

# MOLECULAR AND CELLULAR PHARMACOLOGY, MS

The Molecular and Cellular Pharmacology (MCP) program, in cooperation with the Center for Training in Pharmacology and Drug Development (CTPDD), offers interdisciplinary graduate training in the field of molecular and cellular pharmacology. The primary emphasis is doctoral training in molecular biology, biochemistry, genetics, and cell biology with a focus on integrating these methodologies with modern pharmacology. Other related degree programs under the direction of program faculty are cellular and molecular biology, environmental toxicology, neuroscience, biomolecular chemistry, and genetics.

Pharmacology is the knowledge of the biochemical and physiological actions of drugs, which act on cellular signaling pathways. The molecular basis of cellular signaling and its control by various drugs is a major aspect of modern pharmacology and this aspect is emphasized in the Molecular and Cellular Pharmacology Training Program. The majority of signal transduction pathways still await discovery or at least a thorough molecular characterization. Members of our program employ the whole spectrum of modern biochemical, cell and molecular biological, physiological, and pharmacological methods in a basic research-oriented scientific environment to unravel the many unsolved mysteries underlying cellular regulation and signaling. Certain research initiatives have a translational component, with the goal of applying basic discoveries to developing new therapeutic modalities. Our program brings together an outstanding group of dedicated trainers with a focus on cellular signal transduction.

Graduates of the program will be well prepared for a career in basic biomedical sciences in academia, industry, and more. We provide a unique training experience for young scientists who want to elucidate basic principles of cellular signal pathways. Detailed knowledge of these pathways is the most important prerequisite for the discovery of new drugs and the treatment of diseases. The members of the Molecular and Cellular Pharmacology Training Program invite you to examine the educational and research opportunities described at this site and to consider joining this unique and exciting graduate program.

## ADMISSIONS

### ADMISSIONS

Students may not apply directly for the master's, and should instead see the admissions information for the PhD (<https://guide.wisc.edu/graduate/medicine-public-health-school-wide/molecular-cellular-pharmacology-phd/#admissionstext>).

## FUNDING

### FUNDING GRADUATE SCHOOL RESOURCES

[The Bursar's Office provides information about tuition and fees associated with being a graduate student. Resources to help you afford graduate study might include assistantships, fellowships, traineeships, and financial](#)

[aid. Further funding information is available from the Graduate School.](#)

Be sure to check with your program for individual policies and restrictions related to funding.

## REQUIREMENTS

### MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum degree requirements (<https://guide.wisc.edu/graduate/#requirementsstext>) and policies (<https://guide.wisc.edu/graduate/#policiesstext>), in addition to the program requirements listed below.

### MAJOR REQUIREMENTS MODE OF INSTRUCTION

Face to Face	Evening/Weekend	Online	Hybrid	Accelerated
Yes	No	No	No	No

#### Mode of Instruction Definitions

**Accelerated:** Accelerated programs are offered at a fast pace that condenses the time to completion. Students typically take enough credits aimed at completing the program in a year or two.

**Evening/Weekend:** Courses meet on the UW-Madison campus only in evenings and/or on weekends to accommodate typical business schedules. Students have the advantages of face-to-face courses with the flexibility to keep work and other life commitments.

**Face-to-Face:** Courses typically meet during weekdays on the UW-Madison Campus.

**Hybrid:** These programs combine face-to-face and online learning formats. Contact the program for more specific information.

**Online:** These programs are offered 100% online. Some programs may require an on-campus orientation or residency experience, but the courses will be facilitated in an online format.

### CURRICULAR REQUIREMENTS

Requirement Detail	
Minimum Credit Requirement	30 credits
Minimum Residence Credit Requirement	16 credits
Minimum Graduate Coursework Requirement	15 credits must be graduate-level coursework. Refer to the Graduate School: Minimum Graduate Coursework (50%) Requirement policy: <a href="https://policy.wisc.edu/library/UW-1244">https://policy.wisc.edu/library/UW-1244</a> ( <a href="https://policy.wisc.edu/library/UW-1244/">https://policy.wisc.edu/library/UW-1244/</a> ).
Overall Graduate GPA Requirement	3.00 GPA required. Refer to the Graduate School: Grade Point Average (GPA) Requirement policy: <a href="https://policy.wisc.edu/library/UW-1203">https://policy.wisc.edu/library/UW-1203</a> ( <a href="https://policy.wisc.edu/library/UW-1203/">https://policy.wisc.edu/library/UW-1203/</a> ).
Other Grade Requirements	n/a

