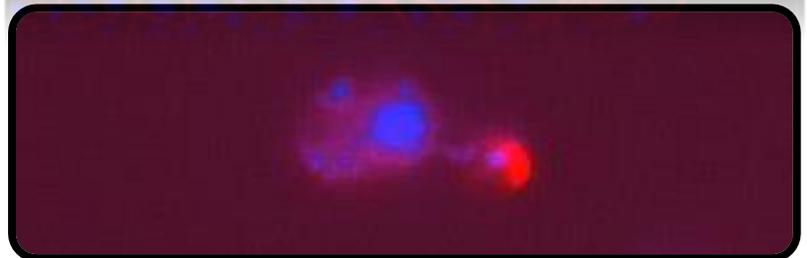
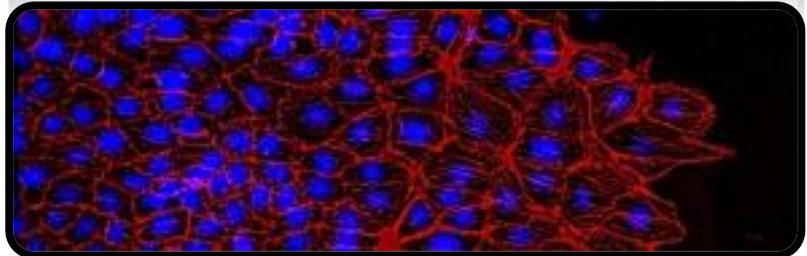
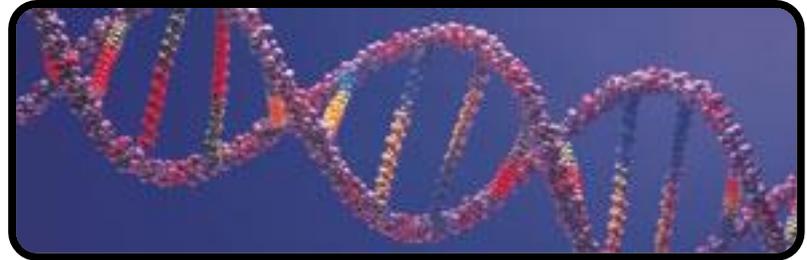


Requirements and Guidelines

Doctoral
Graduate
Program
in
Microbiology
and
Immunology

Medical College
of Wisconsin

*Effective
January 15, 2020*



*Student and Faculty
Handbook*

Student Responsibility

Version Jan 15, 2020

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:
<https://www.mcw.edu/-/media/MCW/Education/Graduate-School/Documents/Handbook09062016FINALHLC.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"
 - Note that the "Dissertation Abstract" is an M&I requirement and need not be submitted to the Graduate School. The form is available on the website for the M&I Graduate Program.

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 within their folder on LabArchives, and providing a copy to their mentor for their respective records if requested.

Please report any Handbook errors to the Program Director

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Section 1. Entrance into the Doctoral Program

A. Selection of Dissertation Mentor

Most students enter the Microbiology and Immunology 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 Microbiology and Immunology (M&I). Students who choose a dissertation mentor in M&I 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 M&I 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 regardless of their route of entry. Deadlines for Qualifying Examinations are summarized in Table 1 and Table 2.

1. IDP Qualifying Examination.

Students who join the M&I doctoral program from the IDP will adhere to the guidelines and deadlines for the IDP Qualifying Examination (see IDP Student and Faculty Handbook). The IDP Qualifying Examination will coincide with the Dissertation Proposal Defense (see below). Briefly, the IDP Qualifying Examination will be held fall Y2 and will be based on a formal evaluation of the student's overall development within the IDP. The examination will consist of a written NIH F31-style Grant Proposal focused on the student's research, an oral presentation of the written proposal, and an assessment of the student's knowledge of curricular material and background information related to the proposal. The qualifying examination will be overseen by the student's Dissertation Committee along with a representative from the IDP Executive Evaluation Committee (EEC). The EEC representative will chair the qualifying examination. The student's dissertation mentor will participate in the Oral Examination but will not vote on the outcome of the Qualifying Exam. There are three possible outcomes to the IDP Qualifying Examination: (1) Unconditional Pass, (2) Conditional Pass, and (3) Fail. Students receiving a conditional pass may be required to complete some remedial work. If the performance of the student is deemed unsatisfactory (i.e. the outcome is a fail), then the student may be required to redo or retake one or more components of the Qualifying Examination. If the second examination is not passed, the student will be ineligible to continue in the program. 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.

