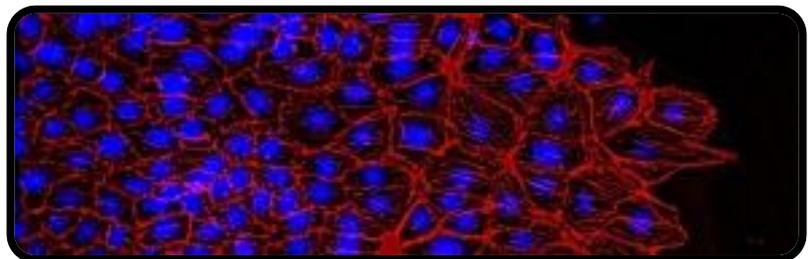
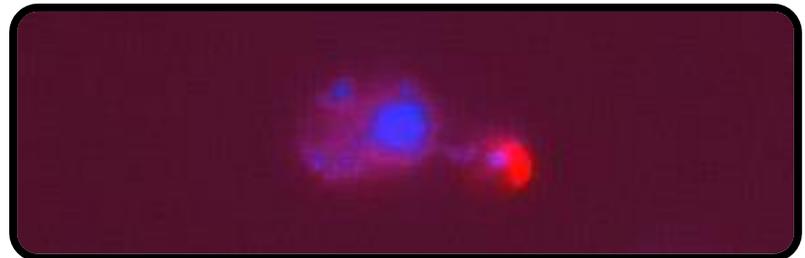
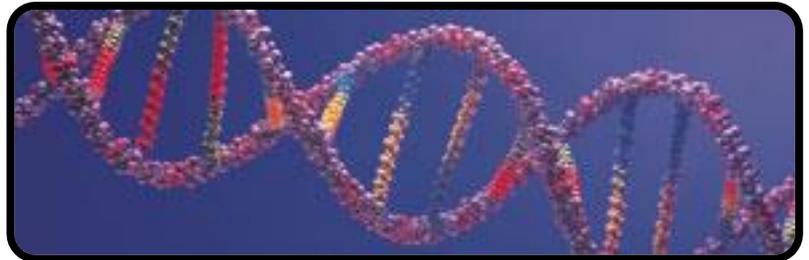


**Requirements  
and  
Guidelines**

**Doctoral  
Graduate  
Program  
in  
Microbiology  
and  
Immunology  
---  
Medical College  
of Wisconsin**

*Effective  
January 1, 2005  
(version: JULY 2018)*



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***Student and Faculty  
Handbook***

## Student Responsibility

Version July 6, 2018

Doctoral students in the Microbiology and Immunology (MI) Graduate Program should use this handbook as a guideline in conjunction with resources 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/Medical-School-FileLibrary/DEPT-Graduate-School/Documents/Handbook-09.06.2016FINALHLC.pdf>  
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"

It is the sole responsibility of doctoral students in the Microbiology and Immunology 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, program administrator, and program director for their respective records.

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## Section 1. Entrance into the Doctoral Program

### A. Selection of Dissertation Mentor

Most students enter the Microbiology and Immunology (MI) Graduate Program via the Interdisciplinary Doctoral Program in Biomedical Sciences (IDP), the Neuroscience Doctoral Program (NDP), 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 MI. Students who choose a dissertation mentor in the Department of MI will receive attentive personal mentoring by their dissertation mentor and will be expected to participate in many activities offered by the departmental graduate program. Throughout their graduate careers, students in the MI 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.

#### 1. IDP Qualifying Examination.

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

#### 2. MSTP Qualifying Oral Examination.

Students who join the MI doctoral program from the MSTP program will be required to pass a Qualifying Oral Examination administered by the MI department through the student's Dissertation Committee. The Qualifying Examination should be completed no later than 8 months after the student enters the MI 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. It is the responsibility of the student to identify a member of the Dissertation Committee other than the mentor to serve as Chairman of the Qualifying Examination. See selection of a Qualifying Exam Chairman below. The student should also communicate with his/her committee members to identify a date, time, and location for 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 the Department of MI, and iii) NOT be the student's research mentor. 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 Master's degree.

