MICROBE-HOST INTERACTIONS (MHI)
STUDENT-HANDBOOK

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INTRODUCTION

Welcome to the MHI Graduate Program! In the next few years, the goal of our program is to give you the tools you need to develop as an independent thinker and learn how to perform hypothesis-driven research in the area of microbe-host interactions. In this handbook, you will find useful information about timelines, information about required forms, information on how to assemble your committee and prepare for your qualifying exam and committee meetings, as well as resources you may need to access for your well-being.

At Vanderbilt, we have a long tradition of free expression, which is one of our core principles. We believe in bringing together people of differing viewpoints for a common purpose. Learn more about how we practice free expression at Vanderbilt and read Vanderbilt's Freedom of Expression policy in the Student Handbook.

ADMISSION TO THE MHI PROGRAM

Students can enter the MHI Ph.D. program following completion of one year of studies in the Interdisciplinary Graduate Program or the Quantitative and Chemical Biology Program (QCB), or completion of 1-2 years of coursework in the Medical Scientist Training Program at Vanderbilt University and completion of research rotations, as determined by IGP, QCB or MSTP.

After students complete the required rotations, they select a laboratory for their dissertation research by late spring or early summer of their first year. This is probably the most important decision made by a student at this stage of their professional education. The choice of a faculty mentor should be based on an informed analysis of the student's intellectual needs and career goals together with compatibility with the mentor. If you have questions about this choice, you're welcome to discuss it with the MHI Program DGS (Dr. Patrick), the Division Chief (Dr. Skaar), or the IGP, QCB, or MSTP Director.

Another entry mechanism exists for students to join the MHI program. A faculty member may recruit a student to enter his/her laboratory via direct admission. Such students participate in the graduate program offered to each IGP student but may bypass the rotation period and enter the sponsoring faculty member's laboratory immediately upon the student's arrival at Vanderbilt. In this case, the mentor provides full financial support for the student's tuition and stipend costs. Occasionally, a plan involving one or two rotations may be created in collaboration with the BRET office when a student is considering joining the MHI program from another lab at Vanderbilt or is transferring from a program at another institution. Please contact the DGS immediately, if you are considering direct admission of a student (for faculty members), or if you are considering direct admission into a specific lab (for prospective MHI students).

Credit Requirements for the Ph.D. in Microbe-Host Interactions

To be awarded the PhD, IGP and direct-admit students must complete a total of **72 credit hours**. Of these, **24 credit hours must be didactic**. The remaining **48 credit hours** are registered under **M&IM 8999** (Non-Candidate Research, aka pre-qual) and **M&IM 9999** (Ph.D. Dissertation Research; you register for this as soon as you advance to candidacy). You can also fulfill these remaining hours with elective courses approved by your mentor, the course instructor, and the DGS. Please contact your Program Manager for more information.

 Core Courses:

Year 1 – during IGP/QCB
IGP 8001: Bioregulation I (8)
MSTP students are exempt

Year 2 – Summer
M&IM 8332 Foundations in Microbiology and Immunology (2)
MSTP students are exempt
**Also required for Direct Admit students*
The objective of this course is to familiarize learners with core concepts in immunology, microbiology, and virology. The course is divided into 10 week-long sessions in which a core component of mammalian immunity is introduced, followed by an examination of how microbial pathogens evade or dismantle the immune response.

Year 2 – Fall
Choose one from the following (you may also elect to take both):
M&IM 8328: Molecular Virology (2)
This course focuses on interactions of animal viruses with their host cells, discussed at the molecular and cellular level as model systems. Special emphasis is placed on current literature and methodology.

OR

M&IM 8350: Bacterial Pathogenesis Through the Lens of Nanomachines (2)
The objective of this course is to provide learners with in-depth knowledge of core concepts of bacterial physiology in the context of pathogenesis. Students will become acquainted with core bacterial processes and how these processes are engaged and altered during infection and in response to environmental changes.

MSTP 8310: MSTP Seminar (1)

*MSTP STUDENTS ONLY

Year 2 - Spring
M&IM 8334: Special Topics in Molecular Pathogenesis (2)
The Special Topics in Molecular Pathogenesis is comprised of a series of "nano-courses" which are 2 weeks long and can be selected from a menu of available courses. Students must select 4 nano-courses to fulfill the 2-credit requirement. Our Program Manager will complete the registration for students. Please note that the nano-course selection for STMP will vary from year to year, depending on student interests, the emergence of new techniques, etc.

M&IM 8335: Research Proposals: Preparation & Critical Review (2)
An essential skill for scientists in an academic setting is the ability to obtain extramural research funding through peer-reviewed grant applications. This course will provide students with an introduction to scientific writing with a focus on research articles and NIH grants. The course will be a mixture of lectures, large and small group discussions, "Shut up and Write" exercises, and mock study sections. Upon completion of this course, students will gain valuable skills and best practices relevant to scientific writing while also assembling the research proposal portion of an NIH grant application focused on their thesis work. They will also gain familiarity with the NIH grant application review process. Click here to view the syllabus.

**Grading for M&IM 8335 - Grading is based on attendance, class participation, timely completion of assignments, and having assigned writing samples prepared for discussion.

Recommended Elective Courses:

IGP8002, Bioregulation II – **Modules and Electives,** FALL [4-8 credit hours]

-- **Adventure Travel Guide to the Microbial World**: IGP 8002-05 [MM1]
This module will introduce the organisms of the microbial world, their adaptations to various ecological niches, and the benefits and challenges they can cause us as visitors. Emphasis will be placed on bacteria (with some attention to fungi and unicellular eukaryotes), the toolkit for studying them, and the joy of understanding how they work. Students will be evaluated with a diverse array of writing assignments and discovery-based tasks. While geared to a student who has never had microbiology before, there should be elements of interest for all levels.

