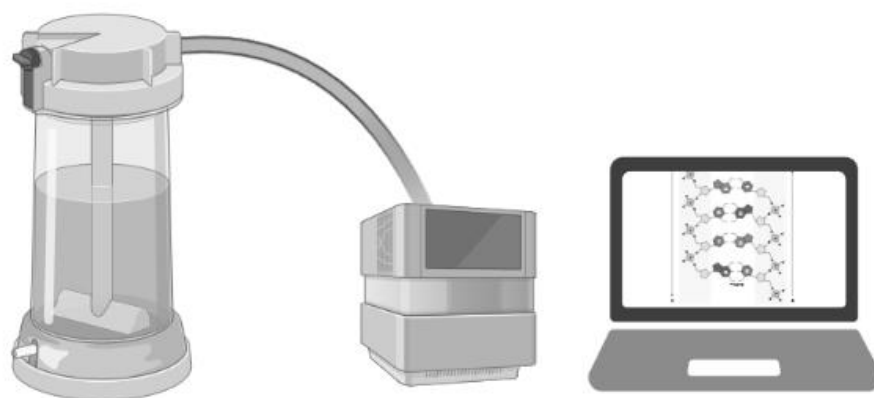


Microbiology Graduate Student Handbook 2022/3

*A handbook to guide students through PhD and MS Programs in
Microbiology at the University of Tennessee-Knoxville*

Produced by the
The Department of Microbiology
College of Arts & Sciences
The University of Tennessee



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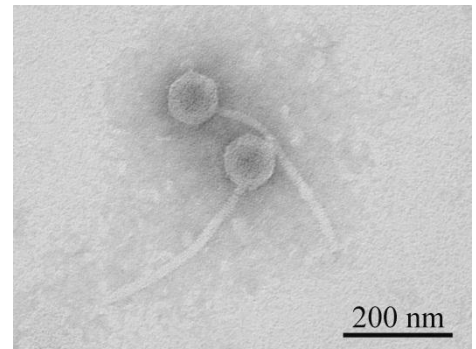
Images in this document provided by the Johnson and Wilhelm labs

Introduction

This handbook contains information concerning the graduate program, including programs of study that are offered and curriculum requirements. It is intended to assist students pursuing graduate degrees in Microbiology at the University of Tennessee, Knoxville. An effort is made to periodically update this document so that it reflects policy changes instituted by the department, college, university, or other administrative unit. Therefore, this handbook will supersede any previous one. Students will be duly notified when amendments are made to the requirements in this handbook; however, not all aspects of graduate study can be included here. All graduate students are urged to consult the Graduate Catalog (<https://catalog.utk.edu/index.php>) and become familiar with the additional policies and requirements not listed herein.

Department Head Welcome Statement

Welcome to the Department of Microbiology! We are delighted that you have chosen to pursue your microbiology graduate research at the University of Tennessee in Knoxville. As a member of our department, you will help advance fundamental knowledge in your chosen topic. It is an exciting time to be a microbiologist. Technological advances have propelled our abilities to study microbial communities, both those inside and outside hosts, with amazing resolution. Appreciation for the roles of microbes in the health of the planet have grown tremendously and interest in microbes is high among citizen scientists. Our department is one of a handful in the U.S. with strong faculty representation in the intersecting fields of microbial pathogenesis and microbial ecology, making it a unique environment to explore microbiome research from molecular to ecosystem scales. Through such research, you will have an opportunity to help address critical global health and environmental issues and to make groundbreaking discoveries that change our views of life on Earth and other planets. To help you achieve your potential as a microbiologist and hone your skills in communicating your knowledge with others, the department provides you with research, teaching, and professional development experiences. You are embarking on a path of discovery. Do not be afraid to ask questions. That is the whole point!



Purpose of this Handbook

The Department Graduate Handbook does not deviate from the established Graduate School Policies (<https://gradschool.utk.edu/graduate-student-life/understanding-your-rights-and-obligations/>). Its purpose is to identify and explain existing mechanisms that enable these policies and practices within the department. It is the responsibility of each individual graduate student to be aware of and satisfy all regulations governing their work and study at UT. For additional information, students should access the Graduate Catalog, *Hilltopics*, publications on the Appeals Procedure, and the Graduate Assistant Handbook, all available on the Graduate School website (<http://gradschool.utk.edu/>).

About the Department

The Department spans the breadth of Microbiology with concentrations in two major areas of the discipline: microbial ecology and microbe-host interactions. **Microbial ecology** examines the interactions between microorganisms (be it individual populations or communities) and their environment. This includes the influence microorganisms have on their environment as well as the influence the environment has on microbial proliferation. Microbial ecologists study the ecology of viruses, bacteria, fungi, archaea, and algae and their relationship to their environment. In our department research is performed in oceans, lakes, terrestrial and industrial settings. **Microbe-host interactions** examine viral, bacterial, parasitic, and fungal organisms that cause disease or promote health in animals and plants. The study of the role of microbes in health and disease includes molecular processes that mediate the outcome of the interaction, the responses and adaptations that enable microbes to recognize the host, and the many ways human, animal, or plant hosts respond to the presence of microbes. A description of the research programs can be found on-line at the following link: [Department of Microbiology | The University of Tennessee, Knoxville](https://micro.utk.edu/diversity/index.php). This is a good place to start identifying areas of research that may be of interest to you.

Diversity and Climate

The faculty, students, and staff of the University of Tennessee's Department of Microbiology view diversity, multiculturalism, and social justice as fundamental ethical and societal values that are crucial components of the scientific endeavor and community (<https://micro.utk.edu/diversity/index.php>). To foster outstanding research, scholarship, and practice - and to be people able to work, excel, and lead in an increasingly multicultural and global society with complex challenges and opportunities - we must be inclusive and diverse. We believe that taking action to improve our department's diversity, equity and inclusivity is the moral and just thing to do. We recognize and value diversity in its myriad forms, including but not limited to disability status, age, ethnicity, gender, sex, family structure, national origin, race, sexual or romantic orientation, religion and spirituality, political affiliation, socioeconomic background, and veteran status.

Our Department of Microbiology is committed to advancing and maintaining a collegial academic environment based on equity and fairness. Therefore, we work to:

- Create and sustain a welcoming, supportive, and inclusive departmental climate.
- Identify and address institutionally racist and biased practices that impede equity and inclusion.
- Increase the numbers of individuals from under-represented populations by attracting, hiring and retaining more diverse faculty, staff, and administrative professionals.
- Attract, retain, and graduate increasing numbers of students from under-represented populations.
- Advocate for and foster a supportive environment for international populations within student, faculty, staff, and administrative positions.
- Ensure that the teaching and learning experience is inclusive and reflects the Department's commitment to diversity and social justice.

- Prepare students to become leaders, teachers, researchers, and clinicians in a diverse world.
- Develop and strengthen departmental partnerships with diverse communities on local, state, national, and international levels.

Microbiology Departmental Expectations

Microbiology Faculty Expectations

Faculty members of the Department of Microbiology are expected to maintain the highest standards of professionalism, demonstrate ethical conduct and work to create an inclusive environment for all graduate students. In line with those expectations, faculty responsibilities to graduate students include the following:

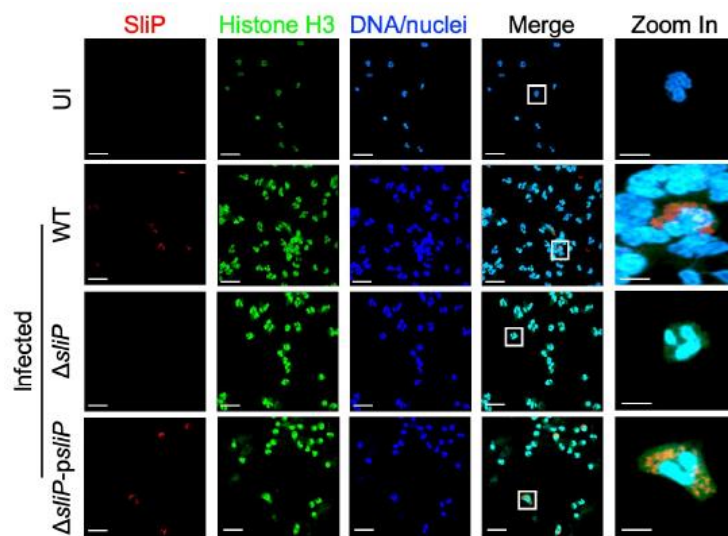
- Recognize and respect that students are trainees, and that the faculty are responsible for creating a supportive environment for students' personal and professional development.
- Make themselves available to their students (within reason) to aid in student development and problem solving.
- Communicate with their students regarding their expectations and with regards to the student's own goals.
- Realize that student progression is individual, and requires ongoing, open discussion with the individual mentee.
- Promote professional development through timely and constructive feedback on scientific progress, writing, presentations (all within agreed upon timelines), encourage meeting participation, etc.
- Respect the time needed for GTA and other professional commitments.
- Recognize/respect students' chosen career paths.
- Respect that students have lives outside of the lab.
- Create an environment that is welcoming to open debate and the ability to challenge accepted intellectual norms and principles in academia.
- Set an appropriate standard for the integrity, quality, and rigor of the work produced by the lab.

Microbiology Graduate Student Expectations

Graduate students of the Department of Microbiology are expected to maintain the highest standards of professionalism, demonstrate ethical conduct and work to create an inclusive environment for all. Students should realize that training at the graduate level goes well beyond the "textbook and classroom" models of their undergraduate education. In line with that expectations, graduate students are expected to do the following:

- Know that they are primarily responsible for their own success.
- Recognize that they are trainees, and that the faculty are trying to create a supportive environment for their development.

- Make themselves available to their faculty mentor within reason, including responding in a timely manner during normal working hours and monitoring communication after hours in case of emergencies.
- Communicate with the faculty mentor their expectations, concerns, and obstacles hindering their development. This may include sharing details as to why progress is hindered.
- Seek feedback from the faculty mentor (and as appropriate their advisory committee members) regarding scientific progress, writing and presentations. These should occur *via* reasonable, mutually agreed upon time frames with their mentor.
- Respect that while on a GTA and/or taking classes that they are to continue working and making progress on their research projects.
- Appreciate that science does not always follow a “normal” (*i.e.*, 9-5) work schedule and will require working beyond their personal schedule at times, especially during emergencies or crunch times.
- Realize that their progression is not at a dictated rate, and requires ongoing, open discussion with their faculty mentor.
- Maintain a life outside of the lab and prioritize their mental health.
- Respect that faculty members have lives outside of the lab.
- Appreciate that they are not the only trainee in a lab or a department, and appreciate the need to work collaboratively with peers.
- Adhere to Hilltopics (<https://hilltopics.utk.edu/>) and to the Department of Microbiology Policy on Graduate Student Behavior found in the Graduate Students Handbook



Contact information for graduate students

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| Department Head: | Professor Heidi Goodrich-Blair (974-6358) hgblair@utk.edu |
| Associate Head | Professor Alison Buchan (974-5231) abuchan@utk.edu |
| Director of Graduate Studies: | Professor Steven Wilhelm (974-0665) wilhelm@utk.edu |
| Graduate Admissions, Recruitment & Orientation: | Professor Todd Reynolds (974-4025) treynolds@utk.edu |
| Graduate Program Steering Committee Chair: | Dr. Karen Lloyd (974-4224) klloyd@utk.edu |
| Diversity and Inclusivity Committee Chair: | Dr. Jill Mikucki (974-4301) jmikucki@utk.edu |
| Administrative Coordinator: | Ms. Rachelle Allen (974-4004) rrallen@utk.edu |
| Graduate Program support: | Ms. Zhane Fanning (974-3441) zfanning@utk.edu |
| Supervisor of Teaching Laboratories: | Ms. Elizabeth McPherson (974-6230) edfish@utk.edu |

Beginning Graduate Studies in Microbiology

Before the semester begins, each new graduate student will meet with the Director of Graduate Studies (Dr. Wilhelm) to plan a course of study, and to select courses to register for their first semester. The Director of Graduate Studies, DGS, (or designated appointee) will serve as an advisor to each new graduate student until a research mentor has been selected. After a student has chosen the lab where they plan to conduct graduate research, the principal investigator (PI), who runs the lab, will serve as research mentor for the student's remaining tenure at UT. After the completion of the lab rotations, the chosen research mentor, along with the advice and counsel of the student's thesis/dissertation committee, will direct the student's research and recommend courses for the subsequent semesters. All students must consult with the Graduate Director regarding lab rotations and courses of study for the first semester, even if the student has identified an area of research or potential supervisor.

General Duties and Requirements for Graduate Students

Purpose of laboratory rotations

There are several reasons for doing lab rotations. The major reason is to find a "home" laboratory. This is the lab where you will perform your thesis/dissertation work. The rotation period allows you to explore the laboratory in terms of scientific projects as well as interpersonal relationships. During this period, you should determine if you work well with the mentor, the science excites you, and if you "fit" with the lab style.

Lab rotations also broaden your horizons. Even if you have an idea of the laboratory in which you ultimately wish to conduct graduate research, and you are certain that the lab's "style" matches your personality well, rotating through a different laboratory gives you time to assess other styles, learn new techniques, new systems, and common and distinctive approaches to conducting science. These experiences will help you develop your research project in your home laboratory as well as challenge you intellectually. You will observe how different laboratories approach scientific questions from different angles. By working with a variety of groups, you will gain valuable insight and new knowledge regarding how one can tackle questions with multiple techniques and approaches. Further, it also will help hone your skills in communicating with others and collaborative science, which are all critical components of any successful scientific endeavor.

Lab rotations also allow you to contribute directly to ongoing laboratory projects. In some cases, you may not generate much data, but you are contributing scientifically to the laboratory by either designing or creating new molecular tools, running assays, analyzing genomic data, assisting with complicated projects, etc. It can happen that you may contribute enough to a project to be included as an author on a paper!

Procedures/guidelines for setting-up laboratory rotations

In all cases, the faculty member (also referred to as the principal investigator or PI) needs to accept you into their lab for a rotation. **It is important to understand that in some cases a faculty member may not have rotation openings due to prior commitments and/or insufficient space.** This is why it is important to meet and discuss rotation possibilities with a number of faculty members.

Students must complete two rotations approximately 8 weeks in length. Note that you can extend a rotation longer (provided the PI agrees) as well as perform a third rotation. The reasons for extending rotations

or completing a third rotation are varied but can include things such as a desire/need to more thoroughly complete an experiment/project or to learn/perfect a new technique. The first rotation period is scheduled from **August 24- October 14** (note that you may wish to begin your first rotation prior to August 24 if you have identified a rotation lab). The second rotation period extends from **October 17 - December 8**. Following completion of the final rotation, the student will join his/her home laboratory *immediately* and begin his/her thesis/dissertation project over the winter break.

To set-up a lab rotation, you should first examine the professors' work. You should attend the mandatory "Meet the Faculty" sessions held during the first week or two after your arrival on campus. This will give you the chance to meet informally with those members of the Department that can accept rotation students. You should also use the departmental website to obtain information about ongoing research projects in the laboratory and links to the faculty members' publications. You will want to select a minimum of two labs you are interested in rotating through. Students can rotate through primary faculty appointments in Microbiology, adjunct, or joint faculty appointments. A list of those faculty is provided at the back of this handbook. Any further questions can be referred to the Director of Graduate Studies (Dr. Wilhelm).

Once you have narrowed your selection down, contact the faculty member (email is often easiest) and schedule a time to speak with them. During this meeting, discuss project opportunities, when they may be able to host a rotation student, lab specific expectations (*i.e.*, are there "core hours," will you be working with a particular lab member, etc.) and potential opportunities for joining the laboratory after rotations.