The format for the examination will be a closed evaluation of the MSTP student by the entire Dissertation Committee. At least 1 month prior to the examination, the student's mentor will identify a research paper that is relevant to the student's area of research interest. It is the responsibility of the student to distribute this paper to all committee members at least 2 weeks prior to the examination. At the Qualifying Examination, the student will present a formal power point presentation of the paper. Questions to the MSTP student may encompass any area but shall be focused on figures presented within the paper. Committee members will use the figures to probe and evaluate strengths and weaknesses of the student's didactic curriculum, knowledge of the scientific methods, and ability to examine and interpret presented data.

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).

### **3. NDP Qualifying Examination.**

Students who join the MI doctoral program from the NDP will be required to pass a Qualifying Oral Examination administered by the MI department through an *ad hoc* committee established by the MI Graduate Program Director in consultation with the student's mentor. Composition of the *ad hoc* qualifying examination committee shall include the student's mentor, the Director of the MI Graduate Program, and an additional 3 faculty members with a primary or secondary appointment within the Department of MI. The Director of the MI Graduate Program will serve as chair of the qualifying examination committee. This committee must be established no later than 2 months prior to the date of the qualifying examination. The Qualifying Examination should be completed by November 30<sup>th</sup> of the student's 2<sup>nd</sup> year within the Graduate School for Biomedical Sciences. 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 Master's degree.

The format for the examination will be a closed evaluation of the student by the *ad hoc* qualifying examination committee. At least 1 month prior to the examination, the student's mentor will identify a research paper that is relevant to the student's area of research interest. It is the responsibility of the student to distribute this paper to all committee members at least 2 weeks prior to the examination. At the Qualifying Examination, the student will present a formal power point presentation of the paper. Questions to the student may encompass any area but shall be focused on figures presented within the paper. Committee members will use the figures to probe and evaluate strengths and weaknesses of the student's didactic curriculum, knowledge of the scientific methods, and ability to examine and interpret presented data.

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).

## Section 2. Course Requirements

### A. Course and Credit Requirements

The training component of the MI 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 MI Graduate 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 MI Graduate Program, and individual Course Directors.

- Students entering from the IDP or NDP are required to take 9 credits of advanced coursework as a minimum within the MI Graduate Program. MSTP students are required to take 6 credits of advanced coursework within the MI Graduate Program.
- All graduate students in the MI Graduate Program are required by the Graduate School of Biomedical Sciences to take *Ethics and Integrity in Science* (10-222B) and *Research Ethics Discussion* (10-444A).
- All graduate students in the MI Graduate Program are required to take the *Seminar course* (25-300) twice: **those who receive an A or A- may opt out of the second seminar.**
- All graduate students in the MI Graduate Program are required to take *Techniques in Molecular and Cell Biology* (16-242).
- Students entering the program from the IDP and NDP are required to take either *Cellular and Molecular Immunology* (25-234) or *Cellular Microbiology* (25-236).
- Students entering the program from the MSTP are required to take *Classical and Molecular Genetics* (16-252) or *Cellular and Molecular Immunology* (25-234) or *Advanced Protein Chemistry* (02-222).

### B. Course Summary

#### Course Requirements:

1. IDP students who enter the MI Graduate Program are required to take:

|        |  |
|--------|--|
| 25-234 | <i>Cellular and Molecular Immunology</i>           |
|        | OR   |
| 25-236 | <i>Cellular Microbiology</i>                       |
| 25-300 | <i>Microbiology and Molecular Genetics Seminar</i> |

|         |  |
|---------|--|
| 10-222B | <i>Ethics and Integrity in Science</i>                                   |
| 25-295  | <i>Readings and Research</i>   |
| 10-444A | <i>Research Ethics Discussion</i>  |
| XX-XXX  | Additional advanced coursework totaling at least six credits (see below) |

**2. MSTP** students who enter the MI Graduate Program are required to take:

|         |  |
|---------|--|
| 16-242  | <i>Techniques in Molecular and Cellular Biology</i>                        |
| 16-252  | <i>Classical and Molecular Genetics</i>                                    |
|         | OR   |
| 25-234  | <i>Cellular and Molecular Immunology</i>                                   |
|         | OR   |
| 02-222  | <i>Advanced Protein Chemistry</i>  |
| 25-300  | <i>Microbiology and Molecular Genetics Seminar</i>                         |
| 10-222B | <i>Ethics and Integrity in Science</i>                                     |
| 10-444A | <i>Research Ethics Discussion</i>  |
| 25-295  | <i>Readings and Research</i>   |
| XX-XXX  | Additional advanced coursework totaling at least three credits (see below) |