-- **Viruses**: IGP 8002-16 [MM2]

This module will introduce students to the amazing field of virology. We will cover the replication strategies of selected viruses and the mechanisms of viral diseases. We will also discuss the utility of viruses and the contributions of virology to prokaryotic and eukaryotic molecular biology. Special topics will include the use of viruses as tools for gene delivery, the development of vaccines against viral pathogens, the development of viruses as therapies for cancer, and the emergence of viruses in human populations.

Note that for MSTP students, 1-2 years of Medical School, with corresponding transfer credits, will be counted as equivalent.

Note that for Direct Admits, the didactic hours can be fulfilled by additional electives.

MHI non-thesis master's degree

The Microbe Host Interaction program does not offer a dedicated master's degree program. However, a student who has successfully completed 24 hours of didactic coursework and 30 hours of total credits towards the Ph.D. can obtain a master's degree from the MHI Program. When all requirements are met, the Graduate Education Committee will approve the request, and the MHI Director of Graduate Studies will submit the necessary paperwork to the Graduate School.

Microbe-Host Interactions Timeline/Roadmap
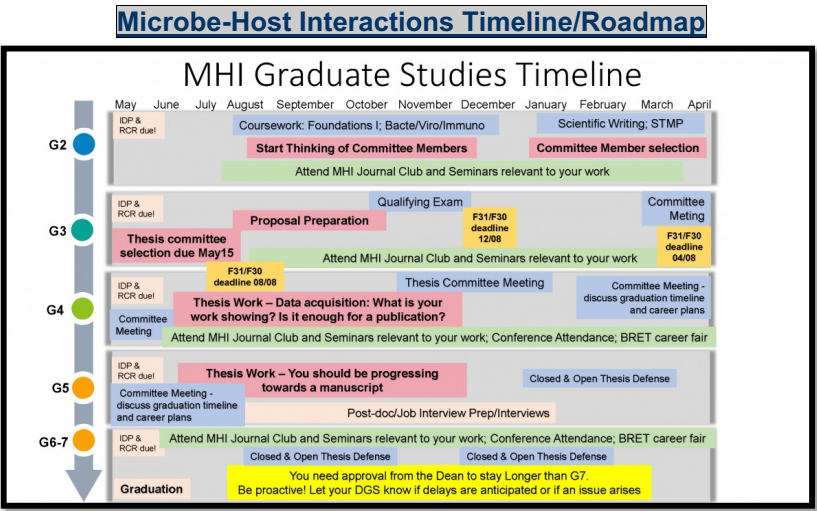
Selecting Your Thesis Committee – Tips, Forms, and Deadlines

Form submission deadline – May 15 of your G2 year, which is approximately 13 months after you selected and joined a lab.

Guidelines for selection –
- The Ph.D. Dissertation Committee must consist of four to five graduate faculty members in addition to the student's research advisor.
- Three or four of the thesis committee members, including the advisor, must have appointments in the PMI Department.
- The Graduate School requires that one member of your committee serve as an "outside member", who cannot be primary or secondary faculty in PMI. Ideally, this individual brings unique expertise or perspectives that will enrich your training experience. The outside member also serves as an objective voice from outside the program, particularly if any concerns arise. Since many faculty hold secondary appointments in PMI, this can be tricky to navigate. If you're unsure whether your selected outside member meets the requirement, please reach out to your Program Manager and DGS for guidance.
- Clinical faculty may serve on the Ph.D. Committee with approval from the DGS and the Graduate School. Faculty from other institutions may serve on the committee, however, they must be approved by the GEC and be available to attend the Qualifying Exam, committee meetings, and Dissertation Defense, via videoconference or in person. Faculty from other institutions can only serve as advisory members of the committee; they are non-voting. The Program cannot support the travel expenses of non-resident committee members.

What to submit for approval:
- Each student must submit a **list of proposed committee members** (approved by the mentor) and an **Abstract/Specific Aims page** describing the thesis project. The format of the abstract and specific aims page should follow that of an F31 application, as learned in the required Research Proposals course completed in the second year of graduate study.

The GEC will evaluate the proposed committee for each student and may recommend substitutions or additions. The student may appeal this recommendation by writing a letter to the Director of Graduate Studies, further justifying the original selections. Any real or potential conflict of interest, such as committee members who are also collaborating with the mentor, or authority relationships between the mentor and

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<u>other committee members, must be disclosed to the Director of Graduate Studies, and a plan for managing such conflicts provided by the mentor</u>.

When the proposed Dissertation Committee is approved by the GEC, the student and mentor are notified, and the information is forwarded to the Vanderbilt Graduate School for the official appointment of each member.

Once approved, the Ph.D. Dissertation Committee functions to:

1.   Conduct the Qualifying Examination.

2.   Evaluate the student's progress and offer advice on the dissertation project during biannual Thesis Committee meetings.

3.   Evaluate the written dissertation.

4.   Administer the dissertation defense.

First Committee Meeting Planning

Once a Dissertation committee is approved by the MHI GEC, the students are strongly advised to schedule their first committee meeting (Ideally, before September 1). During the first committee meeting, the student introduces their proposed thesis project briefly, followed by the specific aims (can be in draft form) of the project. This allows for the committee to evaluate the feasibility and quality of the proposed thesis project and provide guidance before the qualifying exam. The draft-specific aims page should be emailed to the dissertation committee, the DGS, and the Program Manager (PM) one week before this first committee meeting. This procedure is put in place so that the committee identifies potential issues with the aims *before* the exam is administered. This allows the student to not worry about aim feasibility and focus on developing the experimental design, expected outcomes of the research, and potential pitfalls/alternative approaches.

During the first committee meeting, the committee Chair will take notes and provide a letter (this happens with every committee meeting), outlining the input of the entire committee and providing a synopsis/recap of the discussion. The student is encouraged to read this feedback as soon as it is uploaded by the Chair and again,

right before the student begins the process of preparing the qualifying exam proposal. Once the committee chair letter is received that declares approval of the aims, the student can proceed with scheduling the qualifying exam.