Once you have confirmed the opportunity to rotate with individual faculty members, email the Director of Graduate Studies (DGS) with your rotation choices and the order in which you wish to complete your rotations. The DGS will confirm your selections and contact you shortly. Note that in some unusual cases, the DGS may need to modify your requests due to spacing/timing issues with laboratories. In most cases, your selections are honored.

After you receive confirmation from the DGS, contact the appropriate faculty members and solidify the times and details of the rotation. They will likely want to meet with you or have a lab member meet with you to assist you at the onset of your project.

Rotation expectations

The rotation period is your chance to gain new scientific knowledge as well as knowledge about the workings of the lab and whether you "fit" into that style. Thus, it is critical that you learn as much as you can during this time frame. To maximize your learning, **you are expected to be in your rotation laboratory when you are not in classes or teaching**. You are strongly encouraged to provide your class/teaching schedule to the principal investigator as well as to whomever you are directly working with. You should communicate regularly with the PI and your direct supervisor regarding the experimental schedule and notify them of anything that may interfere with your schedule such as illness, etc.

While in the laboratory, you are expected to be mindful of laboratory rules. Each laboratory will have its own rules or guidelines. It is YOUR duty to learn these rules and adhere to them. For example, in some laboratories,

a single person oversees ordering or stocking a particular reagent. You need to discuss with that person the guidelines as to requesting new/more of a reagent.

Some Key Survival Tips:

- Be RESPONSIBLE and SAFE! If you do not know how to use a piece of equipment, or the hazards of a particular chemical, ask. Do not assume anything.
- Work hard and contribute positively to the laboratory. Remember, the PI is also using this as a gauge of your interest, work ethic, intellectual curiosity, and personality.
- Work well with others. Sometimes personalities may clash; do not aggravate the situation further!
- Learn as much about the laboratory and the scientific projects as possible. While you may not end up in a laboratory you rotate through, these faculty members will be your mentors here at UTK, members of your graduate committee, your course instructors, scientific colleagues, and collaborators. You should view them as valuable resources for your scientific development now and in the future.
- Read the pertinent scientific literature. If you are not sure what papers are the best to begin with, ask the PI and senior lab members for recommendations.
- Remember that this experience provides a foundation for future success. When students ask *“how much time should I be putting in”* the common answer is that successful graduate students spend 20-30 hours per week on their rotation (**and 40+ in the lab once they have chosen a lab**). To this end it is important to be responsible and plan well (if you do not use a day planner or daily calendar to schedule your time it is highly recommended that you start).
- If any problems or concerns arise, please contact the graduate director immediately.

During the rotation, you should become familiar with the ongoing projects and overall scientific goals of the laboratory. At the end of a rotation, you should be able to give a 10 minute presentation on the project you have participated in: this includes the relevant background information, relevant preliminary data, the pros and cons of the techniques used and how those techniques work, what your contribution was, and the future plans for the project. In January, you WILL give an oral presentation to the department on one of your rotation projects. If you are mindful and diligent during each rotation, this will be relatively straightforward.

Selection of a thesis/dissertation advisor

It is up to **you** to discuss with the faculty member whether they can/are willing to accept you as a thesis/dissertation student. ***When you have decided regarding which lab you would like to join, you must schedule an appointment with the Graduate Director.*** Ultimately, the decision is between the student and the PI, however, in some unusual cases (e.g., too many students wish to join the same laboratory), other accommodations may need to be made. It is best to wait until the end of your second rotation to start this conversation with your chosen mentor.

General guidelines for being a successful graduate student

Upon joining a laboratory, a student must continue to fulfill specific expectations regarding their academic and research performances. These expectations are put into place to ensure success of our students and completion of their degrees in a reasonable time frame. Additional guidelines, beyond what is listed below, can be found in the following sections of this handbook: **Standards, Problems and Appeals: Academic Policies & Definitions**; and the **Department of Microbiology Policy on Graduate Student Behavior**.

Academic Expectations

Students must successfully pass several course requirements to remain a graduate student. Those requirements are outlined within this handbook in the selections below. Additionally, graduate students must maintain a minimum cumulative 3.0 GPA per University requirements; further discussion regarding academic probation can be found in **Standards, Problems and Appeals: Academic Policies & Definitions** or within [Hilltopics](#). If a student finds himself/herself in a challenging course, it is up to the student to seek out help from the instructor of the course, as well as to notify the major research advisor of potential academic problems.

Research Expectations

Regardless of the degree program, graduate students must successfully complete a research project to graduate. **Students are expected to work 40+ hours a week in their laboratories.** This will help ensure completion of their projects within a reasonable period. Students are also expected to follow the rules and guidelines of their research laboratory. ***Note that the most successful graduates of our program routinely work 60 hours a week on research, reading literature, writing, preparing presentations, teaching, etc.*** If a student is not making reasonable progression towards degree completion, the PI may follow the guidelines in **Addressing Research Progression Between a Principle Investigator (PI) and their Mentee (Graduate Student).**

Students must hold a yearly committee meeting. These meetings are mandatory, and the Department monitors their yearly completion. The purpose of these meetings is to verify that the student is progressing both academically and in their research work. The committee serves to guide the student through any potential difficulties in either area. Students found non-compliant of this requirement may face disciplinary actions. Following a committee meeting, a student will be presented a summary from their committee, and it may contain specific goals that must be met. Students are required to meet the goals laid out by the committee. Failure to comply with committee guidelines can lead to disciplinary actions and possible dismissal from the program (please see **Standards, Problems and Appeals: Academic Policies & Definitions** for more information).

Note that the preliminary examination is not considered a committee meeting.

Ethical and behavioral expectations

Responsible conduct of research is key for scientific success. The Department of Microbiology has high standards for the ethical research behavior of its members. Plagiarism of any form, data misrepresentation or manipulation, are not tolerated. Such behaviors can lead to dismissal from the program. Additional information is found within the **Standards, Problems and Appeals: Academic Policies & Definitions** section of this handbook.

Additionally, the Department has established a general code of conduct for graduate students, outlined in the **Department of Microbiology Policy on Graduate Student Behavior** found within this handbook. *Briefly, graduate students are expected to work full-time (40+ hours a week), treat their GRA or GTA position as an honor, be ethical in their work, and treat their co-workers with respect.* Any violation of these policies can result in dismissal from the program. Please see the full policy for more details.

Teaching Expectations

All graduate students are expected to teach during their time in the Microbiology Graduate Program. For MSc students, this is an expectation of one semester; for PhD students, a minimum of two semesters. Teaching is a critical component of the training program: it improves oral communication, strengthens foundational knowledge, allows for the development of new knowledge, provides valuable skill sets in time management and mentee training, and serves as an opportunity for students to explore instruction as a career option. Note that regardless of career path chosen, at some point everyone will need to instruct and/or mentor those with less experience: serving as a GTA will aid in that preparation.

Serving as a GTA provides not only a tuition waiver for a graduate student, it also supports the stipend for the student. Thus, students are expected to adhere to the policies and expectations established for the class they are instructing, as well as any and all guidelines placed on university instructors. GTAs are expected to be prompt with their grading, communicate effectively with their students and the instructor of record, and treat the GTA as a privilege. GTAs who do not adhere to policies and do not meet the expectations of the course will lose their GTA status, relinquishing the tuition waiver and stipend support.

Academic Guidance

Selection of courses

Graduate courses in Microbiology are listed in the Graduate Catalog. It should be noted that all courses are not offered each year. Specific information for the courses offered each semester can be found through the *Banner System* (<https://myutk.utk.edu/>), the University of Tennessee's electronic registration site. At the time of preregistration or registration, each student can obtain course information from <http://catalog.utk.edu/>. Additional information, concerning the subject matter of specific courses, may be obtained from the course instructor. In addition to courses at the 500- and 600-levels, there are upper division undergraduate courses (400-level) that may be taken for graduate credit. Graduate students enrolled in 400-level courses will be required to do additional coursework; the Graduate School mandates this. The course instructor determines the nature of the extra work. In addition to courses offered by the Microbiology Department, there are many courses offered in other departments or programs, such as: Biochemistry, Cellular & Molecular Biology (BCMB), Genome Science & Technology (GST; Life Sciences in the Graduate Catalog), Veterinary Medicine's Biomedical Research (formerly "Comparative and Experimental Medicine" -/"Pathobiology"), Earth & Planetary Sciences (EPS) and Ecology & Evolutionary Biology (EEB).

Course load

The maximum load permitted by the Graduate School is 15 credit hours for the Fall and Spring semesters and 12 for the summer term – most full time students in the science take 9 hours. The minimum course load for the Fall and Spring semesters is 6 credit hours and the Summer semester carries a minimum requirement of 3 registered credit hours for PhD seeking students. The Graduate Director or student's mentor will assist students in determining the appropriate number of hours to be carried out each semester, but normally a course load of 6-12 credit hours for each of the Fall and Spring semesters are recommended. Typically, newer students need to take 9-12 credit hours each Fall and Spring semester to complete departmental and Graduate School course

requirements. **It is important to make sure that registration for the minimum hours does not invalidate your financial aid package or visa status. If a student is unsure about this, please consult the Graduate School to ensure that you have registered for sufficient credit hours to maintain the required status level.** UT Residence requirement for doctoral students states that you must list two consecutive semesters of full-time enrollment (9 credit hours) or three consecutive semesters of part-time enrollment (6 hours), this includes summer semesters. Enrolling for fewer than 6 credit hours in the Fall or Spring semester is permissible only under certain circumstances.

Minimum GPA requirement

Graduate students must maintain a 3.0 grade point average. A grade point average below 3.0 will automatically place the student on probation with the Graduate School. Removal of probation will occur only when the overall GPA is raised to 3.0 or higher. Upon completion of 18 hours of credit in courses graded A-F, the student must have achieved, and must maintain, an overall grade point average of 3.0 or higher in courses taken for graduate credit. Students who do not meet these standards will be dismissed from the program.

Assistantships and Fellowships

The Department of Microbiology makes financial assistance available to graduate students in the form of graduate teaching assistantships, and institutional fellowships. Graduate research assistantships may be available through external funding obtained by their PI. University policy on the administration of graduate assistantships can be found in the Graduate Catalog. Although the Department makes every effort to provide financial support for graduate students, such support should not be expected to continue automatically from year to year or extended indefinitely. Students should not expect to receive financial support beyond the time limits listed below:

- Students entering program with a B.S./B.A. degree who are working toward the M.S. degree: 3 years
- Students entering program with a Master's degree who are working toward the Ph.D. degree: 4 years
- Students entering program with a Bachelor's degree who are working toward the Ph.D. degree: 5 years

Students may formally apply for extensions to these time limits. Students receiving financial support, in any form, from the department, are reviewed annually for consideration of continued support. Every graduate student's annual efforts are recorded on the **Annual Progress Report**, as described below. Graduate Teaching Assistants must include in their Annual Progress Report evidence of satisfactory teaching performance, such as: student evaluations, comments of faculty supervisors or other satisfactory evidence. Students will receive written notification of assistantship appointment renewals, each year. Students are also required to have an annual committee meeting with their research advisory committee (regardless of source of support) to maintain their financial support. After the committee meeting has ended the student's primary advisor will provide the student with written feedback in terms of the student's progress and standing in the program.



Graduate Teaching Assistants (GTAs) receive a basic stipend, which provides the student with a waiver of maintenance fees and out-of-state tuition. In addition to financial remuneration, the student gains valuable classroom experience that is an important part of his or her graduate program. The responsibilities of a GTA depend on the course in which they are assigned to assist. Generally, the position involves instructing one or two laboratory sections of a Microbiology course. However, some students may be asked to teach a course in the core Biology curriculum where the normal teaching load is approximately the same as that of laboratory sections in Microbiology. Incoming students awarded a GTA are required to attend the training program organized by the Graduate School. In addition, training by Microbiology and/or Biology Core staff is required. Before the first class, the activities and responsibilities of the individual course will be discussed with the GTA by the lab coordinator or course instructor. Continuation of GTA support is dependent on satisfactory performance.

Graduate Research Assistantship (GRA). Some students may be supported by a Graduate Research Assistantship, which is funded through an individual PI's research grant or contract. GRA annual stipends are variable, depending on the source of the grant, but generally they are the same as the stipend for GTAs. The duties and responsibilities of such assistants depend on the grant and the associated research it supports. However, it is expected that a student will spend 40+ hours per week on their research.

Non-Service Graduate Fellowships are available through the UT at large. Recipients of these awards must be involved in full-time graduate studies. The Graduate Record Examination is required for eligibility. Priority is given to first-year graduate students and to doctoral candidates engaged in full-time dissertation research. Further information on these fellowships and grants can be found on the Graduate School's web site (<https://gradschool.utk.edu/graduate-student-life/costs-funding/>).

Scholarships and fellowships are also awarded by several foundations and organizations outside UT. Information on the available scholarship and fellowship opportunities may be obtained from the Fellowship Assistant Office located in the Graduate Admissions' office. Additionally, listed below are a few examples of websites where information on graduate fellowships can be obtained.

Graduate School website: <http://gradschool.utk.edu/graduate-student-life/costs-funding/>

National Science Foundation: <https://www.nsfgrfp.org/>

American Heart Association: <https://professional.heart.org/en/research-programs/application-information/predoctoral-fellowship>

******(Note that for the AHA, the state of TN does not always award graduate fellowships; please consult with the organization)

Ford Foundation (Minority applicants): <http://sites.nationalacademies.org/pga/fordfellowships/>

The Paul & Daisy Soros Fellowships for New Americans: <http://www.pdsoros.org/>

The SREB Doctoral Scholars Program: http://www.sreb.org/page/1074/doctoral_scholars.html

Environmental Protection Agency: <https://www.epa.gov/careers/fellowships-scholarships-and-post-doctoral-opportunities>

National Institutes of Health (F series): <https://grants.nih.gov/grants/guide/pa-files/PA-20-251.html>
<https://grants.nih.gov/grants/guide/pa-files/PA-20-246.html>

Other listings for funding: <http://sites.nationalacademies.org/pga/fellowships/>

In summary, there are external funding sources available to graduate students. All graduate students are encouraged to apply for funding. Although these fellowships are extremely competitive, the receipt of one of these fellowships is considered an honor and ultimately an important component of your *curriculum vitae* /resumé when applying for future positions.

Graduate Student Employee Insurance

Students receiving graduate assistantships from the department will automatically be enrolled in the university's Graduate Student Health Insurance Program as a benefit of their employment. Premiums for the graduate student's insurance will be paid by the university or department for the duration of the student's assistantship. Students may elect to add spouse or dependent coverage at their own expense. Please refer to the Graduate Catalog for additional information (<http://gradschool.utk.edu/>) and to their website: <https://studenthealth.utk.edu/student-health-insurance/>

International Students

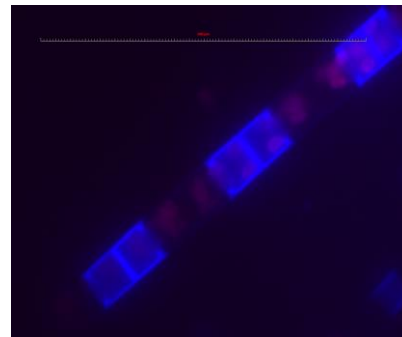
International students are encouraged to communicate frequently with the Center for Global Engagement (CGE) to ensure that they are meeting enrollment requirements to maintain their student visa status. Typically, student status can be maintained if a student is employed on a graduate student research or teaching assistantship and enrolls in a minimum of 6 credit hours each Fall and Spring Semester and 3 credit hours in the summer term. Students interested in learning about exceptions to these minimum enrollments are referred to the CGE. All international students must have health insurance. As mentioned above, those students receiving assistantships (either research or teaching) are automatically enrolled and the premiums for student health insurance coverage, only, are paid by the university or department.