**3. NDP** students who enter the MI Graduate Program are required to take:

|         |  |
|---------|--|
| 16-252  | <i>Classical and Molecular Genetics</i>                                    |
| 25-234  | <i>Cellular and Molecular Immunology</i>                                   |
|         | OR   |
| 25-236  | <i>Cellular Microbiology</i>   |
| 16-242  | <i>Techniques in Molecular and Cell Biology</i>                            |
| 25-300  | <i>Microbiology and Molecular Genetics Seminar</i>                         |
| 10-222B | <i>Ethics and Integrity in Science</i>                                     |
| 10-444A | <i>Research Ethics Discussion</i>  |
| 25-295  | <i>Readings and Research</i>   |
| XX-XXX  | Additional advanced coursework totaling at least three credits (see below) |

Recommended Courses:

Advanced courses that qualify for the additional credits required of Graduate Students in the MI Graduate Program include, but are not limited to:

Advanced Courses\*:

**Microbiology and Immunology (updated March 2018)**

|        |  |
|--------|--|
| 25-210 | <i>Principals in Laboratory Animal Science</i> 1cr       |
| 25-230 | <i>Current Topics in Microbiology and Immunology</i> 3cr |
| 25-234 | <i>Cellular and Molecular Immunology</i> 3cr             |
| 25-236 | <i>Cellular Microbiology</i> 3cr                         |
| 25-251 | <i>Advanced Molecular Genetics</i> 3cr                   |
| 25-259 | <i>Mucosal Immunity</i> 1cr                              |
| 25-260 | <i>Mucosal Pathogenesis</i> 1cr                          |
| 25-261 | <i>Bacterial Toxin-Mucosal Cell Interactions</i> 1cr     |
| 25-262 | <i>Tumor Immunology</i> 1cr                              |

|        |  |
|--------|--|
| 25-263 | <i>Signaling in the Immune System</i> 1cr                  |
| 25-264 | <i>Developmental Immunology</i> 1cr                        |
| 25-265 | <i>Immunological Tolerance</i> 1cr                         |
| 25-266 | <i>Clinical Immunology</i> 1cr                             |
| 25-269 | <i>Advanced Bacterial Physiology</i> 1cr                   |
| 25-271 | <i>Membranes and Organelles</i> 1cr                        |
| 25-298 | <i>Classical Papers in Microbiology and Immunology</i> 1cr |
| 25-280 | <i>Immunology Journal Club</i> 1cr                         |

Advanced Courses in Other Programs:

|        |   |
|--------|---|
| 02-222 | <i>Advanced Protein Chemistry (3 credits) - Biochemistry</i>                                      |
| 01-250 | <i>Advanced Cell Biology (3 credit) - Cell Biology, Neurobiology &amp; Anatomy</i>                |
| 01-212 | <i>Developmental &amp; Stem Cell Biology (3 credits) Cell Biology, Neurobiology &amp; Anatomy</i> |
| 07-224 | <i>Cellular Signal Transduction (3 credits) - Pharmacology &amp; Toxicology</i>                   |
| 07-226 | <i>Current Concepts of Cancer Biology (3 credits) - Pharmacology &amp; Toxicology</i>             |

\*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* (25-295) (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 of Biomedical Sciences.

**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 following the Qualifying Examination. Constitution of the Dissertation Committee must be approved by the MI Program Director and/or Chair of the Department of MI. Upon identification of faculty to serve on the Dissertation Committee, the student should complete the "Committee Approval" form available through the Graduate School of Biomedical Sciences website. Once all signatures are obtained, the student must submit this form to the Graduate School of Biomedical Sciences, and transmit a copy of this form to the MI Graduate Program Director and Program Administrator.

**Mentor.** All students within the MI Graduate Program must have a mentor with a primary or secondary faculty appointment in the Department of MI prior to acceptance into the MI Doctoral

Graduate Program. The 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, and supervises the Dissertation Defense and associated final committee meeting.

