Infection & Immunity Emphasis Area Graduate Student Handbook

September 2025

INFECTION & IMMUNITY (I&I) IN TRANSLATIONAL BIOSCIENCES (TBS)(I&I)
GRADUATE PROGRAM STUDENT HANDBOOK
(Revised September 2025)

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I. PROGRAM OVERVIEW

The Infection and Immunity (I&I) emphasis area of the Translational Biosciences (TBS) Graduate Program offers a comprehensive graduate program leading to the Doctor of Philosophy (Ph.D.) degree issued through the MU School of Medicine. This emphasis area provides individualized training that is strongly oriented toward basic research in molecular and cellular biology, immunology, and microbial pathogenesis in the fields of bacteriology, virology, and parasitology. Graduates completing this training are prepared to pursue challenging and rewarding professional careers that involve research and teaching at supervisory levels in both the academic and private sectors.

Graduate students entering into the program should be highly motivated toward a career in research. They must have, as a minimum, a baccalaureate degree with an undergraduate record showing superior performance in introductory and advanced coursework in prerequisite subjects (biology, chemistry, physics, and mathematics). Additionally, international applicants will require demonstration of English fluency via TOEFL and English Proficiency Exam scores. Letters of recommendation from individuals who are qualified to judge should clearly indicate aptitude for, and dedication to, a career in science. A personal statement explaining previous research experience and goals should be included in the application

The Molecular Microbiology & Immunology (MMI) and Pathobiology and Integrative Biomedical Sciences (PIBS) Departments are central components of an interdisciplinary campus eminence program in molecular biology, which also involves molecular biologists in biochemistry and biological sciences as well as many other University departments. Program core facilities provide cell culture and immunology services, DNA sequence analysis, microarray analysis, protein structural analysis, transgenic animals, protein expression, proteomics, electron microscopy and molecular cytology.

Microbiology Now
The wealth of genomic information available at the outset of the 21st Century has illuminated the vast diversity of the earth's microbial biomass. This immense diversity highlights an almost unlimited flexibility among bacteria, viruses and parasites to experiment with genetic combinations and continuously emerge in forms that are capable of adapting to natural and human-driven changes to their environments. There are the enormous potential benefits of harnessing the great diversity in microbial metabolism to tackle significant environmental problems like bioremediation of toxic environmental pollutants and the generation of unlimited energy supplies in microbe-driven fuel cells. In this atmosphere there is an increased emphasis on the important development of strong linkages between the fundamental sciences of microbial pathogenesis and the human and animal immune systems, and to develop translational partnerships that will enable the application of these research findings to infectious disease threats.

MMI and PIBS History
MMI and PIBS have a long history of providing graduate and postgraduate training opportunities in the laboratories of established scientists with diverse research interests in microbial physiology and genetics, viral gene regulation and pathogenesis, pathogen-host interactions, immunity to infectious diseases, and basic immune function.

Faculty in this training program have achieved international recognition for their scientific contributions and expertise, with their research efforts funded through stringent peer-reviewed grants from federal agencies. In April 2025, Dr. Haval Shirwan became Chair of the Department of Molecular Microbiology and Immunology. Dr. Shirwan was recruited to the Pediatric Department with a joint appointment in MMI in 2020 from the University of Louisville.

The first Ph.D. degree conferred by the MMI department was in 1927 to Esther Wagner Stearn who studied under Mazyck P. Ravenel (MD, State College of South Carolina, 1884), Professor of Medical Bacteriology and Preventive Medicine, 1914-1932, 1942-1946. The title of her dissertation was "Mutation of Characters of Bacteria as Defined by the Action of Gentian Violet in its Staining and Bacteriostatic Effect." Dr. Ravenel´s

major contribution was his comparative studies on the virulence of bovine and human strains of *Mycobacterium tuberculosis* (The Lancet, August 10, 1901, pp. 349-356). His results argued against Robert Koch´s opinion that bovine tubercle bacilli were of no consequence to human health and led to the pasteurization of milk.

Since 1927, close to 500 doctoral degrees in microbiology have been awarded. The majority of students completing a Ph.D. degree in Infection & Immunity (I&I) go on to work as post-doctoral fellows and then obtain positions in either an academic institution or private industry. For more information on student placement history visit https://medicine.missouri.edu/departments/molecular-microbiology-immunology/graduate-program/graduate-placements

Pathobiology and Integrative Biomedical Sciences (PIBS) resulted from the merger of two College of Veterinary Medicine departments—Veterinary Pathobiology and Biomedical Sciences—in Spring 2025. Many of the faculty from the original Veterinary Pathobiology department had secondary appointments in MMI and thus were part of the historical MMI graduate program. In 2002, VPB and MMI agreed to form a merged graduate program with a research focus in microbiology, pathogenesis, and immunology, with interests in both human and veterinary medicine, taking advantage of the presence of both a veterinary and medical school on the MU campus. This merged Molecular Pathogenesis & Therapeutics (MPT) Graduate Program changed to the I&I Emphasis Area in TBS in Fall 2022. The MPT-turned-I&I program has given students a diversity of research opportunities in these areas. With continued expansion of both departments, I&I has continued to grow in terms of the number of faculty and their funded research opportunities as well as graduate students recruited into this program.

II. PROGRAM COMPONENTS

Program of Study
The course of study is designed to build strength in fundamental principles of microbiology, pathogenesis, immunology and molecular biology, but can be flexible to meet the interests and needs of individuals. It may involve a minor field and demonstration of competence or completion of appropriate coursework in a scientifically useful discipline outside the usual study plan, such as statistics or computer science.

The Doctor of Philosophy (Ph.D.) Degree
The program involves (i) a course of study which includes required and elective course work, (ii) participation in programmatic seminars and journal clubs, (iii), a comprehensive examination designed to evaluate a student's ability to propose and experimentally evaluate a significant scientific question, and (iv) the successful completion of a creative and original scholarly research project. Earning a PhD requires producing original scholarship that advances scientific knowledge. Because of this, the PhD is a highly individualized degree, with each student developing a unique course of study designed to build technical, operational, and professional skills for research and long-term career success

Degree Options
Ph.D. Degree
On average, the graduate degree program will require four to six years of full-time effort, although completion may require durations outside this timeframe. A Master's Degree is not a prerequisite for the Ph.D. degree.

Dual Degree
A program leading to combined MD/PhD degrees can be designed for students who are admitted to the Medical School and to the I&I Graduate Program. It is anticipated that these students will fulfill their first two years of Medical School PBL academic requirements before entering the TBS I&I emphasis area for the research-oriented Ph.D. degree. Dual degree students will be encouraged to complete research rotations during the summer semesters of their two years of medical curriculum so that a dissertation research project can be initiated immediately upon entering the Ph.D. program. Typically, clinical responsibilities for the M.D. will be completed after fulfillment of the requirements for the Ph.D.

The Master of Science (M.S.) Degree
Under exceptional circumstances, the Program may allow a PhD candidate to change their terminal degree goal and opt instead for a M.S. degree. Admission requirements are the same as for doctoral candidates, though successful completion of a comprehensive examination is not a requirement for the Master's candidate. Students, opting for a M.S. degree, must follow the Masters requirements set by the University of Missouri Office of Graduate Studies and must complete a research project, write and defend a Master's thesis in front of their Master's committee and the program. The Master's Committee should consist of at least four faculty members including the mentor. At least three of the faculty members should be from the I&I Graduate Program and at least one faculty member from outside of the adviser's primary department.

Requirements for Qualifying and Comprehensive Exam
Each student will be required to master two phases of the program, qualifying and advanced, designed to achieve the educational objectives described above. The TBS and I&I Curriculum Committees make decisions regarding additions or changes to the basic curriculum. Due to the changing environment in this field of research, curriculum offerings and requirements may be subject to change.

Qualifying Phase
A required basic series of courses is designed to establish a foundation in bacterial pathogenesis (MICROB 8404), virology (MICROB 8303), and immunology (MICROB 8304).

