



**Requirements  
and  
Guidelines**

**Doctoral Graduate  
Program**

**in**

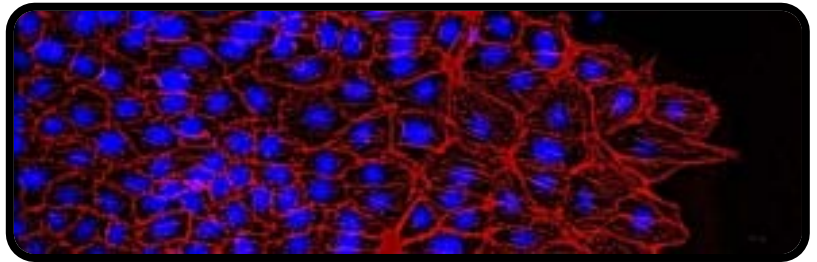
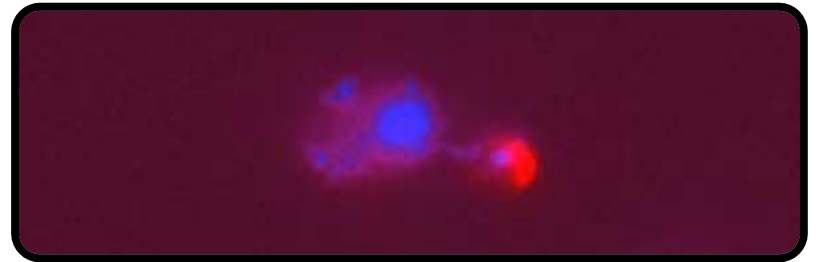
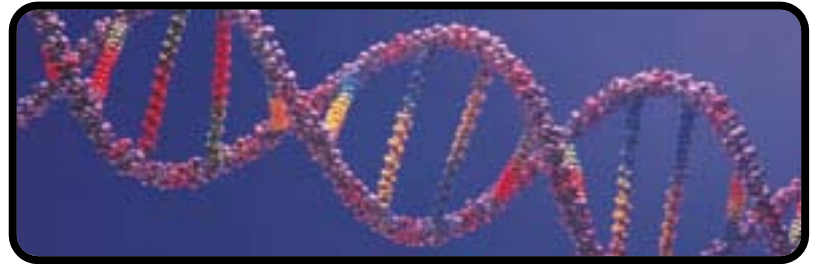
**Microbiology,  
Immunology, and  
Molecular Genetics**

**Medical College  
of Wisconsin**

*Effective*

*January 1, 2005*

*(version: May 2011)*



---

***Student and Faculty  
Handbook***

## Student Responsibility

Doctoral students in the Microbiology, Immunology, and Molecular Genetics Graduate Program should use this handbook as a guideline in conjunction with other sources of information from the Graduate School of Biomedical Sciences at the Medical College of Wisconsin.

- The Graduate School Student and Faculty Handbook describes policies of the Graduate School of Biomedical Sciences. Mentors and their students should review these policies, which are subject to revision by the Graduate Studies Council.
- The Graduate School Handbook is available on the Internet at:  
<http://www.mcw.edu/graduateschool/currentstudents/Handbook.htm>  
or
- From the Graduate School home page, click "Current Students" and then "Handbook".
- Graduate school forms that must be submitted by graduate students after completion of specific requirements are also available on the Internet. On the "Current Students" page, click on "Forms"
- Note that the "Dissertation Abstract" is an MIMG requirement, and the form is available from the Program Director.

It is the sole responsibility of doctoral students in the Microbiology, Immunology, and Molecular Genetics Graduate Program to be familiar with and meet deadlines listed in this guide, and to obtain and submit completed forms to the Graduate School. Students are also responsible for keeping a copy of the completed forms and providing a copy to their mentor for their respective records.

## Contents

<b>Section 1. Entrance into the Doctoral Program</b>	<b>4</b>
A. Selection of Dissertation Mentor	
B. Qualifying Examination	
<b>Section 2. Course Requirements</b>	<b>5</b>
A. Course and Credit Requirements	
B. Course Summary	
C. Scholastic Achievement	
<b>Section 3. The Dissertation Committee</b>	<b>7</b>
<b>Section 4. Student Progress Reports</b>	<b>9</b>
A. Annual Student Evaluation	
B. Dissertation Committee Reports	
C. Readings and Research	
<b>Section 5. The Dissertation Abstract</b>	<b>10</b>
<b>Section 6. Dissertation Research Proposal</b>	<b>11</b>
A. Deadlines	
B. Format for the Dissertation Research Proposal	
C. Preparation of the Dissertation Research Proposal	
D. Evaluation and Defense of the Dissertation Research Proposal	
E. Advancement to Candidacy	
F. Modifying the Dissertation Research Proposal	
G. Student Responsibilities	
H. Faculty Responsibilities	
I. Determination of Dissertation Research Proposal Outcome	
<b>Section 7. External Dissertation Reviewer</b>	<b>14</b>
<b>Section 8. Dissertation Defense</b>	<b>15</b>
<b>Section 9. Summary of Deadlines (Table 1 and 2)</b>	<b>16-17</b>
<b>Dissertation Committee Meeting Summary (form)</b>	<b>18</b>
<b>Doctoral Dissertation Abstract Approval (form)</b>	<b>19</b>