**Dissertation Committee.** Students who enter the MI Doctoral Program from the **IDP** or **NDP** must form a Dissertation Committee by March of their second academic year the Graduate School of Biomedical Sciences (Table 1, Handbook Section 10).

Students who enter the MI Graduate Program from the **MSTP** must form a Dissertation Committee within six months after becoming a full time graduate student (Table 2, Handbook Section 10).

**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 MI. At least two of these three must have a primary appointment in MI. One of these three members is the mentor, who acts as the chairman of the committee.
- ii. one member must not be affiliated with the Department of MI. 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.

Changes in the membership of the Dissertation Committee may occur for various reasons. These changes must be documented by submission of a revised "Committee Approval" form, which has been approved by the mentor, and Director of the MI Graduate Program or Department Chairman. Only the name(s) of the individual(s) removed or added needs to be provided. Once all signatures are obtained, the student must submit this form to the Graduate School of Biomedical Sciences, and transmit a copy of this form to the MI Graduate Program Director and Program Administrator.

**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. Members of a student's committee are expected to 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 MI 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 MI core areas including molecular and cellular biology, genetics, bacteriology, virology, immunology, infectious disease, and the microbiome.

## **Section 4. Evaluation of Students**

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

Mentors are required by the Graduate School to submit an Annual Student Evaluation. This is now accomplished via OASIS.

### **B. Dissertation Committee Meeting Summary document**

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, of which one must be an in-person meeting. 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 electronically complete and make accessible to all committee members a copy of the "Dissertation Committee Meeting Summary Form". Detailed instructions for completing the form and obtaining Dissertation Committee member approval are posted within the Microbiology and Immunology lab notebook on the LabArchives website. An example of the document template can also be found in section 10.

### **C. Readings and Research**

To qualify as a full-time student, graduate students should register for *Readings and Research* (25-295) each semester until they successfully defend their dissertation research. Following completion of all courses, students will register for 9 credit hours of *Reading and Research* for fall and spring semester, or 6 credit hours of *Reading and Research* for summer semester. 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 MI 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 MI 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, mentor, and Dissertation Committee agree on a research project that has potential to generate meaningful data within a reasonable time frame. The student and mentor will discuss 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 student's mentor should also discuss alternative hypotheses and approaches with the student prior to discussion of the Abstract with the full Dissertation Committee. **It is understood that the proposed dissertation research may be modified significantly or abandoned if 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. All documents should follow NIH R21 formatting guidelines, as indicated below.

#### Deadlines.

1. **IDP and NDP** students should submit their Dissertation Abstract no later than November 1 of their third year (see section 10, Table 1).
2. **MSTP** students should submit their Dissertation Abstract no later than 14 months (generally September 1) after becoming full-time graduate students (see section 10, Table 2).

**Abstract Format.** The Dissertation Abstract will be formatted as follows: maximum length of 1 page including figure/s with 0.5-inch margins and all text at least 11-point Arial or Helvetica, single-spaced, with no more than 6 lines per inch and no more than 15 characters per inch. The abstract will include a statement of the hypothesis to be tested, overall objectives, a brief background and experimental design and can include reasonably sized figure/s. Figure legends should use 8 point (minimum) Arial or Helvetica. Students are encouraged to discuss preliminary data with the Dissertation Committee prior to submission of the Dissertation Abstract. Following approval of the abstract by the Dissertation Committee, the student should complete the “Outline Approval” form available through the Graduate School of Biomedical Sciences website. Once all signatures are obtained, the student must submit this form to the

Graduate School of Biomedical Sciences, and transmit a copy of this form to the MI Graduate Program Director and Program Administrator.

## Section 6. Dissertation Research Proposal

### A. Deadlines

1. For **IDP and NDP** students, the Dissertation Research Proposal should be submitted to the Dissertation Committee prior to May 1 of the student's third year. The committee should receive the proposal at least two weeks prior to the Dissertation Committee meeting. The Dissertation Committee Meeting should occur prior to June 1 (at the end of the student's third year) to discuss the merits of 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 in section 10 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 Dissertation 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 section 10, 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 should follow NIH guidelines for R21 proposal applications: 0.5-inch margins, all text at least 11-point Arial or Helvetica, single-spaced, no more than 6 lines per inch and no more than 15 characters per inch for all sections (see below). Figure legends may utilize 8 point (minimum) Arial or Helvetica. The proposal should address the hypothesis to be tested, background and significance, preliminary data, and experimental design. Figures and tables **MUST** be included within the body of sections A-D and are **NOT** to be included as Appendices. Therefore, figures and tables count towards the page limit established below. Literature cited has no page limitations. Details for each section are:

**1. Specific Aims (1 page).** 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. The specific aims page should resemble the abstract.

