



Graduate Program in Microbiology

2023-2024 Handbook

The Graduate Program in Microbiology reserves the right at any time to change, delete, or add to any of the provisions at its sole discretion. Furthermore, the provisions of this document are designed by the Graduate Program in Microbiology to serve as firm guidelines rather than absolute rules, and exceptions may be made on the basis of extenuating circumstances.

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INTRODUCTION

Welcome to the Microbiology Graduate Program at the University of Colorado Anschutz Medical Campus. This handbook provides information about our Graduate Program.

The material contained within this handbook is as current as possible and describes Microbiology Graduate Program specific policies. Please be aware that our program continues to evolve, and specific policies may be altered, thus, the information in this handbook may not always be current.

This handbook, which includes policies and procedures for the Graduate Program in Microbiology, is provided to serve as firm guidelines rather than absolute rules, and exceptions may be made on the basis of an extenuating circumstance. Thus, the handbook does not constitute a contract with the Graduate Program in Microbiology, the Department of Immunology & Microbiology, or the University of Colorado Anschutz Office of Research Education, either expressed or implied. The Graduate Program in Microbiology reserves the right at any time to change, delete, or add to any of the provisions at its discretion. Any exceptions to the departmental policies contained herein require approval by the Director of the Graduate Program. Additional information can be found at the [Microbiology Program](#) website.

Students are responsible for knowing the procedures, policies and requirements outlined in this handbook.

Contact Danielle Romanello, Microbiology Program Administrator, with any questions.
danielle.romanello@cuanschutz.edu

GRADUATE PROGRAM STUDENTS

	<i>Name</i>	<i>Matriculation Year</i>	<i>Lab</i>
1	Burnet, Anna	2019	Nagel
2	Kiem, Klara	2019	Horswill
3	Kirsch, Joshua (BSP)	2019	Duerkop
4	Lucas, Cormac	2019	Morrison
5	Lyon, Laurie	2019	Horswill
6	Sheriff, Emma	2019	Duerkop
7	Akbari, Madeline	2020	Doran
8	Mickens, Kaylee	2020	Santiago
9	Raab, Julie	2020	Russo
10	Spear, Elizabeth	2020	Kieft
11	Andersen, Shelby	2021	Duerkop
12	Cohen, Shirli	2021	Doran
13	Enroth, Timothy	2021	Horswill
14	Job, Alyx	2021	Doran
15	Nguyen, Amber	2021	Horswill
16	Shaw, Steven	2021	Clark
17	Wall, Elena	2021	Lozupone
18	Bilodeaux, Jill	2022	Hesselberth
19	Chau, Joanna	2022	Duerkop
20	Donaghy, Dillon (BSP)	2022	Restrepo
21	Erin Fish (MSTP)	2022	Morrison
22	Leach, Sarah	2022	Guthmiller
23	Nail, Elizabeth	2022	Keestra-Gounder
24	O'Connor, Jack (BSP)	2022	Lozupone
25	Rivera, Grecia	2022	Rotating
26	Thorstenson, Johnny (BSP)	2022	Horswill
27	Crossen, Ari	2023	Rotating
28	Fairbanks, Ana	2023	Rotating
29	Hall, Sydney	2023	Rotating
30	Leon, Anna-Sophia	2023	Rotating
31	Vragel, Gabri	2023	van Dyk

COMMITTEES

<i>Microbiology Graduate Program Director</i>	Breck Duerkop
<i>Program Steering Committee</i>	Lesile Berg Kelly Doran Breck Duerkop Alexander Horswill Marijke Keestra-Gounder Tem Morrison Mike Schurr Linda van Dyk Andres Vazquez-Torres Martin Voskuil
<i>Admissions and Recruitment Committee</i>	Marijke Keestra-Gounder, <i>Chair</i> Kelly Doran Breck Duerkop Alex Horswill David Beckham Brian Russo Elizabeth Spear (Admissions) Madeline Akbari (Admissions) Steven Shaw (Recruitment) Amber Nguyen (Recruitment)
<i>Pre-Comps Advisory Committee</i>	Linda van Dyk, <i>Chair</i> Breck Duerkop Kelly Doran
<i>Prelim Committee</i>	TBD, <i>Chair</i>
<i>Comps Core Committee</i>	Kelly Doran

STUDENT LEADERSHIP AND REPRESENTATIVES

President and Steering Committee Representative	Emma Sheriff
Admissions Committee	Elizabeth Spear, Madeline Akbar
Student RIP Coordinator	Shirli Cohen
Enrichment Funds	Johnny Thorsetensen
Infectious Disease Journal Club (IDJC)	Alyx Job
Recruitment Coordinators, Peer Mentors	Steven Shaw, Amber Nguyen
Student Retreat Coordinator	Shelby Andersen, Amber Nguyen
Social Chair	Madeline Akbari
Student Invited Speaker Coordinator	Tim Enroth, Shirli Cohen, 2024-2025
Communications	Shelby Andersen (Twitter), Elizabeth Nail (Newsletter)
Diversity, Equity, and Inclusion (DEI)	Gabrie Vragel
Prelim and Comps Practice	Tim Enroth, Elena Wall

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COURSE CURRICULUM AND REQUIRED EVENTS

Year 1 Required Events		
4 Pre-Comp Advisory Committee meetings: during orientation, and end of each rotation		
Attend and participate in Infectious Disease Journal Club (IDJC)		
Wednesday Student/Post-doc RIPs and Friday Seminar Series (barring class conflicts)		
Present 15-minute summary seminar after each rotation		

Year 1 Fall Semester Course Curriculum		
Research in Microbiology (lab rotation)	1 credit	MICB 8650, 001
Research in Microbiology (lab rotation)	1 credit	MICB 8650, 002
Statistics for Basic Scientists	3 credits	BIOS 6606
Foundations in Biomedical Sciences	6 credits	BMSC 7806
Core Topics in Biomedical Sciences – Topics A	2 credits	BMSC 7810
Core Topics in Biomedical Sciences – Topics B	2 credits	BMSC 7810

Year 1 Spring Semester Course Curriculum		
Research in Microbiology (lab rotation)	1 credit	MICB 8650, 001
Molecular Mechanisms of Bacterial Disease	3 credits	MICB 7703
Molecular Virology and Pathogenesis	3 credits	MICB 7701

Year 1 Summer Semester Course Curriculum		
Doctoral Thesis	1 credit	MICB 8990

Year 1 Preliminary Exam		
Due dates for written portion of Preliminary Exam: ~June 3		
Last day to complete oral portion of Preliminary Exam: ~June 25		
*Dates are approximate. Time from May finals - end of June are reserved for Prelims until final dates announced.		

Year 2 Required Events		
IDJC, Attend and Present		
Attend Friday Seminar Series		
Attend and Present in Student RIP series		
2 Committee meetings, with Pre-Comps or Thesis Committee		
Comprehensive Exam written proposal due two weeks before oral exam and no later than May 1		

Year 2 Course Curriculum		
Science as a Profession, Fall	1 credit	IMMU 7607
Research in Microbiology, Fall/Spring	3 credits	MICB 7650 (0V3) – variable credit

Workshop in Scientific Writing, Spring	1 credit	IMMU 7605
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Year 2 Summer Semester Course Curriculum		
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Doctoral Thesis	1 credit	MICB 8990
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Year 3 and Beyond Required Events		
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IDJC Attend and Present

Attend Friday Seminar Series

Attend and Present in Student RIP series
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2 Thesis Committee meetings

Ethics instruction must be undertaken at least once during each career stage, and at a frequency of no less than once every four years. After completing the full ethics course in year two, an ethics refresher course may be required, in which students are required to participate only in the discussion sessions.

Year 3 and Beyond Course Curriculum		
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Doctoral Thesis	5 credits Fall/Spring, 1 credit Summer, *5 credits if defending in Summer	MICB 8990 (0V1) – variable credit
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Thesis Preparation		
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Obtain approval from Thesis Committee to write dissertation ~6 months before anticipated defense date

Thesis due to Thesis Committee members at least 2 weeks before oral defense

FIRST-YEAR STUDENT INFORMATION

Pre-Comps Advisory Committee

The Pre-Comps Advisory Committee will advise and oversee the academic progress of students until they begin meeting with their Thesis Committee after their comprehensive exam is completed. First-year students will meet with the Pre-Comps Advisory Committee during the beginning of the fall semester (August). At this meeting, the student and committee will review his/her academic background and goals. The committee will help the student make decisions regarding courses and rotations, and help resolve any problems that may arise until their Thesis committee is formed. The Pre-Comps Advisory Committee will also meet individually with each student 1 to 2 weeks before the end of each rotation to discuss academic progress, rotation plans, and to plan future courses. Students may call a meeting of the committee at any time by contacting the committee chair.