**Assessments and Examinations** Contact the program for information on required assessments and examinations.

**Language Requirements** Contact the program for information on any language requirements.

## REQUIRED COURSES

Code	Title	Credits
PHMCOL-M 781	Molecular and Cellular Principles in Pharmacology	4
PHMCOL-M 739	Rigor, Reproducibility and Becoming an Effective Researcher	1
STAT/F&W ECOL 571	Statistical Methods for Bioscience I	4
OBS&GYN 955	Responsible Conduct of Research for Biomedical Graduate Students	2
<b>Research &amp; Seminar</b>		<b>16</b>
PHMCOL-M 901	Seminar and Journal Club <sup>1</sup>	
PHMCOL-M 990	Research <sup>2</sup>	
<b>Electives</b>		<b>3</b>
Students must take a graduate-level 3-credit course, as approved by their faculty advisor.		
<b>Total Credits</b>		<b>30</b>

<sup>1</sup> Students are required to take 1 credit of seminar each fall and spring semester during enrollment as a graduate student in the program.

<sup>2</sup> Students must take research credits every semester until they meet a minimum of 30 credits. Credits will vary.

## POLICIES

### GRADUATE SCHOOL POLICIES

The Graduate School's Academic Policies and Procedures (<https://grad.wisc.edu/acadpolicy/>) serve as the official document of record for Graduate School academic and administrative policies and procedures and are updated continuously. Note some policies redirect to entries in the official UW-Madison Policy Library (<https://policy.wisc.edu/>). Programs may set more stringent policies than the Graduate School. Policies set by the academic degree program can be found below.

### MAJOR-SPECIFIC POLICIES

#### PRIOR COURSEWORK

##### Graduate Credits Earned at Other Institutions

With program approval, students are allowed to transfer no more than 7 credits of graduate coursework from other institutions. Coursework earned ten or more years prior to admission to a master's degree is not allowed to satisfy requirements.

##### Undergraduate Credits Earned at Other Institutions or UW-Madison

No credits from an other institution or UW-Madison undergraduate degree are allowed to count toward the degree.

### Credits Earned as a Professional Student at UW-Madison (Law, Medicine, Pharmacy, and Veterinary careers)

Refer to the Graduate School: Transfer Credits for Prior Coursework (<https://policy.wisc.edu/library/UW-1216/>) policy.

### Credits Earned as a University Special Student at UW-Madison

With program approval, students are allowed to transfer no more than 15 credits of coursework numbered 300 or above taken as a UW-Madison University Special student. Coursework earned ten or more years prior to admission to a master's is not allowed to satisfy requirements.

### PROBATION

Refer to the Graduate School: Probation (<https://policy.wisc.edu/library/UW-1217/>) policy.

### ADVISOR / COMMITTEE

Every graduate student is required to have an advisor and committee. The advisor serves a dual role: first, to assist the student in acquiring the highest level of knowledge and competence in the field that is possible; and second, to chair the committee that will determine whether the student has performed acceptably at each of his/ her degree milestones. The chair or co-chair of the committee must be Graduate Faculty from the student's program. Advisors may assist in tracking the student's progress toward degree completion, assisting with course selection and academic planning, and helping students identify possible research mentors, committee members, and opportunities.

Master's thesis committees must have at least three members; two must be Graduate Faculty or former Graduate Faculty up to one year after resignation or retirement.

### CREDITS PER TERM ALLOWED

15 credits

### TIME LIMITS

Refer to the Graduate School: Time Limits (<https://policy.wisc.edu/library/UW-1221/>) policy.

### GRIEVANCES AND APPEALS

These resources may be helpful in addressing your concerns:

- Bias or Hate Reporting (<https://doso.students.wisc.edu/bias-or-hate-reporting/>)
- Graduate Assistantship Policies and Procedures (<https://hr.wisc.edu/policies/gapp/#grievance-procedure>)
- Hostile and Intimidating Behavior Policies and Procedures (<https://hr.wisc.edu/hib/>)
  - Office of the Provost for Faculty and Staff Affairs (<https://facstaff.provost.wisc.edu/>)
- Employee Assistance (<http://www.eao.wisc.edu/>) (for personal counseling and workplace consultation around communication and conflict involving graduate assistants and other employees, post-doctoral students, faculty and staff)
- Employee Disability Resource Office (<https://employee disabilities.wisc.edu/>) (for qualified employees or applicants with disabilities to have equal employment opportunities)
- Graduate School (<https://grad.wisc.edu/>) (for informal advice at any level of review and for official appeals of program/departmental or school/college grievance decisions)

