

# VMS - PATHOBIOLOGY, MS

*for the degree of Master of Science in Veterinary Medical Science - Pathobiology*

In the Department of Pathobiology, you will address complex biomedical problems in human and animal health at the cellular, host, and population levels. Graduate education is centered around providing students with unique training experiences in preparation for careers in academics, industry, and public service. A minimum number of required courses creates flexibility for students to explore an individualized program of study. The graduate student experience goes beyond the classroom and research laboratory to include participation in career-building activities, such as the annual Pathobiology Graduate Student EXPO and the College of Veterinary Medicine's Research Day, among others. Students are also encouraged to participate in regional, national, and international conferences.

The Department of Pathobiology offers graduate programs leading to the Master of Science degree. Areas of specialization include bacteriology, cancer biology, computational biology, epidemiology, immunology, parasitology, and virology. Each specialty area has a core of required courses supplemented by other courses within the Department of Pathobiology and from other departments of the Graduate College. Adequate laboratory and animal holding space to conduct the research of the faculty and graduate students is provided in the Basic Sciences Building, Veterinary Teaching Hospitals, and the Veterinary Research Farm.

## Admission

Graduated from a college or university approved by the Illinois and must have a minimum grade-point average of 3.0 (based on 4.0 = A), exclusive of required physical education and military training courses. Applicants with a grade-point average of 2.75 may be considered for admission with limited status. Applicants with a graduate degree or some graduate coursework will be evaluated based on their graduate work and their undergraduate or professional record. Applicants with a professional degree (DVM, MD, etc.) are not restricted to a minimum GPA of 3.0 for that professional degree.

Submission of GRE scores is optional.

The department's Graduate Admissions Committee must approve admission of students.

All international degree-seeking applicants are required to submit the results of an accepted test as evidence of English proficiency unless they qualify for a waiver or exemption. Official scores are required to be submitted directly from the testing agency. All scores must be dated within two years of the beginning of the proposed admission term. The Graduate College Website lists specific requirements and waiver options (English proficiency requirements for graduate admission).

## Faculty Research Interests

Expertise in the Department of Pathobiology spans bacteriology, cancer biology, computational biology, epidemiology, immunology, parasitology, and virology. Through its multidisciplinary approach, the department addresses complex problems in biomedical and veterinary sciences. Research focuses on multi-host disease systems to improve human and

animal health at the individual and population levels in a broad social and environmental context. Specific areas of research interest include:

- Molecular mechanisms of infection, host-pathogen interactions, and immunity
- Strategies for vaccine design and disease control
- Molecular virology
- Bacteriology
- Cancer biology
- Spatial and contextual aspects of health and illness, combining human, animal, and ecosystem health
- Mathematical modeling of infectious diseases to promote disease control
- Foreign animal disease prevention, preparedness, and response

## Training Programs, Centers and Institutes

Our faculty provides undergraduate and graduate instruction in molecular bacteriology, immunology, parasitology, and virology; cancer biology; and infectious disease epidemiology and surveillance. They also participate in interdisciplinary training programs including the Emergent Behaviors of Integrated Cellular Systems (EBICS) Center, the Division of Nutritional Sciences (<https://nutrsci.illinois.edu/>), Beckman Institute (<https://beckman.illinois.edu/>), and the Institute for Genomic Biology (<https://www.igb.illinois.edu/>).

## Financial Aid

A limited number of teaching and research assistantship positions are available.

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For additional details and requirements refer to the department's graduate degree requirements and the Graduate College Handbook (<http://www.grad.illinois.edu/gradhandbook/>).

Code	Title	Hours
<b>Thesis Option</b>		
PATH 490	Introduction to Research Methodology	3
PATH 523	Responsible Conduct of Biomedical Research	2
Biostatistics course requirement: select one from the following approved course list		
PATH 524	Biostatistics	
HK 527	Biostatistics in Public Health	
CPSC 440	Applied Statistical Methods I	
PATH 592	Special Problems (2 General Journal Club and 2 Topic-Specific Journal Club, chosen in consultation with advisor)	4
PATH 599	Thesis Research	1-18
PATH 590	Seminar	1
ELECTIVES		0-17
<b>Total Hours</b>		<b>32</b>

## Other Requirements

Requirement	Description
Other Requirements may overlap	
Final comprehensive examination	Yes
Minimum 500-level Hours Required	12 (8 in PATH)
Overall:	
Minimum GPA:	3.0

Code	Title	Hours
<b>Non-Thesis Option</b>		
Students need Departmental approval for this degree option.		
PATH 490	Introduction to Research Methodology	3
PATH 523	Responsible Conduct of Biomedical Research	2
Biostatistics course requirement: select one from the following approved course list		4
PATH 524	Biostatistics	
HK 527	Biostatistics in Public Health	
CPSC 440	Applied Statistical Methods I	
PATH 592	Special Problems (2 General Journal Club and 2 Topic-Specific Journal Club, chosen in consultation with advisor)	4
PATH 598	Non-Thesis Research	1-8
PATH 590	Seminar	1
ELECTIVES		10-17
<b>Total Hours</b>		<b>32</b>

## Other Requirements

Requirement	Description
Other Requirements may overlap	
Final comprehensive examination	Yes
Minimum 500-level Hours Required	12 (8 in PATH)
Overall:	
Minimum GPA:	3.0

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College of Veterinary Medicine Pathobiology Graduate Program students are expected to meet the following learning outcomes upon completing their degrees.

1. Communicate effectively in oral and written form.
2. Gather, assimilate, and process information to reach sound logical conclusions.
3. Apply scientific reasoning and evidence-based conclusions to problems in Pathobiology.
4. Demonstrate comprehensive knowledge of their chosen sub-discipline (virology, bacteriology, immunology, epidemiology, and parasitology) that forms the foundation of scientific study in infectious diseases of humans and animals.
5. Formulate ideas and concepts and perform hypothesis-driven research beyond the current boundary of knowledge to make substantive contributions to the field.

6. Demonstrate mastery in scientific techniques, methodology, critical analysis, and data analysis.
7. Be prepared to perform high-quality research in academia, industry, or government agencies ethically and professionally for the betterment of human and animal health.

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## Graduate Degree Programs in Pathobiology

- VMS - Pathobiology, MS (p. 1)
  - Pathobiology Research Scholars
- VMS - Pathobiology, PhD (<http://catalog.illinois.edu/graduate/veterinary/medical-science-pathobiology-phd/>)
  - Pathobiology Research Scholars
  - Joint Degree Program: Veterinary Medical Scholars Program
- DVM and VMS - Pathobiology, PhD (<http://catalog.illinois.edu/graduate/veterinary/joint-degree/dvm-veterinary-medical-scholars/>)

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## College of Veterinary Medicine

College of Veterinary Medicine website (<http://www.vetmed.illinois.edu/>)  
Dean: Peter D. Constable

## Department of Pathobiology (<https://www.vetmed.illinois.edu/path/>)

Director of Graduate Studies: Keith Jarosinski  
2522 Veterinary Medicine Basic Sciences Building

2001 South Lincoln Avenue

Urbana, IL 61802  
(217) 333-2449

## Admissions

Karen Nichols ([klp68@illinois.edu](mailto:klp68@illinois.edu))  
Graduate College Admissions & Requirements (<https://grad.illinois.edu/admissions/apply/>)