Advanced Phase
It is expected that combinations of advanced courses in immunology (MICROB 9407), virology (MICROB 9001), infection and immunity (MICROB 9449), and bacterial pathogenesis (MICROB 9404) will comprise the core curriculum, although alternative courses may be prescribed by the Graduate Student Advisory Committee and by Doctoral committees based upon individual student needs. Satisfactory performance is defined as a grade of B or above in these 8000/9000 level courses. Unsatisfactory performance(s) must be corrected according to the recommendations of the Graduate Student Advisory Committee. Such recommendations may include retaking the course(s), additional examinations, or dismissal from the Graduate Program.

Goals and Purpose of Qualifying and Comprehensive Exams
Qualifying Exam
The goal of this exam is to determine whether the student is qualified to enroll in advanced graduate courses and is intellectually prepared to perform research in this program. A passing grade in the first-year didactic coursework will constitute passage of the qualifying exam. The guidelines for this process are covered in greater detail in Section VI.

Comprehensive Exam
The purpose of the comprehensive exam is to certify that the student has sufficient scientific knowledge (from the course work) and research insight to advance to candidacy for the Ph.D. This knowledge and insight are examined in this program through the student writing and orally defending an NIH-style research grant proposal. This examination will be administered after the completion of required course work but prior to the end of the student's third year in the program. The guidelines for this process are covered in greater detail in Section VII.

Goals and Purpose of the Thesis/Dissertation
Ph.D. Dissertation Guidelines
The final education requirement for the Ph.D. degree is the written and oral presentation of a novel and creative piece of scholarly research that represents new information and significantly advances knowledge in that field of research. The dissertation project must be approved by the student's doctoral committee and should demonstrate the student's scientific maturity and ability to write in a scholarly fashion. At the completion of the dissertation research, the student will present his/her research findings in a public seminar for program faculty and personnel and will defend the project before his/her doctoral committee. The project will be detailed in a formal written thesis that conforms to Office of Graduate Studies guidelines with respect to

format. Approval of the scientific content of the thesis is the responsibility of each doctoral committee and requires the signature of each committee member, with no more than one dissenting or abstaining vote. The evaluation will consider the following guidelines with respect to thesis content.

a. **Introduction** – The manuscript should describe pertinent background material that establishes the foundation for the overall thesis proposed as well as the specific research questions being addressed and the significance of this project with respect to the field.
b. **Materials and Methods** – The thesis should describe in detail the experimental protocols used in the study; where applicable, references to published protocols should be made, but modifications to such procedures should be defined. The methods may be presented as a component of each Results chapter, or may be combined into a single, separate chapter.
c. **Results** – Presentation of the data accumulated during the study that is relevant to the thesis being examined and the conclusions reached. The data should be presented in chapter format, with each chapter devoted to particular questions relative to the overall thesis. Since students are encouraged to publish their work during their graduate studies, these chapters may represent those publications (however, the student must be responsible for the writing and presentation of this work in the thesis).
d. **Discussion** – While each chapter presenting research data may contain a discussion of those specific data, the thesis should be concluded with a summary discussion that presents the student's overall conclusions about the study and the relevance of this work to the field as a whole. This summary provides the student an opportunity for knowledgeable speculation as to the significance of the work and its impact on the field.

Program of Study
The program involves satisfactory completion of a minimum of 72 hours of graduate study as well as completion of original research and a thesis, which demonstrates research competence. Of the 72 hours of graduate credit, 15 hours must be in courses numbered 8000/9000 (excluding research and rotations/problems courses, but including up to 4 credit hours of seminar courses).

Stipend and Financial Support
Each student in the program is supported by a stipend (currently $33,000 per year) and basic medical insurance, as long as progression in the program is satisfactory, and in compliance with the rules and restrictions of MU Graduate School (MGS) governance. In parallel to this financial support, the program pays or waives tuition costs. Almost all students receive financial support thus described throughout their entire PhD program.

III. COURSE REQUIREMENTS

Laboratory Rotations
All new graduate students admitted into the I&I emphasis area are required to complete three laboratory rotations starting in the Fall semester and concluding in mid-March before Spring Break begins. Students will meet with the Director of Graduate Studies prior to each rotation to determine the appropriate laboratory and rotation adviser. Laboratory rotations expose graduate students to research activities within the Program and to the experimental laboratory environment in which they will evolve. Prior to finishing the third laboratory rotation the graduate student selects a mentor. Mentor selection is a mutual agreement between the student and the mentor. Once the mentor has been selected, the student will perform his or her doctoral research under the guidance of the mentor in his/her lab.

Students need to perform three research rotations each with a different faculty member who is seeking students before selecting a dissertation research adviser:

- Before starting rotations, students should identify or have identified for them faculty members who seek students that year.

- Rotations start near the beginning of the Fall semester and typically end by mid-March.
- After rotations, each student will select an adviser (who must mutually agree to become the student's adviser) for the dissertation research. The student will begin that research immediately after rotations have ended.

List of Required Courses for Graduate Students in Program

- **Fall semester, 1st year (all required)**
  - MICROB 8303 Fundamental Virology (2 credit hrs.)
  - MICROB 8404 Foundations in Bacterial Pathogenesis (2 credit hrs.)
  - MICROB 9087 Seminar in Microbiology (1 credit hr.)
  - TR_BIOSC 9085 Rotations in Translational Biosciences (3 credit hrs.)
  - TR_BIOSC 9087 First Year Seminar (section 07) (1 credit hr.)
- **Spring semester, 1st year (all required)**
  - BIO_SC/BIOCHM 8060 Ethical Conduct of Research (1 credit hr.)
  - MICROB 8304 Immunology (3 credit hrs.)
  - MICROB 9087 Seminar in Microbiology (1 credit hr.)
  - TR_BIOSC Data Design and Analysis I (3 credit hrs.)
  - TR_BIOSC 9085 Rotations in Translational Biosciences (1 credit hr.)
  - TR_BIOSC 9087 First Year Seminar (section 07) (1 credit hr.)

- **Two of the following Advanced courses should be taken in year 2:**
  - MICROB 9001 Topics in Microbiology (Adv. Virology) (4 credit hrs.).
  - MICROB 9404 Adv. Bacterial Pathogenesis (4 credit hrs.).
  - MICROB 9407 Adv. Immunology (4 credit hrs.).
  - MICROB 9449 Infection and Immunity (4 credit hrs.)

- **MICROB 9087 Seminar** (required to take this each semester years 2-5 years) (1 credit hr.; every Spring semester)
  - Attend Program seminars (all invited speakers, student seminars and student dissertation defense seminars)attendance will be taken; enroll in MICROB 9087 Seminar for 1 credit hr in the Fall and Spring semesters of years 2-5. **You will need to give a seminar during those years as well, and your grade will be determined based on both your attendance and presentation.**

Curriculum timetables are found on the TBS program website.

Credit Hour Requirements

The Office of Graduate Studies requires 72 hours of advanced study to be completed for the Ph.D. degree. A minimum of 15 hours of 8/9000-level course work, not including Problems (TR_BIOSC 9085) and Research (TR_BIOSC 9090), and at most, four hours of Seminar (MICROB 9087) can count toward this requirement.

Full-time Student Enrollment

Graduate student full-time enrollment statues pre-comprehensive exam:
9 credit hours for fall and spring, 5 credit hours for summer.

Graduate student full-time enrollment statues post-comprehensive exam:
2 credit hours for fall and spring, 1 credit hour for summer.

Seminars
Graduate students are required to attend the MICROB 9087 Graduate Program Seminar Series of internal student seminars as well as invited speaker seminars.

This seminar series is a forum to learn and practice oral communication skills as each student describes recent research data to the I&I Graduate Program Faculty and their peer graduate program students. It also provides a means to evaluate research progress in comparison to student peers and to gain an appreciation of the breadth of research activities within the program. While students are enrolled in MICROB 9087, 50% of grade will come from attendance and 50% of grade will come from presentation. Participation in the I&I seminar series is mandatory for all students independent of enrollment in the course. Students in their second through fifth years will enroll in the seminar course during the spring semester. Students are expected to present in the student seminar series during their second and subsequent years unless there are extenuating circumstances (approved by the Director of Graduate Studies) or they will be defending their dissertation in that academic year. When presenting, students should clearly differentiate work performed as part of their doctoral studies from research performed by other individuals, whether internal or external to MU, when that work is presented in their seminar.