Qualifying Examination (QE) – Tips, Forms, and Deadlines

The purpose of the Qualifying Examination (QE) is to determine whether a student is sufficiently prepared for full-time dissertation research leading to the Ph.D. degree.

Deadline: QE should be completed by November 30 of your third year. This allows you to take your proposal and submit it as an F31 application with the December 8 deadline. *This deadline is flexible, depending on a student's circumstances. Please make an appointment to see Dr. Patrick if you or your mentor think the QE cannot be completed by Nov. 30.*

The examination is conducted by the student's Ph.D. committee. The exam comprises the following steps:

1. A written dissertation proposal prepared in NIH format with the page limit adjusted to 10 pages excluding references. Please look at relevant examples here: ***The written document is due 7 days before the oral examination.***

2. An oral defense of the proposed thesis. This comprises the preparation of 20-30 slide presentation that presents: The background and significance of the proposed project; the posed hypothesis and specific aims; experiments and results or prior work that form the rationale of the hypothesis; proposed experiments to achieve the proposed aims. Expected results; possible alternative outcomes; possible pitfalls in the approach and how they can be overcome; future directions → What will you do with the information you will garner from the proposed work?

The committee will ask questions to gauge the student's ability to ***pose a scientific question***, ***formulate hypotheses***, ***develop reasonable strategies to test a hypothesis, anticipate experimental outcomes, and accurately interpret these potential outcomes***. Acquisition of such skills is a crucial prerequisite for success in any scientific environment and must be developed and evaluated.

The committee will ask questions throughout this presentation for 90 minutes, about

background, experimental approaches, protocol design, statistical analysis, anticipated outcomes, and interpretations. Following the oral questioning, the student and mentor leave the room while the committee determines the outcome of the QE. After completing the Redcap Qualifying Exam evaluation online, the committee will invite the student and mentor back into the room to discuss the outcome with the student.

QE Logistics!
- Confirm that you will have completed 24 didactic credit hours in the term in which your QE will occur.
- Contact your committee members for availability (date and time)
- Schedule a room for a two-hour time block
- Notify your Program Manager and DGS immediately when you have scheduled your exam date and time.
- Complete the online Kuali form to "Schedule or Modify the Qualifying Exam".
    - The instructions can be found in the Doctoral Actions Workflow User Guide.
        - After submission, the request will move through the academic workflow to the Graduate School for approval. Once approved, the Graduate School will send you a confirmation email.
- One week in advance of your scheduled exam, send your complete Research Proposal to your committee members, including your mentor.
- One day before your exam, send your Committee Chair the RedCap evaluation link
- After the exam it is your responsibility to submit the "Results of the Qualifying Exam" form in Kuali.
    - Submitting this ensures you will receive the $500 Candidacy Student Success Supplement without any delays.
    - The instructions can be found in the Doctoral Actions Workflow User Guide.
    - After submission, the request will move through the academic workflow to the Graduate School for approval. Once approved the Graduate School will send you a confirmation email.

Passing the QE results in the student becoming a Ph.D. Candidate. This is not an "automatic" step in graduate education. Rather, it is an objective of the formal examination to discern whether a student can go beyond a satisfactory performance in didactic coursework and competently articulate hypotheses, outline research strategies, anticipate experimental outcomes, and provide well-reasoned and accurate interpretations. Until the Thesis Committee is satisfied that these

objectives have been met, candidacy will not be granted. Disapproval of the proposal or inadequate performance by the student in the oral examination may necessitate a redrafting and a second defense of the student's proposal. Failure by the student to pass the QE on the second attempt results in dismissal from the program.

Research Proposal Hacks

Before beginning work on the Abstract/Specific Aims page, the student and advisor should thoroughly discuss the direction that the thesis work will take and how the stated objectives will be achieved. The involvement of the advisor at this planning phase is essential, as it represents a critical component of the mentor-junior scientist dialogue that should continue throughout the dissertation research. Although a cooperative effort between the student and advisor is strongly encouraged during the development of ideas, **it is the responsibility of the student to write and defend the thesis proposal. While the advisor may review the student's document prior to submission to the Committee, the document should primarily represent the work of the student, not the mentor**. Before the examination, the mentor will be asked to comment on the level of input provided to the student during the preparation of the proposal.

Length - The written Research Proposal should not exceed 10 pages in length, excluding references and the Specific Aims page, single-spaced, with margins no smaller than 0.5 inch. The requirements below were adapted from the Instructions for PHS 416-1 (Application for the Ruth L. Kirchstein Individual NIH Postdoctoral Fellowship Application).

1. Title: Choose a descriptive title that states the overarching project goal.

2. Specific Aims (one page): List the broad, long-term objectives and the goal of the specific research proposed, e.g., to test a stated hypothesis, create a novel design, solve a specific problem, challenge an existing paradigm or clinical practice, address a critical barrier to progress in the field, or develop new technology.

3. Background and Significance (1-2 pages): A brief sketch of background material pertinent to the proposal, a critical evaluation of existing knowledge, and identification of specific gaps that the project is intended to fill.

4. Preliminary Studies (1-3 pages):   The student should summarize their

preliminary results that are relevant to the thesis proposal. The significance of these results should be interpreted in the context of the student's hypothesis.

5. <u>Research Strategy (4-6 pages):</u> Most research proposals have three specific aims, although 2 or 4 aims are also quite acceptable. You will need to adjust the length of the description. If we assume you have three aims, then dedicate 2 pages to the description of each aim. A good rule of thumb is to start by thinking about why you are proposing the aim. What will its completion tell you? This is the significance. What experimental approaches do you propose to perform to achieve your specific aim? Describe each experiment and stand back and think: Do I have all the controls to allow me to interpret my data? What are good positive and negative controls? What do I expect to find? How do I evaluate the statistical validity of my approach? What are the possible technical difficulties I will encounter? How would I overcome them? What if I do not see what I expected? Is this necessarily bad? What will I do with the data?