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.

2. NDP Qualifying Examination.

Students who join the M&I doctoral program from the NDP program will be required to pass a Qualifying Oral Examination administered by M&I through the student's Dissertation Committee (see below for Committee information) and an NDP representative. The NDP Qualifying

Examination will coincide with the Dissertation Proposal Defense (see below) and should be scheduled by the student. A modified IDP policy applies: The NDP Qualifying Examination will be held fall Y2 and will be based on a formal evaluation of the student's overall development within the NDP. The examination will consist of a written NIH F31-style Grant Proposal focused on the student's research, an oral presentation of the written proposal, and an assessment of the student's knowledge of curricular material and background information related to the proposal. The qualifying examination will be overseen by the student's Dissertation Committee along with a representative from the NDP. The NDP representative will chair the qualifying examination. The student's dissertation mentor will participate in the Oral Examination, but will not vote on the outcome of the Qualifying Exam. There are three possible outcomes to the NDP Qualifying Examination: (1) Unconditional Pass, (2) Conditional Pass, and (3) Fail. Students receiving a conditional pass may be required to complete some remedial work. If the performance of the student is deemed unsatisfactory (i.e. the outcome is a fail), then the student may be required to redo or retake one or more components of the Qualifying Examination. If the second examination is not passed, the student will be ineligible to continue in the program. 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.

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.

3. MSTP Qualifying Oral Examination.

Students who join the M&I doctoral program from the MSTP program will be required to pass a Qualifying Oral Examination administered by M&I through the Dissertation Committee (see below for Committee information). The Qualifying Examination will coincide with the Dissertation Proposal Defense (see below). For students who enter July 1, the Qualifying Exam should take place before May 15 of Graduate School year 1 (GS1) (see Table 2); the F30 Dissertation Proposal should be sent to the student's Dissertation Committee two weeks before the exam. The student identifies 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 communicates 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 M&I, and iii) NOT be the student's research mentor. The student's dissertation mentor attends the examination but may not participate in the discussion of the student's performance that takes place after the student's exam. The chairman: i) makes the final decision (based on evaluations from all of the committee members) regarding the student's level of performance, and ii) completes and submits the paperwork required to document the student's Qualifying Exam performance.

Students whose Qualifying Exam is deemed 'unsatisfactory' are permitted to repeat the examination once; this should occur by June 30 of the GS1 year. 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. Two weeks prior to the examination, the student should provide the

committee with the F30 Dissertation Proposal. At the Qualifying Examination, the student will present a formal power point presentation of the proposal and questions to the MSTP student may encompass any area but shall be focused on the proposal. Committee members will use the presentation 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.

Section 2. Course Requirements

A. Course and Credit Requirements

The training component of the M&I 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 their 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 M&I 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 M&I 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 M&I Graduate Program; IDP electives (excluding 16-292 *Writing a Scientific Paper* and 16-293 *Writing an Individual Fellowship*)

- count toward this total. MSTP students are required to take 6 credits of advanced coursework within the M&I Graduate Program.
- All graduate students in the M&I doctoral program 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 M&I doctoral 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 M&I Doctoral Program are required to take *Techniques in Molecular and Cell Biology* (2 cr; 16242).
- Students entering the program from the IDP and NDP are required to take *Integrated Microbiology and Immunology* (3 cr; 16270). Students should take this IDP course as an elective during the spring of their first year.
- Students entering the program from the MSTP are required to take (beyond "*Techniques ...*") *Foundations of Biomedical Science III* (16217)

B. Course Summary

Course Requirements:

1. **IDP** students who enter the M&I Graduate Program are required to take:

16270	<i>Integrated Microbiology and Immunology – 3cr</i>
16-292	<i>Writing a Scientific Paper– 1cr</i>
16-293	<i>Writing an Individual Fellowship -2cr</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 coursework totaling at least six credits (see below)