## Section 1. Entrance into the Doctoral Program

### A. Selection of Dissertation Mentor

Most students enter the Microbiology, Immunology, and Molecular Genetics (MIMG) Graduate Program via the Interdisciplinary Program in Biomedical Sciences (IDP), the Neuroscience Program, or the Medical Scientist Training Program (MSTP). These programs provide opportunities for students to identify a dissertation mentor who has either a primary or secondary appointment in the Department of Microbiology and Molecular Genetics (MMG). Students who choose a dissertation mentor in the MMG Department will receive attentive personal mentoring by their dissertation advisor and will be expected to participate in many activities offered by the departmental graduate program. Throughout their graduate careers, students in the MIMG doctoral program continue to meet as a group to share ideas, insights and research accomplishments with each other and with the faculty.

### B. Qualifying Examination

All doctoral students in the Graduate School of Biomedical Sciences must successfully complete a Qualifying Examination. Deadlines for Qualifying Examinations are summarized in Table 1 and Table 2.

#### **IDP Qualifying Examination.**

Students who join the MIMG doctoral program from the IDP program will adhere to the guidelines and deadlines for the IDP Qualifying Examination based on an oral defense of a written Mock Proposal.

#### **MSTP Qualifying Oral Examination.**

Students who join the MIMG doctoral program from the MSTP program will be required to pass a Qualifying Oral Examination administered by the MMG department through the Dissertation Committee. The Oral Examination should be completed no later than 8 months after the student enters the MIMG Graduate Program as a full-time graduate student. For students who enter July 1, the deadline is the following March 1. The student should form a Dissertation Committee within 6 months after becoming a full-time graduate student.

Prior to or at the time of the exam, the student should provide the examination chairperson with the appropriate number of "Doctoral Qualifying Examination Evaluation" forms and one copy of the Chairperson's Report form. Forms are available from the Graduate School web site (see page 2).

The format for the examination will be a closed evaluation of the MSTP student by the entire Dissertation Committee. Questions to the MSTP student may encompass any area but shall be focused on identifying strengths and weaknesses of the student's didactic curriculum, knowledge of the scientific method, and ability to examine and interpret the literature pertinent to their field of study. See selection of a Qualifying Exam Chairman below.

#### **Neuroscience Qualifying Examination.**

Students who join the MIMG doctoral program from the Neuroscience program will be required to pass a Qualifying Examination based on an oral defense of a written Mock Proposal. The format will be similar to that used for the IDP Qualifying Exam. The Qualifying Examination should be completed no later than November 30 of the student's second year. See selection of a Qualifying Exam Chairman below.

**For the MSTP and Neuroscience Qualifying Examinations**, committee members should meet prior to the exam to elect an **Exam Chairperson** to preside over the examination. The examination chairperson must i) be a full-time member of the student's Doctoral Dissertation committee, ii) have a primary appointment in MMG, and iii) NOT be the student's research advisor. The student's dissertation mentor may be a member of the committee, attend the examination, but may not participate in the discussion of the student's performance that takes place after the student's defense. It is the chairman's responsibility to i) make the final decision (based on evaluations from all of the committee members) regarding the student's level of performance and ii) complete and submit the paperwork required to document the student's performance.

Students whose Qualifying Exam is deemed 'unsatisfactory' are permitted to repeat the examination once. If the second exam is also unsatisfactory, the Department Chair, Program Director, and Mentor will determine if the student should be dismissed or pursue a Masters degree.

## Section 2. Course Requirements

### A. Course and Credit Requirements

The training component of the MIMG Graduate Program includes didactic courses, laboratory research, seminars and scientific reading. Full-time students must register for at least 9 credits in the fall and spring semesters and 6 credits in the summer. Students should select their courses in close consultation with the Mentor and Dissertation committee and may take courses not included on the Recommended Course list below.