English-Language Proficiency Requirements for International Students
International and non-native English-speaking applicants must submit scores from an approved language exam: TOEFL, IELTS, PTE Academic, Cambridge English (B2, C1, or C2), or Duolingo. Score requirements are set by the MU Graduate School English Proficiency Standards.
Applicants from countries where English is the native language are exempt. Others may request a waiver if they have completed at least one year of full-time college-level study in an English-speaking country within the last two years.
An additional English proficiency test is required for any graduate student serving in a teaching role. Students needing to strengthen language skills are encouraged to enroll in courses through the Center for English Language Learning.

IV. SELECTION OF THESIS/ DISSERTATION ADVISER

Advisor for New Graduate Students
During the first year of study, the Director of Graduate Studies/I&I Emphasis Area Leader will be responsible for consulting with and advising graduate students in the I&I emphasis area regarding 1) graduate course requirements, 2) participation in the Graduate Student Laboratory Rotation Program and 3) other Programmatic and university requirements pertinent to their graduate education. The Director of Graduate Studies will meet with incoming students early in their first semester (August or September) to introduce the graduate program's education requirements and their timetable. The student and the Director of Graduate Studies shall communicate to determine appropriate laboratory and rotation advisors to be chosen. The rotation advisor selected must concur in this decision. After the student has completed three lab rotations, he or she will select an advisor by mutual consent from doctoral faculty members who are dissertation supervisors in the graduate program and who can financially support the student. The advisor for each rotation will provide a rotation evaluation of each rotating student to the Director of Graduate Studies within two weeks after the student completes the rotation. It is recommended that the advisor verbally communicate the contents of the evaluation report to the student at the end of the rotation before submitting the report to the Director of Graduate Studies. Once each student has formed his or her doctoralcommittee, the committee will be responsible for monitoring the student's progress toward degree.

Selecting an Advisor
After completing three research rotations, students must identify a Research Advisor to supervise their dissertation project. This decision should be mutual between the student and Research Advisor and based on shared research interests and compatible mentoring styles.

Eligibility Requirements: The Research Advisor must be a member of the MU Doctoral Faculty and the I&I Emphasis Area. If a co-mentor arrangement is proposed by the student and two willing co-mentors, it can be permitted if at least one of the faculty members meets the requirements of being a member of both the MU Doctoral Faculty and the I&I Emphasis Area.

Process for Selection: After completion of research rotations, the student is expected to notify both their First-Year Advisor and the PhD Program Coordinator of their selected Research Advisor. The advisor-student relationship is a mutual agreement. Both parties must discuss expectations and complete the Mentor-Mentee Compact and submit the associated form to the Program Coordinator at the time of selection.

Financial Responsibility: It is expected that the Research Advisor will have external grant support or other funds to support a student and related research expenses. The Research Advisor must obtain formal approval of financial responsibility from their Department Chair, via submission of the Memorandum of Understanding form submitted to the Program Coordinator. This MOU indicates that the Department Chair approves the advisor's ability to support the student stipend and tuition and is required because the Department assumes financial responsibility if the advisor loses funding during the student's training.

Failure to Select an Advisor: Students who do not secure a Research Advisor after 3 rotations may be placed on probation, pending review by the Executive Committee. Students may request a fourth rotation with approval from their First-Year Advisor. This rotation must conclude by the end of Spring Semester unless an extension is granted by the Executive Committee. If a Research Advisor is not secured after a fourth rotation, the Executive Committee may recommend the student withdraw or be dismissed, following Graduate School policy:

Responsibilities of the Research Advisor

The Research Advisor plays a critical role in guiding the student's scientific development and professional success. Responsibilities include:

- • *Provide Mentorship and Training:* Foster an inclusive, supportive, and intellectually rigorous environment for the student to develop and conduct original, reproducible research suitable for peer-reviewed publication and dissemination.
- • *Establish Clear Expectations:* Define mutual expectations early, including timelines for coursework, research milestones, comprehensive exams, and dissertation progress. Discuss lab policies, including authorship, data ownership, and publication practices.
- • *Support and Evaluate Progress*: Offer regular feedback and impartial evaluations of student performance, including an annual written progress report submitted to the Emphasis Area leader and the Translational Biosciences PhD program.
- • *Ensure Appropriate Credit and Recognition:* Acknowledge the student's contributions in presentations, publications, patents, or grant applications and uphold fair authorship practices.
- • *Provide Financial Support:* Secure funding for the student's stipend, tuition, and research expenses. Advisors are expected to provide support at the time a student joins their lab, and a clear plan for securing support through year five.

• *Uphold Professional Conduct:* Treat all students equitably, regardless of race, religion, gender, sexual orientation, nationality, or other personal characteristics. Promote a culture of integrity, respect, and accountability.

(Guidelines for Good Practice in Graduate Education, https://gradstudies.missouri.edu/current-students/scholarly-integrity-ethics/guidelines-for-good-practice-in-graduate-education/)

Responsibilities of the Advisee

PhD students are responsible for their academic development, research integrity, and professional conduct. Expectations include:

- • *Engage Actively in Research and Training:* Take ownership of academic progress and research projects. Communicate regularly with the advisor, meet deadlines, and follow through on agreed-upon responsibilities.

- • *Uphold Scientific Integrity:* Conduct research honestly and responsibly. Ensure that data collection, analysis, and reporting are accurate, ethical, and reproducible. Maintain appropriate records of research activities.
- • *Acknowledge Contributions:* Credit collaborators and colleagues in presentations, publications, and other professional settings, and adhere to authorship and citation standards.
- • *Demonstrate Professionalism*: Respect the time and commitments of faculty and staff. Be proactive in seeking feedback, resolving conflicts, and addressing challenges in research or academic performance.
  • *Understand the Mentor's Role:* Recognize that the advisor provides academic guidance, research oversight, and financial support. Be aware that research outcomes may contribute

(Guidelines for Good Practice in Graduate Education, https://gradstudies.missouri.edu/current-students/scholarly-integrity-ethics/guidelines-for-good-practice-in-graduate-education/)

Advisor-Advisee Dissolution

If the student or Research Advisor believes the advising relationship is no longer workable, they may request to dissolve the relationship by contacting the Empasis Area Leader. The Empasis Area Leader will meet separately with the student, the Research Advisor, and the student's Doctoral Thesis Committee to assess the situation. If the student is making satisfactory progress, the student and Emphasis Area Leader will identify a new Research Advisor with appropriate expertise and funding. If the change of Research Advisor includes a change of Emphasis Area, the new Emphasis Area leader will determine whether additional coursework is needed. If no suitable advisor is found, or if the student is not making satisfactory progress, the student may be asked to withdraw or may be dismissed, following MU Graduate School policies: MU Probation and Dismissal (Guidelines for Probation and Dismissal, https://gradstudies.missouri.edu/policy/probation-termination-policies-for-graduate-students/)

Advisor Retires or leaves MU

In the event that an advisor retires or leaves MU, he/she may continue to serve as a student's advisor. If an advisor is unable to continue to serve, the Director of Graduate Studies and the student's doctoral committee will assist the student in finding another advisor in the program that can financially support the student, providing the student is making satisfactory progress.

Satisfactory Progress

Students are normally expected to find a home lab for their PhD research during the first three rotations. If a student does not join a lab after three rotations, the student will be placed on Probation. Probation will be lifted if student (1) enrolls in normal second semester classes and maintains ≥ B- average; (2) engages in a Fourth Rotation of normal duration (6 weeks) culminating in the student finding a funded adviser for his or her doctoral research; and, (3) stays with that lab making good progress through end of the summer term.
After you join a lab, your mentor will then continue to ensure your support as long as you make satisfactory progress towards the Ph.D. degree for up to five years in the Program as defined in your initial offer letter and your annual stipend renewal agreements, with the possibility of continued funding beyond the five year mark to be based upon continued satisfactory progress towards your Ph.D. degree in accordance with MU academic policy.