Microbiology Graduate Program Director & Administrator

The Director will act as an administrator for graduate student activities from matriculation through the thesis defense and is a member of the Pre-Comps Advisory committee. The Director and Program Administrator will interface with the Office of Research Education (ORE) to ensure students are registered for appropriate courses and credits and ensure students fulfill required committee meetings as well as seminar and journal club presentations. A file will be maintained by the Program Administrator for each student that records their activities and accomplishments while in the graduate program and post-graduation.

Planning Academic Program

The Graduate School requires at least 30 semester hours in course work pre-comps (rotations and research courses taken prior to or concurrent with the completion of the comprehensive examination) and an additional 30 semester hours of thesis credits for the Ph.D. All work undertaken as a graduate student must be in compliance with the academic Code of Honor.

The sequence of courses required for the first year of the Graduate Program in Microbiology is shown in the following section.

First-year requirements:

- 10 credit hours of the BMS Core Course series (BMSC 7806, and 2 topics from BMSC 7810)
- Three laboratory rotations (MICB 7650, 11 weeks each)
- Statistics for Basic Scientists (BIOS 6606).
- MICB 7701
- MICB 7703
- Students must pass at least 19 credit hours in the first year of study in order to be eligible to take the comprehensive exam during the second semester of the second year

Second-year requirements

- IMMU 7607 (Science as a Profession), a course in scientific and research ethics, is also required, and is generally taken in the fall semester of the student's second year.
- Students must have passed at least 30 credit hours by the time they apply to take their comp exam

Depending on the student's past courses, the Pre-Comps Advisory Committee may allow alternative courses and/or provide transfer credit for some courses. A request in writing must be submitted to, and approved by, the Pre-Comps Advisory Committee and the Microbiology Graduate Program Director.

Students who matriculate in BSP or other graduate programs and wish to pursue a degree in Microbiology may submit requests to the Pre-Comps Advisory Committee to modify the requirements for courses to be taken in the first year and the committee may, in some cases, require that specific courses in Microbiology be taken during the second year. Students should be aware that they will be responsible for general knowledge in Microbiology during the Preliminary Examination.

Electives

There are many other excellent graduate courses available in the UCD-AMC Basic Science Ph.D. Graduate Programs. A list of elective courses currently approved by the Microbiology Program faculty can be found in *Appendix 3*. Students in the Microbiology Graduate Program may take electives during their first year with approval of the Pre-Comps Advisory Committee, or during subsequent years with the permission of their mentor.

The Graduate School Course Book by the University of Colorado Anschutz Medical Campus can be found at: <https://www.cuanschutz.edu/registrar/catalog>

Registration for classes is completed online. It is advisable to discuss with the Graduate Program Director and the Pre-Comps Advisory Committee the courses that you plan to take each semester of the first year. If you fail to register before the deadline, you will be responsible for late fees. You need to register for one credit each summer or you will have retirement benefits withheld from your stipend. For the fall semester of the second year, you need to sign up for five credits of 7650 (pre-Comprehensive Exam research) as well as for the one credit ethics course. For the spring semester, you need to sign up for five credits of 7650. After you have passed your comprehensive exam, you need to sign up for five credits of 8990 (post-comprehensive exam credits) for each semester until you graduate. After the first year, with agreement of the Thesis mentor and committee, additional course work may be taken in the second and later years.

Grades

Reporting of grades. Grades are reported to the Registrar by the Course Director and the Graduate Program Director (for rotations).

Passing grades. All required courses (including the Core Course, laboratory rotations, and Microbiology course work) are to be met with grades of B (3.0) or better. If a student earns less than a B (3.0) in **any** of these courses, the Pre-Comps Advisory Committee and the Microbiology Graduate Program Faculty will decide, on a case-by-case basis, the appropriate measures to be taken.

Academic probation. The overall grade point average must be a B (3.0) in order for the student to be in good standing in the Graduate School. The Registrar will notify the student and the Graduate Program if and when a student is on academic probation, and Program approval/advising will be required for course registration during this time. The Pre-Comps Advisory Committee will then meet with the student to plan a strategy to remove the student from probation. This may require achieving higher grades in the later courses to balance grades of B- or lower, or taking additional courses. During probation a grade of B or better must be maintained in all courses. The student will have a maximum of two semesters at the discretion of the Microbiology Graduate Program Faculty (if enrolled as a full time student) to raise their GPA to at least 3.00. If a student remains on academic probation after two semesters, s/he will be subject to immediate dismissal upon the recommendation of the full Microbiology faculty and concurrence of the Dean of the Graduate School. If there are extenuating circumstances, however, the program director may petition the Dean for an extension of the probationary time period. Students on academic probation are not eligible to take the Preliminary Examination.

Lab Rotations

Each student is expected to do three lab rotations in laboratories of Microbiology Graduate Program faculty members during the first two academic semesters. Information about the research being done in each faculty laboratory is available on the Microbiology web page:

During orientation, first-year students will meet with the Microbiology graduate faculty and learn about their research programs:

<https://www.cuanschutz.edu/graduate-programs/microbiology/faculty>

Mentor Selection

Each student participates in three lab rotations with mentors who are doing work relevant to the student's interests. By the end of the spring semester, students are expected to have selected a laboratory for his/her dissertation research. In making this decision, it is the individual student's responsibility to discuss possible dissertation research projects and availability of research funding, stipend support, and lab space with each faculty mentor that he/she is considering. The student is encouraged to read the papers from the lab and grant applications supporting the research program, and to be familiar with the unique style of management in the lab. Then the student should approach the faculty member that is his/her first choice about making a commitment to accept the student into the lab.

Virtually all students join a lab. However, **entry into a lab is not guaranteed**. If the student is unable to make an agreement with a mentor to join a lab, the student should initiate discussions with the Pre-Comps Advisory Committee and the Program Director to discuss a possible fourth rotation. The inability to find a laboratory for your thesis research may lead to dismissal from the program.

Participation in Journal Clubs, Research in Progress Seminars, and Microbiology Seminars

One of the most important aspects of the graduate program and an essential tool for continuing education for all faculty and post docs is a lively program of seminars, journal clubs, and data clubs. For graduate students, these serve both as a source of state-of-the-art, new microbiology information and an opportunity to develop strong skills in speaking, which correlate well with future success. We encourage questions from all members of the audience of each of these programs during and after the talks. Vigorous participation by everyone makes these sessions very worthwhile. Notices of the seminar topics are posted online and in the entryway to RC-1 North.

Journal Club:

Each student is expected to attend the Infectious Diseases Journal Club, which is held at 1pm on Thursday. Students are encouraged to participate in discipline-specific journal clubs or works in progress to be selected in consultation with their advisors.

Research in Progress (RIP):

Each student is expected to attend the weekly student and post-doc Research in Progress series (with exceptions for conflicts with required coursework), which are held on Wednesdays at 9 am either in Hensel Phelps East Auditorium or at National Jewish Health.

THE PURPOSE:

The purpose of the Immunology & Microbiology RIP seminar series is to allow graduate students and postdocs in and associated with the department to gain experience organizing and presenting their research in front of an audience. These presentations are meant to be a sharing of current research. There is no need to postpone a presentation due to lack of new information, this is meant to be research IN PROGRESS.

THE RULES OF ENGAGEMENT:

- This series will be year-round with graduate students taking priority during the academic year (September – May) and postdocs taking priority the remainder of the year (June).
- 1/3 of these presentations will be held at NJH, 2/3 will be held at AMC
- Students are placed into specific time blocks based on year in the program. Students may switch ONLY with those in the same time block if the date given to them does not work with them and/or their Mentor's schedule.
- No 2 people from the same lab will present on the same date.
- When at all possible, 1 presenter will be from an Immunology lab and 1 will be from a Microbiology lab.

THE RESPONSIBILITIES FOR GRADUATE STUDENTS:

- Inform your PI and the chair/members of your thesis committee of your date and make sure they can attend if needed
- **IT IS YOUR RESPONSIBILITY TO FIND SOMEONE TO TRADE WITH IF YOU NEED TO CHANGE YOUR PRESENTATION DATE.**
- Have your title ready about a week before your presentation so you can provide it for announcements when asked.
- Show up and present on your presentation date.
- If you need to cancel your presentation date, you must email your PI, your committee chairman, the chair of the department, the graduate program administrator, and the schedule administrator with an explanation of why you need to cancel.