These course requirements are a minimum. Upon consultation with their mentor and dissertation committee, students may elect or be required to take additional courses to broaden their scientific knowledge or otherwise enhance the completion of their doctoral research.

It is understood that special situations may arise regarding the course requirements. In these instances, course requirements for the MIMG doctoral program will be assessed and may be altered on an individual basis. Any alterations to the course requirements will be made in consultation with the Mentor, Director of the MIMG Graduate program, and individual course directors.

- Students entering from the IDP or Neuroscience programs are required to take 9 credits of advanced coursework as a minimum, after the first year. MSTP students are required to take 6 credits of advanced coursework.
- All graduate students – including MSTP students - are required by the Graduate School to take *Ethics and Integrity in Science* (10-222B) and *Research Ethics Discussion* (10-444A).
- All graduate students in the MIMG doctoral program are required to take the Seminar course (05-300) twice: **those who receive an A or A- may OPT OUT of the second seminar.**
- Students entering the program from the IDP and Neuroscience programs are required to take either *Cellular and Molecular Immunology* (05-234) or *Cellular Microbiology* (05-236).

- All students in the MIMG doctoral program are required to take *Techniques in Molecular and Cell Biology* (16-242).

## B. Course Summary

### Course Requirements:

1. **IDP** students who enter the MIMG Graduate Program after successful completion of the first year are required to take:

05-234	<i>Cellular and Molecular Immunology</i>
	OR
05-236	<i>Cellular Microbiology</i>
05-300	<i>Microbiology and Molecular Genetics Seminar</i>
05-295	<i>Readings and Research</i>
10-222B	<i>Ethics and Integrity in Science</i>
10-444A	<i>Research Ethics Discussion</i>
XX-XXX	Additional coursework totaling at least six credits

2. **MSTP** students who enter the MIMG Graduate Program after successful completion of the first two years of the Medical School curricula are required to take:

16-242	<i>Techniques in Molecular and Cell Biology</i>
16-252	<i>Classical and Molecular Genetics</i>
05-300	<i>Microbiology and Molecular Genetics Seminar</i>
05-295	<i>Readings and Research</i>
10-222B	<i>Ethics and Integrity in Science</i>
10-444A	<i>Research Ethics Discussion</i>
XX-XXX	Additional coursework totaling at least three credits

3. **Neuroscience** students who enter the MIMG Graduate Program after successful completion of the first year are required to take:

16-252	<i>Classical and Molecular Genetics</i>
	OR
16-243	<i>Molecular Biology of the Cell</i>
05-234	<i>Cellular and Molecular Immunology</i>
	OR
05-236	<i>Cellular Microbiology</i>
16-242	<i>Techniques in Molecular and Cell Biology</i>
05-300	<i>Microbiology and Molecular Genetics Seminar</i>
05-295	<i>Readings and Research</i>
10-222B	<i>Ethics and Integrity in Science</i>
10-444A	<i>Research Ethics Discussion</i>
XX-XXX	Additional coursework totaling at least three credits

### Recommended Courses:

Courses that qualify for the additional credits required of graduate students in the MIMG doctoral program include, but are not limited to:

### Recommended Courses\*:

#### **Microbiology & Molecular Genetics**

05-210	<i>Principals in Laboratory Animal Science</i> 1cr
05-230	<i>Current Topics in Microbiology and Immunology</i> 3cr
05-234	<i>Cellular and Molecular Immunology</i> 3cr
05-236	<i>Cellular Microbiology</i> 3cr
05-251	<i>Advanced Molecular Genetics</i> 3cr
05-259	<i>Mucosal Immunity</i> 1cr
05-260	<i>Mucosal Pathogenesis</i> 1cr
05-261	<i>Bacterial Toxin-Mucosal Cell Interactions</i> 1cr
05-262	<i>Tumor Immunology</i> 1cr
05-263	<i>Signaling in the Immune System</i> 1cr
05-264	<i>Developmental Immunology</i> 1cr
05-265	<i>Immunological Tolerance</i> 1cr
05-266	<i>Clinical Immunology</i> 1cr
05-270	<i>Advanced Virology</i> 3cr
05-271	<i>Membranes and Organelles</i> 1cr

### **Biochemistry**

02-222 *Protein Chemistry*

Note: Numerous 1 credit courses now available

### **Cell Biology, Neurobiology & Anatomy**

01-250 *Advanced Cell Biology*

01-212 *Developmental & Stem Cell Biology*

### **Pharmacology & Toxicology**

07-224 *Cellular Signal Transduction*

\*Courses not listed herein, including new course offerings from the Graduate School of Biomedical Sciences, may be taken following consultation with the student's Dissertation Committee.