(https://gradschool.missouri.edu/funding/assistantships-fellowships/assistantships/)

Subsequently, it will be defined as successful completion of academic coursework and the comprehensive examination, as well as continued research progress toward the student's degree as judged by the adviser and the student's doctoral committee, and usually culminating in publication(s) in refereed journals and continued grant funding for the project.

Doctoral Candidacy
Candidacy for a doctoral degree is established by passing the comprehensive examination. Status as a continuous enrollment doctoral student begins the term after the term in which the comprehensive exam was successfully completed. Candidacy is maintained by enrolling in 9090 Research for one hour in fall and spring semesters, one hour of seminar in fall and spring semesters, and one hour of 9090 research in summer sessions up to and including the term in which the dissertation is defended. Continuous enrollment provides access to an adviser's support, doctoral program committee guidance and University research facilities for completion of the dissertation. Failure to continuously enroll in 9090 Research until the doctoral degree is awarded terminates candidacy. https://gradstudies.missouri.edu/current-students/doctoral/

V. FORMATION OF THE DOCTORAL COMMITTEE

Forming a Doctoral committee
Each student, with advice from his/her mentor and the Director of Graduate Studies, will assemble a doctoral committee (dissertation committee) composed of at least five members. The committee will be composed of not less than three members of the I&I Graduate Program faculty and at least one member from a department outside of the adviser's primary department (but at MU). The Chairperson of this committee need not be the student's adviser.

Changing Doctoral Committee Members
In the event that an advisor retires or leaves MU, he/she may continue to serve as a student's advisor. If an advisor is unable or unwilling to continue to serve, the director of graduate studies and the student's doctoral committee will assist to ensure that a replacement is found. In the event of a change of committee member during a student's degree program, a Change of Committee form - https://gradschool.missouri.edu/wp-content/uploads/2020/08/program-change-form820.pdf is then submitted to the Office of Graduate Studies for approval.

Functions of Doctoral committee
The Doctoral committee has primary responsibility for (1) approval of the student's course of study, (2) administration of the individual student comprehensive exam and (3) critical review and approval of the student dissertation project.

Responsibilities of Doctoral Committee members
The Doctoral Thesis Committee supports the student and Research Advisor in developing a course of study, defining and conducting research, and evaluating results. The committee also administers and evaluates the comprehensive exam, reviews research progress, and assesses the final dissertation. Students must schedule at least one committee meeting per year. The student will submit an annual post-meeting progress report, separate from the Research Advisor's annual MyVita evaluation. This form can be found in the TBS program Canvas site.

The MU Graduate School has four Doctoral Forms that record specific landmarks of the PhD student's progress toward the PhD degree. These forms are described below, in the table and links to the forms can be found after the table. The PhD student is responsible for bringing the appropriate forms to the committee meetings and returning the signed forms to the Program Coordinator, who will send each completed form to the Graduate School while retaining a copy.

Forms	Form Title (Explanation)	Deadline
D1	Qualifying Examination Results and Doctoral Committee Approval (Formation of student's committee)	Prior to the end of Fall semester of second year
D2	Plan of Study for the Doctoral Degree (Approval of completed and planned course work by doctoral committee)	Prior to the end of Spring semesterof secondyear
D3	Doctoral Comprehensive Examination Results (advancement to candidacy for doctorate)	Prior to end of Fall semester of third year
D4	Report of the Dissertation Defense	When ready

Doctoral Forms
The Office of Graduate Studies requires a series of forms to be completed by the doctoral student https://gradstudies.missouri.edu/current-students/forms-cs/ This is a list of all forms.

Doctoral Forms

- D1 – Qualifying Examination Results and Doctoral Committee Approval Form
- D2 – Plan of Study for the Doctoral Degree Form, D2 – Plan of Study for the Doctoral Degree-Grad Sch Template and Plan of Study (I&I Doctoral Degree example).
- D3 – Doctoral Comprehensive Examination Results Form
- D4 – Report of the Dissertation Defense Form

Masters Forms

- M1 – Program of Study for the Master's Degree
- M2 – Request for Thesis Committee
- M3 – Report of the Master's Examining Committee

Please note that all **Comprehensive exams** and both the **Doctoral** and **Master's thesis defenses** should be completed within the timeline/ deadlines per semester set by the Office of Graduate Studies. Special permission will need to be sought to complete them outside of these deadlines.
https://gradstudies.missouri.edu/current-students/graduation-commencement/graduation-checklist/

VI. QUALIFYING EXAM

Qualifying Exam

The goal of this exam is to determine whether the student is qualified to enroll in advanced graduate courses as well as intellectually prepared to perform research in this program. All first year I&I students are required to enroll in three 8000-level fundamental courses: Foundations of Bacterial Pathogenesis, Fundamentals of Virology, and Immunology, and this should prepare all incoming first year students for advanced (current literature-driven) 9000-level courses offered in our curriculum. Passage with a grade of B- (2.7 GPA) or better in each of these three 8000-level fundamental courses and maintaining an overall 3.0GPA across all graduate coursework will constitute passage of the qualifying exam. Failure to meet these standards results in immediate probation, with two semesters (Fall/Spring) to remediate. Additional conditions may be set by the Executive Committee. Students who fail to meet probation terms will be dismissed. This determination is typically made during the student's first Doctoral Thesis Committee meeting in Spring or Summer of Year 1, and no later than early Fall of Year 2, when both D1 and D2 forms are usually completed.

VII. COMPREHENSIVE EXAM

General description of the process: A student will submit their written proposal to the Doctoral/Preliminary Examination Committee (PEC), the Student Coordinator, and the Director of Graduate Studies. Upon evaluation and "passing" the written portion of the exam process the student will be allowed to progress to the oral portion of the exam. Upon successfully completing and passing the oral exam, the student has successfully completed and passed the comprehensive exam. The final phase of the comprehensive examination, the oral examination, must be completed **BEFORE** the end of the fall semester of the student's third year in the I&I program.

Comprehensive exam proposal: WRITTEN PROPOSAL AND ORAL EXAMINATION.
In the I&I comprehensive examination, each student must be able to:

1) Develop, write and orally defend an original hypothesis-driven research proposal that outlines a series of experimental approaches that will test the validity of their proposed hypothesis.
2) Demonstrate knowledge of core information and concepts in the student's field of interest. Demonstrate knowledge of core information and concepts in the fields of microbiology, immunology and/or pathobiology.

Timeline:
A draft of the Proposal Abstract (or Specific aims page) on a topic previously approved by the student's PEC/Doctoral Committee and DGS; it must be submitted no later than **July 15 after completion of Spring semester of the second year (summer of the second year).** The completed written proposal must be submitted to the PEC, Student Coordinator, and the DGS no later than **September 15** near the beginning of the Fall semester of the student's **third** year in the I&I program.

The PEC will provide their evaluation of the written proposal to the chair of the I&I Oral Exam Committee* and the student on or before **Oct. 1st.** Proposals requiring revision will be due back on or before **Nov 1st.** The PEC must provide their evaluation of the revised written proposal to the PEC chair within 7 days, no later than **Nov 8th.** Once the written portion is passed the student is cleared to schedule the oral portion of the comprehensive exam within 30 days.

Preliminary Examination Committee (PEC):
The I&I program requires that the preliminary exam committee consist of ***a minimum of four faculty members, excluding the student's thesis adviser,*** *plus one member of the I&I Oral Exam Committee member* who will serve as chair of the PEC during the oral examination.* This committee can be the same as the Doctoral Committee (expected default choice). The student's adviser may NOT be an official member of the preliminary oral exam committee, but may attend the oral exam. If the student's adviser attends the oral exam, he/she may not vote or answer questions during the oral exam. However, the adviser may clarify issues

during and after the exam if asked by committee members. The student's adviser is allowed (encouraged) to ask questions during the exam. The adviser may participate in the discussion after the student has finished the exam, prior to the committee's vote.

The PEC need not be identical to the Doctoral Committee. Substitutions can be made to accommodate scheduling conflicts as long as the committee composition still adheres to the Graduate School requirements including inclusion of an outside member. The PEC (Doctoral Committee) should consist primarily of faculty with relevant expertise in the student's focus area. The Office of Graduate Studies requires that one committee member be outside their adviser's primary department or student's graduate program.