**2. Research Strategy: Sections B and C combined (6 pages)**

**i. Background and Significance.** This section should succinctly state the relevance of the proposed research and its potential impact, while not straying into tangential or irrelevant

areas that distract from the compactness and meaningfulness of the proposal. An appropriate review of the literature should include sufficient information to put the proposed research into perspective with the current status of the field. This section should critically evaluate existing knowledge and identify gaps that the project is designed to fill. The significance of the work should be clearly stated. One or two pages is recommended.

**ii. 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. 4 or 5 pages is recommended.

**iii. Literature Cited (no page limit).** This section is not included in the six-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. The document should be prepared with the intent of submission to NIH for pre-doctoral funding. Thus, all work should be original and follow guidelines to avoid plagiarism.

**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 MI 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 by the Dissertation Committee to the Director of the MI Graduate Program as well as the Dean of the Graduate School of Biomedical Sciences. The committee shall either:

1. Approve the completed Dissertation Research Proposal. Committee members will indicate their acceptance of the final research proposal by completing and signing the approval form for the "Doctoral Qualifying Examination Evaluation Form" (see Graduate School web site). The student's mentor will also complete the "Qualifying Examination: Chairperson's Report" Form. These forms, and a copy of the completed research proposal / outline, will be submitted to the Director of the MI Graduate program and the Department Chair for approval and forwarded to the Dean of the Graduate School of Biomedical Sciences for final approval. Copies of the completed and signed documents should be forwarded to the Director and Administrator of the MI Graduate Program for their records. Upon approval by the Graduate School of Biomedical Sciences, a student shall be admitted to Candidacy for the PhD degree.
2. 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 three options (1, 3, or 4) described in this section.
3. Recommend to the Director of the MI Graduate Program, the Department Chair, 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. Committee members will indicate that the student's performance on the Qualifying Examination was "Unsatisfactory" on the "Doctoral Qualifying Examination Evaluation Form" (see Graduate School web site). The student's mentor will also complete the "Qualifying Examination: Chairperson's Report" Form and indicate that it was consensus of the Dissertation Committee that the student's performance was "Failed". These forms, and a copy of the completed research proposal / outline, will be submitted to the Director of the MI Graduate program and the Department Chair for approval and forwarded to the Dean of the Graduate School of Biomedical Sciences for final approval. Copies of the completed and signed documents should be forwarded to the Director and Administrator of the MI Graduate Program for their records.
4. Recommend to the Director of the MI Graduate Program, the Department Chair, 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 Immunology. Under these circumstances, the committee will recommend that the student be dismissed from the graduate program. Students recommended for dismissal have the right to appeal the decision as described in the Graduate School Handbook. Committee members will indicate that the student's performance on the Qualifying Examination was "Unsatisfactory" on the "Doctoral Qualifying Examination Evaluation Form" (see Graduate School web site). The student's mentor will also complete the "Qualifying Examination: Chairperson's Report" Form and indicate that it was consensus of the Dissertation Committee that the student's performance was "Failed". These forms, and a copy of the completed research proposal / outline, will be submitted to the Director of the MI Graduate program and the Department Chair for approval and forwarded to the Dean of the Graduate School of Biomedical Sciences for final approval. Copies of the completed and signed documents should be forwarded to the Director and Administrator of the MI Graduate Program for their records.