Residency status

Students interested in determining their in-state residency status can consult the Residency Classification Guide <https://gradschool.utk.edu/admissions/applying-to-graduate-school/residency-classification/> .

Responsibility in Progression to Degree

It is important to remember the responsibility for completing all course work, teaching assignments, and administrative paperwork is borne by the student. The department has established a set of guidelines as disclosed in this document for use as a reference point for students. The faculty and staff of the Department of Microbiology work diligently to support the student in all of their academic pursuits, but only the student can bear the ultimate responsibility of progress to their degree. ***Note that the most successful graduates of our program routinely work 60 hours a week on research, reading literature, writing, preparing presentations, teaching, etc.***



Description of Programs of Graduate Study

Master of Science (M.S.) - Microbiology

The program leading to the M.S. is designed to provide the student with foundational knowledge, to permit the acquisition of technical competence in the fundamentals of research, and to encourage creative and independent thinking.

Requirements:

Two to three calendar years are usually needed for the course of study. Course requirements include:

- 30 total credit hours including six thesis hours.
- An overall 3.0 GPA in all courses taken for graduate credit. A 3.0 for all courses taken within the department.
- A course in biochemistry, molecular biology, or bioinformatics.
- One course in statistics.
- Satisfactory performance as a teaching assistant for at least one semester.
- Presentation, submission, and acceptance of a research thesis and its oral defense.

In The University of Tennessee's Department of Microbiology, it is anticipated that upon completion of a Master's thesis the candidate will have completed sufficient research and data analysis to enable a contribution, as a lead or senior author of at least one peer-reviewed scientific paper.

Doctor of Philosophy (Ph.D.) - Microbiology

The program leading to a Ph.D. is designed to develop the student's ability to pursue independent and original research in microbiology and allied fields, to communicate their scientific results, and to become effective teachers. Students may enter the program after receiving either a bachelor's or master's degree. Students who enter with a bachelor's degree usually receive the Ph.D. after five to six years. Those students who enter with a master's degree usually receive the Ph.D. after four to five years.

Requirements

Departmental requirements are as follows:

An overall 3.0 GPA in all courses taken for graduate credit. A 3.0 GPA in all courses taken within the department.

- Two semesters of biochemistry, bioinformatics, or molecular biology.
- One course in statistics.
- Satisfactory performance in at least two semesters as a teaching assistant. This is to be completed within the first three years of graduate study.
- Satisfactory performance on the preliminary examination that must be attempted before the end of the fourth semester and passed before Admission to Candidacy.
- Presentation, submission, and acceptance of a research dissertation and its oral defense.

In The University of Tennessee's Department of Microbiology, it is anticipated that upon completion of a doctoral dissertation the candidate will have completed sufficient research and data analysis to enable contribution as the lead author of at least two peer-reviewed scientific papers. Students are strongly encouraged to submit these two manuscripts prior to the completion of the degree program.

Degree Progression

The first year

In the week before classes begin, participation in various orientation and training meetings is required. Training sessions may include fire, chemical, biosafety, and, if necessary, animal training and occupational health registration. Training sessions for GTAs offered by the Graduate School and the Biology departments are mandatory for those students on GTA support.

Students who are non-native English speakers are required to successfully pass the OPiC test and English Placement Exam to receive a teaching assignment. Successful completion of the OPiC test with a score of 50 or better is mandatory by the start of the second year of graduate study. Graduate students not performing at a satisfactory level on the OPiC test are urged to seek coursework and tutoring in the English language through the English Language Institute (ELI) or the Speech Department. Students not passing the OPiC test by the beginning of the second year may be dismissed from the program. If such students wish to remain in the program, he or she will be required to petition the Department Head or Graduate Director for an exception.

Upon arrival on campus, new graduate students will meet with the Graduate Director, who will review the student's background and goals and, together with the student, plan a program for the first year. Apart from the typical curriculum (see below), students will also discuss their two laboratory rotations with the Graduate Director.

The Graduate Director may also recommend undergraduate courses designed to strengthen a student's background. A 'Timetable of Classes' (https://bannersb.utk.edu/kbanpr/bwckschd.p_disp_dyn_sched) is available to assist every student in registering for courses. The 'Timetable of Classes' provides a schedule of course offerings for the next semester, including a list of the specific dates to (pre-) register for courses.

Sample timetable: The First Year of Study

Fall Semester (9-10 hours)

MICR 515 (Colloquium, 1 hr, graded)

MICR 595 (Seminar, 1 hr, not graded)

MICR 596 (Laboratory Rotations, 3 hr, graded, in person)

MICR 6XX Journal club or from another Department (Journal club, 1 hr, graded)

A 3-4 credit hour elective (BCMB 401, an introductory biochemistry course, is highly recommended if biochemistry has not been taken previously)

Spring Semester (9-10 hours)

MICR 615 (Colloquium, 1 hr, graded)

MICR 595 (Seminar, 1 hr, not graded)

MICR 601, - 603, -605, -606 or -609 (Journal club, 1 hr, graded) or from another Department

Thesis/dissertation hours (note: if you opt for a third rotation, you will select MICR 596; please discuss with the DGS in advance)

One 3-4 credit hour elective

Fall Semester (year 2)

MICR 594 (Grant Writing, 3 hr., graded) (Required for PhD students, suggested for MSc candidates)

MICR 595 (General seminar, 1 hr, not graded)

MICR 615 (Colloquium, 1 hr, graded)

A 600-level Journal club (1 hr, graded), unless taking an Advanced Topics course

Thesis/dissertation hours, in person

After the first year

The primary and authoritative source for information concerning degree requirements, by major, for all graduate programs offered at The University of Tennessee, is the *UT Graduate Catalog* (<http://catalog.utk.edu/>). The Graduate Catalog itemizes, in the front section, a list of the University-wide regulations, as well as regulations pertaining to specific programs, as seen in the departmental sections. It is reviewed and updated annually.

This *Student Handbook* contains guidelines for the Microbiology program and is intended to supplement those guidelines detailed in the Graduate Catalog. It is important that students read both the graduate catalog and this handbook because each student is responsible for knowing and following all applicable policies. Failure to follow these policies can delay progress toward graduation. The Department of Microbiology website (<http://micro.utk.edu/>) also lists a succinct synopsis of degree requirements.

Year 2: By the beginning of the second year, each graduate student should have chosen his or her research topic and corresponding laboratory. Research in the chosen area should be well under way. The major professor will help each graduate student choose courses beyond the first year. As your program of research takes shape during this semester, each student must select a **Thesis** (M.S.-seeking students) or **Doctoral** (Ph.D.-seeking students) **Committee**. The doctoral committee consists of a minimum of four faculty members (but may have five), three of whom must be Microbiology faculty members and one is the major professor. The committee for Ph.D. students must include at least one member from another department at UTK. The Graduate School requires four members total, three who are eligible to oversee graduate level research. If there is any member from outside the university (serving as a 5th), they must be listed as a “courtesy member.” The thesis (MS) committee consists of a minimum of three faculty members, two of whom must be tenured or tenure-track Microbiology faculty members. *Students should hold their first committee meeting the summer between second and third semester or at the latest, within the first 4 weeks of the third semester i.e. September of the second year.*

The committee’s responsibility is to guide the student through research, but the committee may also recommend a transition from the M.S. to the Ph.D. track or vice versa. The choice of committee members is an important step because the committee helps to design the remainder of the course curriculum and administers the final thesis/doctoral dissertation defense. If applicable, a change of program application can be submitted to Graduate and International Admissions. This form is available on-line and needs to be filled out and sent to the Graduate School for approval. (<http://gradschool.utk.edu/gradforms.shtml>).

The *preliminary exam (for Ph.D. students only)* is taken during the second semester of the 2nd year (for spring admits, this will be the second spring). Upon passing, the student may apply for *Admission to Candidacy*. The forms for Admission status are found at <http://gradschool.utk.edu/gradforms.shtml>.

Year 3 and onwards: In years 3-5, students concentrate increasingly on their research project, while expanding their scientific backgrounds with additional formal courses as needed.

Courses of Study

General course requirements

Graduate students receiving assistantships (research or teaching) should register as full-time students **every** semester, including summer (there may be an exception for the summer term for MS-seeking students, please consult with the departmental office). For Fall and Spring semesters, the department recommends graduate students enroll for at least 6 credit hours. During summer term, students are advised to register for a minimum

of 3 credit hours. Deviations from these hours can affect access to some student facilities/activities. Please refer to the “Fees” section for additional details.

Milestones during progression through the program are to be communicated once a year (usually in December) to the Graduate Director using the Annual Progress Report (see Appendix).

These milestones include:

Choice of first year *rotation* labs

Fulfillment of teaching requirements (two semesters for PhD, one semester for MSc)

Choice of home lab and major professor at the end of the first semester (or first year)

Formation of *thesis or doctoral committee* in the beginning of second year

Completion of *thesis or doctoral committee meetings*, which are to be held at least once a year

Filling out the Annual Progress Report

Passing of the *Preliminary Examination* (second year; for PhD students only)

Filling out the paperwork for application for candidacy

Changes in the track (PhD versus MSc)

Scheduling and passing of the final *thesis or doctoral defense*

Graduation!

MSc: Candidates must complete a minimum of 30 hrs of graduate credit in courses approved by the student's masters' committee. At least 18 hrs need to be graded coursework, with 14 hrs at or above the 500-level, **exclusive** of MICR 500 (Thesis). A student must fulfill at least 6 hrs of MICR 500, including a minimum of 3 hrs the semester in which the student graduates.

30 hrs

18 graded credit hrs (12 hrs within the Department; at least 14 hrs at or above 500-level)

6 hrs of MICR 500, 6 additional credit hrs

PhD: Candidates must complete a minimum of 72 hrs of graduate credit in courses approved by the student's doctoral committee; 48 hrs are in graduate courses exclusive of MICR 600. **IF** a student enters the program with a master's degree, up to 24 hrs from their MS degree can be used to partially fulfill this requirement (*see note below*). In other words, students holding MS degrees may need to only take 24 hrs of graduate courses exclusive of MICR 600. A minimum of 12 of the 24 hrs (if candidate holds a M.S. degree), or 30 of the 48 hours, must be graded coursework. A minimum total of 24 hrs of MICR 600 is required. It is the responsibility of the student entering with an MS degree and desiring to apply some of their prior graduate credit (up to 24 hrs) to their PhD

coursework requirement to determine whether the Graduate School recognizes the university, courses, and credit hrs. Please check with the Graduate School early in your PhD program to determine if your courses meet UTK Graduate School requirements, particularly if the degree was administered by a non-US academic institution.

*****Once a student enrolls in MICR 600, they are required to register continuously for at least 3 hrs of MICR 600 each semester, including summer term.*****

FOR STUDENTS WITH NO MS DEGREE

72 hrs

24 hrs of MICR 600

30 graded credit hrs (at least 20 hrs at or above 500-level; 6 hrs at 600-level)

18 additional graduate credit hrs

FOR STUDENTS WITH A MS DEGREE

72 hrs

24 hrs of MICR 600

24 hrs credit from UT (12 graded credit hrs; at least 6 hr at 600-level)

24 hrs graduate credits from M.S. degree may be applied to meet 72 hr requirement

Students should work with their thesis or doctoral committee to identify the most appropriate elective courses for their area of study. At the committee's discretion a student may be required to complete courses that satisfy deficiencies in their progress towards a degree.

For each of the Fall and Spring semesters that an individual is enrolled as a full-time graduate student they are required to enroll in the following courses:

MICR 595 (General seminar, 1 hr, not graded)

MICR 515 (first semester of first year only) or MICR 615 (Colloquium, 1 hr, graded)

A 600-level journal club (1 hr, graded), unless taking an Advanced Topics course

In the case where a student plans to defend their thesis or doctoral dissertation early in a semester, a waiver for these mandatory courses MAY be given. This waiver does not preclude any requirements for hours to be completed within the Department or Graduate School. **To obtain a waiver, students must meet with the Graduate Director PRIOR to the beginning of the semester to discuss the option and if warranted, obtain the petition form.** It will be expected that the student's petition includes an established date of defense, the title of their thesis/doctoral dissertation, a statement from their advisor that the student will be defending that semester, and a statement that the student has completed sufficient hours to graduate.

Formal courses

Courses at the 500-level and above can be taken in the Microbiology Department or other departments or programs (BCMB, Vet School, EEB, GST [listed as Life Sciences in the Graduate Catalog]) with approval from the thesis/dissertation advisor. Upper level undergraduate classes (400-level) can also be taken for graduate credit: additional assignments are completed as requested by the instructor. Undergraduate 400-level courses are

usually taken to fill a gap in a student's knowledge base that will aid graduate work. Examples of frequently taken 400-level courses include Biochemistry (BCMB 401), Microbial Pathogenesis (MICR 420), Microbial Ecology (MICR 470), Microbial Genetics (MICR 411) and Microbial Physiology (MICR 410).

General Seminar (MICR 595) 1-hr, not graded

The department conducts a weekly seminar in the Fall and Spring semesters, in which students, professors, and visiting researchers present the results of their current findings. Participation in this seminar is mandatory and a stimulating part of the graduate program. The "Satisfactory-No Credit" grading system is used in General Seminar (MICR 595).

Journal Clubs 1-hr, graded

Journal Clubs provide opportunities for students to critically evaluate important research articles published in a particular area. Topical journal clubs are offered in all the major disciplines of microbiology including Microbial Ecology, Immunology, and Pathogenic Microbiology. Journal clubs meet weekly in the Fall and Spring semesters and are usually conducted in an informal manner. Students and faculty who participate in these seminars present recent journal articles and discuss current topics related to the area of the seminar. Recent findings presented at professional meetings and conferences may also be included. While these sessions are open to all interested graduate students, registration in at least one journal club per semester is required of all graduate students. Students are encouraged to take advantage of the broad spectrum of journal club offerings to both broaden and deepen their knowledge in Microbiology. Additionally, students may take journal clubs offered in other departments/programs that may aid in improving their scientific background. Journal clubs are graded courses. These are the journal clubs normally offered by semester, although not all listed journal clubs may be offered in any one semester and the topics may vary:

Journal Club Offerings (subject to change)

Fall

602 Microbial Pathogenesis

604 Virology

606 Microbial Ecology

Spring

603 Immunology

601 Microbial Physiology

605 Genetics

609 Microbial Genomics

Advanced Topics Courses 1-3 hr, graded

These are generally the major courses that fulfill 600-level, graded requirements (MICR 610-680). The courses are rotated so that each are offered approximately every 2-3 years. They cover a number of current topics in microbial ecology and pathogenesis. Topics courses generally combine many aspects of journal clubs but include the opportunity to interact closely with outside seminar speakers and to improve their writing skills. Check with the department to confirm which courses are currently being offered each semester.

Grant Writing (MICR 594) 3-hr, graded

Graduate students are required to register for this class in the Fall semester of their second year (spring admits should plan to take this class their second Fall semester). The course is an introduction to the steps required to become a productive graduate student and scientist including topics such as scientific ethics and how to write a paper/grant. A major portion of the course involves students writing a grant proposal on their proposed thesis/dissertation research project and presenting it for critique by the instructor and fellow graduate students.

Colloquium (MICR 515 or 615) 1-hr, graded

This is a required and graded one-credit hour course offered in both Fall and Spring. Every lab is given 1-2 slots/semester where their work is presented to the entire department. Every graduate student presents once every academic year.

Lab Rotation (MICR 596) 3-hr, graded

Each student participates in an in person research project in two labs in the Fall semester of the first year. Rotations are arranged by the Graduate Director of the department in consultation with the student.

Other Seminars

Announcements of relevant seminar programs offered outside Microbiology are distributed via e-mail. Most of these special seminars are open to anyone interested. Students are urged to take advantage of such programs that might relate to their special interests.

