



The Department of  
Medical Pharmacology and Physiology  
M.S. Student Handbook

University of Missouri-Columbia  
Revised 03/2025



**Department of Medical Pharmacology and Physiology**  
University of Missouri School of Medicine  
One Hospital Drive, MA415 Medical Science Building • Columbia, MO 65212  
(573) 882-4957 • <https://medicine.missouri.edu/departments/medical-pharmacology-and-physiology>

### Program Leadership



**Kerry McDonald, PhD**  
Professor and Chair  
Bolm Distinguished Chair in Cardiovascular Health  
Department of Medical Pharmacology and Physiology  
One Hospital Drive  
Columbia, MO 65212  
Email: [mcdonaldks@missouri.edu](mailto:mcdonaldks@missouri.edu)



**Erika Boerman, PhD**  
Director of Graduate Studies  
Medical Pharmacology and Physiology  
M524B Medical Sciences Building  
One Hospital Drive  
Columbia, MO 65212  
E-mail Address: [boermane@health.missouri.edu](mailto:boermane@health.missouri.edu)

### Program Support Staff

**Dawn Sapp**  
MA415 Medical Sciences  
573-882-4957  
[dsapp@missouri.edu](mailto:dsapp@missouri.edu)

**Lisa Putting**  
MA415 Medical Sciences  
573-882-3146  
[puttingl@health.missouri.edu](mailto:puttingl@health.missouri.edu)

### Statement of Philosophy

The Department of Medical Pharmacology and Physiology at the University of Missouri, School of Medicine is committed to the development of research scientists. The Department has a strong tradition of preparing students for careers in academic research, teaching, industry and government.

### Program Overview

The duration of the M.S. program is 5 semesters. Students are required to serve as teaching assistants each Fall and Spring semester. The first year consists of required course work, teaching assistantships, and laboratory experiences. By the end of the first semester, students are expected to select a laboratory and mentor, and to form their thesis advisory committee. The second year consists of a continuation of coursework, thesis research, and the defense of their thesis project.

All students and mentors are encouraged to review the AAMC [Compact between Biomedical Graduate Students and Their Research Advisors](#). In addition, students are encouraged to use the [Individual Development Plan \(IDP\)](#) during their training program.

Graduate students have the right to be informed of departmental, professional, and academic policies and procedures that affect them. It is the responsibility of the student to be familiar with the University policies and procedure of the Graduate School, as described in the graduate catalog, and those of the department program. Students are expected to ask questions if any information is unclear or not provided. Important information, including, but not limited to, health insurance, leave of absences, academic integrity, appeals, rights and responsibilities, can be found at the [University of Missouri Graduate School](#).

## Departmental Faculty

For additional information about individual faculty, please refer to the MPP [website](#).