## **C. Scholastic Achievement**

All graduate students are expected to maintain a cumulative grade point average of at least 3.0 and a satisfactory or better evaluation in *Readings and Research* (05-295) (see below). Mentors and students should be aware that a student whose cumulative grade point average is below 3.0 or who receives an Unsatisfactory evaluation in *Readings and Research* will be placed on probation and may ultimately be recommended for dismissal from the Graduate School.

**Challenge to the Student.** The person with the most at stake in any graduate program is the individual student. To obtain a quality education, the student should play an active role in selecting a distinguished Dissertation Committee, attend all relevant seminars and journal clubs, participate actively in research meetings, and conduct a challenging research project.

## **Section 3. The Dissertation Committee**

The Dissertation Committee, which should be formed as soon as possible, will (i) oversee the student's emerging dissertation research, (ii) mentor the student in course selection, and (iii) address deficiencies noted in the student's education by the Qualifying Examination Committee. The Dissertation Committee shall administer the Qualifying Oral Examination for MSTP

students. The constitution of the Dissertation Committee must be approved by the MIMG Program Director, Chair of the Department of MMG, and the Dean of the Graduate School.

**Mentor.** Students entering from the **IDP, MSTP or Neuroscience** programs must have a Mentor with a primary or secondary faculty appointment in the Department of MMG prior to acceptance into the MIMG Doctoral Graduate Program. This Mentor advises the student about courses and supervises the dissertation research. The Mentor chairs the Dissertation Committee and provides guidance to the graduate student in the selection of a Dissertation Committee. The Mentor oversees yearly progress reports, guides the writing and discussion of the Dissertation Proposal, assists in selecting an External Dissertation Reviewer, and supervises the Dissertation defense.

**Dissertation Committee.** Students who enter the MIMG Doctoral Program from the **IDP or Neuroscience** program must form a Dissertation Committee by MARCH of their second academic year in graduate school. Deadlines for forming a Dissertation Committee are summarized in Table 1 and Table 2 (Handbook Section 9).

Students who enter the MIMG Graduate Program from the **MSTP** must form a Dissertation Committee within six months after becoming a full time graduate student.

**Individuals who fail to meet these deadlines will receive no higher than "satisfactory" for Readings in Research for that semester.**

**Dissertation Committee Membership.** The Dissertation Committee is required to have five (5) or more members, each of whom has a PhD, MD or equivalent. The committee shall be comprised of:

- i. at least three members must have an appointment in the Department of MMG. At least two of these three must have a primary appointment in MMG. One of these three members is the Dissertation Advisor, who acts as the chairman of the committee.
- ii. one member must have neither a primary nor a secondary appointment in the Department of MMG. This individual can be from any other MCW basic science or clinical science department, or from an outside institution. Note that the outside member must be available for at least one committee meeting per year, and where applicable, should be in attendance for qualifying exams. A non-MCW member of the committee will not qualify as the External Dissertation Reviewer (see below).

After consulting with the Mentor, the student is responsible for completing the "Request for Approval of a Dissertation Committee" form (see the Graduate School Internet site and obtaining the signatures from the Mentor, the Department Chairman and Graduate School Dean). The student, the Mentor, and the department should maintain copies of the completed form.

Changes in the membership of the Dissertation Committee may occur for various reasons. These changes must be documented by submission of a revised "Request for Approval of a Dissertation Committee" form, which has been approved by the Mentor, Director of the MIMG Graduate program, Department Chairman, and Graduate School Dean.

**Challenge to the Dissertation Committee.** The Dissertation Committee will recommend further coursework when it is deemed beneficial for the student and will aid in directing the course of the student's research. It is the student's responsibility to meet, discuss and invite faculty to serve on their committee. Voting members of a student's committee will attend two committee meetings per year (ideally, one after a research-in-progress presentation), participate and advise in the student's coursework, assist in the preparation of the Dissertation Abstract and Dissertation Research Proposal, and are required to attend the Dissertation Defense. It is the responsibility of the Dissertation Committee to evaluate the Dissertation Abstract and Dissertation Research Proposal, and to determine when the student has completed a sufficient body of original research to write a doctoral dissertation. The committee will read and evaluate the dissertation and attend and evaluate the doctoral dissertation defense. The committee has the authority to recommend dismissal of a student who does not qualify for a PhD based on the committee's evaluation of all components of the student's performance in the MIMG doctoral program.

The committee is charged with ensuring that each student's formal education has the proper breadth and scientific foundation. The committee should aid in the development of an outstanding rigorous plan of advanced study in the Department of MMG core areas including molecular and cellular biology, genetics, bacteriology, virology, immunology, and infectious disease.