Thesis Research (MICR 500) or Doctoral Research (MICR 600)

These in-person courses are used for thesis/doctoral research. Once a student has registered for MICR 600 doctoral research, registration **for at least 3 hrs** is required in every subsequent semester, including summer. Failure to do so may see the student removed from the program by the graduate school.

Code of Conduct for UTK Microbiology Seminars and Colloquia

The Department of Microbiology encourages the open exchange of scientific ideas. Seminars are a forum for the speaker to present their ideas and to allow attendees to learn through engaged listening and questioning. We want our seminars and colloquiums to be an inclusive environment in which all participants feel that their presence is welcome and their contributions valued. Thus, by joining Department-hosted colloquia and seminars, we expect participants to adhere to the following code of conduct:

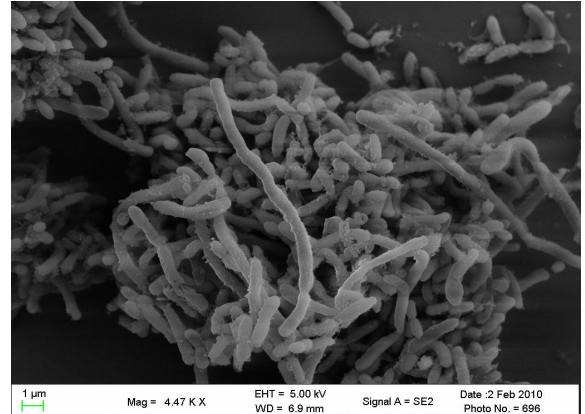
- **All attendees will behave professionally**, treating speakers and other attendees respectfully (demonstrating the understanding that the event is important; to be polite or honor someone) and considerately (in a way that shows that you are always thinking of other people's wishes and feelings). Professional conduct includes thoughtful appreciation of the ways in which power and status affect how people express themselves and how they interpret what is said. This is especially important to consider when speakers are job candidates, trainees, students. *Professional conduct also includes punctual arrival and respect for the speaker by eliminating distractions, such as limiting active use of laptops, tablets or phones except for activities related to presentation (i.e., taking notes or providing electronic feedback).*
- **Constructive interaction** between the speaker and the audience is expected. Speakers should try to present their material in an understandable way, taking into account the diverse levels of expertise in the audience. All audience members are encouraged to respectfully ask constructive questions that lead to a broader and deeper understanding of the speaker's points or help the audience member clarify concepts or points of confusion. *Difficult and probing questions that require critical thinking by both the speaker and audience are encouraged and are, in part, why scientists present their work in seminars and colloquiums. This code of conduct simply asks that you posit your questions in a respectful manner.*
- **Persistent questioning or dialog limits others from participating** and should not be pursued during the talk. If an attendee is not satisfied with the speaker's response to their question or comment, or the question requires a more complex response, then they should reserve follow-up for later discussion to allow the speaker to present their ideas and for other attendees to contribute questions or comments.
- **Discussion between attendees during a seminar** should be kept to a minimum. *This includes side discussions between two people in the audience, as even whispered exchanges can be loud enough to distract nearby participants.* The seminar is primarily a vehicle for the speaker to communicate with the audience.
- **Intimidation** of any participant (speaker or audience member) through inappropriate, aggressive, confrontational, or derogatory (showing a disrespectful attitude) comments or questions is not acceptable, even if you disagree with the points being made by the other person.
- **The host of the seminar** speaker is formally in charge of the seminar. This includes reminding audience members of the department's expectations concerning their conduct. However, all participants present should be mindful of this code of conduct and should help to ensure that it is followed.

This code does not supersede UT Student of Faculty Codes of Conduct

Master Degree in Science (MSc)

MSc Requirements

The program of study leading to the Master of Science degree in Microbiology is designed to provide the student with broad and basic knowledge of the field, to permit the acquisition of technical competence in the fundamentals of research, and to encourage creative and independent thinking. Two to three calendar years are usually needed for the completion of the recommended program of study. A course in biochemistry, bioinformatics, or molecular biology is required (e.g. BCMB 401, 402, 511, 512, 515, MICR 580, etc). The student will select other courses with the assistance of his or her thesis committee.



The student must present his/her thesis research in a public seminar during the final semester of residence. This must be completed by the Graduate School's deadline.

In addition to the specific requirements for the MS in Microbiology, there are certain general requirements for the M.S. degree dictated by the Graduate School. These requirements are described in detail in the Graduate Catalog and should be read by every entering student. Since students often find these requirements difficult to understand, a summary of those rules most often misunderstood is presented above.

MSc Thesis Committee

The student will select a research sponsor (*i.e.*, major professor) toward the end of his/her laboratory rotation period. This major professor will assist in the selection and execution of a suitable research problem and in the choice of a thesis committee. Once a thesis committee of at least three faculty members (at least two of which must be tenure or tenure-track members of the Microbiology Department) has been formed, annual meetings between the student and the committee are required for the purpose of monitoring progress toward the degree. It is important for students to set the meeting dates well ahead of time since it is often very difficult to find a date when all committee members are available.

Switching mid-stream from a MSc to a PhD

In some instances, after consulting their advisor, students decide to switch from the MSc program to the PhD program. The following series of steps is required for the student to do this:

1. The student holds a committee meeting to discuss moving to the PhD program.
2. The MSc student must take and pass the Grant Writing class.

3. Assuming the committee approves the switch, the student contacts the graduate director and requests the change and applies to the graduate school for a change in program, <https://gradschool.utk.edu/forms-central/change-of-program/>. NOTE: there is a change of program application fee. *This fee can be waived by the Department, but it must be requested. **The current form is cumbersome, but we are working with the Graduate School to adjust the forms and in the meantime, we have suggestions.***

4. The student is vetted by the sitting graduate admissions committee. (This is done electronically and is organized by the graduate director).

5. The chair of the admissions committee or graduate director then admits the student in the system assuming the student has passed the above requirements.

Once the student has gone through the above, they will need to work with their advisor to add an extra-departmental member to their committee and any other member to be sure their advisory committee meets the criteria set forth by the graduate school.

The Degree of Doctor of Philosophy (PhD)

The program leading to the Ph.D. degree is designed to develop the student's ability to pursue independent and original research in microbiology and allied fields, communicate the results of their research to the scientific community, and serve as an effective teacher. Students may enter the program leading to the PhD in Microbiology after receiving either a Bachelor's or Master's degree. It is anticipated that, for a student entering with a baccalaureate degree, five to six academic years will be required to complete the program, and that a student entering with a Master's degree from another institution will require four to five academic years, depending on his/her background.

Requirements

Departmental requirements for graduation are two semesters of biochemistry, bioinformatics, or molecular biology (in some cases 400-level courses may be appropriate, however, 500-level courses are strongly recommended), a course in statistics, two 600-level courses (6 hrs total), and two semesters of teaching. The student will select other courses with the assistance of his or her committee.

There are a few general course requirements mandated by the Graduate School. These are described in the Graduate Catalog and are reprinted here for the convenience of the student: A minimum of 24 hours of graduate coursework for those entering with a MSc and 48 hours of graduate coursework for those with a BS/BA degree. A minimum of 12 of the 24 hours (students with an M.S.), or 30 of the 48 hours (students with a BS/BA), must be graded A-F. A minimum of 6 hours of the student's coursework must be taken courses at the 600 level, exclusive of doctoral research (MICR 600). In addition, 24 hours of course MICR 600 Doctoral Research and Dissertation are required (see Registration for Course 600 and Continuous Registration).

Doctoral Committee

After selecting a lab to work in, the major professor (*i.e.*, dissertation advisor, also called the principal investigator (PI) of the lab) will help in selecting members of the Doctoral Committee. This should be completed within the first semester of joining a lab (*i.e.*, generally the second semester of being in the doctoral program). The Doctoral Committee consists of the major professor and at least three other members (and up to four). One

member must be a faculty member from outside the Department of Microbiology (and is referred to as the “external member”). At least three members of the committee (which can be inclusive of the mentor) must be tenured or tenure-track faculty members in the Microbiology Department or Department of Microbiology adjuncts with a tenure-line appointment at UT. It should be noted that in situations where external members are at another institution neither the Department nor University have funds to support travel for annual committee meetings: this responsibility falls on the students’ advisor. In situations where travel is not possible, it is acceptable to use distance communications tools (e.g., Zoom, etc.). ***Note: the requirements for a doctoral committee by the Department of Microbiology may be more stringent than the requirements specified by the Graduate School. The Department’s requirements must be met.***

The student is responsible for setting up a committee meeting before the end of their first year in graduate school. The student and mentor decide on his/her members of the committee. The major professor serves as chairperson. The composition of the committee is approved by the Graduate Director and submitted to the Graduate School on the appropriate form. If the Associate Vice Chancellor and Dean of the Graduate School approve the membership, the student and the committee members will be officially notified. The committee should meet to evaluate the student's progress at least once each calendar year. Before each meeting, a copy of the graduate student progress report should be emailed to each member of the committee. **The student should also provide a short write-up on their work, including background and progress to date to the committee seven days prior to the meeting.**

It is the student's responsibility to schedule the required meetings of his/ her committee. In addition, the members of the committee may independently request meetings at any time. In this way, the student's progress toward the dissertation will be under direct and frequent supervision.

Switching mid-stream from a PhD to a MSc

In some instances, students, in consultation with their advisor, decide to switch from the PhD program to the MSc program. The following series of steps is required for the student to do this:

1. The student holds a committee meeting to discuss moving to the MSc program.
2. Assuming the committee approves the switch, the student contacts the DGS, requests the change, and applies to the graduate school for a change in program, <https://gradschool.utk.edu/forms-central/change-of-program/>. NOTE: there is a change of program fee. *This fee can be waived by the Department, but it must be requested. **The current form is cumbersome, but we are working with the Graduate School to adjust this.***
3. The student is vetted by the sitting graduate admissions committee. (This is done electronically and is organized by the graduate director).
4. The chair of the admissions committee or graduate director admits the student in the system assuming the student has passed the above requirements.

Once the student has gone through the above, they will need to work with their advisor and committee to revise their project goals and objectives as well as possibly revise their committee make-up.

Rules for PhD Committees

Committee Membership

- The committee must have at least 4 members.
- At least 2 committee members must be UT tenured or tenure-track faculty members.
- At least one committee member must be from outside of the student's department/interdisciplinary program. This external member can be from outside UT.
- UT tenured or tenure-track faculty without a doctoral degree and other experts in the field may serve on PhD committees with department head approval.
- Emeritus faculty can serve on committees on which they are serving in that capacity at the time of retirement.

Requirements for Committee Chairs

- Committee chairs must hold a doctoral degree.
- UT tenured, tenure-track, and joint faculty holding a doctoral degree may chair PhD committees.
- The chair is typically from the student's department/interdisciplinary program, but department heads can make exceptions.
- UT employees holding a non-tenure track assistant professor, associate professor or professor title may co-chair committees if their appointment is within the student's major. (The other co-chair must be a UT tenured, tenure-track or joint faculty member.)
- Emeritus faculty can chair committees on which they are serving in that capacity at the time of retirement.

The policy provides for exceptions to the above, and in the case that exceptions are needed, the department head petitions the Graduate School Dean using the committee approval form.

Conflicts of interest for student committees

Conflicts of interest are situations where the actions of an individual in a position of authority can be influenced by factors other than the direct task at hand. Often these are identified as financial (*e.g.*, making decisions that can lead to financial gain / loss for a family member or oneself) or personal (*e.g.*, making supervisory decisions regarding relatives). In science, conflicts can be challenging as life partners often have similar interests and thus end up with similar expertise and in similar lines of work.

Along with the standard COI disclosures for financial and familial relationships (see <https://coi.utk.edu/>), in the Department of Microbiology we have a situation where several faculty are partners. Votes cast by one faculty member in some cases provide the opportunity to influence another faculty member's career and success, making this potentially a conflict. In the present case, we will address how this can influence graduate student committees and then provide a resolution.

In the case of graduate student committees, it is desirable to have the best expertise available to the student. Yet having life partners on the same committee could be perceived as a potential COI, where one partner casts a vote to support the other partners vote or student. To this end while it might be best to avoid have partners serve on the same student advisory committee, it is not always possible. While it is ideal to not generate this potential conflict (or the perception of one), a solution may be as follows:

Where two partners are to serve on the same committee, one partner will serve in a non-voting capacity. This means that an extra committee member (with voting powers) needs to be recruited to the committee to remove any outward appearance of conflict. The non-voting member may be listed as a "courtesy" member on all official documents and may sign such documents, but for advancement of the students, the approval of the standard number of voting members is required. To declare one faculty member as courtesy, the faculty simply need to notify the Director of Graduate Studies (or in the case where it is the DGS, the Associate Head of Department) so there is a record.

The Department of Microbiology at the University of Tennessee has a long history of maintaining standards for faculty and students that meet and exceed those of the institution and the discipline. This effort maintains that record and prevents any external appearances of a conflict of interest.

How to have a successful committee meeting

Committee meetings are an opportunity for students to get feedback on their progress and ideas from outside their home lab. While many students look at this as yet another hoop to jump through, these should be taken as an opportunity to test and improve on your ideas. At the end of your committee meeting you will be provided with valuable feedback that will let you gauge your progress.

Start planning early:

- Use a scheduling program such as doodle (doodle.com) to find a time when your committee members are available. It is advisable to plan at least 8 to 12 weeks ahead of your meeting. You should schedule a minimum of 2.5 hours for your meeting.
- Once the time is set, work with the administrative staff in the Departmental Office to find a place to hold the meeting.
- **By 5 pm one week prior** to your meeting you should present your committee with a short summary of your progress and future goals. In general, write-ups include the following (page numbers are approximations only):
 - A one page summary of the topic area
 - A one page summary of progress to date including challenges and successes
 - A one page summary of work to be done.
 - A list of classes taken and a projected timeline for the rest of your time in the graduate program.

Students must clarify if their committee members prefer electronic or printed out versions of the reports. Do not assume one format or the other.

- On the day of your meeting, you should plan a presentation to discuss your project. It should cover appropriate background information, hypotheses you are testing, methods/approaches you will use and how you will analyze / validate your data. You should prepare a talk that would take approximately 15-20 min to present (it is likely you will be interrupted by the committee, stretching this out). It is both appropriate and desirable to have your mentor review your presentation prior to the meeting.
- Note that at the end of the meeting you will have the opportunity to discuss as a group with your committee members with your mentor absent.
- *Students are requested NOT to provide food or beverages for their committee meetings.*

It is anticipated that the discussion part of the meeting should take no more than 90 minutes. Allowing 15 min for committee deliberation before and after results in the need for students to plan a 2-hour window.

The Preliminary Examination

Doctoral students in the Department of Microbiology are required to complete a preliminary examination testing their broader knowledge in the areas of microbiology relative to their field of study.

Purpose: The purpose of the examination is to test the general breadth of the student's knowledge in their dissertation research as well as the broader field of microbiology. The test has the secondary goal of testing the student's ability to reason and think critically. Thirdly, this examination assesses the student's ability to communicate and defend their scientific ideas. The examination will have both a written and oral component and students must demonstrate competency in both areas to pass. As described below, all students must register for the Grant Writing Course (MICR 594) the fall semester of their second year to begin to prepare for the written component of the preliminary exam.

Preparation: Students scheduled to take the preliminary examination will start by signing up for the department's Grant Writing course (MICR 594) in the fall semester after completing one full year in the department. For students entering in the spring semester, they should consult with the graduate director regarding their timeframe. **Students are expected to complete the preliminary examinations (both written and oral) by March 1 the following calendar year (*i.e.*, students entering their FIRST year of Fall 2022, will take Grant Writing in Fall 2023 and have their preliminary exams by March 1, 2024).** Exceptions (*e.g.*, students who have significant time away from campus for research) will be considered but require approval of the Graduate Director early in the process.