WARNING:

This series is considered a public forum in that anyone who reads the announcement may attend. Therefore, **if you have Intellectual Property that you are not ready to share with the public, please save it for a less public setting.**

Departmental Seminar

Each graduate student is expected to attend the weekly Friday Seminars, which are held at noon in Hensel Phelps East Auditorium. Students will have the opportunity to volunteer to have lunch with out-of-town speakers. This is an outstanding opportunity to network with invited speakers.

Fellowship Applications

All graduate students are urged to apply for individual graduate student fellowships. The Graduate School maintains a database of funding opportunities here: <https://www.cuanschutz.edu/offices/career-development/funding-resources> Students can apply for NSF and Howard Hughes Medical Institute fellowships soon after arriving, as these fellowships are only available to students in the early stages of training. Other fellowships available based on research interest, gender, race, prior military experience,

etc., are indicated on the website. The faculty and the Immunology and Microbiology Department Grants Specialist will be glad to help with applications.

The Microbiology Graduate Program Administrator and Director will assist in preparing portions of applications regarding training and program opportunities. Copies of the fellowship applications, as well as eventual outcomes, should be submitted to the Microbiology Graduate Program Administrator.

TYPICAL FIRST YEAR CURRICULUM

FALL SEMESTER

Foundations of Biomedical Sciences *BMSC 7806* (6 credits)

A unified presentation of fundamental principles of biochemistry, cell biology, genetics and molecular biology. Designed for all first-year basic science graduate students.

Topics in Biomedical Sciences: Topic A *BMSC 7810* (2 credits)

CORE Topics in Biomedical Sciences: Topic B *BMSC 7810* (2 credits)

Statistics for Basic Scientists *BIOS 6606* (3 credits)

This course is designed to obtain a basic understanding of statistics and its applications in biological research, excluding analyses of big data (e.g., proteomics, genomics) which are covered in other courses.

Laboratory Rotation I. *MICB 8650, 001* (1 credit)

Laboratory Rotation II. *MICB 8650, 002* (1 credit)

Each rotation will last approximately 11 weeks. The second rotation will begin 12 weeks into the Fall Semester and extend into the Spring Semester.

SPRING SEMESTER

Molecular Virology and Pathogenesis *MICB 7701* (3 credits)

This 8-week course addresses the molecular biology of viruses and the host-virus interactions that influence pathogenic outcomes of virus infections. Topics include virus structure, virus receptors and entry into cells, genome organization and replication, viral gene expression, virus assembly, host responses to viral infection, emerging viral diseases, epidemiology, virus eradication, and virus evolution. Select medically important viruses will be covered including poliovirus, hepatitis viruses, influenza, HIV, herpesviruses, papillomaviruses and others. Course grades will be based on a mid-term and final exam, student presentations and participation in discussions.

Molecular Mechanisms of Bacterial Disease *MICB 7703* (3 credits)

MICB 7703 is an 8-week lecture and primary literature discussion course. The course covers pathogenic bacteria and an in-depth discussion of several paradigms of bacterial diseases that illustrate important concepts and molecular mechanisms of bacterial pathogens and evasion of host defenses.

Electives. Students take additional approved elective courses, see appendix 2. (variable)

Laboratory Rotation III. *MICB 8650* (1 credit)

SUMMER SEMESTER

Preliminary Examination. The preliminary examination is taken in early to mid-June. The prelim is a two-part exam. The first part is a written critical review of the literature on a specified topic. The second part

is an oral exam based on the written document and will include general knowledge from the first-year coursework.

Research in Microbiology. MICB 8990

(1 credit)

Start thesis work in dissertation laboratory, July 1

PRELIMINARY EXAMINATION

Overview

At the end of the second semester of the first year, each student who is not on academic probation is required to take a Preliminary Examination by the end of June. The Graduate Program in Microbiology uses a two-part exam. The exam will include a **critical** review of a defined microbiology subject chosen by the faculty and written by the student. Following the written document, an oral exam will be administered to test knowledge of the review subject and knowledge of the student's first-year coursework including fundamental questions in virology and bacteriology. This exam is designed to provide an opportunity for students to read a body of literature, distill the findings into a coherent summary, and write in the style of a scientific review. This exercise will help prepare the student to write the introduction section of their Comprehensive Exam in the following year.

Guidelines for Exam

A subject that addresses issues that are topical in microbiology will be selected by the Prelim Exam Committee, consisting of three members of the faculty. The subject matter of the review will be a topic of special interest to the committee, and may include virology, bacteriology or both. The committee will select three to five papers which will form the basis of the review. Other papers relevant to the subject should be utilized by the student. The student will have two weeks to write 10 pages (not including figures) of a double-spaced, one-inch margin, review of the literature. It is recommended that students include a summary figure that encapsulates the review material. A future directions section should be included in which the student proposes possible avenues of future research based on the body of work described in the review. The student should also keep in mind that the exam is a critical review and thus, the student should attempt to make assessments of the relevant importance of findings to the big picture and not just restate findings and interpretations from the primary literature.

A meeting of the students taking the exam, the Program Director, and the Chair of the preliminary examination committee will be held prior to the exam to discuss the requirements for the written and oral portions of the exam and to answer questions. Preliminary exam topics are typically announced at the end of the Spring semester in mid-May, followed by a two-week writing period.

After the written portion is turned in to the Preliminary Exam Committee the student will have at least one week to prepare for the oral portion of the exam, which will occur in early to mid-June. Students should be prepared to answer questions based on the specific exam subject including but not limited to the papers used to write the review. The student should also be keenly aware of techniques used to establish the facts described in their review. Faculty will also ask questions that assess the student's knowledge of basic concepts of microbiology, molecular biology, and cell biology. Thus, students are advised to review first year coursework especially from microbiology courses. Students are also advised to form a study group to review course material.

Grading Exam

The written and the oral portions of the Preliminary Exam will be graded as pass, pass with conditions or fail. Both written and the oral portions must receive a pass or pass with conditions grade. If a student does not pass both sections of the exam the Microbiology Graduate Program Faculty will decide whether to administer a second exam or disenroll the student. After the student passes the Preliminary Examination, the student begins research in their thesis laboratory.

COMPREHENSIVE EXAMINATION

Eligibility and Dates

Eligible students (2nd year students who have passed preliminary examinations and are in good academic standing) will write and orally defend an **NIH F31-style research fellowship proposal** (<https://www.niaid.nih.gov/grants-contracts/calix-sample-f31-application-and-summary-statement>).

The Comprehensive Exam Committee will consist of a minimum of five Microbiology Program Faculty members. Each year, the Comps Core Committee will consist of the Graduate Program Director and one other Microbiology faculty member who will serve on all comprehensive exam committees that year, and who will serve as Chairs of the Comp Committees. The remaining three members of the Comprehensive Exam Committee will be Microbiology Program faculty members of the student's Thesis Committee. The thesis mentor cannot serve on the Comps exam committee, (but will be a member of the Thesis Committee). If one of the Comps Core Committee is already a member of the Thesis Committee, the Microbiology Graduate Program Director will appoint a fifth member. Students should plan to spend no more than four weeks out of the laboratory for researching, discussing, and writing the proposal. The written portion of the exam must be turned in to the Comprehensive Exam Committee two weeks prior to the oral exam date and the oral exam must be completed between January 1st and May 15th. The date of the oral examination should be scheduled by the student before April 1st.

Paperwork to Schedule the Exam

The forms to schedule this exam are in a packet on the Graduate School website at <https://graduateschool.cuanschutz.edu/forms-resources/resources> and then click on All Resources, download both the **Exam Request** and the **Application for Candidacy forms**. These materials should be downloaded the term prior to your anticipated examination date. Your Application for Admission to Candidacy (see above) is due to your Program Administrator at least three weeks prior to your expected examination date.

1. Download and complete the "Application for Admission to Candidacy".
2. Complete the "Exam Request" form.
3. Sign the application and obtain the signature of your program mentor on the "Application for Admission to Candidacy" and of your Program Director on both the "Application for Admission to Candidacy" and the "Request for Scheduling Exam" form. Electronic signatures preferred.
4. Submit both forms to the Graduate Program Administrator at least three weeks prior to the exam.
5. The Graduate School will prepare and distribute the "Notice of Examination" to you, the academic program, and your committee members.
6. Your program will receive not only the "Notice" but all necessary forms to complete the examination. Contact your program advisor regarding the makeup of the Examination Committee as well as the format the exam will take.

