decision is determined by the majority vote.

Once the Committee has completed its deliberations, the student and the Thesis Advisor will be invited to return to the room to hear the Committee's decision. The Chair will summarize the conclusions of the Committee; all Committee members will be free to provide comments and suggestions.

During or following the Committee's deliberations, and in consultation with other Committee members, the Chair must fill out an evaluation form summarizing the Committee findings and indicating the final decision. Once filled, the form should be delivered by the student to the MCDB Graduate Registrar who will distribute the completed form to the student, the Thesis Advisor, all Committee Members and the Director of Graduate Studies. Once the student has completed the work required to convert a Conditional Pass to a Pass, the Chair of the committee should consult with the other Committee members to determine if the work completed is satisfactory. The Chair should then send a message to the MCDB Graduate Registrar (cc'd to the other committee members, the DGS and the student), indicating that the student has met the requirements set at the Prospectus Exam and requesting that the Conditional Pass be converted to a Pass.

Once the student has received a grade of Pass, he/she is required to prepare a one-page summary for the Graduate School and to designate a title for the dissertation. One copy of the proposal must be provided to the MCDB Graduate Registrar.

## **ADMISSION TO CANDIDACY**

“Admission to candidacy indicates that the department and the Graduate School consider the student prepared to do original and independent research” (from Graduate School of Arts and Sciences Programs and Policies). In order to be admitted to candidacy, the student must 1) fulfill all course requirements, 2) pass the Qualifying Exam, 3) have an approved Prospectus, and 4) receive a positive evaluation on laboratory work from the thesis committee. When a student has met all of these requirements, the DGS will submit to the Graduate School the “Certification of Admission to Candidacy” for that student. Admission to candidacy occurs between the 2<sup>nd</sup> and 3<sup>rd</sup> years. A student failing to be admitted to candidacy by the end of the 3<sup>rd</sup> year will not be

permitted by the Graduate School to register for the following term.

## **TEACHING**

An important aspect of graduate training in the MCDB Department is the acquisition of teaching skills through participation in courses appropriate for the student's scientific interests. The requirement is two semesters as a teaching assistant (TA) at the "TF2" level in any of numerous lecture, laboratory, and seminar courses offered at the undergraduate, graduate, and medical school levels.

Students may not teach during the first year of study; students are strongly encouraged to complete their teaching requirement by the end of the third year.

Courses having TA positions are listed on the "TA Position Form" available from the BBS office. During the summer, students formally request TA assignments by indicating their top 3 choices on this form, which they submit to the Department Registrar. The instructor in charge of the course ultimately chooses the TA's. Students are encouraged beforehand to seek out the instructor of any course to express their interest in being a TA for that course.

Prior to the first semester of teaching, each student is required to participate in a training session called Teaching at Yale Day.

There are many different levels of Teaching Fellows at Yale that are distinguished from each other based on the kinds of activities required, the number of hours per week expected, and the number of students taught. Positions at the TF2 level or higher meet the teaching requirement. If a student serves as TF1, he/she must teach two semesters, or do double duty during one semester, in order to meet one of the two teaching requirements. Thus, the teaching requirement can be fulfilled in a number of different ways (e.g., four TF1 positions, 2 TF2 positions, or 1 TF1 position and one TF3 position). The vast majority of Teaching Fellow positions available to MCDB students are at level 2. Therefore, most students fulfill the teaching requirement by teaching two courses at the TF2 level.

Students who would like to continue to serve as Teaching Fellows (with pay) after completion of their teaching requirement must consult with their Thesis Advisor before making a commitment to teach.

## **ANNUAL THESIS COMMITTEE MEETINGS**

The thesis advisory committee is an important body that helps each student navigate the shoals of dissertation research. The function of this committee is to periodically review and evaluate progress, provide advice and expertise about the project, and certify when a student has completed sufficient work to begin writing the dissertation. Therefore, the committee should be regarded as an ally and a resource, not an obstacle. On occasion, the thesis committee can help resolve

differences between a student and an advisor.

The Thesis Committee is normally comprised of four faculty members, at least two of whom must have faculty appointments in the Department of MCDB and chaired by an MCDB faculty member who is not the Thesis Advisor. Additional members may be added at later times if deemed appropriate. The Thesis Committee is assembled by the student in consultation with the Thesis Advisor and approved by the DGS. Faculty members with expertise in the area of the dissertation research are particularly helpful and should be sought out as Thesis Committee members. A student should be cautious about suggesting Committee members who are frequently unavailable, because their presence on the committee may make it difficult to schedule meetings in a timely fashion.