Written component

During the Grant Writing course, the student will prepare a research plan consistent with a written proposal to a federal research agency (DOD, DOE, USDA, NSF, NIH, or similar, see details below). The proposal should describe the student's potential research plans for his/her dissertation. During preparation of the proposal, the advisor may provide oral comments and suggestions on the specific aims page, but the adviser should **not** edit or write the proposal. It should be noted that eligible students may want to submit these proposals, or variations of them, to the NSF/NIH (or other) competitions for graduate student fellowships in the same fall semester.

The research proposal will be no more than 12 pages with 1 inch margins and a font size of 11 or greater in Arial, Times New Roman, or Helvetica, inclusive of images, tables and all text except the Specific Aims page and references.

The student should strive to develop novel hypotheses and specific aims to address their dissertation research in a comprehensive fashion. As the student drafts their proposal, the role of the student's advisor should be limited to generally helping a student "vet" their ideas, suggesting techniques, approaches and experiments that have historically been completed (*e.g.*, pointing to relevant literature), *etc.* This should primarily be achieved through discussions. Under no conditions will faculty be engaged in editing their student's proposals. However, students are welcome to get feedback on the text from their student peers and staff in their labs. Structure and consistency of the proposal will be reviewed within the Grant Writing course, providing the

student with valuable feedback prior to the preliminary examination. However, it should be realized that the student is not “locked into” the proposal from Grant Writing course (*i.e.*, they can change or modify as needed from the proposal submitted during Grant Writing), nor should a passing grade from Grant Writing be construed as acceptable to all the reviewers.

The student will submit a one-page summary (*e.g.*, Specific Aims/Project Summary page) to his/her committee and their advisor exactly **4 weeks** prior to the oral preliminary exam. *This should **not** include Intellectual Merit or Broader Impacts sections as required in NSF proposals.* The student’s advisor will provide, within three days, comments to the chair of that committee which will be shared only the committee members. These comments will reflect the advisor’s opinion on the originality of the ideas and overlap with proposals drafted by the PI. The committee will review both the Aims page and the PI’s summary and provide feedback/suggestions on the proposal to the student within a week of submission. **The student may not simply copy or paraphrase a proposal previously drafted by their advisor, as this is plagiarism, which is further described below.** Additionally, this fails to adequately fulfill the goals for which the preliminary exam is designed (*i.e.*, to test the student’s ability to develop scientific ideas).

Timing/schedule for the preliminary examination: use this to “count backwards”



Plagiarism

Plagiarism will result in a failing grade for the preliminary examination and expulsion from the program. Plagiarism includes copying and pasting text, and it also includes line-by-line paraphrasing of another document as well as using any figures without attribution. While it is acceptable and encouraged to read text written by others, re-writing it entirely would constitute plagiarism.

Here is an example from: Balfour et al. 2015. Following the dance: Ground survey of flowers and flower-visiting insects in a summer foraging hotspot identified via honeybee waggle dance decoding. *Agriculture, Ecosystems and Environment*. 213: 265-271.

“Agriculture is occupying a growing share of the Earth’s land area (Tilman et al., 2011). This, together with increasingly intense farmland management during the last century has often been linked to declining population of flower-visiting insects: hoverflies (Biesmeijer et al., 2006), butterflies (Asher et al., 2001), bees and wasps (Ollerton et al., 2014). However, since the mid-1990s the European Union’s (EU) Common Agricultural Policy has sought to halt the general decline of farmland biodiversity (reviewed in Robinson and Sutherland, 2002) by subsidizing (2007–13: s 22.2 billion; EUROPA, 2011) less intensive crop management and by taking some land entirely out of production (Reviewed in Bignal, 1998). These agri-environmental schemes are now widespread and cover 59% of the UK’s agricultural land (DEFRA, 2013).”

Below is a plagiarism of this text:

The declining population of flower-visiting insects such as hoverflies (Biesmeijer et al., 2006), butterflies (Asher et al., 2001), bees, and wasps (Ollerton et al., 2014), can largely be attributed to increasingly intense farmland management during the last century and increasing land area covered by agriculture (Tilman et al., 2011). To stop the decline of farmland biodiversity, the European Union's (EU) Common Agricultural Policy has decreased crop management intensity, as well as total crop land coverage (Reviewed in Bignal, 1998 and Robinson and Sutherland, 2002). Over half of the UK's agricultural land is now covered by such environmental schemes (DEFRA, 2013).

The plagiarized text is not a copy-and-paste from the original, but it is a line-by-line re-arrangement of the words.

If a figure is used in the preliminary exam that is cut-and-pasted from any other document, it must have attribution. If the source is published, even if the student writing the preliminary exam is an author on the published work, a formal citation is required. If the source is unpublished – from a proposal (funded or not) or personal communication, then the student must receive explicit permission from the originator of the figure to use it in the exam – and then state this permission in the figure legend. If a figure used in the preliminary exam was created by the student but was based heavily on one that appeared somewhere else, the legend must state that this was “based on” or “modified from” the source.

Oral component (defense of proposal)

The examination committee for each student will be set by the **graduate director** and will include members of the student's advisory committee, except for the student's major professor, who is replaced by another faculty member for the purposes of this examination. The graduate director may also make appointments in cases where a committee member is “off-site,” or if there is a need to replace a member due to other commitments. The graduate director will assign an examining committee chair. The graduate director will complete the above task in October, giving students ample time to schedule their oral examination, which should take place by March 1 (i.e., approximately 5 months from assignment of the examination committee). **Once scheduled, the student must report the time and date to the Graduate Director and Graduate Administrator.** The student should schedule a minimum of 2.5 hours for this examination. (As of this writing the mechanism for scheduling rooms for such meetings is unclear – please check with the microbiology office staff to schedule a place for your meeting). The exam will include a presentation (usually ~ 30 minutes in length) on the topic by the student as well as a period of oral questions from the committee. The oral component should be formatted as a scientific presentation of the ideas and experimentation included in the proposal. Typically, the oral component (presentation and questions) will last ~90 minutes, with the committee deliberation to follow. The total length of the exam is at the discretion of the chair of the committee.

As described above, the student will submit his/her Specific Aims page exactly 4 weeks prior to the oral defense and will receive comments from the faculty within one week. The committee must receive the full proposal 1 week prior to the oral defense date. The student, unless otherwise instructed, should distribute this as a printed document to the committee.

Criteria for Evaluation of the Preliminary Exam Research Proposal

A suitable research proposal has several elements:

- (1) clearly formulated hypotheses and specific aims.
- (2) the historical background from which the problem and the hypotheses emerged.
- (3) a series of **direct and feasible** experiments designed to test the hypotheses; and
- (4) a consideration of the possible forms of data which might emerge from those experiments, as well as the problems of interpreting those data.
- (5) consideration of alternative hypotheses and approaches.
- (6) data analysis.
- (7) statements / ideas on how the original hypotheses will be tested by the experiments (*i.e.*, how will you know / what are the metrics used to reject your hypothesis or null).

The exam committee evaluates each of these components. Following are some general guidelines to bear in mind during preparation of the written research proposal and the oral presentation. All research proposals are evaluated on similar criteria.

Problem Identification

Has the proposal clearly identified and stated a significant scientific problem that limits further expansion of knowledge and understanding of fundamental processes and principles? In making this determination, has an adequate literature review been conducted that identifies conflicting, antagonistic and supporting evidence of the research problem?

Hypotheses

What are the basic hypotheses to be tested? Can these hypotheses be nullified? What are the alternatives if a hypothesis is rejected? How do the hypotheses relate to the problem identification?

Goals and Objectives

Has the overall goal of the proposed research been identified in terms of achievements for the successful outcome of the investigation? What constitutes a successful outcome of the research? To achieve this goal, what specific objectives must be met to experimentally test the hypotheses and to provide information to move the research forward?

Experimental Plan

How will the experiments be conducted and what are the appropriate controls? What are the major pitfalls to be encountered and what are the alternative strategies? Will the methods to be employed and experiments proposed provide unambiguous data and experimental results? Do they address the hypotheses presented in the proposal? Are there dependencies between parts of the study (e.g., if you cannot complete part II without completing part I in a certain way)? A consideration of experimental limitations and anticipated problems in

interpreting results frequently demand the creation of “if/then” links between the postulated experiments, which should be carefully spelled out in the proposal.

Scope

Can the experimental plan be conducted within the time frame of the proposed work? Do the objective and experimental plan lead to a cohesive targeted plan of research that will clearly result in hypothesis testing and problem solving? Has care been taken to ensure that the research plan is not overly ambitious, trying to accomplish too much and too many research objectives?

Significance

Successful outcome of the research should be measurable by contributions made to fundamental principles. What contributions will be made that will lead to new problem identification and new avenues of research? How will the results of the proposed experiments advance knowledge in the area? The significance of any research project is somewhat intangible, but good research usually leads to more questions than it answers.

General Guidelines for the Student

The faculty intend that the exam process will simulate as much as possible the professional demands with which a scientist will face while pursuing a research career. Thus, the student should adopt an approach to the exam in keeping with an attitude of professionalism. It is necessary to heavily utilize the information resources of the UT, including the information and perspectives to be found in the knowledge of colleagues (fellow students, faculty, and postdocs).

Assessment of the Preliminary Examination

Results of the combined written and oral exams are determined by the examining committee at the conclusion of the oral exam. Scores from the committee are based on the most current assessment rubric. The results are transmitted to the student, major advisor and graduate director by the chair of the committee. The chair is also responsible for submitting the pass/fail form to the departmental office for records.

There are three potential outcomes of the preliminary examination:

(1) **Pass.** A score of pass means the student has satisfactorily completed both parts of the exam and is free to continue in their program of study.

(2) **Revisions needed – outcome in question.** A decision of the committee that revisions are needed means that a student has knowledge gaps that need attention before the student can move forward. The examination committee determines what remedies are necessary and places limits on the timing of completing the remedies. This may include further reading and reporting to the committee or participation in a course to alleviate this deficit. The student will have no more than six (6) months to meet these conditions and progress will be monitored by the chair of their examination committee. Once a student has successfully met these additional requirements, then a score of pass is registered. If the student does not meet the additional requirements, a score of fail is registered for the student and is dismissed from the program by the end of that semester.

(3) **Fail.** A score of fail means that a student has not met the requirements necessary for advanced research and may be dismissed from the program at the end of the semester the exam is taken. *The examination committee*

and/or the Graduate Director will determine if a student may attempt to pass a second time. The maximum number of attempts per student is thus two.

It should be noted that students in the PhD program that do not receive a score of pass may still complete their research and write a thesis for a MSc degree, which is dependent on approval by the graduate director and the student's major professor.

Logistical problems the Graduate Director will resolve are: seating an exam committee member who is not a member of the student's Doctoral Committee, equitable distribution of exam committee assignments among the faculty, finding committee members who accommodate the timetable established for the exam.

What if?

Should the student receive an evaluation of FAIL on the first attempt at the preliminary exam, he/she may request a new exam, following the same procedure outlined above. The committee will frequently offer suggestions about preparation and/or timing for any re-examination, which must fall within 6 months of the first attempt. Evaluation of the second try is either a PASS or FAIL; there is no option for revisions and no third attempt.

Questions about the Committee's Decision

The Chair of the exam committee will explain the nature of the decision of the committee to the student and present a formal letter explaining the committee's decision. The student should feel free to ask questions about that decision but should not expect the assessment of this type of exam to be as detailed as in "normal" courses. Any inadequacies of the performance will usually be described in general terms (e.g., the experimental approach is flawed due to technical inadequacies, *etc.*). If the student is not satisfied with the action of the exam committee, the matter should be discussed promptly with the Graduate Director or Department Head, but the student should not expect any change in the decision.

For student's to consider

The preliminary examination is a stressful time and a large hurdle for all students. It should be noted that many of the most successful graduates of the department did not pass their preliminary examination on first attempt. Part of the purpose of the examination is instructional, and in some cases the committee feels the student can gain significantly from repeating the process.



Microbiology PhD Preliminary Exam Assessment Rubric

Student name: _____

Examination Date: _____

Evaluator's name: _____

Use the following scale: 5) Excellent; 4) Good; 3) Acceptable; 2) Poor; 1) Unacceptable; UA-Unable to assess.
Please provide qualitative clarifying comments.

An average score (from all examiners) of < 27 is a FAIL, > 32 is a PASS. The overall performance score (PASS/FAIL) for students receiving an intermediary average score will be determined by the committee.

| Criteria | Score | Clarifying Comments |
|--|-------|---------------------|
| The proposal clearly states the research problem, question(s), and hypotheses. | | |
| The proposal shows appropriate preparation and knowledge of background/review of literature, provides justification for undertaking research and its impact. | | |
| Use and competent implementation of methods appropriate to the area of study and to the purpose and stated research questions. | | |
| Illustrates appropriate means for evaluating the results. | | |
| Recognizes limitations of proposed approaches. | | |
| Provides alternative approaches. | | |
| Demonstrates fluent verbal communication. Research proposal is clear and professional in oral form. | | |
| Demonstrates fluent written communication. Research proposal is clearly and professional in written form. | | |
| Demonstrates critical thinking and mastery of general knowledge. Demonstrates capability for independent research in microbiology and preparedness in core disciplines relevant to students' own research. | | |

Total score _____

Research and Dissertation

A research topic for the doctoral dissertation is chosen after consultation with a student's major professor. Students are encouraged to select a topic for research as early as possible. Discussion of potential research projects available in a lab is an important part of a student's rotation experience. After choosing a research advisor and a research problem, work on the research topic for the dissertation should begin. Often the advisor will have a topic associated with the direction of research that will allow the student to get started.

In approaching the demanding task of choosing a suitable problem, the student should keep in mind that the data obtained in research will often dictate the direction of the problem itself. Thus, there may be significant divergence between the initial hypothesis and actual result arrived at upon completion of the problem. Although there may be little difference between master's and doctoral research initially, the doctoral research problem should evolve from the student's original conception and be, in large part, designed and executed by the student, with the consultation and assistance of the research advisor. The problem itself should lead to a significant contribution to the student's selected area of specialization.

During the investigation, the student should become *the* expert on the literature relating to his or her research area. Such knowledge will result from a thorough review of historical references and current journal articles. Definitive knowledge of the literature is a necessary adjunct of doctoral research as well as an important aspect of the student's growing professional competence.

Moreover, the student will have as a primary objective the development of good experimental habits and abilities, which can only be obtained through a real commitment to laboratory work. The successful completion of a research problem requires the accumulation of much data. Devoting large blocks of time to research becomes particularly important after the initial exploratory stage. The student should achieve the satisfaction that comes with the new discoveries and from an increased ability to plan and perform experiments.

Upon completion of the experimental work comes the important phase of compiling and further interpretation of the data. Generally, two first authored publications are expected for a Ph.D. degree. These publications are important as they indicate that the body of work in this dissertation is accepted throughout the scientific community. Once these have been submitted and the student has received approval from the committee, they should begin writing and assembling the dissertation. This should follow the formatting dictated by the graduate school. This may seem trivial, but the formatting to comply with the university's policies can be challenging! Thesis and dissertation workshops are offered by the Graduate School, and it is highly recommended that students attend these workshops!

Admission to Candidacy

Once several major degree requirements have been met, a student may apply for Admission to Candidacy. For Ph.D. students, passing the preliminary examination is usually the threshold. Additional details, some pertaining to M.S. students, are found in the Graduate Catalog. For example, you must have achieved a GPA of at least 3.0.