YOU MUST BE REGISTERED FOR THE TERM IN WHICH THE COMPREHENSIVE EXAMINATION IS TAKEN. If your examination occurs between terms, you will be required to register for the subsequent term.

Written Proposal

The research proposal should be about your intended thesis research that has been developed through interactions with your mentor in the months preceding the comprehensive exam. You should propose 2-3 years of work. It is important that you craft a solid hypothesis and 2-3 specific aims that test your hypothesis. You will also need to demonstrate a significant depth and breadth of knowledge of the relevant background to the problem you propose to study. **The hypothesis, rationale, strategy, and experimental design in the written proposal should be the work of the student.** You may consult with: your PI, the members of your thesis committee, fellow graduate students, post-docs, other faculty, and the published literature. When you discuss your proposed research with others, you must inform them that you are discussing your comprehensive exam and indicate to them that your interactions are for the purpose of developing your ideas or discussing how certain experiments might work or be interpreted. However, faculty and other advisors should not edit the student's written proposal for style or content.

Format guidelines: Your research proposal should contain no more than 6 pages single-spaced (excluding references), plus a separate page for Specific Aims. Margins are to be no less than 0.5 inches and the font should be Arial with no smaller than 11 pt. Use of figures and schematics is strongly encouraged. Proposals that fail to abide by format guidelines will be returned.

Organization of the Written Proposal

Abstract/specific aims. *One separate page.* Write an abstract that succinctly describes your project. It should briefly introduce the problem and summarize the overall objectives and methods to be used. It should serve as a concise and accurate description of the work when separated from the proposal

Research plan. *6 pages.* The research plan is divided into the following sections: *Significance; Innovation; Approach.*

Significance:

Briefly describe the background leading to the present proposal, critically evaluate existing knowledge, and specifically identify the gaps the project is intended to fill. State concisely the significance- importance and health relevance of the research described in the proposal by relating the specific aims to the broad, long-term objectives.

In other words:

- Explain the importance of the problem or critical barrier to progress in the field that the proposed project addresses.
- Explain how the proposed project will improve scientific knowledge, technical capability, and/or clinical practice in one or more broad fields.

Innovation:

Point out inventive/original aspects of your proposed research, these may be conceptual or technical advances to the field.

Clearly state a hypothesis and summarize how the proposal will test that hypothesis. Most top-notch NIH grant applications are driven by well-focused and testable hypotheses. Generally, applications should ask questions that prove or disprove a hypothesis rather than search for a problem or simply collect information. Think of your hypothesis as the foundation of your application -- the conceptual underpinning on which the entire structure rests. Your experimental results will prove or disprove your hypothesis. Don't confuse your hypothesis with methods. Methods describe how you will perform your

experiments. **Keep Your Hypothesis Focused.** Choose an important, testable, focused hypothesis that increases understanding of biologic processes, diseases, treatments, or preventions and is based on previous research. Hypotheses should naturally provoke questions. Answering these questions then becomes the goal of each of your specific aims.

Preliminary studies:

Describe the preliminary studies or data relevant to the proposal. This information can encompass published literature from your laboratory, as well as data you have generated since you have been in the laboratory. Figures and Tables should be annotated with citations that indicate who is credited with generating the data, especially when it is someone other than yourself. Figures and Tables are to be embedded within the document, not submitted as a separate section, and are included as part of the 6 page limit. Figures should be legible and should include a figure legend.

Approach:

- Describe the overall strategy, methodology, and analyses to be used to accomplish the specific aims of the project. Describe the rationale for the proposed experiments and include sufficient detail for how the experimentation is to be completed. Include how the data will be collected, analyzed, and interpreted. Schematics, tables, and timelines can be very effective ways to present complex experiments and working models.
- Discuss potential outcomes, problems and alternative strategies. Make sure that your proposed experiments generate interpretable results allowing you to answer the question you propose. When you have that answer, discuss what you will do next.

References. The written proposal should be well referenced. Proposals may use any standard citation style, but you must include the names of all authors (in the same sequence as the publication), article and journal title, book title, volume number, page numbers, and year of publication. References are not included in the page limitations.

Oral Examination

It is the responsibility of the student to schedule the oral defense. Examinations will take the form of an oral defense of the research proposal by the Comprehensive Exam committee. Your mentor will not participate in the examination, although he or she may attend. Plan to present a 10 to 15-minute overview of your proposal as a PowerPoint presentation. Summarize relevant background and preliminary data. Present your hypothesis and specific aims. Broadly review your experimental plan. You will be questioned about anything specifically and generally related to the proposal. It is wise for the student to review broadly before the examination. Students are advised to take one or more practice oral exams from other students and/or post-docs. Exams typically take 2-3 hours.

Outcomes

Pass

You must receive the affirmative votes of a majority of the members of the committee in order to pass. Student continues to doctoral candidacy.

Pass with revisions/conditions

Revisions to the written proposal may be required by the examination committee. A pass with revisions will require the student to address the comments of the review committee and resubmit a revised written

proposal **within two weeks** of the oral examination. The revised proposal will be reviewed by the committee and a Pass/Fail determination will be made. Other requirements, such as additional coursework or directed reading, may also be made by the committee. The terms for completion of these requirements will be determined by the committee at the end of the oral examination. In such cases, the committee, via the chair, will provide written instructions regarding the conditions that must be met by the student to receive a passing grade. You will be considered to have "passed" when these conditions are met to the satisfaction of the committee. Failure to meet the conditions in the time specified will result in failure of the examination.

Fail

In the event that you fail the examination, you are subject to immediate dismissal from the Graduate School. At your program's discretion, you may be allowed to retake the examination once. The retake will be in a form designated by the committee and must be completed within six months. Failure of the second exam will result in automatic dismissal.

THESIS COMMITTEE AND DISSERTATION

Thesis Committee

This is a committee of five (four faculty members plus the mentor) that will be formed during the second year. The mentor and student recommend appropriate members and chair of the committee to the Graduate Program Director. The committee must include at least one, but not more than two, faculty members outside the Microbiology Graduate Program Faculty. Any outside members should have expertise in the area of the student's research.

The Thesis Committee must be constituted and an initial meeting must be conducted by February of the second year, at which time the student will conclude meetings with the Pre-Comps Advising Committee. The student is responsible for scheduling a meeting of the committee (to include the entire committee or a majority of the committee members) every six months, or more often if necessary, to review the student's plans and progress and make suggestions to facilitate the research. The committee will also mediate conflicts that may arise between the student and mentor. Individual committee members are available for consultation at any time.

At least 48 hours before each meeting, the student should submit to each member of the committee a written summary of the progress since the last meeting and plans for the next six months or more. If the student is scheduled to give a research-in-progress seminar, it may be convenient to schedule the committee meeting immediately after the presentation to avoid repetition.

After each committee meeting, the student and committee chair should promptly write minutes of the meeting. The student and the committee chair should reach agreement on the document, after which each committee member, the student, the Graduate Program Director, and the Graduate School (submitted online) are provided a copy of the final report.

The Thesis Committee will help the student and mentor decide when enough original research and submission of high-quality manuscripts describing the research have been done to allow the student to write the dissertation. **The Thesis Committee will not agree to a thesis defense date until at least one first-author primary research article has been submitted to a peer-reviewed journal.** One submitted paper is a minimum requirement and not considered the norm for fulfilling sufficient research to earn a PhD.

In the last six months of the student's time at UCD, the student must comply with all the regulations of the Graduate School regarding writing and submission of the thesis and the graduation procedures and ceremonies. The Thesis Committee will read the dissertation and be responsible for the final examination in defense of the dissertation. Students must allow at least 14 days after submitting the dissertation to the thesis committee before the date of the thesis defense.

Dissertation

The dissertation is written by the student according to UCD guidelines and based on the student's original research. The mentor will provide primary guidance on the scientific writing, and the student may also consult with other faculty, in particular the Chairman of the Student's Thesis Committee. The Assistant Dean of the Graduate School offers lectures throughout the year describing the required format of the dissertation. It is advised that you attend this lecture. Examples of previous successful dissertations are available in the Immunology and Microbiology Department. The student and mentor are responsible for providing high quality illustrations for the dissertation and making copies of the final dissertation for the Thesis Committee.