**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 and presented during annual or semi-annual meetings and included in the summary submitted prior to the Dissertation Committee meeting. A revised research document should include a 1 page description detailing:

1. revised hypothesis
2. modified or new Specific Aims
3. new or changed methods
4. anticipated results
5. alternative approaches

This document will be approved by the Dissertation Committee and forwarded to the MI Graduate Program Director and Graduate Program Administrator. A new, full-length Proposal is NOT required, and the modified proposal does NOT require approval of the Director of the MI Graduate program, the Department Chair, 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 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 NDP, 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. Dissertation Document and Defense**

Candidates in the MI Graduate 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 Document. The Dissertation Document 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 Document, 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. An initial introduction section putting the student's work in context is expected. A discussion section stating the importance and relevance of the Dissertation research to the field of study is also appropriate and should be sufficiently clear to provide direction for subsequent investigations. Upon completion, the written Dissertation Document will be distributed to the members of the Dissertation Committee at least 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, and the Dissertation Committee. Following the public defense, the candidate will meet in private with the Dissertation Committee wherein the Dissertation Document 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 written 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. Any departure from this timeline will require a formal request from the student and mentor and approval by the Graduate School of Biomedical Sciences.

Students must register for Doctoral Dissertation (25-399) the semester that they are planning on holding their Dissertation Defense. It is incumbent on the student to ensure that Dissertation Committee members have given their approval to enroll in this course and defend their dissertation work. Students should notify the MI Graduate Program Director and Program Administrator of their intent to graduate. The student should also communicate with the

Graduate School of Biomedical Sciences to notify them of their intent and confirm that all documentation needed for their graduation is in place.

## **Section 8. Additional Required Activities**

In addition to completing required courses, qualifying examinations, and the Dissertation Document, students within the MI Graduate Program are required to participate in and/or complete other required documents/activities, including the following:

### **A. Student Portfolio**

Upon entrance into the MI Graduate Program, all students are required to complete the “Student Portfolio” document. This should be done by July 30<sup>th</sup> of that year. This document is available within the Microbiology and Immunology notebook on the LabArchives website ([www.labarchives.com](http://www.labarchives.com)). Updates to this document should be made periodically, or at a minimum prior to each meeting with the Dissertation Committee. Detailed instructions on how to complete this document have been provided within the Microbiology and Immunology lab notebook. Students should discuss the document during their committee meeting to identify activities completed since the last committee meeting, or to identify areas where attention is needed. A copy of the document template is provided in Section 10.

### **B. Committee Meeting Summary document**

Students should complete the “Committee Meeting Summary” document prior to and following each meeting with their Dissertation Committee. The student should electronically complete and make this document accessible to all committee members. Detailed instructions for completing the form and obtaining Dissertation Committee member approval are posted within the Microbiology and Immunology lab notebook on the LabArchives website. An example of the document template can also be found in section 10.

### **C. MyIDP**

All students are required to initially complete the MyIDP career assessment upon their entrance into the MI Graduate Program. This should be done by July 30<sup>th</sup> of that year. Each subsequent year, students are expected to update the MyIDP career planning tool (or an equivalent) and discuss the process with the mentor. Completion of this requirement should be noted in the Student Portfolio document available within the Microbiology and Immunology notebook on the LabArchives website ([www. Labarchives.com](http://www.Labarchives.com)). MyIDP can be accessed at: <http://myidp.sciencecareers.org/>

### **D. Responsible Conduct in Research (RCR) Training**

Students are required to participate in RCR activities twice yearly. The Center for Bioethics and Medical Humanities, in collaboration with faculty mentors, tailors structured session and collaborates with the Office of Research to ensure that all mandatory instruction is received and tracked. The formal training is divided into two modules. The first is *Module 1: Online Training* and is divided into eight lessons that provide the basis for understanding the ethical issues related to basic scientific and medical research, including conflict of interest, animal and human subject research policies, safe laboratory practices, research misconduct, mentor/mentee responsibilities, authorship and publication, collaborative research, data acquisition, peer review, and the scientist as member of society. The online module forms the basis for face-to-

face *Module 2: Discussion Series*, which provides a venue for facilitated discussions of a series of topics in research ethics. RCR is associated with the “Spotlight in Science” series.

## **Section 9. Student Mental Health Resources**

MCW appreciates the demands imposed on students during their training, which can produce a variety of stressors to students and their families. Therefore, MCW has a Student Mental Health Services program to assist students and their families in times of need. Counseling and therapy for personal and school related issues include but are not limited to:

- Anxiety
- Depression
- Substance abuse
- Marital concerns
- Sexual dysfunction, as well as
- Child, adolescent, and family problems

Student Mental Health Services can be contacted at 414-955-8933, Monday – Friday from 8am to 5pm. Additional information is also available at:  
<https://www.mcw.edu/Psychiatry-Behavioral-Medicine/Health-Services.htm>

## Section 10. Summary of Deadlines / Forms

### Table 1.

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

| Academic Year <sup>§</sup> | 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           |

§ Refers to when student entered the Graduate School of Biomedical Sciences.