Annual Committee meetings must be held before the following dates or the student will be placed on probation:

- March 1 - for students in year 6 and beyond
- April 1 - for students in year 5
- May 1 - for students in year 4
- June 1 - for students in year 3

Once a meeting is scheduled, a student must advise the Registrar of the date.

Prior to each Committee meeting, the student must send a progress report to the Thesis Committee and the Registrar at least a week prior to the meeting. All previous committee reports should be attached. This system of continuous reporting has a couple of benefits. First, it will make writing your annual committee report easier. It will eliminate the need for the student to include introductory material in (unless the student has switched projects since the last Committee meeting), and it will eliminate the need for the student to restate the goals listed the previous year. Second, it is hoped that this system will make it obvious to both the student and to Committee members whether or not significant progress is being made from year to year.

This system of continuous reporting should not make the student feel compelled to complete the aims stated in the previous report. Research takes unexpected twists and turns, and it may make sense to abandon some or all of the goals previously stated in the interests of pursuing a new interesting observation.

The report should include the following:

1. Cover Page. The cover page must include (i) the title of the student's project, (ii) the student's name and the year of study, (iii) the name of student thesis advisor, (iv) the names of the members of student committee, (v) the name of the Chairperson of student committee, and (vi) the date, time and place of the meeting.
2. Introduction. Introductory information should be kept to a minimum (your committee has heard it before), unless you have switched projects since the last meeting committee.

3. Results. Summarize the results you have obtained since the last committee meeting and your interpretation of these results. Describe any problems you have encountered.
4. Goals. State your goals for the next 12 months. Number them for ease of reference in the future.
5. Publications. Students must list any papers already published or submitted for publication. If none, state "none".
6. Figures (as appropriate).
7. Tables (as appropriate).
8. References.

The Annual Report need not be lengthy. A rough guideline is that items 2 through 4 should be approximately 1200 words in length.

If a manuscript is in preparation, an outline of it should be included in the Annual Report. The outline should include:

1. The Take-home message.
2. A List of Subtitled Sections.
3. A List of Figures and Tables, with brief descriptions of the data to be included in each. On the manuscript outline, it should be mentioned which experiments have already been completed and which remain to be done.

If the student is planning to graduate in the next 12 months, he/she should bring an outline of the thesis. This should include a list of chapters with a brief description of the information to be contained in each, preferably in list format. Publications and/or papers in preparation should be mentioned.

At the committee meeting, the student should plan on giving a brief presentation, about 20 minutes in length, covering the data acquired since the last committee meeting and the plans for the next 12 months. The Committee can aid in interpreting the results, and assessing whether the project is on track, and assist in prioritizing experiments. For students at an advanced stage, the Committee can approve the plans for thesis writing.

At the conclusion of the committee meeting, a Committee Meeting Report must be completed by the Chair of the Committee and returned to the student who is responsible for submitting to the Graduate Registrar.

## **PREPARING AND SUBMITTING THE DISSERTATION**

The MCDB department strongly recommends that each student have at least a primary research manuscript in submission to a journal before the Committee gives permission to the student to write his or her dissertation. Before the student starts writing, he/she should read “Preparation and Submission of the Doctoral Dissertation” (see “Where to get forms” below), and obtain a dissertation packet from the Graduate School.

It may take a couple of months to write the dissertation, or less time for students who have published papers that will form the core of the dissertation. The dissertation should describe the scholarly work of the student only (since the only author of the dissertation is the student). Results produced by collaborators should be excluded. If these results provide context for the student’s original work, they can be briefly described in the text (but not shown in Figures unless the student actively participated in producing these results), and the contribution should be properly acknowledged. In addition, the student should draw his or her own illustrative diagrams rather than using or modifying published ones. Note that the student must obtain permission from the publishers prior to reproducing published materials (even if it is from the student) in his or her dissertation.

### **Copyright Notice**

To copyright the dissertation, the student should consult <http://www.yale.edu/graduateschool/academics/forms/formatDissertation.pdf> for instructions.