- Office of Compliance (<https://compliance.wisc.edu/>) (for class harassment and discrimination, including sexual harassment and sexual violence)
- Office Student Assistance and Support (OSAS) (<https://osas.wisc.edu/>) (for all students to seek grievance assistance and support)
- Office of Student Conduct and Community Standards (<https://conduct.students.wisc.edu/>) (for conflicts involving students)
- Ombuds Office for Faculty and Staff (<http://www.ombuds.wisc.edu/>) (for employed graduate students and post-docs, as well as faculty and staff)
- Title IX (<https://compliance.wisc.edu/titleix/>) (for concerns about discrimination)

### Grievance Policy for Graduate Programs in the School of Medicine and Public Health

Any student in a School of Medicine and Public Health graduate program who feels that they have been treated unfairly in regards to educational decisions and/or outcomes or issues specific to the graduate program, including academic standing, progress to degree, professional activities, appropriate advising, and a program's community standards by a faculty member, staff member, postdoc, or student has the right to complain about the treatment and to receive a prompt hearing of the grievance following these grievance procedures. Any student who discusses, inquires about, or participates in the grievance procedure may do so openly and shall not be subject to intimidation, discipline, or retaliation because of such activity. Each program's grievance advisor is listed on the "Research" tab of the SMPH intranet (<https://intranet.med.wisc.edu/>).

#### Exclusions

This policy does not apply to employment-related issues for Graduate Assistants in TA, PA and/or RA appointments. Graduate Assistants will utilize the Graduate Assistantship Policies and Procedures (<https://hr.wisc.edu/policies/gapp/>) (GAPP) grievance process to resolve employment-related issues.

This policy does not apply to instances when a graduate student wishes to report research misconduct. For such reports refer to the UW-Madison Policy for Reporting Research Misconduct for Graduate Students and Postdoctoral Research Associates (<https://research.wisc.edu/kb-article/?id=84924>).

#### Requirements for Programs

The School of Medicine and Public Health Office of Basic Research, Biotechnology and Graduate Studies requires that each graduate program designate a grievance advisor, who should be a tenured faculty member, and will request the name of the grievance advisor annually. The program director will serve as the alternate grievance advisor in the event that the grievance advisor is named in the grievance. The program must notify students of the grievance advisor, including posting the grievance advisor's name on the program's Guide page and handbook.

The grievance advisor or program director may be approached for possible grievances of all types. They will spearhead the grievance response process described below for issues specific to the graduate program, including but not limited to academic standing, progress to degree, professional activities, appropriate advising, and a program's community standards. They will ensure students are advised on reporting procedures for other types of possible grievances and are supported throughout the reporting process. Resources (<https://grad.wisc.edu/current-students/>

#reporting-incidents) on identifying and reporting other issues have been compiled by the Graduate School.

#### Procedures

1. The student is advised to initiate a written record containing dates, times, persons, and description of activities, and to update this record while completing the procedures described below.
2. If the student is comfortable doing so, efforts should be made to resolve complaints informally between individuals before pursuing a formal grievance.
3. Should a satisfactory resolution not be achieved, the student should contact the program's grievance advisor or program director to discuss the complaint. The student may approach the grievance advisor or program director alone or with a UW-Madison faculty or staff member. The grievance advisor or program director should keep a record of contacts with regards to possible grievances. The first attempt is to help the student informally address the complaint prior to pursuing a formal grievance. The student is also encouraged to talk with their faculty advisor regarding concerns or difficulties.
4. If the issue is not resolved to the student's satisfaction, the student may submit a formal grievance to the grievance advisor or program director in writing, within 60 calendar days from the date the grievant first became aware of, or should have become aware of with the exercise of reasonable diligence, the cause of the grievance. To the fullest extent possible, a grievance shall contain a clear and concise statement of the grievance and indicate the issue(s) involved, the relief sought, the date(s) the incident or violation took place, and any specific policy involved.
5. On receipt of a written grievance, the following steps will occur. The final step must be completed within 30 business days from the date the grievance was received. The program must store documentation of the grievance for seven years. Significant grievances that set a precedent may be stored indefinitely.
  - a. The grievance advisor or program director will convene a faculty committee composed of at least three members to manage the grievance. Any faculty member involved in the grievance or who feels that they cannot be impartial may not participate in the committee. Committee composition should reflect diverse viewpoints within the program.
  - b. The faculty committee, through the grievance advisor or program director, will obtain a written response from the person or persons toward whom the grievance is directed. The grievance advisor or program director will inform this person that their response will be shared with the student filing the grievance.
  - c. The grievance advisor or program director will share the response with the student filing the grievance.
  - d. The faculty committee will make a decision regarding the grievance. The committee's review shall be fair, impartial, and timely. The grievance advisor or program director will report on the action taken by the committee in writing to both the student and the person toward whom the grievance was directed.
6. If either party (the student or the person or persons toward whom the grievance is directed) is unsatisfied with the decision of the program's faculty committee, the party may file a written appeal to the SMPH senior associate dean for basic research, biotechnology and graduate studies within 10 business days from