The application form may be obtained from the Office of Graduate Admission and Records (<http://gradschool.utk.edu/gradforms.shtml>). Enter the courses taken, the grades received, and the courses planned to take to satisfy graduation requirements. Next, obtain the necessary signatures and turn in the appropriate number of copies to the Office of Graduate Admissions and Records. The Graduate School checks to make sure all requirements are satisfied and returns a copy to the student. The application must be approved by the Office of the Registrar no later than one full semester prior to the date the degree is to be conferred (Ph.D.); for M.S. students, the deadline is the last day of classes of the penultimate semester. The office will have indicated the date by which all requirements must be finished.

Who Owns Data in the Department of Microbiology?

One of the important items to be aware of is the appropriate ownership of data generated during work in an academic setting. The reagents, supplies, and in some instances, stipends of students, are covered by grants, start-up funds for laboratories, and internal funding sources. *Grants are awarded to the University*, not to the individual investigator. Further, internal awards and start-up funds are University dollars. The University appoints the principal investigator (who produced the grant and/or awarded internal funding sources) as their sole official representative to manage the project and the data generated regardless of funding source. Consequently, the principal investigator (University representative) decides on how data is generated and how credit for generated data is recognized. Along these lines, ownership of data remains with the PI when a student leaves the lab. Upon leaving the lab for any reason, the student is to provide all data (both hardbound and electronic) in an organized, detailed fashion, including all raw data and analyzed data files according to the laboratory checkout procedures.

Work included in a Thesis or a Dissertation

While science is often a collaborative process, work that is to be placed into a thesis or dissertation must represent a significant contribution by the student. In other words, the listing as an author on a published paper does not necessarily merit a major chapter of a dissertation. The student's committee, upon evaluation of the prospectus/conspectus, will render this decision. Please see section "*Penultimate committee meeting*."

Penultimate committee meeting

At least one semester prior to scheduling a defense of either a thesis or dissertation, the graduate student should produce a prospectus for their committee in a formal committee meeting. Using the guidelines provided for research reports, the student must draft a written report detailing the original work they have generated (and

work that is ongoing) that would comprise a thesis/dissertation with appropriate chapter headings. The student must clearly indicate in the prospectus who contributed which data that is proposed to be included within the dissertation. While science is highly collaborative, the committee must be able to evaluate whether a student has contributed enough at the juncture to merit the writing of the final document. These same guidelines should be followed for the oral presentation at this meeting.

The mentor in the written summary will include explicit details regarding which work may be included within the thesis or dissertation and will indicate if or under what conditions the student may begin preparing for their defense. If additional experimentation is needed, this will be clearly indicated in the written summary as well as whether a follow-up meeting prior to the defense is needed.

Note: each data chapter in a thesis or dissertation must begin with details as to who performed which experiments included within the chapter. As an example:

Experiments were conducted by STUDENT X, with the exception of experiment B which was performed by Person Y and experiment C which was performed by Person Z. STUDENT X and Mentor A wrote the manuscript.

Thesis and Doctoral Dissertation Defense

The format for the final examination is a formal public seminar, followed by a meeting of the student with their doctoral committee. The public lecture for the thesis defense must be announced no later than two weeks before it is to be given. This gives the people in the department ample time to plan to attend. **Note that students are expected to turn in printed out dissertations to each committee member.** The student will be passed on (1) the written work contained in the thesis/doctoral dissertation and (2) the oral examination. The following timetable is recommended in compliance with the official Graduate School schedule (<http://gradschool.utk.edu/default.shtml>):

Graduation Timeline:

| Item | Time |
|---|--|
| Submission of completed dissertation to major professor | At least three weeks before final examination |
| Submission of printed, completed dissertation to committee | By 5 pm at least <u>10 business days</u> before final examination |
| Announcement of the public lecture | At least two weeks before the lecture <i>via</i> submission to the Microbiology listserv as well as flyer postings. |
| Final examination | No later than one week before expected approval of completed dissertation |
| Approval of completed dissertation | As determined by the deadlines put forth by the Graduate School. Note that the mentor and committee members must agree to all revisions and a student must provide the mentor and committee enough time to review the document before it is accepted |

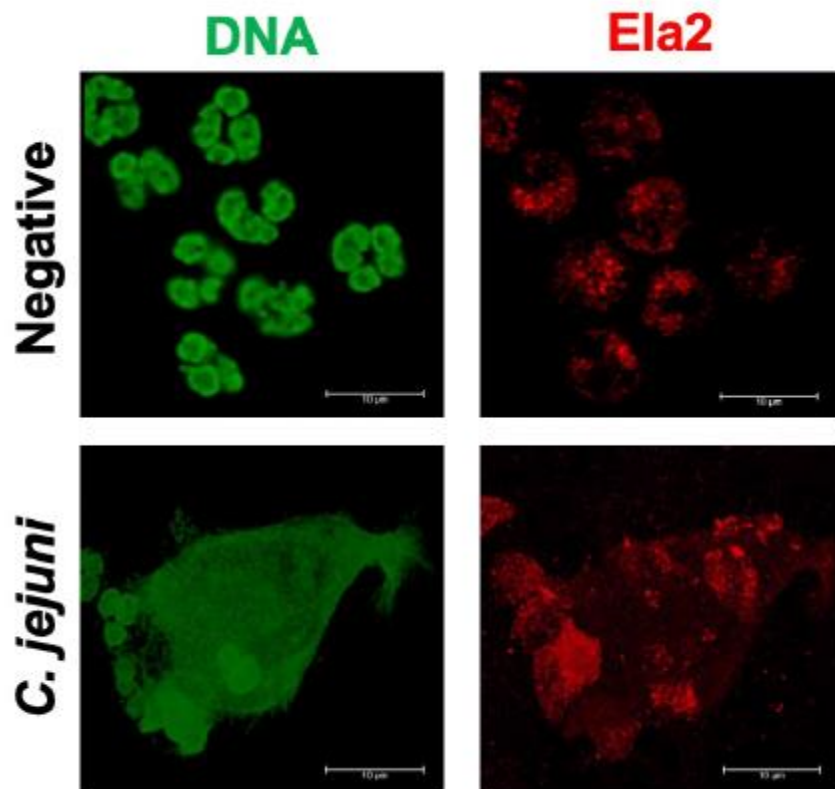
The examination itself does not constitute acceptance of the thesis/doctoral dissertation. Committee members have the prerogative to accept or reject a dissertation prior to its submission to the Graduate School, even though the student has passed the final oral examination. Exact dates, relative to each semester, can be found on the graduate school website (<http://gradschool.utk.edu/graduation/graduation-deadlines/>). For Ph.D. students, about one month before the end of the semester, you need to turn in the Scheduling of Defense of Dissertation which can be submitted online as well as in person (<http://gradschool.utk.edu/forms-central/schedule-of-dissertation-defense/>). All completed theses need to be submitted electronically. Paper submissions are no longer required. These dates are also available from the Graduate School website.

As a special note: food should not be provided to the audience or committee members during the defense.

It is recommended that you attend one of the “How to submit your thesis” workshops. It is your responsibility to ensure proper formatting of your thesis.

Non-degree students

Occasionally a student will be admitted to study in the department as a non-degree candidate, described in the Graduate Catalog. Non-degree students are prohibited by department policy from registering for MICR 500 or MICR 600. Non-degree students should arrange to meet with the Graduate Director for further information.



Checklist for setting up your defense

- Seek approval of your advisor and dissertation committee to proceed with scheduling your defense. This is done by scheduling a regular committee meeting (the penultimate meeting, see above) in the semester prior to the one you plan to defend. Be sure to speak with your advisor first!
- Complete your admission to candidacy paperwork and have it approved by the graduate school.
- Apply to graduate at least one semester prior. You must apply to the graduate school in the prior semester.
- Using scheduling software, identify a defense date with committee and block of at least 3 hrs.
- Allow one hour for the public lecture and defense
 - Allow 2 hours for closed-door dissertation committee defense
 - These meetings are commonly not in the same room
- Schedule room for public defense (big enough for 25 – 30 people) and private defense (large enough for you and your committee)
- Send a flyer announcing defense through departmental listserv (**2 weeks prior** to defense). Advertising the defense is a requirement.
- Submit your dissertation to committee 2 weeks (at least 10 working days) prior to defense, be sure to submit by 5 PM. Be mindful of how you collate and secure pages.
 - If these deadlines are not met, the committee may elect to postpone the defense.

Paperwork to bring to defense

- Oral examination pass/fail form (this is emailed to the advisor and student at least one week prior to defense). It is often prudent to bring a backup copy.
- A copy of the dissertation approval form (obtained from the graduate school by the student); please note the embargo request is embedded within this form.
- Remind your advisor to bring copies of the SACS approval forms to be completed and submit completed to departmental office.

Notes about the day of your defense

- The most important thing you can do the day before your defense is get a good night's sleep.
- It is often prudent to have one or two other graduate students available on “standby” to help at the public component with last minute errands (e.g., running to get a laser pointer). Again this is not mandatory but it is likely your peers and lab mates will be happy to assist.

Food is not to be provided to the audience members or members of the committee.

Important Notes on Receipt of Final Paycheck and Future Publications

Students, regardless of reason, who leave a lab are required to go through a laboratory check-out with the PI or a person the PI deems their representative. The student is to provide all data (both hardbound and electronic) in an organized, detailed fashion, including all raw data and analyzed data files, ensure all strains, stocks, plasmids, reagents, etc., are properly cataloged and filed with the details on how they were generated. The format and organization of these materials/files/data must be done in consultation with the PI or a designated representative. Finally, all waste and unneeded chemicals and biologicals must be properly disposed of according to guidelines provided by EHS and Biosafety. Students will then need to return any laboratory keys and security clearances. The *University of Tennessee* will not clear final paychecks (including stipends) until the above conditions are met to the satisfaction of the DGS.

When a student leaves a lab, regardless of the circumstances, (including electing not to continue in graduate school, transferring labs, leaves of absence or graduation) the decision on how unpublished findings will be disseminated/used is again up to the discretion of the mentor, see section on “*Who owns the data.*” In many instances, the project will undergo an evolution and change initial directions. That can lead to additional time to publish and may lead to reduced roles of the original data produced. All of which (and other factors) will impact authorship and contributions; consequently, *decisions on the fate of the data, including authorship, journals, etc., fall to the laboratory PI.*

Standards, Problems and Appeals: Academic Policies & Definitions

(A complete description of academic policies is found in “*Hilltopics*” and is recommended reading)

Academic Standards and Academic Standing

Graduate education requires continuous evaluation of the student. This includes not only periodic objective evaluation, such as the cumulative grade point average, performance on preliminary examinations, and acceptance of the thesis or dissertation, but also judgments by the faculty of the student's progress and potential. Continuation in a program is determined by consideration of all these elements by the faculty and the head of the academic unit.

The academic records of all graduate students are reviewed at the end of each semester, including the summer term, to determine academic standing. For good standing, graduate students must maintain a cumulative grade point average (GPA) of at least 3.0 on all graduate courses taken for a letter grade of A-F. Grades of S/NC, P/NP, and I, which have no numerical equivalent, are excluded from this computation.

Departments and programs may have requirements for continuation or graduation in addition to the minimum requirements set forth in this catalog for all graduate programs. It is the student's responsibility to be familiar with the special requirements of the department or program.

There are three types of academic standing set at the end of every term of enrollment: good standing, academic probation, and academic dismissal.

See Academic Probation and Academic Dismissal for information on these types of academic standing.

Academic Probation

Upon completion of 9 hours of graduate course work, a graduate student will be placed on academic probation when their cumulative GPA falls below 3.0. A student will be allowed to continue graduate study in subsequent semesters if each semester's grade point average is 3.0 or greater. Upon achieving a cumulative GPA of 3.0, the student will be removed from probationary status.

Academic Dismissal

If a student is on academic probation, the degree or non-degree status will be terminated by the Dean of the Graduate School if the student's semester GPA falls below 3.0 in a subsequent semester. When the particular circumstances are deemed to justify continuation, and upon recommendation of the appropriate academic unit and approval of the Dean of the Graduate School, a student on probation whose semester GPA is below 3.0 may be allowed to continue on a semester-by-semester basis.

Dismissal of a graduate student by a department or program is accomplished by written notice to the student, with a copy to the Graduate School. In those cases where the department's requirements for continuation are more stringent than university requirements for graduate programs, the Dean of the Graduate School will evaluate the student's record to determine whether the student is eligible to apply for a change of status and register in another area of study. Registration for courses in a department from which a student has been dismissed will not be permitted, except by written authorization from that department.

Academic Honesty

Academic integrity is a responsibility of all members of the academic community. An honor statement is included on the application for admission and readmission. The applicant's signature acknowledges that adherence is confirmed. The honor statement declares:

An essential feature of the University of Tennessee, Knoxville, is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the university, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity.

Plagiarism

The Department of Microbiology and the University of Tennessee take this matter very seriously. Students should not plagiarize. Plagiarism is using the intellectual property or product of someone else without giving proper credit. The undocumented use of someone else's words or ideas in any medium of communication (unless such information is recognized as common knowledge) is a serious offense subject to disciplinary action that may include failure in a course and/or dismissal from the university. Some examples of plagiarism are

- Using without proper documentation (i.e., quotation marks and a citation) written or spoken words, phrases, or sentences from any source.
- Summarizing without proper documentation (i.e., a citation) ideas from another source unless such information is recognized as common knowledge.
- Borrowing facts, statistics, graphs, pictorial representations, or phrases without acknowledging the source.

- Submitting work, either in whole, or in part, created by a professional service and used without attribution (e.g., paper, speech, bibliography, or photograph). In order to avoid questions of plagiarism, students involved in collaborative research should exercise extreme caution. If in doubt, students should check with the major professor and the Dean of the Graduate School about the project. Plagiarism will be investigated when suspected and prosecuted if established. This also includes submitting identical data for two different publications.

Students on Probation – Process of Identification and Notification

The cumulative GPA is a trigger for moving a student from good standing to either probation or dismissal. Beginning at the end of spring term, the Graduate School will calculate GPAs at the end of each semester. All students with a cumulative GPA less than 3.0, and those who began the semester on academic probation, will be identified. Graduate school staff will generate this report at the end of spring term, summer term, and fall term.

Initial Probation

For any graduate student who has completed at least 9 credit hours, if the cumulative GPA falls below a 3.0, the student will be notified by the Graduate School that they have been placed on probation. This notification will be *via* email and copied to the Director of Graduate Studies and the Department Head. The letter will instruct the student to meet with an advisor to determine a course of action to increase the GPA.

Move Back to Good Standing

For any graduate student on probation, if the cumulative GPA rises to 3.0 or higher, the student will be notified by the Graduate School that they are now in good standing. This notification will be via email with cc's to the Director of Graduate Studies and the Department Head. Students will be encouraged to continue to work closely with an advisor to make progress toward graduation.

Probation in Multiple Semesters

For any graduate student on probation, if the cumulative GPA remains below 3.0 in subsequent semesters, the department (DGS and/or Department Head) will be contacted by the Graduate School to determine the preferred course of action. If the student's semester GPA was below 3.0, policy dictates that dismissal will follow, unless the department makes an appeal. Typically, if the student's semester GPA was 3.0 or higher, the student can remain on probation. Following consultation with the department, the student will be notified by the Graduate School whether they remain on probation or are dismissed. The DGS and Department Head will be copied on this communication.