The student must provide the completed dissertation to the thesis committee at least two weeks prior to the public oral presentation of the student's dissertation research. The written dissertation is expected to be in final form. The student is primarily responsible for the form of the dissertation. Detailed instructions can be found on the Graduate School webpage under 'Format Guide for Theses and Dissertations' here: <https://graduateschool.cuanschutz.edu/forms-resources/resources>

The student's mentor should carefully read and edit the dissertation prior to submission to the thesis committee. If the written document is found to be poor by the thesis committee, the oral presentation and defense of the thesis may be delayed.

The student is responsible for scheduling the date and location of the public oral presentation of the dissertation research to the UCD community. On the scheduled date, the student will present a public seminar on the dissertation research, followed by questions from the audience. The student will then immediately take an oral Final Examination in Defense of the Dissertation administered by the Student's Thesis Committee. The Committee may suggest changes needed for the dissertation to be acceptable as well as examining the student on the content of the research. Each member of the Examination Committee must sign approval or disapprove of the dissertation and the Oral Defense for submission to the Graduate School. A simple majority vote of the committee determines the outcome of the deliberations.

Once the dissertation defense is passed and all the requirements for completion of the dissertation have been accomplished and approved, the student should provide a bound copy of the final version of the dissertation with figures to the UCD library, the Immunology and Microbiology Department, and the mentor. The specific requirements for the written document are available from the Graduate School. A copy of the dissertation abstract must be submitted for microfilming.

The student is now eligible to receive the PhD degree. This degree can be awarded at the Spring UCD graduation, or in August or December without a ceremony as described in the UCD Student Handbook. Consult the Graduate School office for current rules regarding when requirements must be met and complete in order to participate in graduation ceremonies.

Changing Advisors or Dismissal from Thesis Lab

While it is always the goal that a student who chooses a thesis advisor is able to complete the PhD thesis with this advisor, this relationship does not always work out. While the Microbiology Program does not have the authority to dictate whether or not a student continues in a particular thesis lab, the Program does suggest certain guidelines in the interest of fairness to both student and mentor. Still, in the end, it is at the discretion of both the student and advisor as to whether a student continues in the chosen thesis lab.

Guidelines:

- 1) If a student is having trouble in the lab, such as in the form of conflicts with the mentor or lack of mentoring, then the student should consult with the Microbiology Graduate Program Director and/or the Chair of their Thesis Committee. This action should be taken as soon as problems arise. A written summary of the meeting and issue should be documented.
- 2) If a mentor is unhappy with the performance, lab citizenship, work ethic or intellectual engagement of a student (or any other problem), then the mentor should meet with the student expressing these concerns. Consultation with the Graduate Program Director and/or the Chair of the student's thesis committee is also recommended. A written summary of the meeting and issue should be documented.
- 3) In either of the cases above, the advisor and the student should then work out a plan of remediation. This plan should be in writing, and it is advised that the plan be forwarded to the Microbiology Graduate Program Director and the Chair of the student's Thesis Committee. Regular meetings between the student and advisor should be held, and satisfactory or unsatisfactory improvements documented (copied to the Director and Committee Chair).
- 4) Should a conflict reach the point where either the student or mentor decides that mentor-student relationship should end, then the student has several choices. The student can find another mentor within the Program, transfer to another lab in a different graduate program, choose to leave the Program with a Master's degree (subject to the rules of the Graduate School and approval by the Thesis Committee), or choose to leave the Program.

The UC Denver Ombuds office is also available to students and mentors to help resolve conflicts and misunderstandings. They are experts in problem resolution and are completely confidential. Please refer to the website to find out more about their offerings <https://www.ucdenver.edu/offices/ombudsoffice>

TRAINING TIME LIMIT

Doctoral students are expected to pass the comprehensive examination and advance to candidacy within two years and are required to complete all degree requirements within **seven** years of matriculation. Students are strongly encouraged to finish their degree requirements in less than seven years. During this time, students are required to maintain satisfactory academic performance and to demonstrate appropriate progress toward accomplishing the goals of their thesis projects, as evaluated by their mentor and Thesis Committee as requirements for remaining in the Microbiology Graduate Program. Students who fail to complete the degree in the seven-year period are subject to termination from the Graduate Program in Microbiology upon recommendation of the Thesis Committee and Steering Committee. For a student to continue beyond the seven-year limit, the Graduate Program Director must petition the Microbiology Program Faculty and include 1) reasons why the student should be allowed to continue in the program and 2) the amount of additional time that will be needed for completion of the degree, which cannot exceed one additional year.

CAREER INFORMATION

The graduates of this program have gone into academic positions with teaching and research, biotechnology companies, and government agencies. It is important for us to keep in contact with our graduates both to provide help if needed and to help us in preparing applications for training grants which require information on careers of program graduates.

Up-to-date information on job opportunities at the postdoctoral level and career positions is posted on a bulletin board in the Immunology and Microbiology Department as well as on our career center website at www.ucdenvercareercenter.org/index.html. In addition, job placement services are available from professional societies such as ASM, ASV, ASCB, etc. Program faculty are of great help in finding postdoctoral positions. The Graduate School sponsors Career Days for graduate students and postdoctoral fellows to learn about possible career options.

The Microbiology Graduate Program makes every effort to allow the graduate students and postdoctoral fellows to interact with faculty guests who present Microbiology Seminars. Often, they are invited to lunch with the guest speaker after the seminar. In such meetings, the students and postdocs are the hosts for the event, providing any requested information about the graduate programs here. In addition, they should ask questions of the speaker about his/her own field of research, career path, and present institution. To learn more about career opportunities outside of academics, you may attend seminars offered by the Alternatives in Science Club as well as many networking events offered through the Colorado BioScience Association (CBSA). Membership to CBSA is paid through the University, so most events are covered.

Career Development Opportunities

The Graduate School at the University of Colorado Denver|Anschutz Medical Campus offers a variety of career development workshops, seminars, and training programs. These opportunities are coordinated by the Career Development Office (CDO) and trainings focus on the non-research-based skills that are essential for any successful scientific career: communication, leadership and management, and professionalism. These workshops and seminars are offered many times throughout the year and range from short one-hour lunch sessions to multi-day sessions. More information about the workshops, additional career development resources, and a schedule of events can be found on the CDO website: <https://www.cuanschutz.edu/offices/career-development>

GRADUATE STUDENT ACTIVITIES

Student Senate and Council

The Microbiology Graduate Program is allowed to elect representatives for Student Senate. Senate oversees and votes on University-wide student issues. Also, all graduate students are welcome to attend monthly Graduate Student Council (GSC) meetings. GSC acts on issues of importance to graduate students. Any student may submit issues to Senate or GSC for consideration.

<http://www.ucdenver.edu/life/services/studentlife/StudentGovernment/senate/Pages/form.aspx>

Microbiology Student Governance

The Microbiology Program also has its own Student Council which elects a faculty liaison/President to represent the Microbiology student body to the faculty, an Admissions and Recruitment Committee member to assist in selecting new student candidates, a Graduate Student Retreat Committee Chair to

organize the upcoming year's retreat, a student representative to the Enrichment Activities and Funds committee, and a journal club coordinator for the Infectious Disease Journal Club (IDJC).

Annual University Student Research Forum & Poster Session

Each year a Student Research Forum is held to highlight the research contributions of graduate students and medical students. Students from all programs present posters on their research. Faculty judge the posters and presentations and financial awards are made. Food is provided and there is a large and enthusiastic audience of faculty and students. Cash prizes are provided to students with the posters considered the most outstanding by faculty reviewers.

<https://medschool.cuanschutz.edu/education/current-students/curriculum/tracks/research-program/37th-annual-student-research-forum>

Recruitment of New Students for the Graduate Program in Microbiology

Applications for admission in August of 2019 will open September 1st. The deadline for applications is December 1st. The Admissions Committee, composed of faculty and a student representative, will review written applications and recommend approximately 10 students to be interviewed. Candidates will be invited to interview with faculty and graduate students.

Students in the Microbiology Program are expected to help host the applicants at meals or social events, interview them as requested, present posters on their own research, and provide tours of the campus. Students with insight into applicant's qualifications are requested to submit comments to the Admissions Committee. Students in the Microbiology Graduate Program will play an important role in welcoming new graduate students, orienting them to UCD, and mentoring them during the first year of the graduate program.

Other Activities

Social activities are available both campus wide, including welcome weekend and Fun In-The-Sun (FITS) on Fridays during the summer, and other graduate program and departmental functions.

