Comparative Biosciences

http://vetmed.illinois.edu/cb/

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Major: Veterinary Medical Science – Comparative Biosciences
Degrees Offered: M.S., Ph.D.

Joint Degree Program: Veterinary Medical Scholars Program
Degrees Offered: D.V.M and M.S., D.V.M. and Ph.D.

Medical Scholars Program: Doctor of Philosophy (Ph.D.) in Veterinary Medical Science – Comparative Biosciences and Doctor of Medicine (M.D.) through the Medical Scholars Program (http://www.med.uiuc.edu/mdphd)

Graduate Degree Programs

The Department of Comparative Biosciences offers graduate work leading to the degrees of Master of Science and Doctor of Philosophy. Areas of specialization include physiology, pharmacology, and toxicology. Each area has a core of required courses supplemented by other courses within the Department of Comparative Biosciences 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

Applicants for graduate study in comparative biosciences must have a minimum grade point average of 3.0 (A = 4.0). Grade point averages will be calculated on the last 60 hours of undergraduate studies for those without the D.V.M. degree and on the entire professional curriculum for those with the D.V.M., or equivalent, degree. Applicants with a graduate degree or with some graduate coursework will be evaluated on the basis of their graduate work as well as their undergraduate or professional records. Qualifications of students must be approved by the department’s Graduate Studies Committee.

The Graduate Record Examination (GRE) is required and must have been taken within the last five years prior to application. Candidates must score an average in the 80th percentile or higher on each of the three portions of the GRE to be eligible for consideration.

International applicants whose native language is not English must take the Test of English as a Foreign Language (TOEFL). A score of at least 50 on the Test of Spoken English (TSE) oral exam and score at least 50.

We are not accepting applications for the M.S./D.V.M. program at this time.

Joint Degree Programs

Students accepted into the Veterinary Medical Scholars Program (http://www.vetmed.illinois.edu/asa/vmsp.html) can complete a D.V.M. and Ph.D. simultaneously.

Students accepted into the Medical Scholars Program (https://www.med.illinois.edu/mdphd) can complete a M.D. and Ph.D. simultaneously.

Graduate Teaching Experience

Experience in teaching is considered a vital part of the graduate program and is required as part of the academic work of all M.S. and Ph.D. candidates in this program.

Faculty Research Interests

Experimental models range from stem cells to rodent models to domestic animals, wildlife, and human patients. Exciting research is being conducted by CB faculty in the areas of:

- endocrine/reproductive biology and toxicology
- environmental and ecological toxicology
- uterine and placental biology
- aortic mesangial stem cells
- stem cells for assessment of small molecule and nanoparticle pharmacology and toxicology
- nanodisks as platforms for the study of membrane proteins
- mouse and frog models of development
- the impact of environmental and dietary compounds on neurodevelopment and on addictive potential of substances of abuse
- circadian rhythms in animal models of shift work and jet lag
- immunopharmacology and drug allergy
- obesity and diabetes mellitus
- cancer chemotherapy
- the interplay between infectious agents and contaminants with wildlife populations
- comparative drug disposition and pharmacokinetics

Research techniques range from micro-RNA to animal and human patient epidemiology to ecological assessments.

Training Programs, Centers and Institutes

Our faculty provide graduate instruction in stem cell research, molecular genetics, pharmacology and toxicology. They also participate in interdisciplinary training programs including the NIEHS-funded Environmental Toxicology Training Program (http://vetmed.illinois.edu/cb/nih/tox), the Interdisciplinary Environmental Toxicology Training Program (http://vetmed.illinois.edu/iertp), the Reproductive Biology Program (http://mcb.illinois.edu/cni), the Neuroscience Program (http://neuroscience.illinois.edu), the Nutritional Sciences Division (http://www.nutrsci.illinois.edu), Beckman Institute (http://www.beckman.uiuc.edu), and the Institute for Genomic Biology (http://www.igb.illinois.edu). CB faculty also lead the Veterinary Clinical Pharmacology Residency Program (http://vetmed.illinois.edu/cb/vcpcharm.html), which prepares graduate veterinarians for the certifying examination of the American College of Veterinary Clinical Pharmacology.