Upon receipt of the dissertation, the Graduate School will send the dissertation out for evaluation by the readers. After all reader evaluation forms have been returned to the Graduate School and all requested changes to the dissertation have been made, the DGS acting on behalf of the entire MCDB faculty will sign the form recommending award of the Ph.D. degree. Then the Graduate School Degree Committee and finally the Yale Corporation will vote to approve conferral of the degree.

### **Thesis defense**

After the thesis committee has approved the writing of the thesis, the student selects a date for the thesis defense in consultation with the Thesis Committee. The dissertation must be submitted to the Thesis Committee members at least two weeks before the defense. The defense must be held in person on the Yale campus, with the entire Thesis Committee present. Typically the defense lasts 1 to 2 hours and starts with an introduction of the student by the Thesis Advisor, followed by a 45-55 min seminar by the student. This is followed by a private examination of the student by the Thesis Committee.

## **Readers**

The students, in consultation with the Thesis Advisor, must identify three readers who will evaluate the dissertation. One of the readers must be from outside of the Yale Community. The Registrar's Office has developed a new online Notification of Reader's Form (ONOR), which is available at [www.yale.edu/dissertationreaders](http://www.yale.edu/dissertationreaders). The student should fill this form as soon as possible (at least a few days before the deadlines) and submit it to the DGS electronically.

## **Deadlines**

There are 2 deadlines for submission of the dissertation, one in October, and one in March. Please go to the Registrar's Site for exact dates. The Graduate School does not make any exception to these deadlines, which have been picked to give readers adequate time to evaluate the dissertation. The Notification of Readers' form should be submitted a few days before the deadline to allow time for DGS approval.

A student can refer to the Dissertation Submission checklist, which can be found on the School of Arts and Sciences Graduate School website. <http://www.yale.edu/graduateschool/academics/forms/dissertationChecklist.pdf> This document lists all the requirements and forms necessary to initiate this process. Also this website lists the Graduate School's Guide to Formatting the Dissertation [www.yale.edu/graduateschool/academics/forms/formatDissertation](http://www.yale.edu/graduateschool/academics/forms/formatDissertation). The dissertation submission checklist will also provide additional forms that will need to be submitted as well as dissertation manuscripts fees.

The Department of MCDB requires the student to e-mail the title of the thesis as well as the date of the defense to the Graduate Registrar. In addition, the student will be asked to fill out a Post-Graduate Form before he/she leaves the Yale Campus.

## **VACATION AND LEAVE**

The course of study and graduate student stipend are based on a 12-month commitment. It is expected that students will take no more than two weeks of vacation, in addition to University holidays each year. Note that breaks in course work (Fall or Spring break, Christmas/New Year's, beyond the official university holiday days, summers) are not holidays for graduate students. First-year students are required to schedule any absences with the DGS and the faculty member in whose lab they are working. Unscheduled absences or excessive vacation time will result in a stipend reduction and/or possible suspension from the Program.

In the event that the student needs to take a leave of absence, a personal leave of absence form must be filled out.

## **PROBATION**

If the Thesis Advisory Committee deems that the student has made insufficient progress in the time since the previous meeting, the Committee may decide to place the student on “notice” or “probation”. The Committee will discuss with the student expectations and goals that they would like to see completed by the next committee meeting, usually in six-month time. If the student fails to satisfy the Committee at the next meeting, the student’s progress will be discussed at the next Faculty meeting, where the student may be asked to withdraw from the program. A student will also be placed on probation if he/she has not met with his/her Thesis Committee as mandated.

## **FORMS**

Many of the forms that graduate students will need to fill out during their studies, including petitions for degrees, are downloadable at the Graduate School (<http://www.yale.edu/graduateschool/home/forms.html>).

## **SCHEDULE OF ACADEMIC DATES AND DEADLINES**

<http://www.yale.edu/printer/bulletin/htmlfiles/grad/schedule-of-academic-dates-and-deadlines.html>

## **CURRENT LIST OF MCDB FACULTY AND PERSONNEL**

<http://www.biology.yale.edu/facultystaff/index.html>

If you have any questions, please contact the DGS, Christine Jacobs-Wagner (Christine.Jacobs-Wagner@yale.edu) or MARRISA DeLise, Graduate Registrar (MARRISA.DeLise@yale.edu.)