GENERAL INFORMATION

Graduate School Policy for Leave

Graduate school is a privilege; working in the biomedical research/academic field, whether as a graduate student, a postdoctoral fellow, or an independent investigator, is a challenging profession requiring a high level of commitment and responsibility. Students who receive full-support stipends from Ph.D. programs at the University of Colorado Anschutz Medical Campus must pursue their training full-time, devoting each day of the typical work week plus any additional time required by their research projects and academic courses. Within those demands and expectations, it is also important to take time away. Consequently, the Graduate School has established the following guidelines for the amount of vacation and leave time allowable for students to maintain full-time student status.

Vacation and Holidays: Graduate students shall receive all CU Anschutz campus holidays and no more than 10 week days (not including weekends) of vacation per annum, with no year-to-year accrual. Students shall continue to receive stipends during vacations and holidays. Students taking courses are expected to attend all classes and take all exams as scheduled. The times between academic terms and the summers are all considered active parts of the training period and leave must be taken in accordance with this policy. Students supported via extramurally funded projects or training grants must comply with sponsor requirements regarding effort.

Sick Leave: Graduate students may continue to receive stipends for up to 11 week days (not including weekends and campus holidays) of sick leave per annum, with no year-to-year accrual. Under exceptional circumstances, additional sick days may be granted following a written request from the student and approval by the student's thesis advisor (if known) and program director. Sick leave may be used for medical conditions related to pregnancy and childbirth. Students supported via extramurally funded projects or training grants must comply with sponsor requirements regarding effort.

Parental Leave: Graduate students may receive stipends for up to 8 work weeks (not including weekends and campus holidays) of parental leave per annum for the adoption or the birth of a child. Either or both parents are eligible for parental leave. Student's must provide advance notification to their thesis advisor (if known) and/or program prior to taking parental leave. Sick leave may not supplement parental leave except as noted above. Students supported via extramurally funded projects or training grants must comply with sponsor requirements regarding effort.

Unpaid Leave: Individuals requiring more than 11 week days (not including weekends and campus holidays) of sick leave or more than 8 work weeks (not including weekends and campus holidays) of parental leave must seek approval from their thesis advisor (if known) and their program for an unpaid leave of absence. A leave of absence must be requested by the student and approved by their thesis advisor (if known) and program in advance of taking the leave of absence. The leave period and conditions must be documented at the times of leave and of re-entry into the program. A copy of this agreement must be submitted to the Graduate School. Students supported via extramurally funded projects or training grants must comply with sponsor requirements regarding effort.

Unused Leave at Termination. Upon graduation or termination, a graduate student forfeits all unused vacation, sick, and parental leave; payment may not be made from grant funds (training grants or research grants) for leave not taken.

Requests: Students are required to report leave requests (vacation, sick, and parental leave) to
1) their thesis advisor,
2) the program in which they reside, and/or 2) their thesis advisor's home department or unit. If both the program and home department/unit provide reporting mechanisms, students will defer to the requirements of the advisor's home department/unit. It is the student's responsibility to identify the correct process for reporting leave.

Students who have not yet joined a thesis lab (e.g., first-year students) are advised to discuss with potential dissertation advisors any additional expectations regarding vacation and leave. After a student has selected their thesis advisor and joined the advisor's research program, they must request and receive approval for vacation leave from their thesis advisor in advance of taking vacation leave. The student must make all necessary arrangements in advance to cover any responsibilities that the student has for the research program or for maintaining their ongoing experiments and/or resources (e.g., cell lines, animals). If students are unable to reach an agreement on vacation leave with their advisor, they can discuss challenges of this nature with program leadership. In all cases, students supported via extramurally funded projects or training grants must comply with sponsor requirements regarding effort

Checking Account

It is important to establish a checking account as soon as possible. The University issues all pay checks, including student stipends, as automatic direct deposits. Students should log into their portal and navigate to the resources tab to locate their W4 and Direct Deposit forms. Note: Direct deposit is mandatory and students have until August 16th to complete these two forms.

Computers (Software & Equipment)

The Department of Immunology and Microbiology has invested in computers for students and other research personnel. Individual laboratories all have computers that are accessible to students. Most departmental equipment has common use computers for special purposes. Because these are common use computers, everyone is asked to keep their own data on the lab server (micro-LS2 Labserver) which is backed up nightly and not on the hard drives. It is especially important to prevent virus problems and to maintain free space on the hard drive that no extra programs may be installed on these common use computers.

The Department Administrator can help students set up remote access accounts for their home computers. In addition, UCD has site licenses for several programs such as Microsoft Office, and virus protection programs that can be downloaded onto student computers without charge. This will allow compatibility between computers at work and at home. All computers connected to the UCD network are required to run approved, up-to-date virus protection software.

Department of Immunology and Microbiology point of contact for all department level computers, printers and server support:

Mike Elmore, LAN Administrator/IT Consultant

Michael.elmore@ucdnever.edu

Cell 303-981-5172

Please submit all support requests using a ticket at: <http://Micro-LS1.ucdenver.pvt/support/>

CU Alerts!

CU Alerts! Emergency messaging includes email, text, computer pop-up messages, and social media postings. Please visit the Emergency Management *CU Alerts!* Page <https://www.cuanschutz.edu/police/cu-alerts/anschultz-alerts> and follow the instructions to register your cell phone number. Be sure to enter your cell phone number in the Employee Profile section of the portal as a “CELLULAR” device (or it will not be imported into the *CU Alerts!* System).

E-mail Access and IT Services

Graduate students will have an account in the electronic mail/internet access system by contacting the University of Colorado IT Services- 4-HELP (4357). You will need to know both your nine-digit Student Identification Number and your four-digit Personal Identification Number (PIN) to obtain an account in the system. If you do not know your PIN, you may obtain it at the UCD-AMC Registrar’s by going there in person with a picture ID. Note that these are university accounts and cannot be used for political lobbying, downloading music files, etc. University IT Services is also available to assist you with your IT/Helpdesk needs. Please refer to the following website for more information regarding their services and protocol- <http://www.ucdenver.edu/about/departments/ITS/Pages/OIT%20Home.aspx>

Most communications from the Graduate Program in Microbiology will be via e-mail; all Microbiology Graduate Program graduate students are expected to have e-mail access, to monitor this account regularly, and to respond to emails from the Program Administrator, Program Director, and other Program Faculty and Staff.

Health Insurance

Student Health insurance is part of the financial package offered to incoming Graduate Students. The Health Insurance invoice is paid in conjunction with your tuition invoice. All degree and specific approved, certificate-seeking students enrolled in five or more credit hours must take the University sponsored Student Health Insurance Plan. Students covered by another source of insurance through a spouse/partner may request a waiver and must do so by 9/28/18. Students wishing to cover dependents may enroll them at their own expense.

The University of Colorado provides varied student needs in the area of health. The Student Health Insurance (SHI) Plan is designed to provide students with health care coverage offering a PPO accident and sickness health plan.

The Office of Health Promotion is available to all students to assist with selecting or waiving the Student Insurance Plan. The Student Health Insurance Coordinator can help you evaluate your insurance needs so you choose the best plan available. If you are having problems understanding a bill, or you think an error has been made, don't hesitate to contact the Student Insurance Office. One of the functions of the Student Insurance Office is to help you resolve billing issues.

<https://www.cuanschutz.edu/student/health-wellness/student-health-insurance>

Phone: 303-837-2127 Email: studentinsurance@cuanschutz.edu

Hours: 8 am – 5 pm (Appointments recommended)

ID/Access Badge: Identification Card and After Hours Access

Everyone on campus must carry a UCD picture ID at all times. This ID serves many purposes including enabling students to access the library, parking, gain access to the laboratory sections of the Department, after-hours entry into RC-1, after-hours access to the elevators, and to attend special University functions. Please notify the Department Administrator immediately if your UCD ID is lost so it can be canceled and replaced.

Lab Equipment Use

The Department of Immunology and Microbiology has made a sizeable investment in state-of-the-art equipment to support its research programs. Expert users for each piece of equipment are designated to teach new users how to get the most benefit from the equipment and how to properly use it. All users must observe equipment guidelines and sign up in the logbooks. This keeps the equipment available for everyone. Access to equipment will be restricted for anyone who abuses the equipment.