Student Appeal Procedures

The Microbiology Department recognizes that there will be occasions when a student perceives that they have received an inappropriate grade or have otherwise been treated unjustly by a member of the faculty. We believe that such instances require prompt and careful review. To facilitate this review, the following procedures should be followed:

1. The student shall attempt to resolve the matter with the faculty member in question.

2. If the matter cannot be resolved with the faculty member, the student should notify the Department Head. This notification should be in the form of a written narrative outlining the act(s) the student perceives as unjust.
3. The Department Head will appoint an *ad hoc* committee of three faculty members to investigate the complaint. If the complaint involves the student's academic performance (e.g., quality of answers on an exam) at least one of the committee members will be familiar with the subdiscipline.
4. Within two weeks, the committee will meet separately with the student and with the faculty member involved and review any pertinent documents submitted by either party. On the basis of this examination the committee will report to the Department Head, indicating whether they believe an unjust act has occurred.
5. The Department Head will review the committee's report and either accept or reject the committee's recommendation. If the final decision finds no unjust act, the Head will inform the student of that decision and the reason for it. If it is judged that an unjust act has occurred, the Head will consult with the faculty member involved, and attempt to negotiate a remedy. The outcome of these activities will be communicated to the student by the Head.
6. If the departmental decision is not satisfactory to the student, the student may appeal that decision to the Dean of the College, then to the Dean of the Graduate School. The details of this procedure are documented here: <http://gradschool.utk.edu>.



Addressing Concerns Between a Student and Their Advisor

While the Microbiology Department has been traditionally built on collegial relationships between faculty and students, it is possible that professional concerns may arise impacting the student-PI relationship. Note that these concerns are separate from sexual harassment, racial bias, sexual orientation bias, etc.; guidelines for such concerns can be found here (<https://hilltopics.utk.edu/campus-policies-procedures/>). Examples of professional concerns might include an interpersonal conflict, concern about work-related expectations, research approach, perceptions about lack of competency or other dissatisfaction. In most cases, addressing the issue directly and face-to-face should be the first step in attempting to resolve any professional concern or conflict. In cases where faculty and/or committee members are counseling students on professional concerns they have with their direct advisor, the student should be encouraged to meet with their PI directly to address issues.

In the rare event that concerns cannot be resolved in routine advising meetings, the following steps should be followed to document and address an unresolved professional concern.

The student or PI should initiate a written request (*e.g.*, email) to address the professional concern through a face-to-face meeting. This written request should also be copied to the DGS (Director of Graduate Studies) and the DGS must be copied on subsequent communications between the student and PI regarding the matter. It is the responsibility of those involved to respond in a timely manner (*e.g.*, within 48 h) and work together to find an agreeable meeting time. This meeting should be reserved for a direct, specific and focused discussion of the issue of concern/conflict. A written summary of this meeting, with both parties (student and PI) stating the nature of the issue and an agreed summary of the conversation regarding any potential action items, should be generated at the conclusion of the meeting. A copy of this document, signed by both parties, should be sent to the Director of Graduate Studies (DGS) for review.

Following this meeting, the DGS will review the resolution document and determine the next course of action *via* a written response to both parties. This could include suggesting a follow-up meeting between student and PI to determine if addressing specific action items remedied concerns, meeting with a third party (mediator) to find a suitable resolution or individual meetings with the student and PI. All subsequent meetings regarding the professional concern, once brought to the attention of the DGS, must be followed up with a written summary, signed by both parties, that is copied to the DGS.

If a professional concern between a student and PI cannot be resolved, the DGS will facilitate conflict resolution based on departmental and university policy, and the best interest of all parties involved. This may include the student conducting rotation(s) to find a suitable new lab or leaving the program. It should be noted that as each case is unique the specific actions to be taken are at the discretion of the graduate director. Please refer to guidelines on departing a lab, for any reason, in the sections on “who owns the data” and “decision to change labs or leave the program.”

N.B.: if professional concerns arise with a student in the laboratory of the DGS, the Director of Undergraduate Studies will take the place of the DGS in the above steps.

Decision to change labs or leave the program

While several policies are in place designed to help students and mentors work together, in some instances it is best for both parties if the student changes laboratories. Additionally, in some instances, a student may decide that continuing in graduate school in the Department of Microbiology is not the best fit for them and elects to leave the program.

If upon following the conflict resolution protocol (above), the student is interested in changing laboratories, the student must meet with the DGS and discuss this as an option PRIOR to discussions with any new potential mentors. There are many points of consideration at such a time including: has the student passed their preliminary examination? What is the status of the work for the dissertation (see section on “*Work for inclusion into a thesis or dissertation*”)? Have publications been generated (see section on “*Who owns the data*”)?

If upon weighing the above (and other) considerations, the DGS determines a laboratory change is acceptable, the DGS (in collaboration with the student and faculty member(s) involved) will provide a framework for completion of an additional rotation(s) in other laboratories as well as the future composition of the student’s thesis/dissertation, if appropriate. *Note, at no time is a faculty member required to accept a student for a rotation period nor is a faculty member required to allow a student to join their laboratory.*

Please see section “*Important Notes on Receipt of Final Paycheck and Future Publications*” for more information about how to properly leave a lab.

Progression Concerns Between a Principal Investigator and their Mentee

While graduate school success is dictated by personal motivation of an individual graduate student as well as the nature of the project, a faculty member may become concerned that a student is not making adequate research progress. Note, that this lack of progress is not due to unforeseen technical circumstances, but rather due to a student not adequately focusing on their research objectives. In most cases, addressing the issue directly and face-to-face should be the first step in attempting to resolve any professional concern or conflict. Calling a meeting of the student’s committee to discuss this issue collaboratively is another option.

In the rare event that concerns cannot be resolved in routine advising meetings, the following steps should be followed to document and address an unresolved professional concern. If the steps below do not resolve the issue, the PI will issue an NP (Not Pass) for thesis/doctoral research hours that semester.

The PI should initiate a written request (*e.g.*, email) to address concerns regarding degree progression through a face-to-face meeting not later than October 15th if the fall semester; March 15th for spring semester, and June 15th for summer terms. This written request should also be copied to the DGS (Director of Graduate Studies) and the DGS must be copied on subsequent communications between the PI and student regarding the matter. It is the responsibility of those involved to respond in a timely manner (*e.g.*, within 48 h) and work together to find an agreeable meeting time. This meeting should be reserved for a direct, specific and focused discussion of the issue. A written summary of this meeting, with both parties (PI and student) agreeing to the nature of the issue and summary of the conversation regarding any potential action items, should be generated

at the conclusion of the meeting. A copy of this document, signed by both parties, should be sent to the Director of Graduate Studies (DGS) for review.

Following this meeting, the DGS will review the resolution document and determine the next course of action *via* a written response to both parties. This could include suggesting a follow-up meeting between student and PI to determine if addressing specific action items remedied concerns, individual meetings with the student and PI, or meeting with a third party (mediator) to find a suitable resolution ~~or~~. All subsequent meetings regarding concerns about research progress, once brought to the attention of the DGS, must be followed up with a written summary, signed by both parties, that is copied to the DGS.

In the event that research progression does not improve, the PI, upon notifying the DGS, will issue a NP for research hours for the semester. The steps outlined above must occur prior for any NP, even if this is issued during subsequent semesters in a row.

If a student earns 2 consecutive NPs for research, or a total of 3 NPs during their duration of the graduate program, the student will be dismissed from the program. Please refer to guidelines on departing a lab, for any reason, in the sections on “who owns the data” and “decision to change labs or leave the program.”

N.B.: if research progression concerns arise with a student in the laboratory of the DGS, the Director of Undergraduate Studies will take the place of the DGS in the above steps.

Department of Microbiology Policy on Graduate Student Behavior

Students in the Department of Microbiology are expected to follow the Student Code of Conduct, as in *Hilltopics*. University policy in dealing with students that violate the principles of the Student Code of Conduct are further described in *Hilltopics* regarding student Rights and Responsibilities.

The Department of Microbiology has further specific policies. These policies apply to all areas of the Student Code of Conduct, but particularly focus on issues of harassment, academic integrity, sexual harassment, the right to privacy, and a reasonable work ethic. All students joining the department consent to abide by these rules.

If a graduate student commits acts of harassment, sexual harassment, invasions of privacy, and/or a breach of academic integrity, the student’s faculty advisor may remove the student from under his/her mentorship. Further consequences may occur, depending on severity of the infraction. This may include but are not limited to the following:

The department may not renew the student’s financial support.

The student may be excused from the degree program.

Any action will be independent of consequences that occur through the Office of Student Judicial Affairs and/or civil or criminal proceedings the student is involved with because of said actions.

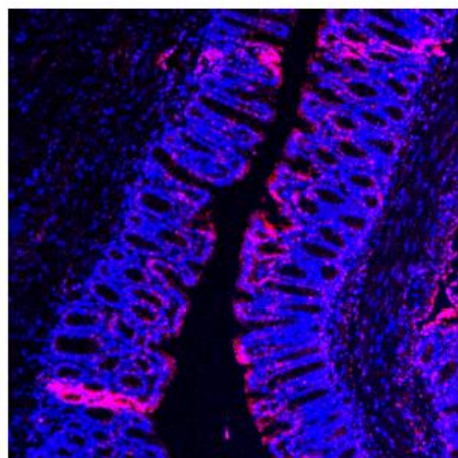
Harassment would include actions such as 1) verbal (slander) or written (libel) misrepresentations of a malicious nature. 2) Repeatedly making other students, faculty, or staff feel uncomfortable or unwelcome in the laboratory or unable to optimally perform their duties, even after being warned by the faculty, 3) verbal or physical abuse.

Sexual Harassment (as interpreted from *Hilltopics* which has a more exhaustive definition) includes unwelcomed sexual advances (i.e., physical or verbal or non-verbal communication) that are continued after one party verbally objects. Sexual harassment also includes behavior of students who are engaged in an intimate relationship that is distracting or disturbing to others while at work.

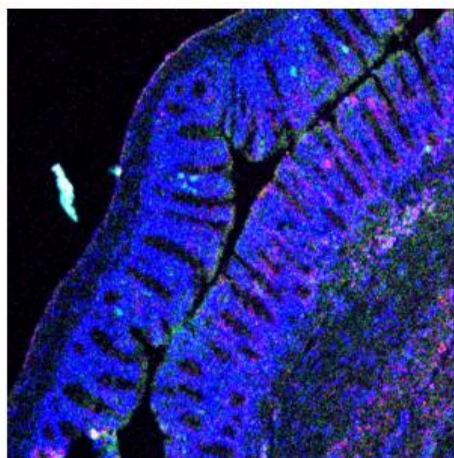
Students, faculty, and staff have a reasonable expectation of privacy at work. Therefore, cameras and recording devices should not be used to record by audio or video or still images, others without their knowledge.

Students are expected to follow standard codes of academic honesty. Falsifying or misrepresenting data and reprinting previously published material without attribution are not tolerated. These actions are a violation of university policy, and can, in some instances, carry criminal charges.

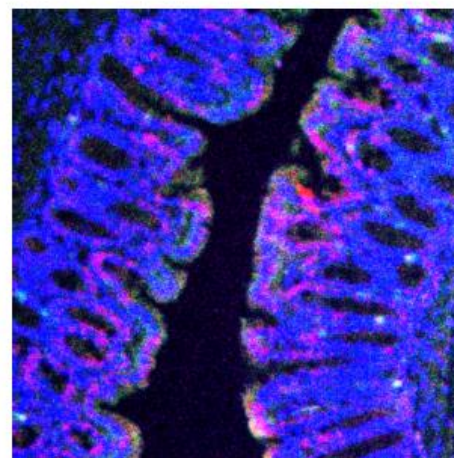
Students are expected to treat their GRA or GTA position as a *privilege and a full-time job*. They are expected to be in the lab, office, or field at least 40 hours/week under normal circumstances. Consistent refusal to be at work and focused on thesis or dissertation projects after verbal and written warnings could result in removal from the faculty member's lab. Further information is in the section on "*Microbiology Graduate Student Expectations*".



Uninfected



WT Infected



$\Delta sliP$ Infected

Policy for graduate student leave of absence

The Department will defer in all cases to policies set forward by the graduate school of the University of Tennessee regarding leave; these policies follow in the next section. We note that policies in the graduate school generally refer to situations where students require leave that totals a semester (or more) in length.

Where leave is required for less than a full semester, the following generalities will be considered. It should be noted that each case will be handled on an independent basis. In every case the student should immediately consult with their advisor and the Director of Graduate Studies so the accommodations can be planned for

Short-term Medical and Family-Related Leave

For students requesting short term leave, the department will work with the student to ensure that the student's teaching responsibilities are covered (generally by one of their peers). "Short-term" should be considered periods of less than 4 weeks.

Long-term Medical and Family-Related Leave (Serious Health Condition, Pregnancy/Childbearing, Child-Bonding)

For long-term medical or family leave, students should consider whether a one semester leave from the graduate program (detailed below) is in their best interest. Where this is not desirable, the student will work with the Graduate Director and their advisor to best determine a path forward for their duties.

Bereavement Leave

State employees are entitled to 3 days of paid **bereavement leave** following the death of the employee's child, parent, spouse, sibling, grandchild, grandparent, stepchild, stepparent, foster parent, or parent-in-law (TN Code Sec. 8-50-113).

Jury Duty Leave

Employees who are called or summoned to jury duty are often entitled to job-protected leave. In Tennessee, employers with five or more regular employees must grant leave to eligible employees who serve on a jury. Students should immediately contact their advisor and inform the Graduate Director if they are summoned.

Military Leave

Student employees who are called to active military service should consider a short-term withdrawal from the program. Please consult with the Graduate Director.

Other types of leave – research off campus, conference travel

For students whose research requires them to be absent from the UT campus, it is incumbent on the advisor and student to ensure support for the student is arranged. ***Students on teaching assistantships should plan to be off campus for no more than 2 weeks, and it is the student and advisor's responsibility (working with the director of the course) to arrange for a substitute.*** For students whose off-campus work will last longer than 2 weeks, it is anticipated that they will be supported by a GRA from their advisor for the entire semester.

For students traveling during the semester for scientific meetings or conferences, they should work with the course instructor and their peers to arrange for a substitute for the classes they will miss. It is anticipated that the student will be absent for this type of travel for no more than one week.

Graduate Student Leave of Absence – Graduate school of the University of Tennessee

Enrollment Policy

Graduate students are required to maintain an active status through continuous enrollment from the time of first enrollment until graduation. Therefore, graduate students must register for a minimum of 1 graduate credit hour each semester (excluding summer) until graduation [doctoral students that have begun to register for dissertation hours (course 600) must register for a minimum of 3 hours during all semesters, including summer] OR the student can submit a Leave of Absence (LOA) form requesting a pre-approved break in enrollment (up to two years).

The minimum enrollment for international students may be different, and international students must check with the Center for Global Engagement (CGE) to determine the minimum enrollment required to maintain satisfactory enrollment requirements attached to their specific visa.

Leave of Absence (LOA) Policy

A Leave of Absence (LOA) is a temporary cessation of study and may be granted for up to two (2) years for medical reasons and other emergencies. A Leave of Absence (LOA) allows graduate students in good academic standing to postpone their studies for a definite period of time, normally not to exceed two (2) years in the event of unavoidable circumstances (e.g., documented medical reasons, active military duty, etc.). Supporting documentation must be submitted with the LOA form. A letter of support from the Director of Graduate Studies/Department Head may be included. All LOAs are reviewed and granted on a case by case basis. Financial hardship is not an approved LOA.

A graduate student who wishes to request an LOA will submit to the Graduate School a completed Leave of Absence form which requires the endorsement of the student's Department Head and Director of Graduate Studies. The LOA form is first approved by the department and then submitted to the Graduate School for approval. **An official Leave of Absence begins only after the student receives a copy of the request with the Graduate Dean's signature confirming final approval of the Leave of Absence.**

Application for a Leave of Absence must be received by the Graduate School before the last day of classes for the semester for which the LOA is requested. **A leave of absence will not be granted retroactively after the end of the semester.**

An approved Leave of Absence stands in lieu of registering for the minimum of 1 credit hour (or 3 hours for Ph.D. students registering for course 600) for each semester for which the leave of absence is granted. During a leave of absence, students may not use UTK facilities, resources, or services designed or intended only for enrolled students; receive a graduate assistantship, fellowship, or financial aid from the University, or take any UTK courses.