**External Dissertation Reviewer.**

A non-voting External Dissertation Reviewer will be selected from a non-MCW institution approximately 6 to 12 months before the dissertation defense. This non-voting committee member will be required to read the dissertation and actively participate in the dissertation defense (see below, page 15).

## **Section 4. Student Progress Reports**

### **A. Annual Student Evaluation**

Mentors are required by the Graduate School to submit an Annual Student Evaluation. This is now accomplished via the EASI website, and instructions for content are included at the EASI portal.

### **B. Dissertation Committee Reports**

One of the primary functions of the Dissertation Committee is to provide ongoing advice and guidance regarding the student's research and to monitor progress towards the degree. To ensure regular interaction between the student and the committee, the student shall be responsible for coordinating two meetings with the Dissertation Committee each year. These meetings will provide an opportunity to discuss concerns about student performance, changes in Specific Aims for the doctoral research, access to equipment, and any other issues which may arise. During at least one of these biannual meetings each year, the student will provide an oral progress report, which may concur with a Research in Progress presentation. The student should provide the mentor a Dissertation Committee Meeting Summary form (located at the end of this document (see page 18) or available on the Department of MMG website), which should be completed by the mentor, circulated to the committee for comments, and then the final

version signed by both the mentor and the student and placed in the student's file by the MIMG Graduate Program Administrator.

### C. Readings and Research

In order to qualify as a full-time student, graduate students should register for *Readings and Research* (05-295) every Fall, Summer, and Spring until they successfully defend their dissertation research. Students who leave MCW before their dissertation defense should consult with the mentor and the graduate school to determine the appropriate procedure to remain eligible for a PhD.

Performance in *Readings and Research* is assigned a grade of E (excellent), G (good), S (satisfactory), or U (unsatisfactory). Due to the varying nature of the research experience across the different labs in the department, fixed criteria for grading students in *Readings and Research* cannot be established. Mentors will consider the following when assigning grades:

- 1) written research summaries
- 2) presentations to the department or dissertation committee
- 3) motivation and commitment of time to research
- 4) data management and record keeping
- 5) familiarity with the literature
- 6) collegiality within the lab
- 7) ability to establish and meet pre-set deadlines and goals
- 8) lab skills and experimental design
- 9) communication skills
- 10) scientific honesty and integrity
- 11) research accomplishments and progress towards the dissertation

The mentor will consult with members of the Dissertation Committee and the Director of the MIMG Graduate Program if an evaluation of Unsatisfactory in Readings and Research is contemplated; an Unsatisfactory places the student on probation. If student performance is evaluated as Unsatisfactory, a letter explaining the basis for this grade shall be submitted to the Director of the MIMG Graduate Program and to the Dean of the Graduate School in Biomedical Sciences. A student who receives a second evaluation as Unsatisfactory during subsequent semesters of study will be recommended for dismissal.

### Section 5. The Dissertation Abstract

The Dissertation Abstract should provide a brief description of the proposed research to be undertaken, including the specific hypothesis to be tested, background, and experimental design. The purpose of the Dissertation Abstract is to ensure that the student, advisor, and Dissertation Committee agree on a research project that has potential to generate meaningful data within a reasonable time frame. The student will discuss with the Mentor potential areas of research and agree upon a reasonable hypothesis to be tested, the overall scientific objectives, and experimental design that will be used. The mentor should discuss with the student alternative hypotheses and approaches prior to discussion of the Abstract with the Dissertation Committee. **It is understood that the proposed dissertation research may be modified significantly or abandoned if so recommended by the Dissertation Committee, or as a**

**consequence of future developments in the student's doctoral research.** In such cases, a new Abstract is not required.

**Deadlines.** **IDP and Neuroscience** students should submit their Dissertation Abstract no later than November 1 of their third year (see Table 1). **MSTP** students should submit their Dissertation Abstract no later than 14 months (generally September 1) after becoming full-time graduate students (see Table 2).

**Abstract Format.** The format for the Dissertation Abstract will be one page with 1-inch margins and a minimum 12-point font, single-spaced. It will include a statement of the hypothesis to be tested, overall objectives, a brief background and experimental design. Preliminary data can be presented to and discussed with the Dissertation Committee prior to submission of the Dissertation Abstract. A copy of the Dissertation Abstract and the signed **Doctoral Dissertation Abstract Approval Form** (see page 19) should be submitted and maintained by the MIMG Graduate Program Administrator, the mentor, and the student.