The Department of Immunology and Microbiology point of contact for Equipment (repairs, service contracts, inventory, and ordering) is:

JC Haller, Laboratory Resource Coordinator

Jon.haller@ucanschutz.edu

Anschutz Campus RC1N P18-9122

PH: 303-724-4245 Cell: 303-594-2838 Fax: 303-724-4226

The preferred method to submit a service request for problems with equipment, computers, or facilities is through the online ticketing system. By using this system we can insure your request is tracked and properly completed: <http://micro-ls1.ucdenver.pvt/support/>

Lab Training Classes

There are several university requirements to assure safety of all personnel who work in laboratories. The Environmental Health and Safety Division of UCD offers classes and certification in **radioisotopes, handling hazardous waste, and blood borne pathogens**. For working in microbiology laboratories, all of these classes are recommended. Each topic has an initial class with extensive handouts to read before and an annual refresher class in which you will hear about new regulations, recent problems, etc. The information on the scheduling of the classes is on the website: <https://research.cuanschutz.edu/ehs/home/training>

Graduate students should take these classes at the beginning of their first rotation. Radioisotopes may be taken at a later date or a non-users version may be taken depending on the laboratories in which rotations will take place. Please notify the Graduate Program Administrator as soon as the necessary examinations have been passed so the information can be put into your folder. It is the student's responsibility to stay current with required annual refresher classes.

Students must complete the following Skillsoft classes prior to working in the lab:

- Lab Safety
- Blood Borne Pathogens

- Regulated Medical Waste Management

All new research associates, animal care workers or faculty, staff, fellows, students and affiliates who are part of an [IACUC](#) or [IBC](#) protocol that works with animals, animal waste, or animal tissues or enter the vivarium as well as those who work with the items detailed below are required to enroll in the Occupational Health Program (OHP).

- | | |
|--------------------------|---|
| • toxins/venoms | • radioactive materials |
| • infectious agents | • heavy metals |
| • anesthetic gases | • lasers |
| • anti-neoplastic drugs | • formaldehyde |
| • teratogens/carcinogens | • human blood, tissues, cells or cell lines |

Enrollment consists of completing and submitting the [Initial Medical Surveillance Questionnaire](#), then scheduling an Initial Medical Surveillance appointment by calling the Occupational Health Clinic at (303) 724-9145. All prior written immunization records need to be submitted prior to the appointment or brought to the appointment. Your health information, immunization history and work-related duties will be reviewed by the OHP nurse to identify any potential hazards and review health recommendations and follow-up.

Depending on your risk category, the OHP may require you to undergo additional training, medical surveillance, or additional vaccinations and/or titers prior to initiating your duties. Upon completion of the Initial Medical Surveillance appointment, a certificate of OHP enrollment will be issued and your OHP enrollment status forwarded to either the IACUC or IBC.

All employees will need to submit an Annual Medical Surveillance Form each year to keep their enrollment current. The OHP will send out an annual reminder to each individual prior to the due date. If the Annual Medical Surveillance Form is not received by the OHP by the end of the anniversary month, steps can be taken to ensure compliance including notification of Principal Investigator (PI) or Supervisor and leading up to OHP disenrollment and/or vivarium badge access removal.

Parking & Transportation

Many parking options are available to students at the Anschutz Medical Campus and your first stop will be the Parking Office in Building 500 if you are interested in any parking on campus. You can learn more about student parking on the [parking office's website](#), but for convenience, we've summarized some key options here as well.

You will be provided an RTD Eco Pass each year. Your RTD Eco Pass is not just for commuting to and from campus. You have unlimited rides on regular fixed route service provided by RTD and all RTD contractor-operated fixed route service, including bus and Light Rail.

<https://www.rtd-denver.com/fares-passes/ecopass>

Residency Status

By the end of your first year of training, students from out-of-state must petition the Office of the Registrar for in-state resident status for the purpose of tuition classification. This is a **very important** priority for first year students. After the first full year, funding will be available (assuming satisfactory academic

progress) only if the student qualifies as an in-state resident or is a foreign national. Required objective evidence of residency includes:

- Colorado Driver's license
- Colorado automobile registration & license plates
- Colorado voter registration
- Colorado state income tax records
- Ownership or Rental of residential property for at least 12 months

It is important to note that students are initially classified as "resident" or "non-resident" for tuition purposes during the Admissions process. The classification is based upon information furnished by the student and from other relevant sources. After the student's status is determined, it remains unchanged in the absence of satisfactory evidence to the contrary. Once the student has met the requirements for establishing residency ("domicile") as defined by Colorado law, the student may submit a Petition for In-State Tuition/Residency Classification to the Office of the Registrar. (Please see section, "Petitions and Appeals").

The requirements for establishing residency for tuition purposes are defined by Colorado law. (See **Colorado Revised Statutes 23-7-101 et. seq.** View online at <https://cdhe.colorado.gov/colorado-residency-statutes>. As tuition classification is governed by state law and by judicial decisions that apply to all public institutions of higher education in Colorado, the University of Colorado does not have discretion to make exceptions to the rules as established by state law.

The statutes require that a qualified individual must be domiciled in Colorado twelve (12) consecutive months immediately preceding the term for which resident status is claimed.

An individual is "qualified" to begin the process of establishing domicile and the one year domicile period by virtue of adulthood and emancipation at age 22, marriage, or enrollment in a post-baccalaureate graduate or professional degree program. An unemancipated minor is qualified through the residency of his or her parents or legal guardians. (See below "Emancipation and Residency.")

Additional information can be found here: <https://www.cuanschutz.edu/registrar/residency/current-students#:~:text=Establishing%20Residency%20in%20Colorado,of%20establishing%20domicile%20in%20Colorado.>

Stipend Support Health Insurance

Students in the Graduate Program in Microbiology receive an annual stipend (\$30,000 for 2018-2019 academic year), individual health and dental insurance, and tuition. The Program Administrator will arrange for payment of these funds, and handle any financial problems that may arise. Late registration fees are the responsibility of the student.

First-year non-resident students are expected to take all necessary steps to attain **Colorado Residency** by the end of their first year in the Program. This makes them eligible for in-state tuition rates, a very considerable savings. The Program is only responsible for the cost of the equivalent of the in-state tuition rate after the student's first year.

After the thesis mentor has been selected, the student's stipend, insurance, tuition, research expenses and professional travel will be paid from grants to the mentor. While receiving support from an NIH grant, you cannot receive additional funds from outside employers per NIH guidelines.

According to financial aid, "...In order to avoid retirement withholding from your stipend checks, Financial Aid requires students to be registered for a minimum of 5 credit hours." The exception to this is in the summer semester, students will only need to register for 1 credit to meet full-time status.

Teaching Opportunities

Students who have an interest in teaching experience should make this interest known to the Director of the Graduate Program and to their advisory committee (Pre-Comps or Thesis). It is possible to gain teaching experience by participating in the teaching labs for medical students or by facilitating paper discussions for first year core students. Faculty will provide advice in preparation and feedback on teaching performance in order to improve teaching skills. Other teaching opportunities may be available within UC Denver. For students interested in other teaching opportunities, it is the responsibility of the student to obtain approval of their advisor, to conform to relevant UC Denver Graduate School policies, and to inform both the Microbiology Graduate Program Director and their Thesis Committee.

Tuition

Tuition is paid by the Graduate School for first year students and by the student's thesis advisor in subsequent years. Tuition payment is subject to the following limitations:

- Payment for tuition, benefits and fees is processed by your Program Administrator
- **Tuition will be paid only at in-state tuition rates after the first year. Any additional tuition will be the responsibility of the student. Thus, it is imperative that out-of-state students establish in-state residency within the first year as to avoid paying the difference in out-of-state versus in-state tuition (See In-state Residency Status section).** This is not the case for foreign students who do not qualify for in-state residency. For such students, the thesis advisor will be responsible for tuition payments.
- Please make every effort to register before the Add/Drop published deadline. (The student is responsible for any late fees incurred.) **Not registering and paying a tuition bill by the deadlines set by the Registrar and Bursar's Offices will result in a \$60.00 late fee. Students are personally responsible for paying all late fees and fines.**
- Neither the Department nor the Program will pay tuition for retroactive registration

APPENDIX 1

Requirements for BSP Students joining Microbiology

Mentor Discussion

A Biomedical Sciences Program (BSP) student who completes a rotation in the lab of a Microbiology Graduate Program faculty member and wishes to work in that lab will discuss options with the faculty member. If the faculty member would like to have the student join the lab, then the student and faculty member will discuss which graduate program that the faculty member is associated with (e.g., Microbiology, Molecular Biology, etc.) would be most suitable for the student. One important factor is the formal course requirements.

Program Approval

If the faculty member and student decide that the student would ideally get his/her degree from the Microbiology Graduate Program, they must request approval by the Microbiology Graduate Program faculty. A majority vote of the Microbiology Steering Committee will decide whether or not to accept the student into the Program.