2. **MSTP** students who enter the M&I 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 – 2cr</i>
16-217	<i>Foundations of Biomedical Science III – 3cr</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 coursework totaling at least one credit (see below)

3. **NDP** students who enter the M&I Graduate Program after successful completion of the first year are required to take:

16-270	<i>Integrated Microbiology and Immunology – 3cr</i>
16-292	<i>Writing a Scientific Paper– 1cr</i>
16-293	<i>Writing an Individual Fellowship -2cr</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 coursework totaling at least XXX credit (see below)

Recommended Courses:

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

Recommended Courses*:

Offered by the M&I Graduate Program (updated March 2018)

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

ver Sept 2020

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

Other Programs:

16-215/18	<i>Foundations in Biomedical Sciences I, II, III, or IV</i> 3cr
16-245	<i>Statistics for Basic Sciences</i> 1 cr
16-273	<i>Advanced Cell Biology</i> 3 cr
16-xxx	<i>See other IDP Course Offerings</i>
01-212	<i>Developmental & Stem Cell Biology (3 credits)</i> Cell Biology, Neurobiology & Anatomy
07-224	<i>Cellular Signal Transduction (3 credits)</i> - Pharmacology & Toxicology
07-226	<i>Current Concepts of Cancer Biology (3 credits)</i> - Pharmacology & Toxicology

*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.

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, must be approved by the M&I Program Director, Chair of M&I, and the Dean of the Graduate School, using the "Committee Approval" form available on the Graduate School website.

A. Mentor. All students within the M&I Graduate Program must have a mentor with a primary or secondary faculty appointment in the Department of M&I prior to acceptance into the M&I 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.

B. Dissertation Committee Formation. Students who enter the M&I Doctoral Program from the **IDP** and **NDP** must form a Dissertation Committee by June 1 of their first academic year in graduate school (i.e., June 1 following the first IDP/NDP year, Table 1).

Students who enter the M&I Graduate Program on July 1 from the **MSTP** must form a Dissertation Committee by February 1 of GS1 (Table 2).

C. 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 have:

- i. at least three members with an appointment in the Department of M&I. At least two of these three must have a primary appointment in M&I. One of these three members is the mentor, who acts as the chairman of the committee.
- ii. one member that is not affiliated with the Department of M&I. 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 the qualifying exam and dissertation proposal defense.

With input from the mentor, it is the student's responsibility to meet, discuss and invite faculty to serve on their committee. 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. Changes in the membership of the Dissertation Committee may occur for various reasons. These changes must be documented by submitting a revised "Committee Approval" form, which has been approved by the mentor, and Director of the M&I 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 M&I Graduate Program Director and Program Administrator.

Challenge to the Dissertation Committee. The Dissertation Committee will (i) mentor the student in course selection, (ii) oversee the student's emerging dissertation research and assist in the preparation of the Dissertation Abstract and Dissertation Research Proposal, (iii) oversee the Qualifying Examination (and Proposal Defense, if the same), (iv) address deficiencies noted in the student's education by the Qualifying Examination Committee, (v) oversee the Dissertation Proposal defense, and (vi) attend two committee meetings per year (ideally, one associated with a research-in-progress presentation). It is the responsibility of the Dissertation Committee 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 M&I 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 M&I 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. MyIDP Participation

Students are required to develop an Individual Development Plan upon joining a lab and review the plan with their mentor. Students should utilize MyIDP available at the following website: <https://myidp.sciencecareers.org/>. MyIDP should be updated yearly and discussed with the mentor. Documentation of this activity should be made within the "Student Portfolio" (see section 9) and uploaded into the student's LabArchives folder.

C. Responsible Conduct in Research (RCR)

According to the NIH, "The scientific community and the community at large rightly expect adherence to exemplary standards of intellectual honesty in the formulation, conduct, and reporting of scientific research." To reach this goal, students are required to participate in the RCR sessions that occur TWICE a year. These workshops provide a total of 4-hours of refresher RCR training per year to help trainees remain compliant for training grants (T32 and TL1), individual fellowships (F), and to gain greater appreciation of issues surrounding responsible conduct of research.