## Section 6. Dissertation Research Proposal

### A. Deadlines

1. For **IDP and Neuroscience** students, the Dissertation Research Proposal should be submitted to the Dissertation Committee by May 1 of the student's third year. The committee should have two weeks to review the proposal before meeting to discuss the proposal with the student. The student should meet with the committee by June 1 (at the end of the student's third year) to discuss the proposal. If the Dissertation Committee requests that the proposal be revised before it can be accepted, the deadline to submit the revised proposal to the committee is September 1 (at the beginning of the student's fourth year). Table 1 summarizes the deadlines for submitting, evaluating, and if needed, revising the Dissertation Research Proposal.
2. For **MSTP** students, the Dissertation Research Proposal should be submitted to the committee within 21 months after becoming a full-time graduate student (for students who enter July 1, this corresponds to April 1 of the student's second year as a full-time graduate student). The student should meet with the committee within one month after submitting the proposal. If the Dissertation Committee requests that the proposal be revised before it can be accepted, the deadline to submit the revised proposal to the committee is three months after submission of the original proposal (see Table 2).

**Individuals who fail to meet these deadlines will receive an UNSATISFACTORY for Readings in Research for that semester. Please be aware that a "U" in Readings and Research automatically places a student on probation, and two "U" grades are grounds for dismissal from the program.**

**B. Format for the Dissertation Research Proposal.** The Dissertation Research Proposal shall be similar to an NIH grant application with a single-spaced, 12 page maximum, with 0.75" to 1" margins and at least a 12-point font (Times, Arial, Helvetica) for sections **a - d** (see below). The proposal should address the hypothesis to be tested, background and significance, preliminary data, and experimental design. The Literature Cited section is not included in the 12

page maximum. Figures and tables **MUST** be included in the text and **NOT** in an Appendix section, and figures/tables **DO** count towards the 12 page limit. Details for each section are:

**a. Specific Aims.** This section shall describe and list the hypotheses to be tested and the overall goal(s) of the project. A set of specific aims that define the key components of the experimental strategy to test the hypotheses should be listed and briefly described. This section should not exceed one page.

**b. Background and Significance.** This section should consist of a review of the literature relevant to the proposed research, but not stray into areas that are not relevant to the proposal. The review should include sufficient information to put the proposed research into perspective with the current status of the field. This section shall critically evaluate existing knowledge and identify gaps that the project is intended to fill. The significance of the work should be stated (for example, what would be the impact if the work is completed as planned?). Three to four pages are recommended.

**c. Rationale, Experimental Design, and Methods.** The rationale for the work should be clearly stated. This section should describe experimental approaches and protocols that will be used to achieve the specific aims and test the proposed hypotheses. Details about reagents, cells, animal models, environmental conditions, equipment and controls that are required to establish feasibility should be stated in this section. Anticipated results, data interpretation and alternative approaches should be discussed. Methods of analysis, statistical methods, and a proposed timeline for successful completion are also useful. This section can also include unpublished preliminary data or published data obtained by the student that are relevant to the proposal and/or support the hypotheses. Seven to eight pages are recommended.

**d. Literature Cited.** This section is not included in the 12-page limit and should list all published information referred to in the preceding sections. The format shall follow established and published guidelines for a major journal specific to the field of study or as established by the department.

**C. Preparation of the Dissertation Research Proposal.** The Dissertation Research Proposal should be an original document that is written by the student and that represents the original thoughts and ideas of the student. Verbal advice from the mentor, members of the committee, or other faculty should be sought by the student to assist in preparation of the proposal. The student should not copy components from the mentor's grant proposal, published journal articles, reviews, textbooks, or Internet sources without acknowledging the source and enclosing the copied sections in quotation marks. Committee members may suggest changes that would improve the content or grammar of the proposal, but should not edit or write any section of the proposal.

**D. Evaluation and Defense of the Dissertation Research Proposal.** The Dissertation Research Proposal will be evaluated no later than four weeks after the proposal is submitted to the Dissertation Committee. For the dissertation defense, the student will call a committee meeting and present an overview of the Dissertation Research Proposal and address any questions or concerns of the Committee members. The committee will evaluate the Dissertation Research Proposal and Defense with respect to: (i) the hypothesis – is it appropriate, based on existing data, (ii) the experimental design – will the proposed experiments provide a test of the hypothesis, are appropriate controls included, and are alternative approaches described, (iii)

the background – has the student demonstrated adequate knowledge of existing data, and (iv) preliminary data – has the student demonstrated the ability to conduct experiments, analyze the results, and formulate appropriate conclusions, and does the student have a firm grasp of the project?