    All these have to fit in two pages per aim!! So, please start early. Write out your thoughts. You may end up being over the page limit. Re-read the whole section. How can you condense the text without losing the clarity of the document? Start early! Has it been submitted for a mock review?

6. <u>Literature Cited (no page limit):</u> Use Endnote or another standard reference software to format this section. Each reference must include the names of all authors (in the same sequence in which they appear in the publication), the article and journal title, book title, volume number, page numbers, and year of publication. Include only bibliographic citations. Follow scholarly practices in providing citations for source materials relied upon in preparing any section of the application.

Preparing for your Qualifying Examination

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Prepare written document; use to prep a 25-30 slide presentation	Slides should focus on: Big picture – what is the problem? How do you propose to solve it? Present your aim first, then the experimental approach. What do you expect to see? What if you do not see what you expect? What next? What experimental limitations do you anticipate?

Meet with your chair to find out expectations prior to the exam	Practice through a mock qual with peers (GSA) and with lab members	Be prepared to answer general questions pertaining to your project

Bi-annual Thesis Committee Meetings

Once the qualifying exam is successfully completed, each MHI student is required to have a Thesis Committee meeting every six months. Students must identify a date and time that the Committee members will be available, reserve a room for the meeting, and notify the Program Manager of the scheduled meetings. Scheduling can be difficult for members who are very busy and travel frequently, so students must be proactive in scheduling the meetings well in advance of the six-month deadlines. A minimum of four committee members should be available (including the mentor) for the Thesis Committee meeting, to maintain the quorum.

 If this is not possible due to multiple scheduling conflicts, Dr. Patrick can attend as a fourth member. Please note that the progress report should be shared with the absent committee members and a one-on-one meeting should be scheduled to update the absent committee members on the student progress.

In preparation for each meeting, students should prepare a written Progress Report

and distribute this to each Committee Member no less than 7 days before the meeting. During the committee meeting, the student should describe his/her accomplishments since the previous meeting and outline plans for the next six months of work. Following the meeting, the student will be informed of the Committee's input on student progress by the Committee Chair in writing, including any suggestions for improvement. The Research grade will also be determined by the Thesis Committee, in collaboration with the Research Advisor. Students are required to schedule committee meetings before the end of the Fall (Nov to mid-Dec) and Spring (April to early May) semesters so the Research grades for those terms can be determined at the committee meetings.

Note: Failure to schedule committee meetings promptly may result in an Unsatisfactory Research grade, which is recorded on the student's transcript. In circumstances such as an extended absence owing to medical reasons, parental leave, or participation in a professional internship, the student shall notify the DGS and request an extension.

Before each committee meeting the student must initiate a Redcap evaluation survey link to be sent to the Committee Chair. The Chair will enter the Committee's evaluation of the student's performance at the end of the meeting so the student will have access to the evaluation. Subsequently, the student will send the Chair another link for uploading the Committee Meeting Summary letter.

Instructions for Research Progress Reports
Please refer to this document as a template.

Preparing your Committee Meeting Presentation
Follow your qualifying exam rubric, but now, instead of presenting all the aims, please present the aim(s) for which you have accomplished work and would like your committee's feedback.
Please treat your committee meeting as a free expert consultation and not as an exam. Your committee is there to guide you and help you succeed.

9999 Research Course Grading

When a student passes the Qualifying Exam, they are formally advanced to Ph.D. candidacy. After that, they are enrolled in research courses numbered 9999 each term (winter, spring, and summer). The grade for these courses is based on the student's progress towards their Ph.D. in that term and is subjective. To ensure fair grading, MHI has established that the grades for 9999 courses are determined by

the dissertation committee, rather than the advisor alone.
Although the 9999 grades are not used to calculate the GPA, they are included on the student's transcript and remain part of their academic record.

If a student is registered for research credit hours and receives a U grade, those credits are not awarded, and the student will have to re-enroll for those credit hours. Tuition will also be charged again for those credit hours. **Three U grades can result in automatic dismissal from graduate school.** Furthermore, failing to schedule biannual committee meetings on time may give grounds for assigning a U grade for 9999 research courses.

Milestones for Student Development

MSD is a series of required tasks designed to encourage students to be proactive in career planning and development. Each activity should also be described in the corresponding biannual progress report and discussed at the committee meeting.

1st Committee Meeting ***after qualifying exam***: connect to committee members and the DGS via LinkedIn and develop a biosketch available for public view.

2nd Meeting ***after qualifying exam***: begin the meeting with a 3-minute elevator speech on their work (one slide permitted but not required). Students are encouraged to use this as an incentive to participate in the annual 3-Minute Thesis competition.
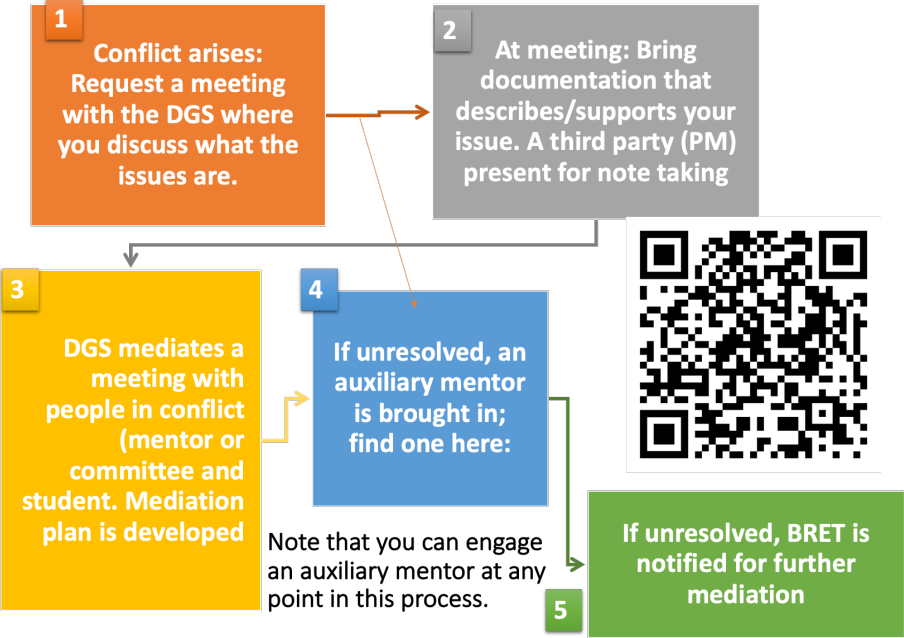
3rd Meeting ***after qualifying exam***: The student provides a list of 3 faculty members who have been asked to write letters of recommendation for the next stage of their career. The goal is to begin to develop relationships with the respective faculty early on.