A member of the I&I Oral Exam Committee (see below) will serve as the chair and voting member of the oral exam committee during the comprehensive exam process. This is to help ensure there is a form of standardization of the comprehensive exam process.

I&I Oral Exam Committee: The Oral Exam Committee (OEC) will consist of 2-4 I&I Faculty (the actual number will depend on the number of students who are expected to present orals in a given year). I&I faculty members will be assigned to the OEC by the Executive Committee. Members of this committee will serve for one year. Their responsibilities are for at least one of them to attend (as a voting member) and chair of the oral exams of all students defending a comprehensive exam proposal during their year of service. While an OEC member is not required to read each proposal in detail, he or she is expected to have at least cursory/general knowledge of the proposal being defended. The OEC member is to monitor the exam process and work with each PEC to ensure a fair and standard oral exam process for I&I students. In the event that a member of the student's doctoral thesis committee is a member of the OEC, that faculty member CAN also serve as chair of that student's oral exam. If the student's mentor/thesis adviser is a member of the OEC, he or she is NOT allowed to serve as chair of the oral exam.

The Written Proposal:
The written proposition should take the form of a NIH-style (R-21) research grant proposal.
The proposal must be hypothesis-driven. It can focus on an original unsolved problem that is either within the area of a student's doctoral research or developed into a proposal distinct from the student's thesis research.

If, at any point, it becomes clear that the written proposal is copied from any source, including grant proposals from the student's mentor, the student will be immediately referred to the DGS and GSAC to consider the student's immediate dismissal from the program.

NIH R21 Grant Proposal Format for Comprehensive Exams

Use Arial or Helvetica 11 pt font (or larger), single-spaced, with at least 0.5 inch margins (left, right, top and bottom) on all pages.

Section 1: SPECIFIC AIMS (**1 page maximum**)

Begin with one or two brief paragraphs of background and introduction of the issues (open question(s)/gap in our knowledge) to be addressed. State the central hypothesis and specific aims, followed by an outline of the experimental plan. End with a conclusion paragraph that states the significance, contribution and rationale of the proposal upon completion of the work.

Section 2: RESEARCH STRATEGY (**6 pages maximum**, not including the Specific Aims page, sections A-D)

- Organize the Research Strategy in the order specified below.
- Start each section with the appropriate section heading – Significance, Innovation, Background and Preliminary Data, Approach.

- Cite published experimental details in the Research Strategy section and provide the full reference in the Bibliography and References Cited section. *This section is excluded from the page limit.*

A. Significance (1-2 pages; page limits listed for each subsection are suggested guidelines, not rigid requirements; however, the whole research section is limited to 6 pages total)
The proposal must contain a review of literature pertinent to the specific question(s). This provides the intellectual framework and rationale for the proposal. It should provide the reviewer with a clear understanding of the current state of the field, the important questions that remain unanswered, why these questions are important, and which one(s) will be addressed.

B. Innovation (≤1 page)
The innovation section should contain an explanation of what, specifically, is new and innovative in either the design, approach, methodology or techniques that ensures the success of the proposed experiments

C. Background and Preliminary Data (≤1 page)
Data relevant to the proposition should be embedded as figures/tables in the text. To conserve space, wrap the text around the figures/tables. If the proposal is on an area of research based on a review of the literature, and there is no relevant preliminary data, state so. This will not be counted against the student.

D. Research Design and Methods (3-4 pages)
The proposition must include descriptions of experiments designed to test the hypothesis in sufficient detail to allow the reviewer to assess their feasibility and applicability, a discussion and interpretation of the anticipated results, potential alternative hypotheses and potential pitfalls. It should conclude with a concise statement of the significance of the project. Remember that a typical R21 grant is expected to be completed within 2 years, therefore, your experiments should be able to completed within this timeframe. Insight and creativity in solving the problem will be an important basis for evaluation, as well as the ability to present a focused plan. Arguably, the most common criticism of these proposals is a lack of focus.

Section 3: BIBLIOGRAPHY AND REFERENCES CITED (No page limit)

The student will be evaluated both on the written proposal and through an oral examination in which the student will argue the strengths and weakness of this particular research plan. It is expected that both the written document and the oral defense will be of the highest scientific quality.

Comprehensive exam evaluation criteria includes (but are not limited to) the following:

Written proposal

a. **Presentation** – the proposal should be grammatically correct and checked for spelling errors; it should be well illustrated.
b. **Clarity of scientific content** – the proposal should be clearly and concisely presented; the experimental plan should include a discussion of rationale, expected results, technical limitations, and alternative experimental approaches; techniques (protocols) should be referenced where possible and described in terms of their objectives and expected outcomes, and not their details (except where necessary).
c. **Strength of scientific arguments** – the proposal should critically define the scientific impact of the study proposed and the rationale for the experimental strategy employed; creativity that is scientifically sound, documented by references to the literature and clearly presented will be viewed favorably.
d. **Scope** – representative of an extensive/exhaustive review of the current literature regarding the chosen topic.

Oral examination

a. **Organization and presentation** – as with any seminar, the student should lead the committee through an organized discussion of the key information that establishes the importance of the question being addressed and the details of the experimental plan to address it; the discussion should be well illustrated to emphasize those key points and not simply a reiteration of the written proposal which the committee has already read.

b. **Knowledge of the field** – the student is expected to have a thorough understanding of pertinent subject matter relevant to the problem being discussed; responses to questions from the committee should be reasoned, lucid and supported by references to the literature.

c. **Knowledge of the technical parameters of the experimental plan** – the student should know the details of the design, what parameters are critical to the outcome of the experiment, what technical limitations must be considered, and what alternative strategies are possible should the committee discussion conclude that the proposed experiments fall short of their objectives.

d. **Cognitive and analytical abilities** – the student will be evaluated on his/her ability to recognize the strengths and weaknesses of the proposal from the committee discussion, to assess the significance of the data generated from this project with respect to the field and to present a reasoned set of theoretical arguments that support the objectives of the research plan.

Proposal Abstract (or Specific aims page): A student will work with his or her doctoral committee during the Spring semester of the second year to evaluate and approve the topic of his or her comprehensive exam. Once approved, the student will submit a draft of the proposal abstract or specific aims page to the I&I program Student Coordinator and the DGS) by July 15 after the spring semester of the student's second year. Late proposals will not be accepted and will count as a failure of the written exam.

Evaluation of the Written Proposal:

Upon receipt of the written proposal (due submitted to the PEC, I&I Student Coordinator, and I&I DGS by September 15 of the third year), each examiner will review the document and indicate whether the proposal is acceptable, needs revision or is unacceptable.

- ACCEPTABLE: If all examiners rate the proposal as acceptable, the student may schedule the oral preliminary examination (see below).
- NEEDS REVISION/UNACCEPTABLE: If **more than one** member of the exam committee votes for revision or that the proposal is unacceptable, the written proposal will be returned to the student for revision.

After receiving the comments from the exam committee, students should meet individually with each committee member who requests changes, so that there is a clear understanding of the concerns and how to adequately address them. **The student's thesis advisor is NOT allowed to comment or help with the revision (beyond the initial discussion of any changes they request in their review of the written proposal).**

The revised proposition is due 4 weeks after the evaluation of the initial proposal is returned to the student. (See above for timeline of actual due dates)

Evaluation of Revised Proposal: All revised proposals are evaluated as either acceptable or unacceptable. If all examiners judge the revised proposal to be acceptable, then the oral preliminary examination may be scheduled. If there is disagreement among the committee regarding the revised proposal (i.e., more than one "unacceptable"), then the committee (including the student's advisor) will meet to discuss the proposal. *If after this meeting, **more than one** examination committee member judges the proposal as unacceptable, this would constitute failure of the written portion of the exam. See I&I/Graduate School regulations for Failure (below).* The committee's recommendation at this stage (either "acceptable" or "unacceptable") will be forwarded to the GSAC, which will have final approval.

If the overall decision on the proposal is "acceptable", then the student will have passed the written portion of

the exam and be allowed to proceed to the oral preliminary examination. If a revised written proposal is deemed unacceptable, then the student will have 12 weeks before he or she can be examined on a new proposal (see below) (no later than 16 weeks).