Full-time Faculty	Title	Email
Kerry McDonald, PhD	Chair of Medical Pharmacology and Physiology	mcdonaldks@missouri.edu
Adebowale Adebisi, PhD	Professor	a.adebiyi@health.missouri.edu
Erika Boerman, PhD	Associate Professor; Director of Graduate Studies	boermane@health.missouri.edu
Alejandro R. Chade, MD	Professor	alejandro.chade@health.missouri.edu
Taixing Cui, MD, PhD	Professor	taixingcui@health.missouri.edu
Michael J. Davis, PhD	Curators' Distinguished Professor	davismj@health.missouri.edu
Timothy L Domeier, PhD	Margaret Proctor Mulligan Professor	domeiert@health.missouri.edu
William Durante, PhD	Professor	durantew@health.missouri.edu
Stephen Halenda, PhD	Associate Professor	sph@missouri.edu
Olga Glinskii, MD	Assistant Research Professor	glinskiio@health.missouri.edu
Laurin Hanft, PhD	Assistant Teaching Professor	hanftl@health.missouri.edu
Michael Hill, PhD	Professor	hillmi@missouri.edu
Luis Martinez-Lemus, DVM-PhD	James O. Davis Distinguished Professor in Cardiovascular Research	martinezlemusl@missouri.edu
Mei Methawasin, PhD	Assistant Professor	m.methawasin@health.missouri.edu
Charles E. Norton III, PhD	Assistant Professor	nortonce@health.missouri.edu
Alan Parrish, PhD	Associate Professor; Vice Chair for Education	parrishar@health.missouri.edu
Luis Polo-Parada, PhD	Associate Professor	poloparadal@missouri.edu
Steven S. Segal, PhD	Curators Distinguished Professor	segalss@health.missouri.edu
Gregorz Sowa, PhD	Associate Professor	sowag@health.missouri.edu
Peter A. Wilden, PhD	Associate Professor	WildenP@health.missouri.edu
Scott Zawieja PhD	Assistant Professor	zawiejas@health.missouri.edu
Joint and Adjunct Faculty	Title	Email
Mohammad Badran, PhD	Associate Professor	mbadran@health.missouri.edu
Frank W. Booth, PhD	Professor	BoothF@missouri.edu
Doug Bowles, PhD	Department Chair & Professor	BowlesD@missouri.edu
Chandrasekar Bysani, DVM, PhD	Margaret Proctor Mulligan Professor in Medical Research	chandrasekarb@health.missouri.edu
William Fay, MD	Professor	fayw@health.missouri.edu
Kevin Gillis, DSc	Professor	GillisK@missouri.edu
Christopher Hardin, PhD	Professor	hardinc@missouri.edu
Eileen Hasser, PhD	Professor	HasserE@missouri.edu
Kattesh V Katti, PhD, MScEd	Director of University of Missouri Cancer Nanotechnology Platform	kattik@health.missouri.edu
David D. Kline, PhD	Professor	KlineDD@missouri.edu
Nicole L. Nichols, PhD	Assistant Professor	NicholsN@missouri.edu
Anandi Upendran, PhD	Director of Biomedical Innovation	upendrana@health.missouri.edu

## Graduate Advisory Committee

### Selection of a Thesis Advisor (Major Professor):

Students must identify and select a thesis advisor from the departmental faculty. The thesis advisor guides course selection, thesis committee formation, research, and thesis/dissertation preparation. The thesis advisor is the official liaison between the student and the Graduate Education Committee.

Prior to starting the program, students should begin contacting faculty members to explore areas of research interest. A thesis advisor must be selected by the end of the first semester. MS students are required to complete at least one research rotation prior to selecting a thesis advisor. Rotations can begin the summer before beginning of classes but no later than the first part of the fall semester. Faculty members and students should discuss rotation expectations. The **Student/Mentor Expectations** document should be completed by the faculty member and student *before* the start of the rotation. During rotations and thesis research, students are expected to devote a considerable amount of time to research even when coursework and teaching is in progress. A key part of developing into a biomedical scientist is for the student to learn how to partition his/her time so that progress can be made in research while other responsibilities are met.

### Thesis Committee:

A thesis advisory committee is composed of three members of the MU faculty: a major advisor from the department, and two graduate faculty members. The major advisor approves the Plan of Study for the Master's Degree (M1) form, while the thesis committee approves the Request for Thesis Committee (M2) and Report of Master's Examining Committee form (M3). Each of these forms is available on the [Graduate School website](#).

## Coursework

The Master of Science degree requires 30 hours graduate credit. A minimum of 15 of the 30 hours must be 8000/9000 level courses and no more than 40% of the 30 hour credit requirement can be satisfied by research, readings and problems courses. The approved curriculum is:

### Year 1: Fall Semester

MPP 7422 Medical Physiology (4)  
MPP 9422 Journal Club (1)

MPP 8200 Medical Pharmacology I (3)  
MPP 8412 Seminar (1)

### Year 1: Spring Semester

MPP 9422 Journal Club (1)  
MPP 8412 Seminar (1)  
MPP 8090 Research (2)

MPP 9001 Teaching Physiology (2)  
TR\_BIOSC 8560 Data Design (3)