4th Meeting ***after qualifying exam***: Student discusses one or more options being considered for the next step in their career.

5th Meeting ***after qualifying exam***: Student presents a detailed plan for approaching the next career following completion of the Ph.D.

Conflict Resolution Tree

Sometimes conflict may arise between a student and their mentor or a member(s) of their committee. Please follow these steps:

1 Conflict arises: Request a meeting with the DGS where you discuss what the issues are.

2 At meeting: Bring documentation that describes/supports your issue. A third party (PM) present for note taking

3 DGS mediates a meeting with people in conflict (mentor or committee and student. Mediation plan is developed

4 If unresolved, an auxiliary mentor is brought in; find one here:

Note that you can engage an auxiliary mentor at any point in this process.

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If unresolved, BRET is notified for further mediation

Mental Health & Wellness Resources

> Your health and wellness should always be number 1!
> Please look over these resources

ADDITIONAL RESOURCES

BRET Parental Leave Policy: (https://medschool.vanderbilt.edu/bret/parental-leave-policy/)

Student Health Center: 1210 Stevenson Center Lane, (615) 322-2427 (https://www.vumc.org/student-health)

Project Safe Hotline - (615) 322-SAFE (7233) - staffed 24 hours a day, seven days a week

LGBTQI Life: (615) 322-3330 – (https://www.vanderbilt.edu/lgbtqi/)

Equal Employment Opportunity – (615) 343-9336- Nondiscrimination/anti-harassment, faculty/staff accommodations, and affirmative action programs pursuant to Vanderbilt's requirement as a federal contractor.

Student Center for Belonging and Communities: 3rd floor of Sarratt in Suite 335 scbc@vanderbilt.edu (https://www.vanderbilt.edu/scbc/)

Office of Student Care Coordination: Rand Hall, Suite 305, (615) 343-9355 (https://www.vanderbilt.edu/carecoordination/)

University Counseling Center: 2015 Terrace Place, (615) 322-2571 (https://www.vanderbilt.edu/ucc/)

Center for Student Wellbeing: 1211 Stevenson Center Lane, (615) 322-0480, healthydores@vanderbilt.edu, https://www.vanderbilt.edu/healthydores/

Title IX and Student Discrimination: (615) 343-9004 - gender equity and sexual misconduct, (https://www.vanderbilt.edu/title-ix/)

Vanderbilt Psychiatric Hospital "Respond" – (615) 327-7000

Vanderbilt Recreation and Wellness Center - (615) 343-6627

Student Access Services - (615) 343-9727- disability services for qualified students, (https://www.vanderbilt.edu/student-access/how_to/get_accommodations/index.php)

Project Safe Hotline: (615) 322-SAFE (7233) - staffed 24 hours a day, seven days a week

Student of Concern Report

The Vanderbilt Statement of the Honor Code

The ASPIRE Program (Career Development)

Preparing your Dissertation

YES! You are here! You should be thinking about this dissertation document throughout your research training and not only during the last 4 months of your graduate student life.

It might be argued that the writing of the dissertation begins the day a student chooses a topic for thesis research. So, as your DGS, I highly encourage you to look at other students' dissertations (examples can be found under "Students' Dissertation Repository" and begin thinking of your chapters. All dissertations have an Introduction and a Conclusions/Future Directions chapter. You can start with the introduction and can alter it as your project evolves. Your chapters will be completed as you are completing your specific aims. Being proactive about learning the format and beginning to put thoughts on paper early on will be very helpful.

-LOGISTICS -

Before the actual document is prepared, the student should obtain the current version of the Graduate School's official instructions for dissertations.

At the committee meeting before setting the thesis defense examination, the student should formally request permission to defend.

During the development of the dissertation, the mentor and student must review and edit the text together on a chapter-by-chapter basis. ***In general, the dissertation should contain only the original research of the student.*** In instances in which some aspects of the work have already been published, please request the relevant permissions to reproduce from the journal in which you published. Most journals will allow you to do this. Also please clearly indicate in the chapter's title page the name of the journal in which your work has appeared.

There is such a thing as self-plagiarism! It is disallowed for the student to copy and paste their published journal article. Please be mindful of that!

In cases where work was performed collaboratively, please indicate which experiments were performed by other individuals with appropriate attribution. It is not acceptable to include entire bodies of work (e.g., from publications) in which the student played a minor part as chapters in the dissertation.

Once both the mentor and the student concur that the dissertation is complete, a copy should be provided to each member of the Thesis Committee. The committee members should be asked to evaluate a document that the student and thesis advisor concur on is the final draft. This final draft should be distributed to the committee **at least two weeks** before the defense. Dissertation Defense includes a written dissertation and an oral defense. Successful completion of both requirements, followed by approval of the dissertation by the Graduate School, results in the awarding of the Ph.D. degree.