Information listed in this catalog is current as of 04/2016
Financial Aid
A limited number of research and teaching assistantships or associate positions are available.

Master of Science in VMS Comparative Biosciences
Student must select from one of the following courses with the advice of his/her dissertation committee:

- MCB 450 Introduction Biochemistry
- MCB 354 Biochem & Phys Basis of Life (credits cannot be used towards degree)
- MCB 401 Cell & Membrane Physiology
- MCB 402 Sys & Integrative Physiology
- MCB 410 Developmental Biology
- MCB 480 Eukaryotic Cell Signaling
- MCB 501 Advanced Biochemistry

Select one of the following: 4

- PATH 524 Biostatistics
- VCM 572 Clinical Epidemiology
- CPSC 440 Applied Statistical Methods I
  or approved equivalent

CB 590 Seminar 1
CB 591 Biosciences Seminar Series (may be repeated for up to 2 hours of credit) 1
CB 592 Special Problems (4 max applied toward degree) 4

Electives 5-11
CB 599 Thesis Research (min/max applied toward degree) 12

Total Hours 32

Other Requirements 1
Other requirements may overlap

- Students may be required to take additional courses as recommended by Advisory Committees or Department Divisions

Minimum Hours Required Within the Unit: 8 (500 level)
Minimum 500-level Hours Required Overall: 12
Final Exam/Thesis Defense Required
Thesis Deposit Required
Minimum GPA: 3.0

Doctor of Philosophy in VMS Comparative Biosciences

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<tr>
<th>Course</th>
<th>Description</th>
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<tbody>
<tr>
<td>CB 590</td>
<td>Seminar (Thesis Defense seminar 1 hour and Prospectus Exam 1 hour.)</td>
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<tr>
<td>CB 591</td>
<td>Biosciences Seminar Series (may be repeated for up to 4 hours of credit)</td>
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Student must select ONE of the following courses with the advice of his/her dissertation committee:

- MCB 450 Introduction Biochemistry
- MCB 354 Biochem & Phys Basis of Life (credits cannot be used towards degree)
- MCB 401 Cell & Membrane Physiology
- MCB 402 Sys & Integrative Physiology
- MCB 410 Developmental Biology
- MCB 480 Eukaryotic Cell Signaling
- MCB 501 Advanced Biochemistry

Select one of the following: 4

- PATH 524 Biostatistics
- VCM 572 Clinical Epidemiology
- CPSC 440 Applied Statistical Methods I
  or approved equivalent

CB 592 Special Problems (min/max applied toward degree. Limit of 12 credit hours total. This limit includes credits accrued during the MS degree.) 12
CB 599 Thesis Research (min/max applied toward degree) 0

Total Hours 64

Other Requirements 1
Other requirements may overlap

- Students may be required to take additional courses as recommended by Advisory Committees or Department Divisions

- 64 hours (including thesis research) earned in courses meeting on the Urbana-Champaign campus, on the Chicago campus, or in other locations approved by the Graduate College for graduate credit

- Teaching experience is required

- Masters degree required for Admission to Ph.D.? No, but Masters level requirements must be met (32 hours min)
- Qualifying Exam Required: Yes
- Preliminary Exam Required: Yes
- Final Exam/Dissertation Defense Required:
  - Dissertation Deposit Required: Yes
  - Minimum GPA: 3.0

1 For additional details and requirements refer to the department's graduate degree requirements (http://www.vetmed.illinois.edu/vb/ms_phd.html) and the Graduate College Handbook (http://www.grad.illinois.edu/gradhandbook).
M.B.A. Joint Degree Program

Students in this unit may choose to earn their major degree and simultaneously complete an M.B.A., with 12 fewer required hours than when pursuing both degrees independently. Students must be enrolled in the M.B.A. program for three terms and complete all the requirements of their primary degree. Interested students should see the joint program requirements (http://catalog.illinois.edu/graduate/graduate-majors/bus-admin-mba/joint-mba) and contact the M.B.A. program and their major department office for more information.

D.V.M. and Ph.D. in Veterinary Medical Science – Comparative Biosciences

Students accepted into the Veterinary Medical Scholars Program (http://www.vetmed.illinois.edu/asa/vmsp.html) can complete a D.V.M. and Ph.D. simultaneously.