Format of the Oral Examination:
The purpose of the oral examination is:

1) To test the student's ability to present and defend the written proposal.
2) Demonstrate knowledge of core information and concepts in the student's field of interest
3) Demonstrate knowledge of core information and concepts in the fields of microbiology, immunology and/or pathobiology.

Evaluation of the Oral Examination:
Following the exam, the student is excused from the room and each committee member casts a vote of "PASS", "PASS WITH RESERVATIONS" or "FAIL". Following discussion, an overall evaluation of "PASS", "PASS WITH RESERVATIONS" or "FAIL" is given.

- PASS: The student has passed the oral examination and becomes a Ph.D. candidate.
- PASS WITH RESERVATIONS: The student has passed the oral preliminary examination, but the committee has some concerns that must be addressed to remove the reservations. The committee will outline what must be accomplished and a reasonable time frame to achieve this, in order to lift the reservation.
- FAIL: If more than one faculty votes for failure, the student has failed the oral examination. The oral may be taken a second time only and the same committee members must give the exam.

Failure
A failure of either the written or oral section of the exam constitutes failure of the comprehensive exam. If a failure is reported, the committee must also include an outline of the general weaknesses or deficiencies of the student's work in their report to the GSAC. The student and the committee members are encouraged to work together to identify steps the student might take to become fully prepared for the next examination.

Request for clarification
If at any time the student believes that the advice given by the committee is inadequate, the student may send a written request for clarification to the committee. The examining committee must respond to this request in writing within two weeks. A copy of this request will be sent to the Graduate School and I&I GSAC as well.

Retaking the exam
A student who fails may not take a second comprehensive examination for at least 12 weeks. Scheduling of the re-examination should be done within 4 weeks of the 12-week deadline or as otherwise established by the examination committee. Retaking of the comprehensive exam will proceed with similar intervals of deadlines as described for the original comprehensive exam. Failure to pass two comprehensive examinations automatically prevents candidacy.

Special Circumstances: The graduate program recognizes that these requirements must occasionally be tailored to meet specific conditions that apply to individual students. Alterations in the standard program (such as course substitutions, delay of the Oral Exam, or leave of absence) may be requested by petitioning (in writing) the DGS who will take the request to the GSAC for consideration. These requests should be made well in advance of the above deadlines.

VIII. THESIS/DISSERTATION DEFENSE AND FINAL ORAL EXAMINATION

Dissertations
The dissertation must include the results of original and significant investigation, and it must be the candidate's own work.

Dissertation Guidelines
The final education requirement for the Ph.D. degree is the written and oral presentation of a novel and creative piece of scholarly research that represents new information and significantly advances knowledge in that field of research. The dissertation project must be approved by the student's doctoral committee and should demonstrate the student's scientific maturity and ability to write in a scholarly fashion.

Students preparing to write a thesis or dissertation should follow the Office of Graduate Studies Guidelines for preparation and submission.

Thesis/dissertation Guidelines - https://gradstudies.missouri.edu/current-students/thesis-dissertation/thesis-dissertation-guidelines/

One bound copy of the final dissertation is submitted to the mentor and one bound copy is submitted to the Program. All dissertations submitted to the Program will be shelved in MMI library. Deadlines are established each semester for submission of the dissertation to the Office of Graduate Studies. Consult the Office of Graduate Studies for these deadlines and for a checklist of the materials to be submitted for graduation.

https://gradstudies.missouri.edu/current-students/graduation-commencement/graduation-checklist/

Dissertation Announcement
At the completion of the dissertation research, the student will present his/her research findings in a public seminar for program faculty and personnel and will defend the project before his/her doctoral committee. The Program will announce thesis dissertations. Please contact the Student Coordinator to help in setting a date within the timeline of the Office of Graduate Studies as well as a room and a flyer to announce the presentation.

Dissertation Passing/Failing Criteria
The project will be detailed in a formal written thesis that conforms to Office of Graduate Studies guidelines with respect to format. Approval of the scientific content of the thesis is the responsibility of each student's doctoral committee and requires the signature of each committee member, with no more than one dissenting or abstaining vote. The evaluation will consider the following guidelines with respect to thesis content.

Introduction – The manuscript should describe pertinent background material that establishes the foundation for the overall thesis proposed as well as the specific research questions being addressed and the significance of this project with respect to the field.

Materials and Methods – The thesis should describe in detail the experimental protocols used in the study; where applicable, references to published protocols should be made, but modifications to such procedures should be defined. The methods may be presented as a component of each Results chapter, or may be combined into a single, separate chapter.

Results – Presentation of the data accumulated during the study that is relevant to the thesis being examined and the conclusions reached. The data should be presented in chapter format, with each chapter devoted to particular questions relative to the overall thesis. Since students are encouraged to publish their work during their graduate studies, these chapters may represent those publications (however, the student must be responsible for the writing and presentation of this work in the thesis).

Discussion – While each chapter presenting research data may contain a discussion of those specific data, the thesis should be concluded with a summary discussion that presents the student's overall conclusions about the study and the relevance of this work to the field as a whole. This summary provides the student an opportunity for knowledgeable speculation as to the significance of the work and its impact on the field.

Credit – Since in many cases, publications are being included as chapters in dissertations, and since often multiple authors contribute to a publication, only publications on which a student has made a major contribution (first author or co-first author publication only) should be included in a student's dissertation. Furthermore, any of the research performed by another individual or other individuals (technician, other graduate students, post-doctoral fellows, faculty members, et al.) in that publication should be specifically attributed to that or those individual(s). Thus, students should provide information at the end of each chapter as to which individuals helped or performed which experiments in the chapter other than those performed by the defending student.

IX. PROGRAM POLICIES - https://gradstudies.missouri.edu/policycategory/satisfactory-progress

Academic performance
Grade Point Average: A graduate student's grade point average is based on the student's entire graduate record at MU. To remain in good standing, a graduate student must maintain a cumulative GPA of 3.0 or better. To graduate, a student must have an overall GPA of 3.0 in all graduate courses taken at MU and not just those courses listed on a program of study.

Incomplete Grades
An incomplete grade (I) may be recorded when the student's work is incomplete but otherwise worthy of credit, or when the instructor is unable to assign a grade at the end of the semester. The student must finish this work (Problems and Research courses exel&led) within the next calendar year or the "I" will not be removed. Grades of incomplete, "I" do not automatically convert to an "F" if not completed.

Dismissal
At the end of each semester, graduate students with a cumulative GPA below 3.0 are placed on probation by the Office of Graduate Studies. If at the end of the following semester the cumulative GPA is 3.0 or better, the probationary status is removed. A student on probation failing to raise the cumulative GPA to 3.0 may be allowed a second probationary semester. A student is subject to dismissal upon failure to raise the cumulative GPA to 3.0 by the end of the second probationary semester, or at any time a semester/term or cumulative GPA falls below 2.0. Note: Summer session is not counted as a semester.

Once a student's doctoral committee has been formed and met, the doctoral committee will first rule on such matters. If a student's doctoral committee has recommended probation or dismissal, that decision will be communicated to the Graduate Student Advisory Committee, and the latter will subsequently rule on this issue as well. If both committees have placed the student on probation and that probation has not been reconciled, the student's doctoral committee followed by the Graduate Student Advisory Committee may recommend dismissal of the student from this graduate program. All committee decisions on either probation or dismissal will be determined by majority vote. Both the student's doctoral committee and the Graduate Student Advisory Committee will meet with the student when possible before a vote for probation or dismissal is taken. If the chair is the student's adviser, then the two committees' recommendations will determine whether the student is dismissed or retained; if that vote is split, a joint session of the student's doctoral committee and the Graduate Student Advisory Committee will make the decision. Once the student is dismissed by the program, the decision must be approved by the Dean of the Office of Graduate Studies to take effect.