Each student must notify the Program Manager of the dissertation title, defense date, time, and place **at least two weeks** in advance of the defense to allow time for notification of the Graduate School. The scheduling of the defense must be done in communication with the mentor, committee members, and your Program Manager to avoid conflicts.

Dissertation Defense
The MHI Ph.D. defense is divided into two parts. In the first part (Closed Defense), the student will submit their written dissertation to the committee two weeks before the scheduled meeting. The dissertation must have been read and approved by the mentor before distribution. The Closed Defense (CD) must be scheduled such that a minimum of four committee members can attend. Upon receipt of the dissertation, the committee will immediately examine the document (within 1-2 days), and if it is incomplete or of poor quality, the Chair will notify the student that the meeting must be canceled, and the student will have to reschedule it *after submitting an improved version of the dissertation*. The Chair will communicate to the students the necessary changes.

If, after initially examining the dissertation, the committee decides to proceed with the CD, the committee will read the dissertation thoroughly to inform the changes of improvements that will be necessary for approval. At least one day before the CD, the student shall send the Chair a Redcap link for submitting the defense evaluation. At the CD, the student will also be examined orally on their understanding of the research and familiarity with the relevant literature. The student shall consult the committee Chair in advance for specifics regarding the format of the meeting, which will normally require a presentation.

Permission to schedule the Open Defense (OD) seminar will be determined by a simple majority vote of the committee members at the CD, including the mentor. If the vote is a tie, permission will not be granted. If the dissertation is satisfactory (i.e. deficiencies are minor and the student can easily correct these) and the student demonstrates satisfactory knowledge of their research, permission to schedule the OD will be granted.   In the event permission is not granted, the committee will communicate the deficiencies that must be corrected, including changes in the dissertation, prior to scheduling the OD.

Scheduling the Open Defense

The Graduate School must be formally notified by submission of an official form two weeks in advance of the scheduled OD. *Because formal permission to schedule the OD is not granted until the CD, the OD should not be scheduled any earlier than two weeks after the CD*. One week before the OD, the student shall submit the final version of the dissertation to the committee, with changes from the original version indicated (e.g. via the "compare documents" or markup feature in MS Word), which can be done electronically. The student should bring the title pages to the defense for signature. Following the OD there will be a brief meeting during which the committee signs the Graduate School form and, if approved, the Dissertation Title Page.

Student Defense Scheduling Process
1. Inform your Program Manager and DGS of the date, time, and room of your scheduled Closed Defense meeting.

2. Two weeks before your Closed Defense, send your Dissertation to all your Committee Members. If they request a printed version, provide that as well.

3. You may unofficially schedule a date, time, and room for your Open Defense at any time, but this is not binding, and the DGS will not sign the form communicating the defense scheduling to the Graduate School until approval at the Closed Defense. (Implication: students should be very careful about encouraging relatives to book travel until scheduling passing the Closed Defense.) The Open Defense should not be scheduled for a date earlier than two weeks following the Closed Defense to allow the required advance notice to the Graduate School.

4. The Program Manager will help make arrangements for the open defense and send out notifications. It is important to include the PM in all planning of the closed and open defenses. It will be your responsibility to submit the online Kuali form to "Schedule or Modify the Dissertation Defense". The instructions can be found in the Doctoral Actions Workflow User Guide. After submission, the request will move

through the academic workflow to the Graduate School for approval. Once approved, the Graduate School will send you a confirmation email. You must submit the defense request in Kuali at least two weeks in advance of the open defense. While the MHI Program requires completion of both the Closed and Open Defenses, the Graduate School recognizes the Open Defense as the official PhD requirement.

5. Send your revised Dissertation to your Committee one week in advance of the Open Defense.

Training Grants and MHI requirements

Upon entry into the MHI Program, a student may be selected for appointment to an NIH training grant. Each student should meet with the Director of the corresponding training grant to be informed of any specific academic requirements. When the requirements of the specific Training Grant conflict with the MHI Program requirements, the student should discuss the situation with their PI, Training Grant Director, and Director of Graduate Studies to resolve the conflict. All students must complete the RESPONSIBLE CONDUCT OF RESEARCH (RCR) IGP 8004, which must be completed in person at least once before defending. Must also be completed in person once every 4 years if on an NIH grant.

Teaching Opportunities

Teaching is a useful component of graduate training and can help students develop skills that are invaluable for careers of many kinds. Currently, there is no specific teaching requirement for earning a Ph.D. in the MHI program. To enhance the graduate education experience, the program encourages Ph.D. candidates to participate as teaching assistants (TAs) in various undergraduate and graduate-level courses. Students should consult their research advisor for guidance regarding time management before entering teaching commitments that may be time-consuming. Students must receive approval from their mentor and DGS before agreeing to be a TA. Students cannot TA for more than 10 hours per week to align with the BRET/NIH NRSA policy of only allowing 25% additional effort outside of research. Please contact your Program Manager for more information about being a TA.

SEMINARS

Effective communication is essential for progress in science and nearly any scholarly endeavor. Seminars are the ideal forum for scientific debate and the development and refinement of communication skills. Attendance and participation in seminars are essential for honing such skills, for becoming informed on important topics, and most importantly, for learning by example how to construct and test a hypothesis.

Graduate students in MHI are expected to:

1.   Attend and participate in the Molecular Pathogenesis Training **(MPT)** seminar series. Department faculty and staff have carefully organized the RIP seminar series to provide students with a forum to present their research accomplishments. The experience is critical for learning to develop and present scientific seminars (25-50 minutes in length).

2.   Attend and participate in **Departmental Retreats and Symposia**. The retreats provide an opportunity to develop skills for the presentation of research at scientific meetings (both talks and posters).