Time of Transfer

Students normally transfer from the BSP program into other programs on July 1.

Coursework

In order to take the Comprehensive Examination, all students in the Microbiology Graduate Program are required to have taken and passed with a grade of B or better at least 30 academic credits. This must include the core courses (8.5 credits), Science as a Profession (Ethics) (1 credits), 3 laboratory rotations (1 credit each) and at least 7.5 additional credit hours of approved elective courses. Microbiology students are required to take MICB 7701, MICB 7703 and MICB 7621, and BSP students that wish to join the Graduate Program in Microbiology are encouraged to take as many of these courses as possible. The remaining credits may consist of research credits. Acceptable courses to fulfill the Microbiology elective requirements are listed in Appendix 2.

The BSP program allows BSP students to select from a wide range of electives offered by the Graduate School to satisfy their course requirements and preparation for the preliminary examination. BSP students who select the Graduate Program in Microbiology would typically do so at the end of the second semester of their first year, but they must decide which electives to take before the second semester or classes would need to be taken in their second year.

Preliminary and Comprehensive Exams follow Microbiology Program guidelines.

APPENDIX 2

Resources for New Graduate Students

Animal Facility/Safety Training

<https://research.cuanschutz.edu/ehs/home/training>

Bookstore (303-724-2665)

Located in Education 2 South, first floor. Special bookstore charge accounts are attainable; students should request information at the front registers. The bookstore accepts VISA, MasterCard, American Express, and personal checks with appropriate identification. Bookstore hours are extended during the first week of each quarter.

<https://cuanschutz.bncollege.com/>

Bursar's Office (303-315-1800)

The Bursar is responsible for all financial activities related to student billing, tuition collection, institutionally managed loan programs and coordination with the state.

Education 2 North
13120 East 19th Ave.
Room 3120A
Mail Stop A098
Aurora, CO 80045

<https://www.cuanschutz.edu/about/contact-us/contact-page/bursar's-office>

Campus Health Center at CU Anschutz (303-724-6242)

Campus Community Health
1890 N. Revere Ct.
Suite 5040
Aurora, CO 80045

Services:

- Behavioral and Counseling Services
- Flu Shots
- Physical and General Services

<https://nursing.cuanschutz.edu/patient-care/campus-community-health>

Campus Shuttle

<https://www.cuanschutz.edu/offices/facilities-management/parking-transportation-maps/parking/cu-anschutz-medical-campus-rail-shuttle>

CARE Team (303-724-8488)

The Campus Assessment, Response & Evaluation (CARE) Team was created to address the health and safety needs of students as well as the campus community. The purpose of the team is to assess whether individuals pose a risk to themselves or others and to intervene when necessary, and more generally, to identify and provide assistance to those in need. The team takes a preventative approach to risk assessment by offering resources, referrals, and support to both the concerning individual and those impacted by their behavior.

<https://www.cuanschutz.edu/student/support/care-team>

CeDAR (720-848-3000)

Center for Dependency, Addiction and Rehabilitation is the University of Colorado Hospital's premier addiction treatment center. Check the events schedule for on-campus recovery meetings.

<https://www.cedarcolorado.org/>

Disability Resources and Services (303-724-8428)

The Disability Resources and Services Office is the designated office that maintains disability-related records, determines eligibility for academic accommodations, determines reasonable accommodations and develops plans for the provision of such accommodations for students attending the university.

<https://www.cuanschutz.edu/offices/office-of-disability-access-and-inclusion>

Diversity and Inclusion, Office of (odeice@cuanschutz.edu)

The Office of Diversity and Inclusion (ODI) provides leadership to enhance diversity university-wide and to foster a culture of inclusion

<https://www.cuanschutz.edu/offices/diversity-equity-inclusion-community>

Ethics Hotline (1-800-677-5590)

CU EthicsLine provides a way to anonymously report concerns involving fiscal misconduct, violations of state or federal law, serious or recurring violations of university policy, or gross waste of university funds or property. The reporting service is provided by EthicsPoint, an independent company that provides similar services for hundreds of companies and universities. Options for 24/7 reporting are via a toll-free phone number (1.800.677.5590) or online (www.Ethicspoint.com).

Environmental Health & Safety, Department of (303-724-0345)

N-95 Respirator Training/Fit-Testing (for those needing to go into the BSL-3)

Radiation Safety Training

<https://research.cuanschutz.edu/ehs>

Equity, Office of (303-315-2567)

Staff can assist with reports of discrimination, harassment, or sexual misconduct. They can also take ADA accommodation requests, and/or reports of accessibility issues.

<https://www.ucdenver.edu/offices/equity>

Financial Aid (303-724-8039)

<https://www.cuanschutz.edu/student-finances/financial-aid>

Family Educational Rights and Privacy Act (FERPA) guidelines

<https://www.cuanschutz.edu/registrar/student-resources/ferpa>

ID/Access Badging Office (303-724-0399)

<https://www.cuanschutz.edu/police/divisions/electronic-security/badging-office>

Information Technology, Office of, OIT (303-724-4357)

<https://www.ucdenver.edu/offices/office-of-information-technology>

IT equipment, server, local software in Department of Immunology & Microbiology only

Please submit all support requests using a ticket at:

<http://Micro-LS1.ucdenver.pvt/support/>

LGBTQ Student Resource Center

LGBTQ Student Resource Center is a tri-institutional office on the Auraria Campus serving the students, faculty and staff of Metropolitan State College of Denver, Community College of Denver and University of Colorado at Denver and Health Sciences Center. We are available to students as a resource for exploring issues of sexual orientation and gender identity.

<https://www.cuanschutz.edu/offices/diversity-equity-inclusion-community/programs-and-initiatives/lgbtq-hub>

Ombuds Office (303-724-2950)

The Ombuds Office is a **safe**, confidential, and **nonbiased** resource that members of the University of Colorado-Denver can approach to discuss, voice, and clarify any university-related concerns. We are a neutral third-party resource that is available to hear individual complaints and help sort out and **identify options** for resolving those concerns.

The Ombuds Office is well-trained in listening, facilitating, recommending, mediating, and coaching. Each individual on our team is a member of the International Ombudsman Association and are **Certified Organizational Ombudsman Practitioners**.

We even offer [trainings and seminars](#) for groups and departments to help learn communication skills, conflict management, and effective team building.

<https://www.ucdenver.edu/offices/ombudsoffice>

Parking & Transportation (303-724-0049)

<https://www.cuanschutz.edu/offices/facilities-management/parking-transportation-maps/parking>

Police, Anschutz Medical Campus (303-724-4444) Emergencies 911

Registrar, Office of (303-724-8000)

<https://www.cuanschutz.edu/registrar>

Research Core Facilities

<https://medschool.cuanschutz.edu/immunology-and-microbiology/dept-resources-new#ac-equipment-facilities-support-1> x

Student Health, Office of (303-724-7674)

The Student Health Insurance (SHI) Plan at the Anschutz Medical Campus is designed to provide students with health care coverage, offering a PPO accident and sickness health plan. Located in Education 2 North P28-3207

Student Services

- American Indian Student Services
- Asian American Student Services
- Black Student Services
- Counseling Services
- Office of Campus Student Services
- Student Conduct and Community Standards, Office of
- Veteran Student Services
- Writing Center

<https://www.cuanschutz.edu/student/services>

Student Housing

<https://www.cuanschutz.edu/student/resources/housing>

Student Mental Health (303-724-4716) Afterhours emergencies (720-848-0000)

We provide comprehensive and confidential mental health services for all students enrolled in the schools located at the Anschutz Medical Campus (Medical, Dental, Nursing, Pharmacy, Public Health, Physician Assistant, Physical Therapy, graduate school, etc.). Initial appointments are scheduled relatively quickly, often within the same week. Options for ongoing care include receiving treatment from the AMC Student Mental Health clinicians, the UCH Outpatient Psychiatry Clinic, and a community network of providers, depending on insurance coverage.

<https://www.cuanschutz.edu/mental-health-resources>

Student Portal

Where you'll update/access your contact information, grades, financial information, employment information-pay, W2's, W-4's, employee ID #, various payroll forms (direct deposit), etc.

login is email username & password

<https://passport.ucdenver.edu/login.php>

Student Senate (303-724-2866)

Education II North
13120 E 19th Ave #3200
Aurora, CO 80045

<https://www.cuanschutz.edu/student/campus-life/senate>