the date of notification of the program's faculty committee. The following steps will occur:

- a. The grievant will be notified in writing, within 5 business days of the written appeal, acknowledging receipt of the formal appeal and establishing a timeline for the review to be completed.
  - b. The senior associate dean or their designee may request additional materials and/or arrange meetings with the grievant and/or others. If meetings occur, the senior associate dean or their designee will meet with both the grievant and the person or persons toward whom the grievance is directed.
  - c. The senior associate dean or their designee will assemble an ad hoc committee of faculty from outside of the student's graduate program and ask them to prepare a written recommendation on whether to uphold or reverse the decision of the program on the student's initial grievance. The committee may request additional materials and/or arrange meetings with the grievant and/or others. If meetings occur, the committee will meet with both the grievant and the person or persons toward whom the grievance is directed.
  - d. The senior associate dean or their designee will make a final decision within 20 business days of receipt of the committee's recommendation.
  - e. The SMPH Office of Basic Research, Biotechnology, and Graduate Studies must store documentation of the grievance for seven years. Grievances that set a precedent may be stored indefinitely.
7. The student may file an appeal of the School of Medicine and Public Health decision with the Graduate School. See the Grievances and Appeals section of the Graduate School's Academic Policies and Procedures (<https://grad.wisc.edu/documents/grievances-and-appeals/>).

### Time Limits

Steps in the grievance procedures must be initiated and completed within the designated time periods except when modified by mutual consent. If the student fails to initiate the next step in the grievance procedure within the designated time period, the grievance will be considered resolved by the decision at the last completed step.

### OTHER

All students in the Graduate Program in Molecular and Cellular Pharmacology receive competitive stipends to cover living expenses, tuition and fees from Graduate School Fellowships, NIH Training Grants, or research assistantships funded through the Graduate Program. Health insurance costs are partially covered by the university and provide the same coverage as for faculty and staff.

## PROGRAM RESOURCES

The MCP Program and UW–Madison offer a wealth of resources intended to enrich graduate student studies and enhance professional skills. It is expected that students will take full advantage of the resources that best fit their needs and support their career goals. Since MCP alumni thrive in academia, industry, corporate, government, and non-profit arenas, we strive to be holistic and innovative in our approach to meeting the diverse professional development needs of our students. By actively participating in these professional development opportunities, students will build the skills needed to succeed academically at UW–Madison and to thrive professionally in their chosen career. For the most updated information, please visit: MCP Program Professional Development (<https://molpharm.wisc.edu/career-development/>).

## LEARNING OUTCOMES

### LEARNING OUTCOMES

1. Gain a broad understanding of the pharmacological principles that underlie all biological processes.
2. Become aware of the current limitations of the state of understanding of this discipline and the strategies that are required to advance the field of pharmacology.
3. Creates new approaches in research, scholarship, or performance that makes a substantive contribution.
4. Conduct independent research using a breadth of pharmacological processes.
5. Think critically to address research challenges using a broad range of the theories, research methods, and approaches to scientific inquiry.
6. Collaborate with investigators within the program, university, and beyond since current and future advances in pharmacological sciences demand interdisciplinary skills.
7. Fosters ethical and professional conduct in the sciences, including but not limited to: exposition of the scientific method; ethical design of experimental protocols; reproducibility in science; professional behavior in industrial, government, and academic settings; documentation of scientific results; communication to other scientists and the public; peer review; and confidentiality.
8. Communicates complex ideas in a clear and understandable manner.
9. Explore career development opportunities in industry, government, and academia to realize professional goals and paths.
10. Develop teaching and mentoring skills in both lecture and laboratory settings.

## PROFESSIONAL DEVELOPMENT

### PROFESSIONAL DEVELOPMENT GRADUATE SCHOOL RESOURCES

Take advantage of the Graduate School's professional development resources (<https://grad.wisc.edu/pd/>) to build skills, thrive academically, and launch your career.