**Failure to meet the deadlines in Table 1 may result in a student receiving an UNSATISFACTORY in Readings and Research, which places the student on probation.**

### Table 2.

**Deadlines for MSTP students who enter the MI Graduate Program July 1**

| Academic Year* | Semester | Month/Day   | Month # <sup>&amp;</sup> | 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 |
|---|------|------------|----|---|

\* Refers to when MSTP student becomes a full-time graduate student in the Department of MI. This is generally in July after the second year of Medical School.

& Month # refers to the number of months since student entered the MI Graduate Program.

**Failure to meet the deadlines in Table 2 may result in a student receiving an UNSATISFACTORY in Readings and Research, which places the student on probation.**

**Microbiology and Immunology Graduate Program**  
Medical College of Wisconsin

**Dissertation Committee Meeting Summary**

Instructions: The **student** should complete the **Pre-Meeting Information Section** and provide to his/her thesis committee members using LabArchives prior to the meeting. Following the meeting, the **student** should complete the **Post-Meeting Information Section**. Once complete, committee members should review and provide comments to indicate approval of the document.

**Pre-Meeting Information**

1. Goals set at last committee meeting:

2. Research progress since last committee meeting:

**Dissertation Committee Meeting Summary document p.2.**

**Post-Meeting Information:**

3. Summary of Thesis Committee Meeting:

4. Goals established for next committee meeting:

# Microbiology and Immunology Graduate Program

## Medical College of Wisconsin

### Student Portfolio (SP)

**Instructions:** The **student** should complete the SP following entrance into the Microbiology and Immunology Graduate Program. The document should be updated semi-annually and provided to committee members using LabArchives at least 1-week prior to each committee meeting.

**1. Contact Information** (Name, Address, Telephone, Email)

**2. Education:**

**Institution attended** (Name of institution, Department or Program, Location, Degree, Date of attendance)

**3. Research Experience**

**Research Projects** (Institution, Position, Dates, Description of Project)

**Research Grants Awarded/Pending/Submitted** (Title, Source, Role, Dates, Status, Funds Awarded)

**4. Peer-Reviewed Workshops/Presentations/Committee Meetings**

**Meetings and Conferences Attended** (Name of conference, Location, Title of abstract, Date, Indicate if poster or talk)

**Institution or Department Presentations** (Location, Title of talk or abstract, Date, Format of presentation)

**MCW Graduate School Annual Poster Session** (Title of poster, Date)

**Thesis Committee Meetings** (Date)

**5. Bibliography**

**Papers** (Authors, Title, Journal, Volume, Pages, Year, PMID#)

**Review Articles** (Authors, Title, Journal, Volume, Pages, Year, PMID#)

**Papers/Review Articles in Preparation** (Authors, Title, Journal, Year)

**6. Academic Activities**

**Courses** (Year, Semester, Course #, Course Name)

## **Student Portfolio p.2.**

**Coursework complete?** Y\_\_\_\_ N\_\_\_\_

**Individual Development Plan [MyIDP or equivalent]** (Date completed, Date discussed with mentor)

**Spotlight in Science Sessions Attended** (Date, Topic of Session)

**Responsible Conduct in Research Sessions Attended** (Date, Topic of Session)

**Career choice Presentations Attended** (Date, Topic of Session)

**Other Professional Development Activities** (Date, List activity)

### **7. Teaching**

**Guest Lectures Delivered** (Date, Course)

**Community/Lay Public Presentations** (Date, Event)

### **8. Mentoring**

**Mentoring activity** (Name of student, Title, Date, Capacity)

### **9. Memberships in Professional Societies**

**Organization** (Name of society, Role, Dates of membership)

### **10. Leadership and Service**

**Committee service** (Name of committee, Role, Dates of service)

**Community Service Activities** (Name of event, Role, Dates of service)

### **11. Honors and Awards**

**Honors or awards** (Name of Award or Honor, Date received)