3.   Regularly attend seminars in areas related to their scientific interests. The PMI seminar series hosts speakers in both basic and clinical research disciplines. Students are also encouraged to attend the Discovery Lectures as well as lectures in other areas relevant to their research.

     Students are also expected to fulfill all training requirements of the Training Grant to which they are appointed, including courses and seminars.

How to Tackle the MPT

- **The student shall submit an abstract via email to Dr. Sebastian Joyce (and cc their PM) at least two weeks before the scheduled date of the presentation.** The Abstract must be reviewed and approved by the mentor before submission. Submission of the abstract is the student's responsibility, and they will not receive multiple reminder emails. The format is shown on the following pages.

- **All students must present a 30-minute MPT presentation per year.** While the seminar should be moderated by the host (see below), it is also the presenter's responsibility to control the flow of his/her seminar. Thus, it is important to allow

sufficient time for pertinent questions during the seminar, but the speaker should also minimize irrelevant tangents that are not pertinent to the seminar.

- **Speakers are to be hosted by the previous week's MPT speaker.** For example, if John Smith is presenting in week 1 and I am presenting in week 2, it is John's responsibility to introduce me <u>and moderate questions</u> for my presentation. Hosting duties include introducing the speaker (provide a brief background of the presenter's education, etc.), and regulating the flow of questions during the presentation and post-seminar session. A good moderator maintains the "flow" of the seminar and enhances the effectiveness of the presentation. Because some faculty may interrupt with questions, presenters and moderators may wish to designate stopping points for questions (particularly in 45-minute talks) and may postpone entertaining to some questions in the interest of time.

Molecular Pathogenesis Training
Seminar Series
THURSDAY, ==day month== 2025
Time: 1:00 PM   •   Place: 1220 MRBIII

==First Last names==

==PhD candidate/Postdoctoral Fellow==, the ==xyz== Laboratory

==Title: cathchy, short & sweet: fit it in this & next lines==

Please don't change any part of the format in this template

HIGHLIGHTS—*Cell Press instructions*

https://www.elsevier.com/researcher/author/tools-and-resources/highlights

- ==85 characters including spaces between words==
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- ==Insert graphical abstract in this "text box:" for this please use the "insert" pulldown menu; use the "picture" and then "picture from file" options to insert a JPEG or TIFF file here.==

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  https://www.cell.com/pb/assets/raw/shared/figureguidelines/GA_guide.pdf

Graduate Student Association (GSA)

The PMI Graduate Student Association consists of students in the MHI and Molecular Pathology and Immunology (MPI) programs. GSA officers are elected annually by graduate students in the Program. The primary goals of the GSA are to improve communication between the student body and the program GECs, to help prepare students for their Qualifying Exams, and to foster communication and social interactions among our students.

The GSA works closely with the DGSs and the GECs to communicate student concerns and suggestions. The GSA executive council attends at least two GEC meetings annually to offer ideas on many aspects of departmental life, including coursework organization, the Qualifying Exams, and scientific retreats.

To assist students with the Qualifying Exam, the GSA administers practice exams in which the third-year students present their thesis proposal to the student body and field questions from senior students.

Finally, the GSA works to maintain an enjoyable and supportive social atmosphere within the MHI and MPI Programs. Student-only gatherings with refreshments are held and student nights out are also organized. The GSA may also coordinate outreach events to improve departmental involvement in the greater Nashville community (e.g. Habitat for Humanity). Students are encouraged to participate in GSA-sponsored activities, but they should be careful to avoid participating in extracurricular activities to an extent that would undermine the effectiveness of their research training and progress.

The Honor System

The essence of graduate studies in a professional school setting is the student's maturation into a scientist whose competence, creativity, critical thinking and collegiality are built upon a solid foundation of professional ethics and conduct. To this end, strict adherence to the Honor Code of Vanderbilt University is necessary.

The following information concerning the Vanderbilt University honor system was excerpted from the Vanderbilt University Graduate Student Handbook:

"Graduate and professional students are subject to the jurisdiction of the

> student body that implements the Honor System in the Graduate School and professional schools - Graduate Honor Council and Student Honor Council of the School of Medicine."

Students are required to acquaint themselves with the provisions of the Honor System. https://www.vanderbilt.edu/academicintegrity/

The Honor System presumes that all work submitted as part of academic requirements is the original work of the student unless credit is given with proper footnoting and bibliographic techniques or as prescribed by the course instructor.

Cheating, plagiarizing, or otherwise falsifying the results of a study is prohibited and may constitute grounds for dismissal from graduate school. The honor system applies not only to examinations, but all work handed in, such as papers, reports, solutions to problems, tapes, films, and computer programs, unless accepted by the instructor. For graduate students, this especially applies to Research Proposals and Dissertations.

Students are responsible for obtaining from their professors an explanation of the freedom they may exercise in collaboration with other students or in the use of outside sources, including the student's own work prepared and submitted for another course. If a student does not obtain a clear definition of the application of the Honor Code from a professor in any class, the student must assume that the Honor Council will follow the strictest interpretation of the Honor Code with respect to that class.

Faculty members do not routinely monitor tests and examinations to apprehend violators. Instructors who remain in examination rooms are there primarily to give assistance.

Breach of the Honor Code
Without the support and cooperation of the entire student body, the Honor System will not work. Students must insist on the absolute integrity of themselves and their fellow students. It is the obligation of every student who suspects an honor violation to act in one of the following ways, determining the choice of action by the flagrancy and/or certainty of the violation.

If a student has reason to suspect that a breach of the Honor Code has been committed, they must:
1.   Issue a personal warning to the suspect, or

2. Report the incident to the Honor Council for action by the president.
    An official warning will be issued by the Council to the suspect or a
    the hearing will be held by the Council, or

3. Inform the instructor during the suspicions and identify, if possible, the
    person(s) suspected.

In addition, any Microbe-Host Interactions instructor, course, director, or thesis advisor having reason to suspect a student of breaching the Honor Code is expected to issue a warning or report the violation to the Honor Council.