### Summer Semester

MPP 8250 Medical Pharmacology II (3)  
MPP 8090 Research (2)

### Year 2: Fall Semester

TR\_BIOSC 8550 Skills I (1)\*  
MPP 9422 Journal Club (1)  
MPP 9001 Teaching Physiology (2)

MPP 8412 Seminar (1)  
MPP 8090 Research (4)

### Year 2: Spring Semester

TR\_BIOSC 8550 Skills II (1)\*  
MPP 8412 Seminar (1)  
MPP 9001 Teaching Physiology (2)

MPP 9422 Journal Club (1)  
MPP 8090 Research (4)

*\*NOTE: The Skills 1 and 2 courses may be combined into a single course for AY 2025-2026*

**Registration:**

Registration for course work each term is the responsibility of the student. Course registration should conform to the student's plan of study. Course information may be obtained through the University [myZou](#). Course consent may be required for some courses in order to enroll. Please contact Lisa Putting or Dawn Sapp in the MPP office regarding course permission numbers and enrollment.

**Student Responsibilities****Teaching Assistant (TA) Responsibilities:**

MS students will be TAs in the MPP 3202 Elements of Physiology course each semester. TAs are responsible for preparing the laboratory, assisting students in the laboratory, and cleaning up after lab. Duties include reviewing relevant material each week, attending weekly TA preparation meetings, and serving as a TA each Thursday. As part of TA duties, all students must enroll in MPP 9001 Topics in Physiology – Teaching Physiology per the schedule above.

**Research Presentations**

All MS students are required to present their research at the annual MPP Trainee Research Forum, typically held in August prior to the start of Fall courses. Students will have additional opportunities to present research on campus at the annual Cardiovascular Day, Health Science Research Day and Life Sciences Week.

**M.S. Thesis:**

Students must write and defend the thesis to their committee. Students are also expected to present their thesis research findings in a ~30-minute seminar prior to their defense. It is at the discretion of the thesis advisor whether the presentation is public or limited to the thesis committee. The written thesis should include a literature review, hypothesis to be tested, methodology, results and discussion. The thesis needs to be formatted in accordance with [MU Graduate School guidelines](#). Upon completion of a successfully defended thesis the student will submit an electronic version to the Graduate School and paper copies to the Department for binding. The Department pays the costs of binding a copy for the student, one for the Department library and one for each of the dissertation advisory committee members who wants one.

**Student Progress and Retention****Reasonable Term of Study:**

The target time required to complete the M.S. program is 5 semesters. Both the graduate student and the thesis committee should strive to keep the term of study from being unduly exceeded. Program duration may only be extended with permission from the thesis advisor, Program Director and Department Chair.

**Maintaining Records of Progress towards a Degree:**

There are 3 forms for the M.S. degree (M-forms) that need to be completed and returned to the Graduate School to aid in assessing your progress towards degree completion. A copy of these forms can be obtained from the [Graduate School website](#). Each form is submitted to the Graduate School. These forms include:

- M1 Form:** Lists the course work to be included in the student's degree program.
- M2 Form:** Request for thesis committee. Due by the end of the second semester.
- M3 Form:** Reports the results of master's thesis defense. Due 2 weeks prior to graduation.

**Preparing for Graduation:**

The Graduate School must be notified of the semester that you plan to graduate. Check with the Graduate School early in the semester to find the deadlines for defending and turning in the final copy of your thesis. You also should note the deadline for ordering your graduation regalia. More information about graduation deadlines can be found [HERE](#).

**Grounds for Dismissal:**

Annual review of students will be performed, with input from the student, thesis advisor and faculty who supervise the teaching assistants.

Academic standing in graduate school is based on grade point average (GPA). This is achieved by a cumulative GPA above 3.0 and achieving a “Satisfactory” grade in any courses graded on an S/U basis. Students who do not maintain this GPA or receive a “U” (Unsatisfactory) grade are placed on probation at the end of the semester in which this occurs. If at the end of the following semester the cumulative GPA is 3.0 or better without any “U” grades, the probationary status is removed. A student on probation who fails to achieve a 3.0 cumulative GPA without “U” grades may be allowed a second and final probationary semester on the recommendation of the program leadership. A student is subject to dismissal upon failure to achieve a 3.0 or greater without “U” grades by the end of the second probationary semester or when the cumulative GPA falls below 2.0. To graduate, a student must have a cumulative GPA of 3.0 or above for all graduate courses taken at MU.