If issues pertaining to satisfactory progress cannot be resolved and persist to a point at which dismissal is being considered, the faculty adviser and the student's doctoral committee will meet to decide on the length of probation that is appropriate to remediate the problem. Following this decision, the student will be notified in writing of the duration of the probationary period, which may vary from 30 days to a full semester. The letter will also include an explicit statement of what must be accomplished and by what date in order for the student to be removed from probation and returned to good standing in the program. If the student does not comply with the conditions of probation, a letter (signed by the director of graduate studies) will be sent to the student with notification of dismissal from the degree program. In all instances, dismissal letters (including those referenced above), will inform the student of the right to appeal, first, to the program, and second, to the Graduate Faculty

Senate. A copy of the program's letter must be sent to the Dean of the Office of Graduate Studies at the same time it is sent to the student, and must be approved by the Office of Graduate Studies to take effect.

Extensions
When there has been unsatisfactory progress with respect to meeting university-wide Office of Graduate Studies time to degree limits, the student may file a written request for an extension with the Vice Provost for Advanced Studies and Dean of the Office of Graduate Studies who will grant or deny the request. The Director of Graduate Studies and the student's major adviser must endorse the extension. If an extension is granted, the student will be given a specified period of time to correct the deficiency. Denial of an extension request is final and binding. Please contact the Office of Graduate Studies for more information.

Appealing a Dismissal
If the student decides to appeal the program dismissal, the appeal process will take effect through the same committees as the original decision; a letter from the student to the Director of Graduate Studies for the program will initiate the process. As long as a student is in an appeal process, the student should maintain enrollment and continue working on degree program requirements. Students must complete the program appeal process prior to considering an appeal to the Graduate Faculty Senate. If the student does not appeal the program's dismissal, the Office of Graduate Studies will send the student an official notice of dismissal from the program.

X. PROGRAM POLICIES: RESPONSIBLE CONDUCT OF RESEARCH

Responsible Conduct of Research Program
The mission of the Responsible Conduct of Research Program is to improve and institutionalize the training of graduate students and post-doctoral fellows in the responsible conduct of research to foster a university culture of research integrity at the University of Missouri.

https://gradstudies.missouri.edu/professional_development/research-compliance/

Dean's Certificate in the Responsible Conduct of Research
Doctoral and postdoctoral students from all disciplines are eligible to participate. Benefits include: Provides training in the responsible conduct of research, promotes integrity in the research process and provides information about current and upcoming regulations and certifications necessary to do research and present the student as a more informed investigator. For more information visit

Animal Care Quality
The Office of Animal Care Quality Assurance (ACQA) is responsible for advising the MU administration on compliance with federal animal care and use policies and regulations. In addition, the ACQA provides administrative support to the MU Animal Care and Use Committee (ACUC) and oversees the institutional training and occupational health and safety programs related to the use of animals in research and teaching.

The ACQA office works closely with the http://research.missouri.edu/compliance/ (OAR) to help maximize the quality of animal research at MU. The OAR office manages several animal housing facilities on campus and oversees the veterinary care program for all animals at MU. Staff in the OAR assist faculty and researchers with procurement of animals and supplies, provide technical support, animal husbandry and health monitoring in the OAR-managed facilities.

Animal care and use protocol review forms are available from the Animal Care Quality Assurance (ACQC), WBC 106 Animal Sciences Center. More information may be found on the Research at MU website - https://research.missouri.edu/acqa/ .

XI. STUDENT CONDUCT AND CONFLICT RESOLUTION

Mizzou provides policies, training programs and other resources designed to guide graduate students in research, intellectual property, academic honesty and professional conduct.

https://gradstudies.missouri.edu/policycategory/academic-integrity-ethics

Expectations for Graduate Students' Professional Behavior and Acceptable Behavior

- Devote an appropriate amount of time and energy toward achieving academic excellence and earning the advanced degree.
- Be aware of time constraints and other demands imposed on faculty members and program staff.
- Take the initiative to ask questions that promote understanding of the academic subjects and advances in the field.
- Communicate regularly with faculty advisers, especially in matters related to research and progress within the graduate program and with any teaching responsibilities.

Conflicts with Faculty

Graduate students are encouraged to work out any conflicts with the mentor. If they cannot come to a mutual agreement the student should seek assistance from the Director of Graduate Studies. The Director of Graduate Studies along with the help of the relevant department chair and/or the Graduate Student Advisory Committee will work with the student and mentor until a mutual agreement is established.

XII. ASSISTANTSHIP AND FELLOWSHIP POLICIES

The purpose of a graduate assistantship is to provide a professional development opportunity consistent with a student's educational objectives and to provide financial support for a graduate student within the context of program or grant-related tasks to be performed for a set period of time during which the student is expected to pursue academic and/or professional activities towards the advanced degree. To hold a graduate assistantship, a student must be admitted to a program or area with a specific graduate degree objective and must be enrolled and be making satisfactory progress (3.0 GPA) toward degree attainment during the period of the assistantship. Rights, Privileges and Responsibilities of Graduate Assistants and Fellowship Recipients.
https://gradstudies.missouri.edu/funding/assistantships-fellowships/
https://gradstudies.missouri.edu/funding/tuition-support-program/

Graduate Research Assistantships

To hold a graduate assistantship, a student must be admitted into the program and must be enrolled and be making satisfactory progress (3.0 GPA) toward degree attainment during the period of the assistantship.

All graduate students accepted into the I&I Graduate program are financially supported while they are making acceptable research progress. The standard I&I graduate student stipend level of support is $33,000 pre-comprehensive exam or post-comprehensive exam.

Tuition charges for residential/nonresidential students will not be paid by qualifying full-time graduate students in I&I Graduate Program. Students are responsible for paying incidental fees (recreation facility, student activity and information technology, also parking if needed).

Fellowship Recipients

Students supported by a substantial fellowship through internal or external sources may receive a stipend of $35,000 and tuition coverage during the years of support. This policy exists to incentivize acquisition of such sources of support.

Health Insurance
Health benefits are available to all MU students through the Student Health Center and the Accident and Sickness Insurance program. Payment of the Student Health Center fee is mandatory for full-time students and optional for part-time students. The Student Health Center treats short-term conditions such as colds and flu and refers students to specialists or hospital care if necessary. Accident and Sickness Insurance has been available for all students for many years, on a voluntary basis for domestic students, but mandatory for international students since 1998. For detailed information about the optional insurance plans, consult https://gradstudies.missouri.edu/funding/student-medical-insurance/ . Health insurance subsidies are waived for all qualifying full-time graduate students in the program.

Health Insurance Enrollment
A graduate student may enroll in the Accident and Sickness Insurance for Graduate Assistants while attending MU. Students can enroll when they register for classes, either in person or by phone. If the student wishes to enroll in the insurance through the cashier's office or on myZou, they must do so within 30 days of classes. For more health and medical insurance information visit https://gradstudies.missouri.edu/funding/student-medical-insurance/

Leave of Absence
It will be the responsibility of the student to resolve all issues pertaining to their support (e.g., GRA, GTA, Fellowship or Scholarship) with their adviser or other relevant authority prior to taking an approved leave of absence. These issues include the date when support will be terminated and whether or under what conditions the student will be reinstated for support upon their return. Prior to the completion of the Leave of Absence, the student must notify the program's Director of Graduate Studies (DGS) and the Office of Graduate Studies so that the reentry process can be initiated.

A graduate assistant unable to fulfill the duties of his or her appointment because of illness or injury shall notify the administrator of his or her major unit as soon as circumstances permit. Similarly, a graduate assistant unable to fulfill the duties of her or his appointment because of birth or adoption of a child shall notify the administrator of her or his major unit as soon as circumstances permit. The appointing unit may adjust the graduate assistant's workload duties as the assistant's physical circumstances reasonably dictate. If total absence from duties becomes necessary, the major unit shall hold the appointment, provided the graduate assistant is still enrolled, for a period of two months, or to the end of the appointment period or of the semester, whichever should occur first. The graduate assistant shall have the right to return to the assistantship, within the original terms of the appointment, at such time as he or she is able to reassume the duties of the position.
https://gradstudies.missouri.edu/policycategory/requested-leave-of-absence

Graduate Student Maternity/Paternity Leave Policy:
Graduate students are allowed a total of two months maternity/paternity leave, of which up to one month may be paid leave upon the approval of the adviser and/or chair.
https://gradstudies.missouri.edu/policycategory/requested-leave-of-absence

Travel Funds
Students wishing to obtain travel money to attend scientific conferences have a variety of sources from which they may apply for funding. These sources should be applied to in the order listed.