D. 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. The document template can also be found in Section 9.

E. 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 (substandard), and U (unsatisfactory). Please note that the definition for S has been changed from satisfactory to substandard. 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 M&I Graduate Program if an evaluation of *Unsatisfactory* in Readings and Research is contemplated, as an *Unsatisfactory* places the student on probation. If there is consensus that the student performance is evaluated as *Unsatisfactory*, a letter explaining the basis for this grade and detailed corrective measures and strategies shall be submitted to the Program Director and to the Dean of the Graduate School in Biomedical Sciences. A student who receives a second evaluation as *Unsatisfactory* during any subsequent semester of study will be considered 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, mentor, and committee 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 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 F30/31 formatting guidelines, as indicated below.

Deadlines.

1. IDP and NDP students should submit their Dissertation Abstract, as crafted in *Writing an Individual Fellowship* course (16-293), before September 1st in the fall of the second year, and seek Dissertation Committee approval within two weeks (see Table 1 and M&I Form). Transmit

a copy of this departmental form to the M&I Graduate Program Director and Program Administrator, NOT the Graduate School, and ideally upload the document on LabArchives.

2 MSTP students should submit their Dissertation Abstract (Specific Aims) by March 1 of GS1, and seek Committee approval within two weeks (see Table 2 and M&I Form). Transmit a copy of this departmental form to the M&I Graduate Program Director and Program Administrator, NOT the Graduate School, and ideally upload the document on LabArchives.

Section 6. Dissertation Research Proposal

A. Deadlines

1. For IDP and NDP students, the Dissertation Research Proposal (F31, from 16-293 *Writing an Individual Fellowship*) may also serve as the Qualifying Exam document if the student has been able to generate a sufficient amount of preliminary data to justify holding both exams at the same time. Students wishing to hold their dissertation proposal qualifying exam at the same time should inform their Dissertation Committee (minus the EEC representative) at two weeks before the Exam / Defense date (Nov-Dec of the student's second year, as scheduled by the IDP; NDP students need to schedule this Exam). 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 May 1 of the following 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 (F30) also serves as the Qualifying Exam document and should be submitted to the Qualifying Exam / Dissertation Committee two weeks before the Exam / Defense date (~May 15 of GS1). 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 June 30 of GS1 (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 should follow NIH guidelines for F30/31 proposal applications and be developed in the *Writing an Individual Fellowship* course (16-293) or Grant Writing Proposal Workshop for MSTP students: 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.

Reasonably sized figures may be included, and legends should use 8-point (minimum) Arial or Helvetica. This section should not exceed one page.

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. For **IDP students**, the dissertation defense coincides with the IDP Qualifying exam and will be scheduled through the IDP (Table 1) (the dissertation proposal should be provided to the committee two weeks before the exam). For **NDP students**, the NDP Qualifying exam also coincides with the dissertation defense, but NDP students need to schedule the exam as in Table 1 (the dissertation proposal should be provided to the committee two weeks before the exam). **MSTP students** need to schedule a committee meeting for the exam by ~May 15 of GS1 (Table 2). The student will present an overview of the Dissertation 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 M&I 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 Dissertation Advisor will convey the evaluation and recommended course of action by the Dissertation Committee to the Director of the M&I 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 M&I 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 Program Director and Administrator of the M&I Graduate Program for their records, and uploaded into LabArchives. 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 same four options (i – iv) described in this section.
3. Recommend for a MS degree. This occurs if the Director of the M&I Graduate Program, the Department Chair, and Dean of the Graduate School decide 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 M&I 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 dismissal from the program. This occurs if the Director of the M&I 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.

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 M&I Graduate Program Administrator. A new, full-length Proposal is NOT required, and the modified proposal does NOT require approval of the Director of the M&I 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. Final 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 the deadlines in Tables 1 and 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.