In addition to academic requirements, a student may be placed on probation and ultimately dismissed for failure to meet teaching assistantship or research requirements. The MPP MS Program has the right to place on probation any graduate student who is deemed to be making insufficient research progress or whose work is not of the quality required. Indicators of insufficient research progress include, but are not limited to, a “U” grade in MPP 8090 (thesis research), an unsatisfactory annual review, or failure to meet working expectations laid out with the thesis advisor in a given semester. Indicators of insufficient teaching progress include, but are not limited to, a “U” grade in MPP 9001 (teaching), failure to attend TA preparation meetings, unexcused absence from TA duties or unprofessional TA behavior. After a minimum of 30 days probation, dismissal from the program is possible.

The thesis advisor, program director or departmental chair must inform the Graduate School as soon as the student is notified and a probationary period begins. Dismissal may occur at any time during study for a graduate degree. Details of the dismissal policy and appeals process can be found [HERE](#).

**General Information****Tuition and Fees:**

Along with the stipend, the Department of Medical Pharmacology and Physiology provides a tuition and fee waiver for approved courses for all graduate students. All courses that are relevant and applicable to a student’s degree program and approved by the student’s advisor will be covered by the waiver. If a student takes a course that is not approved by the department or advisor, the student will be responsible for the total cost of that course.

Tuition and fee waivers are often processed by the MPP department shortly after the start of each semester. Students who see a balance on their account or have questions about pending charges should contact program staff about any questions regarding billing each semester.

**Outside Employment:**

A stipend is provided to MS students in exchange for full-time work in the laboratory and as a TA. Thus, outside employment is strongly discouraged. If special circumstances require such employment, students should discuss it with their major professors to ensure that it will not conflict with their research activities. During the first year, the Program Director is to be contacted regarding outside employment.

### **Holidays, Sick Days, and Vacation:**

Students should establish working hours and work expectations with their rotation and thesis advisors each semester. Flexible work hours are both a necessity and a privilege that should not be abused. A reality of graduate studies is that, at times, students may need to work night, holidays, and weekend hours to effectively conduct a research project. Per [MU Graduate School Policies](#), students are entitled to a minimum of 10 days of paid vacation per academic year, scheduled in advance to minimize conflict with their coursework and research activities. Additional vacation and personal time should be arranged in advance with the thesis advisor and/or program director. [University holidays](#) are published annually. The Department is committed to accommodating all major religious and cultural holidays for our students once absences are arranged with the major advisor, course director and/or other relevant parties.

### **Laboratory Safety**

All employees and students must be protected from exposure to hazardous chemicals, radiation, etc. through a combination of safety training and safe practices in the work place. Rotation and thesis advisors will assist the student in enrolling in necessary safety training courses through Environmental Health and Safety and other regulatory offices as needed based on each student's specific research. Commonly-required training is summarized below, but each student must consult with their advisor to ensure all lab-specific requirements are met.

#### *Environmental Health and Safety Training:*

- EHS 120: Intro to Lab Safety
- EHS 201-202: Biosafety Training
- EHS 220: Bloodborne Pathogens
- EHS 301-305: Chemical Safety for Laboratory Workers

#### *Occupational Health and Safety Program*

1. OHSP Hazard Evaluation Form (HEF)
2. OHSP Confidential Health Questionnaire (CHQ)
3. Occupational Health & Safety Training

\*\* training below is only required if working with laboratory animals\*\*

#### *Basic Training for Animal Care and Use*

#### *Mouse and Rat Handling Workshops (Optional)*

*Note: Ensure you have completed the online Basic Training for Animal Care and Use at MU.*