- **a.** Travel funds from Adviser's grants (additional criteria at the discretion of the professor).
- **b.** Funding from the Office of Graduate Studies (must be a doctoral student, have successfully completed comprehensive examination and be admitted to doctoral candidacy [post-comprehensive exam]). Forms for the Office of Graduate Studies travel awards may be obtained from the Student Coordinator. These usually are only awarded once during a student's graduate career.
- **c.** Funding from the Life Sciences Program travel awards (student must have completed comprehensive examination and be presenting his or her research at a national meeting; can only be awarded once during graduate career).

d. Funding of up to $400.00 per fiscal year (July 1-June 30) can be requested from the either the Department of MMI or VPB, if the primary appointment of the adviser is in either department, for both pre- and post-comprehensive exam students including first year students after selecting a doctoral research adviser.
- The mentor must submit a letter to the Director of Graduate Studies documenting that sources A-C above have been explored and stating purpose for attending the meeting. The Director of Graduate Studies, and after consultation with either the MMI or VPB Chair, will consider such requests.
- Presentations are not required, but strongly encouraged. First year students are waived from needing to present at the meeting.
- Requires 50% cost sharing from mentor.
- Mentors can request a report from the students following the meeting about the outcome of the meeting.

e. Students are also encouraged to apply for travel awards from the societies sponsoring research conferences (e.g., ASM and AAI) and directly from the conferences themselves (e.g., Keystone Symposia and Gordon Conferences).

Links for Travel Award Applications

- Travel award application from the Graduate School (student needs to be ABD to apply): https://gradstudies.missouri.edu/graduate-awards-travel-scholarships/
  The following fellowships are available through the above link.
  - Travel award application for Profession Presentation Travel Award (many only receive one time award either Professional or Dissertation award).
  - Travel award application for Dissertation Research Travel Scholarship (student needs to be ABD and may only receive one time).
  - Travel award application through the Graduate Professional Council (student need not be post-comprehensive exam).
  - Travel award application through the Graduate Student Association (student need not be post-comprehensive exam).
- Travel award application through Life Sciences Program (only available to a LS fellow, but needs to be post-comprehensive exam); please contact the Life Sciences Fellowship office for the proper form.

XIII. UNIVERSITY RESOURCES

Gaines/ Oldham Black Culture Center (GOBCC)
https://gobcc.missouri.edu/

Graduate Diversity – Inclusion Initiatives
https://gradschool.missouri.edu/inclusive-excellence/diversity-inclusion-initiatives/

Fellowships at Mizzou
A database of external Fellowships http://fellowships.missouri.edu/

Academic Writing Presentations
http://gradstudies.missouri.edu/professional-development/build-your-skills/ Workshops for TA's in Writing Intensive courses, Resources on Writing, Writing Intensive course evaluations.

Job Search & Career Development Resources
https://gradstudies.missouri.edu/pdsubject/career-development-exploration/ Resources on job searches, writing, and relationships in Office of Graduate Studies, financial aid, etc.

Computer Information
IATS Everything Technology Guide http://doit.missouri.edu or Help Desk 573-882-5000

Dissertation Binding
Available at Printing Services. https://gradschool.missouri.edu/policy/technology-and-your-thesis-or-dissertation-supplemental-materials-submission/

Graduate Student and Postdoctoral Scholar Networks
https://gradstudies.missouri.edu/professional_development/networking-networks/

Graduate Travel, Scholarships & Awards
https://gradstudies.missouri.edu/graduate-awards-travel-scholarships/travel-scholarships/
Travel awards available through different Office of Graduate Studies organizations. See details, deadline dates, and specific requirements under Application for Dissertation Research Travel Scholarships at this website.

Educational Technologies at Missouri
http://etatmo.missouri.edu
ET@MO supports the meaningful use of technology to improve teaching and learning. Canvas, Tegrity and other applications used for the purpose of teaching.

Graduate Professional Council
http://gpc.missouri.edu/

Graduate Students as Parents
Learn about school or daycare options http://childcarecenter.us/missouri/columbia_mo_childcare
https://gradstudies.missouri.edu/admissions/admitted-students/

Tuition Support Program: Assistants, Fellows, Instructors (Health Insurance and Fee Waivers)
https://gradstudies.missouri.edu/funding/assistantships-fellowships/ Contact: Karen Gruen GruenK@missouri.edu 573-884-2326

International Center
https://international.missouri.edu/
Funding opportunities, International fellowships and scholarships, Curators Grants-In-Aid Program for International Students, News and Resources

John Bies International Professional Presentation Travel Scholarships and International Dissertation Research Travel Scholarships
https://gradstudies.missouri.edu/graduate-awards-travel-scholarships/travel-scholarships/

MU Library
http://library.missouri.edu/

Minor in College Teaching
https://gradstudies.missouri.edu/current-students/minors/ 12 credit hours beyond major program; 6 hours of core courses, 3-6 hours of Teaching Practicum, 3 hours of Teaching Electives, Teaching Portfolio.

MU Counseling Center
http://counseling.missouri.edu/
The MU Counseling Center promotes the success and growth of individuals in the MU community and the campus as a whole, fostering personal, intellectual and psychological well-being.

Preparing Future Faculty – PFF
https://gradstudies.missouri.edu/professional_development/purpose-of-the-pff-program/ PFF Fellows visit a mentor at a partner institution 1-2 times per semester, and participate in monthly class meetings and professional development/career workshops. GRS 9010 and 9020 for 1 credit hour each semester.

Professional Presentation Travel Scholarships
https://gradstudies.missouri.edu/graduate-awards-travel-scholarships/travel-scholarships/

Software training courses
Offered at no charge to students. https://doit.missouri.edu/services/training/

Statistics Help
http://sssc.coas.missouri.edu The Social Science Statistics Center provides MU graduate students with assistance with projects, theses, and dissertations. Check this website for a description of their services.

Writing Help
The Learning Center Writing Lab offers free, fifty-minute writing consultations for MU graduate students. Graduate students may come for help with short papers, seminar reports, letters, or vitas. To make appointments, call the Learning Center Writing Lab at 573-882-2493. https://writingcenter.missouri.edu/

XIV. SURVIVAL SKILLS FOR GRADUATE STUDENTS

Role of Business Support Specialist II (Student Coordinator). Serves as an informational source for students with regard to revision of curriculum, university rules, regulations and policies. Maintains student's files and monitors student's progress towards meeting degree requirements. Assists graduate students in registering for classes and makes sure they have enrolled in the correct number of hours each semester. Prepares students tuition fee waivers and assists students in signing up for medical insurance.

Prepares course syllabuses, evaluations and hands out consent forms for classes taught in MMI, Schedules rooms for courses and seminars. Acts as a liaison between faculty and the bookstore rep for ordering textbooks for each course.

MMI Office Staff – Prepares paperwork for payroll, hospital ID badges, lab keys, and parking permits.

Registering for classes
New students will meet with the director of graduate studies to determine which courses to take. Students will register through the student system, myZou, on the internet. Registration instructions and pawprints are emailed to the students upon acceptance by the Office of Graduate Studies.

Student ID Cards
Students will obtain a University Student ID card for access to the student recreation center, natatorium, most buildings, campus computing labs, student health services, and charge purchases at the University Bookstore. The campus ID card office is located inside the University Bookstore. Students must present a photo ID to obtain a campus ID card. The campus ID can be set to access assigned buildings and animal quarters.

Setting up email
All students are automatically provided with an e-mail account. Each student will be giving a PawPrint which is the ID needed to access most MU-technology resources. The PawPrint consists of a student's initials and three random characters to ensure uniqueness. New students must activate their PawPrint using the four-digit Personal Identification Number (PIN) provided by the Registrar at this web address, https://doit.missouri.edu/new/ . To access your Mizzou e-mail account, go to http://webmail.mizzou.edu