Section 7. Dissertation Defense

Candidates in the MI 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 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 8. Student Mental Health Resources

The M&I Department and MCW appreciate 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 9. Summary of Deadlines / Forms

Table 1. Deadlines for IDP/NDP students

Academic Year	Semester	Month / Day	Item
1	Spring	mid-Feb	Join M&I Department
	Summer	June 1	Form Dissertation Committee
2	Fall	Sept 1 st week	F31 Dissertation Abstract due - crafted within 16-293 <i>Writing an Individual Fellowship</i> course - approval required two weeks later
		Nov-Dec TBD	F31 Dissertation Proposal due - crafted within 16-293 <i>Writing an Individual Fellowship</i> course - Due 2 weeks before IDP Qualifying Exam if holding the dissertation proposal exam simultaneously – Date Determined by IDP Scheduling
		Nov-Dec TBD	IDP Qualifying Exam / Dissertation Proposal Defense - Date Determined by IDP Scheduling, or scheduled by NDP student
2	Spring	May 1	Submit Dissertation Proposal to committee (if holding separately from IDP/NDP qualifying examination)
	Spring	June 1	Hold Dissertation Research Proposal Defense (if holding separately from IDP/NDP qualifying examination)

Table 2. Deadlines for MSTP students

Academic Year*	Semester	Month/Day	Month#	Item
GS1	Fall	July-Sept	-	Join M&I Department
	Spring	February 1	6	Form Dissertation Committee
		March 1	8	Dissertation Abstract Due
		May 1	10	Dissertation Proposal due
		~May 15	10	Qualifying Exam / Proposal Defense
		June 15	11	Revised Proposal (if required)
		June 30	11	Qualifying / Defense retake (if required)
GS2	Fall	F30 submit		August 8, November 8, April 8

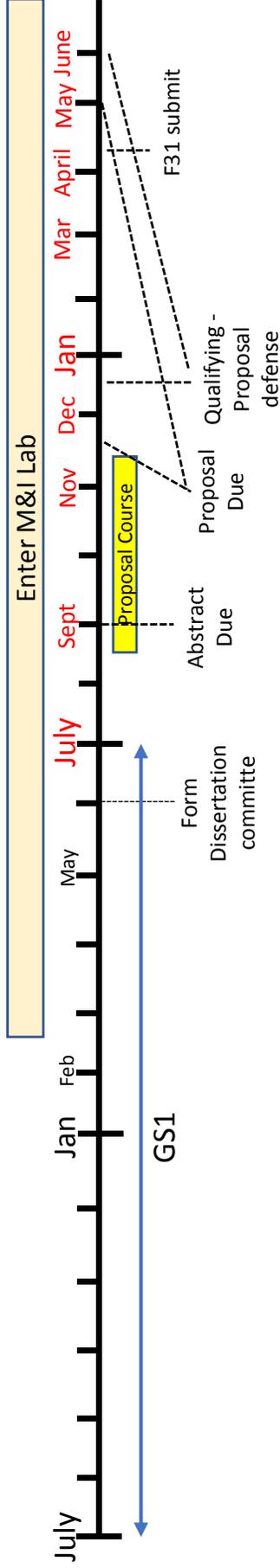
* Year 1 begins when an MSTP student becomes a full-time graduate student in the Department of Microbiology and Immunology. This is generally in July after the second year of Medical School.

Month refers to the number of months since entering the M&I graduate program.

ver Sept 2020

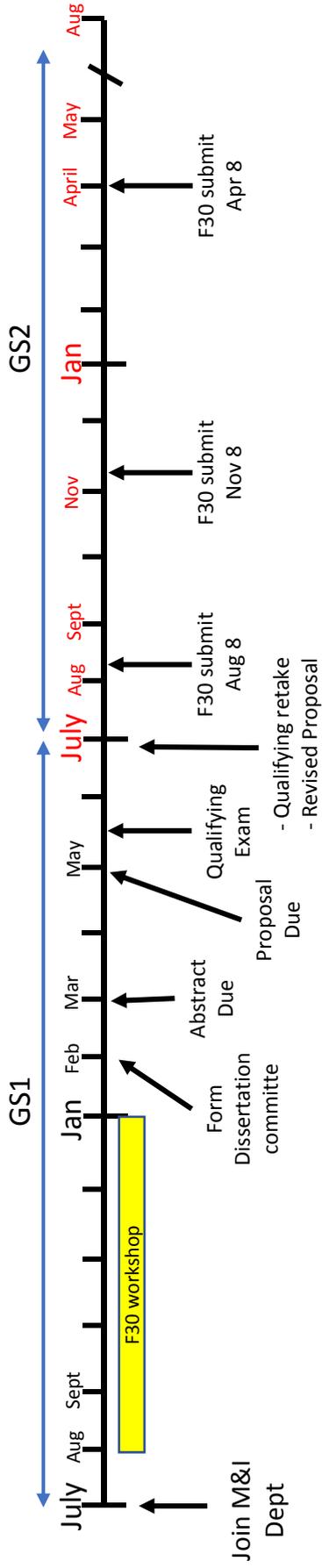
Failure to meet the deadlines in Tables 1 and 2 may result in a student receiving an UNSATISFACTORY in Readings and Research, which places the student on probation.