**E. Advancement to Candidacy.** Acceptance of the Dissertation Research Proposal is a Graduate School requirement for advancement to Candidacy for the Ph.D. degree. The Dissertation Committee will identify any potential problems or weaknesses with the Dissertation Research Proposal and will evaluate the ability of the student to conduct the proposed experiments, obtain the required data, interpret the results, formulate conclusions based on the experimental results, and propose subsequent experiments. These skills are essential for completion of the dissertation research that is a required component of the MIMG Graduate Program. It is the responsibility of the committee to determine whether the student has the necessary skills, motivation, and knowledge to complete the dissertation research, and if not, what course of action should be taken. The Mentor will convey the evaluation and recommended course of action of the Dissertation Committee to the Director of the MIMG Graduate Program as well as the Dean of the Graduate School of Biomedical Sciences. The committee shall either:

- i. approve the completed Dissertation Research Proposal. Committee members will indicate their acceptance of the final research proposal by signing the approval form for the *Doctoral Dissertation Outline* (see Graduate School web site). This form and the completed research proposal / outline will be submitted to the Director of the MIMG Graduate program and the Department Chairperson for approval and forwarded to the Dean of the Graduate School of Biomedical Sciences for final approval. Upon approval, a student shall be admitted to Candidacy for the PhD degree.
- ii. call for revision of the proposal. The committee will formulate a series of steps that will provide the student with an opportunity to revise the Dissertation Research Proposal, to discuss the revised version with the committee, and to be reevaluated by the committee. The outcome of this evaluation will be one of the same four options (i – iv) described in this section.
- iii. recommend to the Director of the MIMG Program and Dean of the Graduate School that, based on concerns with the preparation and presentation of the Dissertation Proposal, coupled with problems on the qualifying examination, academic record, and/or concerns of the mentor, the student lacks one or more skills required for completion of the dissertation research and therefore is not qualified to be admitted to candidacy for the PhD degree, but has sufficient skills to complete the requirements for a MS degree. Students advised to pursue the MS degree must meet the requirements for that degree, which includes completion of a research project and preparation of a thesis that is approved by the Thesis committee.
- iv. recommend to the Director of the MIMG Program and Dean of the Graduate School that, based on concerns with the preparation and presentation of the Dissertation Proposal, coupled with problems on the qualifying examination, academic record, and/or concerns of the mentor, the student lacks one or more skills required for completion of a graduate degree from the Department of Microbiology and Molecular Genetics. Under these circumstances, the committee will recommend that the student be dismissed from the graduate program. Students recommended for dismissal have the right to an appeal as described in the Graduate School Handbook.

**F. Modifying the Dissertation Research Proposal.** It is recognized that the Dissertation Research Proposal is only a guidepost towards future research and that certain aims may ultimately be non-productive. Therefore, during the course of the PhD Candidate's research it may be necessary to modify or change the hypothesis to be tested or the Specific Aims of the Dissertation Research Proposal. These changes should be discussed with the entire Dissertation Committee. In the instance where the committee determines that major shifts in research focus are recommended, the candidate will be required to complete a one page document detailing:

- i. revised hypothesis
- ii. modified or new Specific Aims
- iii. new or changed methods
- iv. anticipated results
- v. alternative approaches

This document will be approved by the Dissertation Committee and forwarded to the MIMG Graduate Program Administrator. A new, full-length Proposal is NOT required, and the modified proposal does NOT require approval of the Director of the MIMG Graduate program or the Dean of the Graduate School of Biomedical Sciences.

**G. Student Responsibilities.** It is the student's responsibility to help design and maintain a rigorous, broad-based educational program that reaches and achieves the highest possible standards in research. The Dissertation Research Proposal should be viewed as an opportunity for the student to demonstrate superior preparation and aptitude for an advanced career in biomedical science.

**H. Faculty Responsibilities.** It is the responsibility of the individual Mentor and the Dissertation Committee members to ensure that the Dissertation Research Proposal is evaluated in a fair, yet comprehensive and rigorous fashion. The quality and impact of a degree program is dependent upon the careful, constructive training given to all students. Discussion during the Dissertation Research Proposal presentation should focus on the scientific question being asked and the approaches, methods and protocols proposed to be used to answer that question. Questions examining the scientific method, data interpretation, alternative approaches, and theoretical foundations of the methods used and probing the extent, breadth and depth of the scientific literature are appropriate.

**I. Determination of Dissertation Research Proposal Outcome.** The student and his/her Dissertation Committee are charged with finalizing the outcome of the Dissertation Research Proposal and its oral defense by no later than 7 (seven) months following submission of the original written proposal to committee members. For students entering from the IDP or Neuroscience Programs, this corresponds to December 1 of the student's 4th year. For students entering from the MSTP, this corresponds to November 1 of the student's 3rd year.

