

LABORATORY ANIMAL MEDICINE

Graduate Program Head	Ronald P. Wilson
Program Code	LAM
Campus(es)	Hershey (M.S.)
Degrees Conferred	Master of Science (M.S.)
The Graduate Faculty	View (https://secure.gradsch.psu.edu/gpms/?searchType=fac&prog=LAM)

All students entering the program must have completed a professional degree program in veterinary medicine and must hold the degree of D.V.M., V.M.D., or equivalent. This program is only offered at the Penn State College of Medicine, Milton S. Hershey Medical Center.

The Department of Comparative Medicine is a basic science, academic department of the College of Medicine. It is concerned with the range of variation of normal and abnormal structure, function, and behavior in a variety of species of animals used for teaching, testing, and research. Its faculty, staff, and students work in a multidisciplinary and collaborative fashion with all other departments in the college to advance the research mission.

Graduate study in laboratory animal medicine consists of advanced training in biology, medicine and methodology pertinent to animal-based research, and the development of scholarship and research capabilities within the specialty. The general plan is one that provides a broad, basic foundation upon which the individual can build a career in teaching and research and/or in the professional direction of research animal facilities.

Admission Requirements

Applicants apply for admission to the program via the Graduate School application for admission (<https://gradschool.psu.edu/graduate-admissions/how-to-apply/>). Requirements listed here are in addition to Graduate Council policies listed under GCAC-300 Admissions Policies (<https://gradschool.psu.edu/graduate-education-policies/>).

Degree Requirements

Master of Science (M.S.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Policies. (<https://gradschool.psu.edu/graduate-education-policies/>)

To earn the master's degree, each student must complete at least 30 credits of course work at the 500 or 600 levels.

The curriculum of this training program includes:

Code	Title	Credits
Required Courses		
CMED 501	Biology and Care of Laboratory Animals	3
CMED 503	Laboratory Animal Genetics	3
CMED 507	Techniques of Laboratory Animal Experimentation	3
CMED 515	Experimental Surgery of Laboratory Animals	3
CMED 530	Diseases of Laboratory Animals I	3
CMED 531	Diseases of Laboratory Animals II	3
CMED 535	Comparative Pathology	3

CMED 590	(1 credit per semester)	4
CMED 596	Individual Studies	1-3
BMS 591	Biomedical Research Ethics	1

Culminating Experience

Students completing a thesis enroll in CMED 600; students in the non-thesis option enroll in CMED 596. ¹

CMED 600	Thesis Research (for M.S. thesis) ²	9
or CMED 596	Individual Studies	

Total Credits **36-38**

¹ A non-thesis option may be elected by the student but must be approved in writing by the Program Director. A scholarly paper on a topic relevant to the fields of laboratory animal medicine or laboratory animal science must be written and presented. Up to 9 credits of independent study (CMED 596) may be earned for this work.

² The submission and defense of a thesis based on an original hypothesis-driven research project is required. A minimum of 9 credits of thesis research (CMED 600) are required (a maximum of 6 credits may receive a quality grade).

Students may, with the approval of the Program Director, enroll in graduate level courses offered at the Penn State College of Medicine, Penn State Harrisburg, University Park, or Penn State's World Campus.

Minor

A graduate minor is available in any approved graduate major or dual-title program. The default requirements for a graduate minor are stated in Graduate Council policies listed under GCAC-600 Research Degree Policies (<https://gradschool.psu.edu/graduate-education-policies/>) and GCAC-700 Professional Degree Policies (<https://gradschool.psu.edu/graduate-education-policies/>), depending on the type of degree the student is pursuing:

- GCAC-611 Minor - Research Doctorate (<https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-600/gcac-611-minor-research-doctorate/>)
- GCAC-641 Minor - Research Master's (<https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-600/gcac-641-minor-research-masters/>)
- GCAC-709 Minor - Professional Doctorate (<https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-700/gcac-709-professional-doctoral-minor/>)
- GCAC-741 Minor - Professional Master's (<https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-700/gcac-741-masters-minor-professional/>)

Student Aid

Graduate assistantships available to students in this program and other forms of student aid are described in the Tuition & Funding (<https://gradschool.psu.edu/graduate-funding/>) section of The Graduate School's website. Students on graduate assistantships must adhere to the course load limits (<https://gradschool.psu.edu/graduate-education-policies/gsad/gsad-900/gsad-901-graduate-assistants/>) set by The Graduate School.

Courses

Graduate courses carry numbers from 500 to 699 and 800 to 899. Advanced undergraduate courses numbered between 400 and 499 may

be used to meet some graduate degree requirements when taken by graduate students. Courses below the 400 level may not. A graduate student may register for or audit these courses in order to make up deficiencies or to fill in gaps in previous education but not to meet requirements for an advanced degree.

Comparative Medicine (CMED) Course List (<https://bulletins.psu.edu/university-course-descriptions/graduate/cmед/>)

Learning Outcomes

1. **KNOW:** Demonstrate appropriate breadth and depth of knowledge of husbandry, veterinary care, pathology, and colony management of species of animals commonly used in biomedical research.
2. **APPLY/CREATE:** Apply knowledge of laws, regulations, guidelines, and position statements concerning the use of animals in biomedical research to common research activities and scenarios.
3. **APPLY/CREATE:** Apply knowledge of anesthesia and analgesia of animal species used in biomedical research to critical evaluation of IACUC protocols, development of recommendations for prevention of pain and distress, and veterinary medical management of surgical procedures.
4. **APPLY/CREATE:** Apply knowledge of adult learning theory and education methodology to the design and execution of techniques training for researchers and other teaching activities.
5. **APPLY/CREATE:** Apply knowledge of research ethics, experimental design, techniques, data management, and data analysis to create new knowledge connected to the field of laboratory animal science and/or other biomedical science disciplines.
6. **COMMUNICATE:** Demonstrate a variety of methods for communicating scientific information, including formal presentations, discussion facilitation, written abstracts, written manuscripts, and poster presentations.
7. **THINK:** Critically evaluate published research in the field of laboratory animal science and biomedical research disciplines in order to practice evidence-based laboratory animal medicine, support animal welfare, and support the research mission.
8. **PROFESSIONAL PRACTICE:** Practice veterinary medicine in accordance with the highest ethical standards, values, and best practices for the recognized veterinary specialty of laboratory animal medicine.

Contact

Campus	Hershey Med Ctr
Graduate Program Head	Ronald Paul Wilson
Director of Graduate Studies (DGS) or Professor-in-Charge (PIC)	Tiffany Lynn Whitcomb
Program Contact	Mandy Houser College of Medicine, Dept of Comparative Medicine, H054 500 University Drive Hershey PA 17033 mlh36@psu.edu
Program Website	View (http://med.psu.edu/ laboratory-animal-medicine-ms/)