Violations of the Honor Code
Violations of the Honor Code are cause for disciplinary actions imposed by the appropriate honor council. The following are included as violations:

1. Cheating on an exercise, test, problem, or examination submitted by a student to meet course requirements. Cheating includes the use of unauthorized aids (such as crib sheets, discarded computer programs, the aid of another instructor or any action designed to deceive a member of the faculty or a fellow student on a take-home exam, etc.); copying from another student's work; soliciting, giving, and/or receiving unauthorized aid orally or in writing; or similar action contrary to the principles of academic honesty.

2. Plagiarism on an assigned paper, theme, report, or other material submitted to meet course requirements. Plagiarism is defined as using concepts or words from an outside source, whether in the form of a direct quotation or of a paraphrase. Credit must be given to the original source for each idea by footnote or other technique acceptable to the instructor. For example, should the student forget to note on research cards the source of material and then fail to footnote the source when the paper or report is prepared, use of texts or papers prepared by commercial or noncommercial agents and submitted as a student's own work the student is still committing a plagiaristic act. Not knowing how or when to footnote is not considered a sufficient excuse.

3. Falsification of results of study and research.

4. Failure to report a known or suspected violation of the Code in the manner prescribed.

The Honor Code Applied to Preparation of Papers

- Papers are to express the original thoughts of the student. If a topic for a paper has been discussed fully among students prior to an assignment, then the students should consult the instructor about writing on that topic.

- Failure to indicate the source of ideas, expressions, phrases, or sentences constitutes plagiarism.

- A student may not submit papers substantially the same in content for credit in more than one course, without specific and prior permission of all instructors concerned.

Students often have trouble distinguishing between privileged information and common knowledge. An idea may be considered common knowledge if it is encountered at least three times in separate sources during one's research into a particular subject. (Reprints of one source do not constitute separate sources).

Students are expected to follow the general rules of footnoting for each discipline. One footnote is not sufficient if additional material from the same resource is included in a work. Footnotes should express the extent of ideas or expressions of others that are used. All direct quotes must be in quotation marks or block quote format. Simply providing a footnote without using quotation marks or block quote format is a violation. For further information about footnoting, refer to A Manual for Writers by Kate L. Turabian, or the *MLA Style Sheet.*

A general rule is **when in doubt, always cite!**

The written pledge (refer to "Undergraduate Honor Pledge" in the Student Handbook) signifies that the work submitted is the student's own and that it has been completed in accordance with the requirements of the course as specified by the instructor. In addition, each student and faculty member are expected to establish a clear understanding of the requirements in each course. Any student uncertain about the application of the pledge in a particular course requirement should always consult the instructor. The Honor System pledge, or an abbreviation, should be included in all written work completed by the student and submitted for a grade. Any work handed in for credit, however, will be considered pledged unless otherwise accepted by the professor.

Vacation Policy

Graduate study is a mentally challenging and physically demanding pursuit that requires a student's full dedication. Intensive study and research on the part of a student naturally require vacations so that students can relax and reconnect with loved ones and family members. Students should establish an understanding of the policies and expectations of his/her research advisor when deciding to join a particular laboratory. Faculty members are likewise encouraged to establish clear and equitable vacation policies for students in their laboratories. In general, students should be permitted a minimum of 15 days of vacation per year, not including university holidays, which should be scheduled in cooperation with the research advisor.

Leave Policy

The MHI policy regarding leave of absence is that set by the Graduate School as described in the Vanderbilt University Graduate Student Handbook. If a student is experiencing serious physical or emotional difficulties, s/he is highly encouraged to communicate this to the research advisor, the Director of Graduate Studies, and/or the Program Director.

The parental leave policy can be found at:
https://gradschool.vanderbilt.edu/current_students/parental_leave.php

BRET Student Effort Policy

Graduate students in the Microbe Host Interactions Program receiving Vanderbilt University financial support or services must devote full-time effort to graduate study. Students cannot accept jobs for pay within or outside the University unless prior approval is given by their advisor, their Director of Graduate Studies, and the Dean for the Office of Biomedical Research Education and Training. Exceptions to this rule include part-time internships and activities that contribute to career development and that do not exceed the time commitment outlined by the National Institutes of Health, service as course associates at Vanderbilt, and occasional and temporary part-time pursuits (e.g. house sitting). Engagement in outside employment without obtaining approval may result in loss of financial aid, including stipend.

BRET Travel Procedures

The BRET office has developed and launched a new electronic tool to support students who are traveling for Vanderbilt business. The new system, hosted in REDCap, will allow you to alert faculty and financial administrators of your upcoming trip and allow them to approve your travel and identify the funds you will use to support your trip.

To start the process, please proceed to the BRET Travel Webpage. On the right-hand tool bar, please click **"Student Intent to Travel REDCap"** to access the form.

For a guide on the travel process, please refer to the BRET Travel Procedures posted on the BRET Travel Webpage. You may refer all travel-related questions to Aaron Howard. You may also schedule a 1:1 meeting with him at any time.

Graduate School Catalog

Information for current Vanderbilt graduate students can also be accessed through the Graduate School catalog or online at:
https://www.vanderbilt.edu/catalogs/graduate/graduate-school/
The website and catalog also provide information regarding Thesis and Dissertation guidelines, Graduation Forms, Registration Instructions, Honor Council information, Travel Grant Application, Change of Address, and additional helpful information.
You can also access the MHI Catalog portion of the Graduate School Catalog directly by clicking here.

Vanderbilt's Freedom of Expression Policy

At Vanderbilt, we have a long tradition of free expression, which is one of our core principles. We believe in bringing together people of differing viewpoints for a common purpose. Learn more about how we practice free expression at Vanderbilt and read Vanderbilt's Freedom of Expression policy in the Student Handbook.