An approved leave of absence does extend the allotted time limit toward degree completion. The term(s) and/or year(s) of an approved Leave of Absence (LOA) will not be counted toward time to degree and milestone deadlines such as Admission to Candidacy.

Students receiving funding of any kind should be aware of certain consequences of a Leave of Absence. Of course, a student on leave may not hold a Graduate Assistantship. For students receiving federal financial assistance, the U.S. Department of Education regulations require the University to report enrollment status as "WITHDRAWN" when students take a leave of absence for a semester or more. This results in the beginning of

the Federal Stafford Loan grace period and/or the starting of repayment of the Federal Supplemental Loan for Students. Additionally, upon returning to the University of Tennessee, Knoxville, new loan applications must be submitted and an in-school deferment form must be filed.

Instructions

- Confer with your Department Head and/or Director of Graduate Studies and relevant offices (e.g. Financial Aid, CIE, Graduate Assistant employment) regarding the impact of an LOA on your financial, academic, work-related, and personal circumstances; and
- Confer with your Department Head and/or Director of Graduate Studies about what, if any, conditions may be placed on your reinstatement after the LOA
- If after the above review and consultation, you choose to request an LOA,
 1. Complete the Leave of Absence form (include supporting documentation).
 2. Obtain signatures of your Department Head and the Director of Graduate Studies.
 3. Submit signed form to the Graduate School for approval.

Important Notes

- **When to submit the request:** You should submit the LOA form to the Graduate School as soon as possible, but the form must be received before the last day of classes for the semester for which the LOA is requested. **A leave of absence will not be granted retroactively after the end of a semester.**
- **Verify college approval:** Submitting the LOA form to your college does not guarantee that the request will be approved. You should confirm that your college approved your LOA and verify the approved LOA start and return dates.
- **Canceling registrations:** An approved LOA does NOT automatically cancel any registrations. If you are enrolled for the term(s) included in the approved LOA, you must cancel your registration(s) and withdraw from UTK. **Failure to withdraw from MyUTK will result in billing and assigned grades for the term(s).**
- **Financial support** (from the University): If you receive financial aid from the University, you should talk with the office giving your support (department, graduate assistantship, Financial Aid, Graduate School Fellowship Office) to learn about any effect a leave of absence might have.
- **Financial support** (from private funding sources): If you receive funding from a source outside the University, you should talk with that agency to learn about any effect a leave of absence might have.
- **International student:** You must contact CIE to determine what, if any, impact the LOA will have regarding your legal status.
- **Dual program student:** If you are a dual program student, you must request a LOA from each program and will need to request reinstatement from each program/department.
- **Reinstatement after LOA:** If you obtain an approved LOA, you are eligible for reinstatement provided you:
 1. Apply for reinstatement via the Reinstatement Form;
 2. Apply for reinstatement to the same major and degree you requested the LOA from,
 3. Request for reinstatement for the term/year indicated on the approved LOA form.
- **Notification:** An email indicating the decision will be sent to the student and those that signed. The official LOA begins only after the approval of the Dean of the Graduate School.

The Department of Microbiology of the University of Tennessee

Heidi Goodrich-Blair, David and Sandra White Professor, Head

Alison Buchan, Carolyn W. Fite Professor, Associate Head

Professors

Buchan, A., PhD – Georgia

Goodrich-Blair, H., PhD - Albany

Löffler, F.E., PhD – Technical Univ.
Harburg/Hohenheim (Germany)

Reynolds, T.B., PhD – Vanderbilt

Wilhelm, S.W., PhD – Western Ontario (Canada)

Associate Professors

Fozo, E.M., PhD – Rochester

Ganusov, V.V., PhD – Emory

Lloyd, K.G., PhD – North Carolina

Mikucki, J. PhD- Montana State

Sparer, T.E., PhD – Emory

Su, C., PhD – Penn State

Zinser, E.R., PhD – Harvard

Assistant Professors

Burcham, L., PhD-Mississippi State

Johnson, J., PhD- Iowa

Parker, B. J., PhD – Emory

Talmy, D., PhD – Essex (UK)

Steen, A. D., PhD – North Carolina

Professor *Emeritus*

Becker, J.M., PhD – Cincinnati (not research active)

Sayler, G.S., PhD – Idaho (not research active)

Small, P., - Stanford (not research active)

Research Faculty

Burcham, Z., PhD - Mississippi State

LeClerc, G., PhD - Georgia

Pfiffner, S., PhD - Florida State

Vishnivetskaya, T., PhD – Pushchino, Russia

Yan, J., PhD – Louisiana State

Joint Faculty

Graham, D., PhD – Illinois

Hettich, R.L., PhD – Purdue

Pan, C., PhD – Tennessee

Podar, M., PhD – Texas Southwestern Medical
Center (Dallas)

Schadt, C., PhD – Colorado

Lecturer

McAlvin, C., PhD – Tennessee

McPherson, E.F., MS – Tennessee

Chandler, J.W., PhD - Tennessee

Adjunct Faculty

Buongiorno, J., PhD - Tennessee

Briggs, L., MPH - Tennessee

Bruce, B., PhD – Wisconsin

DeBruyn, J.M., PhD - Tennessee

Eda, S., PhD - Tokyo (Japan)

Hazen, T.C., PhD – Wake Forest

Lin, J., PhD – Ohio State

Radosevich, M., PhD – Ohio State

Wall, J., PhD - Essex (England)

Appendix I: Pertinent Graduate Student Web Pages

- **After Admission** (<http://gradschool.utk.edu/admissions/after-admission/>) – This page contains information about submitting transcripts, getting NetID and password, demonstrating English proficiency, etc.
- **Before Starting Research** (<http://gradschool.utk.edu/thesesdissertations/before-starting-research/>) – This page contains up-to-date information about the Office of Research and Engagement and the UT Libraries' Scholarly Publishing Toolkit
- **Best Practices in Teaching Program** (<http://gradschool.utk.edu/training-and-mentorship/bpit/>) – This page describes the BPIT program and will provide links to registration and agenda.
- **The Big Picture** (<http://gradschool.utk.edu/graduate-student-life/the-big-picture/>) – This page provides an overview of the graduate education process from getting admitted to graduation.
- **Graduate Student Life** (<http://gradschool.utk.edu/graduate-student-life/>) – This page is a jumping off point for multiple aspects of life as a graduate student, such as registration, engaging in research, getting funded, knowing rights and responsibilities, and links to UT resources that graduate students can make use of.
- **International Graduate Students** (<http://gradschool.utk.edu/graduate-student-life/international-graduate-students/>) – This page provides information and links for International Graduate Students. Includes: Admission to Candidacy, Doctoral Committee Appointment Form , Scheduling Defense of Dissertation, Graduate Student Travel Award Forms
- **Library Website for Graduate Students** <http://libguides.utk.edu/graduate>
- **OIT** <http://oit.utk.edu/>
- **Student Ombudsperson** <https://dos.utk.edu/student-ombudsperson/> is a neutral, independent party who can give confidential advice on a University related manner.

Appendix II: Guidelines for NIH-style preliminary exams

Type your proposal using one-inch margins, top, bottom, left, and right. Use ARIAL 11-point font

A. Specific Aims

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. **One page limit.**

B. Background and Significance

Briefly sketch the background leading to the present application, critically evaluate existing knowledge, and specifically identify the gaps that the project is intended to fill. State concisely the importance and health relevance of the research described in this application by relating the specific aims to the broad, long-term objectives. If the aims of the application are achieved, state how scientific knowledge will be advanced. Describe the effect of these studies on the concepts, methods, technologies, treatments, services or preventative interventions that drive this field. **Limit to two to three pages.**

C. Research Design and Methods

Describe the research design conceptual or clinical framework, procedures, and analyses to be used to accomplish the specific aims of the project. Include how the data will be collected and analyzed. Describe any new methodology and its advantage over existing methodologies. Describe any novel concepts, approaches, tools, or technologies for the proposed studies. Discuss the potential difficulties and limitations of the proposed procedures and alternative approaches to achieve the aims. As part of this section, provide a tentative sequence or timetable for the project. Although no specific number of pages is recommended for the Research Design and Methods section, be as succinct as possible. **There is a total page limit of 12 pages allotted for *items A-C*.**



Appendix III: Guidelines for NSF-style preliminary exams

Type your proposal using one-inch margins, top, bottom, left, and right. Use ARIAL 11-point font

National Science Foundation Proposals are judged on two criteria: Intellectual Merit and Broader Impact.

While the Department of Microbiology expects students to focus on the research component of their proposal (the Intellectual Merit), it is important for students to understand and be aware of the Broader Impacts. As well, NSF is constantly changing requirements, so students are advised to examine the NSF **Grant Proposal Guide** prior to proposal preparation.

***The following is an excerpt from the *National Science Foundation's* web page.

SF merit review criteria are listed below. Following each criterion are potential considerations that the reviewer may employ in the evaluation. These are suggestions and not all will apply to any given proposal. Each reviewer will be asked to address only those that are relevant to the proposal and for which he/she is qualified to make judgments.

Criterion 1: What is the intellectual merit of the proposed activity?

How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of prior work.) To what extent does the proposed activity suggest and explore creative and original concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

Criterion 2: What are the broader impacts of the proposed activity?

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

PIs should address the following elements in their proposal to provide reviewers with the information necessary to respond fully to the above-described NSF merit review criteria. NSF staff will give these elements careful consideration in making funding decisions.

Integration of Research and Education

One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students, and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learning perspectives.

Integrating Diversity into NSF Programs, Projects, and Activities

Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- are essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

Student-Advisor Expectation Scales

The following is an optional exercise that students and their advisors can complete.

Read each pair of statements describing end points on a continuum. Estimate your position and mark it on the scale. For example, if you believe very strongly that it is the advisor's responsibility to select a research topic for the student, on scale #1 you should circle '1'. If you think that both the advisor and student should be equally involved, circle '3'.

Course of Study & Dissertation Planning

- | | | | | | | | |
|----|---|---|---|---|---|---|--|
| 1. | The advisor should suggest and approve which courses the student takes. | 1 | 2 | 3 | 4 | 5 | Students should solely determine which courses they take. |
| 2. | It is the advisor's responsibility to select a promising dissertation research topic. | 1 | 2 | 3 | 4 | 5 | The student is solely responsible for selecting the dissertation topic. |
| 3. | The advisor should select the other members of the dissertation reading committee. | 1 | 2 | 3 | 4 | 5 | The student should select the members of the dissertation reading committee. |

Contact & Involvement

- | | | | | | | | |
|----|--|---|---|---|---|---|---|
| 4. | The advisor should determine how often and when to meet with the student. | 1 | 2 | 3 | 4 | 5 | The student should decide how often and when to meet with the advisor. |
| 5. | Faculty-student relationships are purely professional and personal matters are not appropriate. | 1 | 2 | 3 | 4 | 5 | Close personal relationships are essential for successful advising. |
| 6. | The advisor should check regularly that the student is working consistently and on task. | 1 | 2 | 3 | 4 | 5 | Students should work independently without having to account for how they spend their time. |
| 7. | The advisor should be the first place to turn when the student has problems with the research project. | 1 | 2 | 3 | 4 | 5 | Students should try to resolve problems on their own, including seeking input from others, before bringing a research problem to the advisor. |
| 8. | The advisor is responsible for providing emotional support and encouragement to the student. | 1 | 2 | 3 | 4 | 5 | Emotional support and encouragement are not the responsibility of the advisor – students should look elsewhere. |

The Dissertation

- | | | | | | | | |
|-----|--|---|---|---|---|---|--|
| 9. | The advisor should insist on seeing all drafts of work to ensure that the student is on the right track. | 1 | 2 | 3 | 4 | 5 | Students should submit drafts of work only when they want input and feedback from the advisor. |
| 10. | The advisor should assist in the writing of the dissertation if necessary. | 1 | 2 | 3 | 4 | 5 | The writing of the dissertation should only ever be the student's own work. |
| 11. | The advisor should determine when and where to present or publish the research. | 1 | 2 | 3 | 4 | 5 | The student should decide when and where to present or publish the research. |
| 12. | The advisor should decide when the dissertation is ready to be defended and submitted. | 1 | 2 | 3 | 4 | 5 | The student should decide when the dissertation is ready to be defended and submitted. |
| 13. | The advisor has direct responsibility for the quality of the dissertation. | 1 | 2 | 3 | 4 | 5 | The student bears sole responsibility for the quality of the dissertation. |

Support

- | | | | | | | | |
|-----|---|---|---|---|---|---|---|
| 14. | The advisor is responsible for finding funding for the student until the student graduates. | 1 | 2 | 3 | 4 | 5 | Students are responsible for finding their own sources of funding. |
| 15. | The advisor is responsible for introducing the student to others in the field, especially at conferences. | 1 | 2 | 3 | 4 | 5 | Students are responsible for building their networks in the field. |
| 16. | The advisor is responsible for providing career advice and preparation to the student. | 1 | 2 | 3 | 4 | 5 | Career advice and preparation are not the responsibility of the advisor – students should look elsewhere. |

Student-Advisor Expectation Scales

The Student-Advisor Expectation Scales worksheet lists 16 pairs of statements describing end points on a continuum. Individuals differ as to the position they take on each scale. These differences reflect variation in educational philosophy, personality, and the norms of the home discipline. Each item is an issue about which most students and advisors need to reach agreement. Often, however, students and faculty members do not directly discuss their perspectives about how this matter should be resolved and why. In fact, in many cases, the situation may change over the student's time in doctoral studies.

Making expectations explicit, and having regular conversations about expectations, helps to minimize misunderstandings. It is important to recognize that most students do not feel comfortable asking their advisor to complete the worksheet. Faculty members may need to be the ones to initiate conversations about expectations.

This document can provide a basis for conversations between students and advisors to align their expectations. The Expectation Scales worksheet can be used in several ways.

Faculty Advisors

Faculty advisors can complete the worksheet and use it as the basis for a discussion with individual students, among a group of advisees, or with a team in the lab. Students prefer faculty members to initiate discussions.

- ☐ For each item, why does the advisor think that this is the best way to proceed?
- ☐ Which items are non-negotiable? Which can be discussed and determined together?
- ☐ In which ways does the advisor tailor her/his *modus operandi* to the individual student? Why does the faculty member change his/her MO? Does the advisor take into account the student's personality, background experiences, stage in graduate studies, or other factors?
- ☐ What other expectations does the advisor have of students? When and how should students ask for clarification of expectations?

Students

Students can complete the worksheet to explore:

- ☐ The student's own needs and desires. What does the student think is the best way to proceed for the student's own development?
- ☐ What does the student believe and understand to be the advisor's preferences and *modus operandi*?
- ☐ Complete the worksheet identifying both what the student desires and the perception of the faculty advisor's position. If the difference is 2 points or more, this is an item that should probably be discussed directly.
- ☐ Do all of the faculty member's advisees share similar understandings of the advisor's preferences and *modus operandi*?
- ☐ Develop a personal advising philosophy. How would the student plan to advise graduate students in the future? How does the student mentor and advise undergraduates or newer graduate students?

Director of Graduate Studies

The worksheet can be used with a group of faculty members to initiate discussion about:

- ☐ What positions do individual faculty members hold? Why do they think that this is the best way to proceed?
- ☐ Does the department have some expectations that are shared?
- ☐ Do faculty members share the same reasons or rationale for shared positions on scales?
- ☐ When and how do faculty members discuss expectations with student advisees?