IDP / NDP Qualifying Exam / Dissertation Defense Timeline Microbiology and Immunology



- Join Micro and Immunology ~Feb 15
- Form Dissertation Committee: June 1
 - Abstract Due: Sept 1, or based on timing in "Writing a Fellowship" course (IDP 16-293)
 - Proposal Due: Nov 15-Dec 1, or two weeks before Qualify/Defense if doing concurrently
- Qualify / Proposal Defense: Dec 1 - Dec 15, as scheduled by IDP or NDP student
 - Submit F31 (if desired) April 8
- Submit dissertation proposal (if separate) May 1
- Defend dissertation proposal (if separate) June 1

MSTP Qualifying Exam / Dissertation Defense Timeline Microbiology and Immunology



- Join M&I Dept: July 1
- Form Committee: February 1, GS1
- Dissertation Abstract due: March 1, GS1
- Dissertation Proposal due: May 1, GS1
- Qualify Exam / Proposal Defense: ~May 15, GS1
- Qualify re-take (if needed): June 30, GS1
- Revised Proposal (if needed): June 30, GS1
- Submit F31 (if desired): Aug 8, Nov 8, Apr 8 - GS2

Microbiology and Immunology
Medical College of Wisconsin

Doctoral Dissertation Abstract / Specific Aims Approval

Instructions: Submit your dissertation research proposal Abstract (or Specific Aims for MSTP) to your committee for approval *prior to* writing the dissertation research proposal. Please type or print the names of the committee members on this form and obtain the appropriate signatures to indicate approval. Please provide copies of the approved form AND the Specific Aims to the committee members AND the M&I Departmental office for inclusion in your records. **DO NOT send to the Graduate School, as this is a Departmental requirement !!!**

Student's Name: _____

Dissertation Advisor: _____
Print Signature date

Program Director: _____
Print Signature date

Dissertation Committee:

Name

Signature

Microbiology and Immunology Graduate Program

Medical College of Wisconsin

Dissertation Committee Meeting Summary

Link to this form is on the M&I website/Graduate Program

Instructions: The **student** should complete the **Pre-Meeting Information Section** and provide to his/her thesis committee members prior to the meeting. Following the meeting, the **student** should complete the **Post-Meeting Information Section**. The completed document should then be circulated to committee members for comment/approval, and the final copy of the report should be signed by the student, the advisor, and the Program Director.

Graduate Program:

Student: _____
Name Signature date

Advisor: _____
Name Signature date

Program Director: _____
Name Signature date

Dissertation Committee Members (Name and Department)

Member 1:

Member 2:

Member 3:

Member 4:

Member 5:

Overall evaluation of student's effort - To be determined by committee members (Has student: (i) provided information in a timely manner, and (ii) completed or made progress towards indicated goals).

Exceeded expectations Met expectations Below expectations

Continued on next page

Dissertation Committee Meeting Summary – Page 2

Pre-Meeting Information

1. Goals set at last committee meeting, Continued:

2. Research progress since last committee meeting:
(Can attach a document or use this space)

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)

Link to this form is on the MI website/Graduate Program

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 members of the thesis committee 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, 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)

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)

Student Portfolio (SP) – Page 2

6. Academic Activities, continued

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)