**Individuals who fail to meet these deadlines will receive an UNSATISFACTORY for Readings in Research for that semester. Please be aware that a "U" in Readings and Research automatically places a student on probation, and two "U" grades are grounds for dismissal from the program.**

### **Section 7. External Dissertation Reviewer**

Candidates in the MIMG Doctoral Program are required to invite an External Dissertation Reviewer who will read their dissertation, attend the dissertation defense, and be active

participants in the student's dissertation defense and the committee discussion that follows the defense. Non-voting External Dissertation Reviewers may be selected any time after successful completion of the Dissertation Research Proposal; optimally at least 6 months before a student submits his or her completed dissertation to the committee. External Dissertation Reviewers should be selected following discussion with the Mentor and informal consultation with the members of the Dissertation Committee. External Dissertation Reviewers should be selected for breadth and depth as well as national / international reputation. The Mentor and student should inform the Director of the MIMG Graduate Program in writing when an External Reviewer has been selected. It is the student's responsibility to invite the selected External Reviewer to become a member of the Dissertation Committee. The student is responsible for contacting the Reviewer, providing that person with the completed dissertation, and selecting a date when the External Dissertation Reviewer can attend the dissertation defense. The department will provide travel expenses and an honorarium for the External Reviewer to attend the dissertation defense.

### **Section 8. Dissertation Defense**

Candidates in the MIMG doctoral program must present broad-based evidence of proficiency in research and of distinctive achievement in a special field, and particularly for independent investigation as demonstrated by the Dissertation. The Dissertation shall comprise a substantial body of original research representing the student's own laboratory work. Any collaborative components of the research, other than that of the Mentor, must be identified and the student's contribution clearly delineated. The Dissertation, including the initial version submitted to the Committee, will be written with a high-level of literary skill such as would be expected in leading journals specific to the candidate's field of study. The format shall correspond to the recommendations of the Graduate School. The document will be organized around clearly stated hypotheses, rigorous experimental tests of the hypotheses, clearly presented results, and appropriate interpretation of the data. A discussion section stating the importance and relevance of the Dissertation research to the field of study is appropriate and should be sufficiently clear to provide direction for subsequent investigations. Upon completion, the written Dissertation will be distributed to the members of the Dissertation Committee as well as the External Reviewer two weeks prior to the Dissertation Defense.

The Dissertation defense consists of a public defense in the form of a seminar, at the end of which the candidate entertains questions from the scientific community / public, the External Reviewer, and the Dissertation Committee. Following the public defense, the candidate will meet in private with the Dissertation Committee wherein the Dissertation is scrutinized in more detail, and issues both central and tangential to the work will be discussed. Upon a satisfactory defense and in accordance with the Graduate School, final copies of the dissertation, including any changes required by the Committee, must be submitted to the Dean of the Graduate School within two (2) weeks following the defense. The degree application will then be signed.

## Section 9. Summary of Deadlines

**Table 1.**

**Deadlines for IDP and Neuroscience students whose academic year begins July 1 and ends June 30**

Academic Year	Semester	Month	Day	Item
2	Fall	November	30	Qualifying Exam
	Spring	MARCH	1	Form Dissertation Committee
3	Fall	November	1	Submit Dissertation Abstract
	Spring	May	1	Submit Dissertation Research Proposal
		June	1	Meeting for Evaluation of Dissertation Research Proposal by Committee
4	Fall	September	1	Revised Dissertation Research Proposal Meeting, If Necessary
4	Fall	December	1	Outcome of Dissertation Research Proposal Defense Finalized

**MSTP DEADLINES: next page**

**Table 2.****Deadlines for MSTP students who enter the MIMG program July 1**

Academic Year*	Semester	Month/Day	Month#	Item
1	Fall	July-Sept		Begin Grad School
	Spring	January 1	6	Form Dissertation Committee (July start)
		March 1	8	Qualifying Exam
2	Fall	September 1	14	Submit Dissertation Abstract
	Spring	April 1	21	Submit Dissertation Research Proposal
		May 1	22	Meeting for Evaluation of Dissertation Research Proposal by Committee
3	Fall	August 1	25	Revised Proposal Meeting, If Necessary
3	Fall	November 1	28	Outcome of Dissertation Research Proposal Defense Finalized

\* Year 1 begins when an MSTP student becomes a full-time graduate student in the Department of Microbiology and Molecular Genetics. This is generally in July after the second year of Medical School.

# Month refers to the number of months since entering the MIMG graduate program.



