Molecular and Cellular Pharmacology, M.S.

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.

The MCP program emphasizes study of the basic molecular and cellular mechanisms involved in the regulation of cellular events and cellular signal transduction mechanisms and the interaction of hormones, drugs, and chemicals with living systems. The faculty provides expertise in such challenging areas as the molecular events related to neurotransmitter receptor G-protein effector signaling; molecular structure of neurotransmitter receptors; genetic approaches to mechanisms for elucidating synaptic transmission; molecular mechanisms of action drugs of abuse and neurotransmitter transporters; phosphoinositide-generated second messengers and their regulation of membrane protein function and cell growth; regulation of tissue-specific gene transcription; molecular mechanisms of erythropoiesis; molecular mechanisms of leukemogenesis; regulation of hormone and neurotransmitter release; mechanism of action of polypeptide hormones; peptide–hormone receptors; control of steroid synthesis; induction of drug-metabolizing enzymes; chemical initiation and prevention of cancer; mechanisms and regulation of antibiotic action and resistance. Aside from providing insight into drug action, studies in pharmacology have led to important advances in our understanding of fundamental biological processes.

Requirements

Minimum Degree Requirements and Satisfactory Progress

To make progress toward a graduate degree, students must meet the Graduate School Minimum Degree Requirements and Satisfactory Progress (http://guide.wisc.edu/graduate/#policiesandrequirementstext) in addition to the requirements of the program.

Master’s Degrees

M.S.

Minimum Graduate Degree Credit Requirement

30 credits

Minimum Graduate Residence Credit Requirement

16 credits

Minimum Graduate Coursework (50%) Requirement

Half of the degree coursework (15 of 30 total credits) must be in graduate-level coursework; courses with the Graduate Level Coursework attribute are identified and searchable in the university’s Course Guide (http://my.wisc.edu/CourseGuideRedirect/BrowseByTitle).

Prior Coursework Requirements: Graduate Work from Other Institutions

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

Prior Coursework Requirements: UW–Madison Undergraduate

No credits from a UW–Madison undergraduate degree are allowed to count toward the degree.

Prior Coursework Requirements: UW–Madison University Special

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

Credits Per Term Allowed

15 credits

Program-Specific Courses Required

Contact the program for information on any additional required courses.

Overall Graduate GPA Requirement

3.00

Other Grade Requirements

The Graduate School requires an average grade of B or better in all coursework (300 or above, not including research credits) taken as a graduate student unless conditions for probationary status require higher grades. Grades of Incomplete are considered to be unsatisfactory if they are not removed during the next enrolled semester.

Probation Policy

The Graduate School regularly reviews the record of any student who earned grades of BC, C, D, F, or Incomplete in a graduate course (300 or above), or grade of U in research credits. This review could result in academic probation with a hold on future enrollment or in being suspended from the Graduate School.

Advisor / Committee

Every graduate student is required to have an advisor. To ensure that students are making satisfactory progress toward a degree, the Graduate School expects them to meet with their advisor on a regular basis.

An advisor generally serves as the thesis advisor. In many cases, an advisor is assigned to incoming students. Students can be suspended from the Graduate School if they do not have an advisor. An advisor is a faculty member, or sometimes a committee, from the major department responsible for providing advice regarding graduate studies.
A committee often accomplishes advising for the students in the early stages of their studies.

**ASSESSMENT AND EXAMINATIONS**
Contact the program for information on required assessments and examinations.

**TIME CONSTRAINTS**
Master's degree students who have been absent for five or more consecutive years lose all credits that they have earned before their absence. Individual programs may count the coursework students completed prior to their absence for meeting program requirements; that coursework may not count toward Graduate School credit requirements.

**LANGUAGE REQUIREMENTS**
Contact the program for information on any language requirements.

**ADMISSIONS**
This master's program is offered for work leading to the Ph.D. Students may not apply directly for the master’s, and should instead see the admissions information for the Ph.D. (https://molpharm.wisc.edu/admissions-how-to-apply)

**LEARNING OUTCOMES**

**KNOWLEDGE AND SKILLS**
- Articulates, critiques, or elaborates the theories, research methods, and approaches to inquiry or schools of practice in the field of study.
- Identifies sources and assembles evidence pertaining to questions or challenges in the field of study.
- Demonstrates understanding of the primary field of study in a historical, social, or global context.
- Selects and/or utilizes the most appropriate methodologies and practices.
- Evaluates or synthesizes information pertaining to questions or challenges in the field of study.
- Communicates clearly in ways appropriate to the field of study.

**PROFESSIONAL CONDUCT**
- Recognizes and applies principles of ethical and professional conduct.

**PEOPLE**

**Faculty:** Professors Anderson, Auger, Beebe, Bement, Bresnick, Chapman, Cryns, Czajkowski, Denu, Greenspan, Hardin, Hayney, Huttenlocher, Jackson, Jefcoate, Johnson, Kalejta, Kamp, Keck, Keely, Kimble, Kolesar, Kwon, Li, Martin, Miyamoto, Mosher, Murphy, Raines, Rapraeger, Schuler, Sheibani, Svaren, Thomson, Tibbetts, Wassarman, Xu, Yang, Zhang, Zhao; Associate Professors Audhya (director), Balijepalli, Burkard, Buxton, Chanda, Chang, Ge, Hornberger, Jorgensen, Kuo, Kalejta, Lee, Masters, Pagliarini, Roopra, Striker, Tang, Weaver, Wheeler, Xing; Assistant Professors, Blum, Collier, Jiang, Johannsen, M. Kimple, R. Kimple, Kreeger, Lamming, Lou, Rui, Saha, Sherer, Sridharan