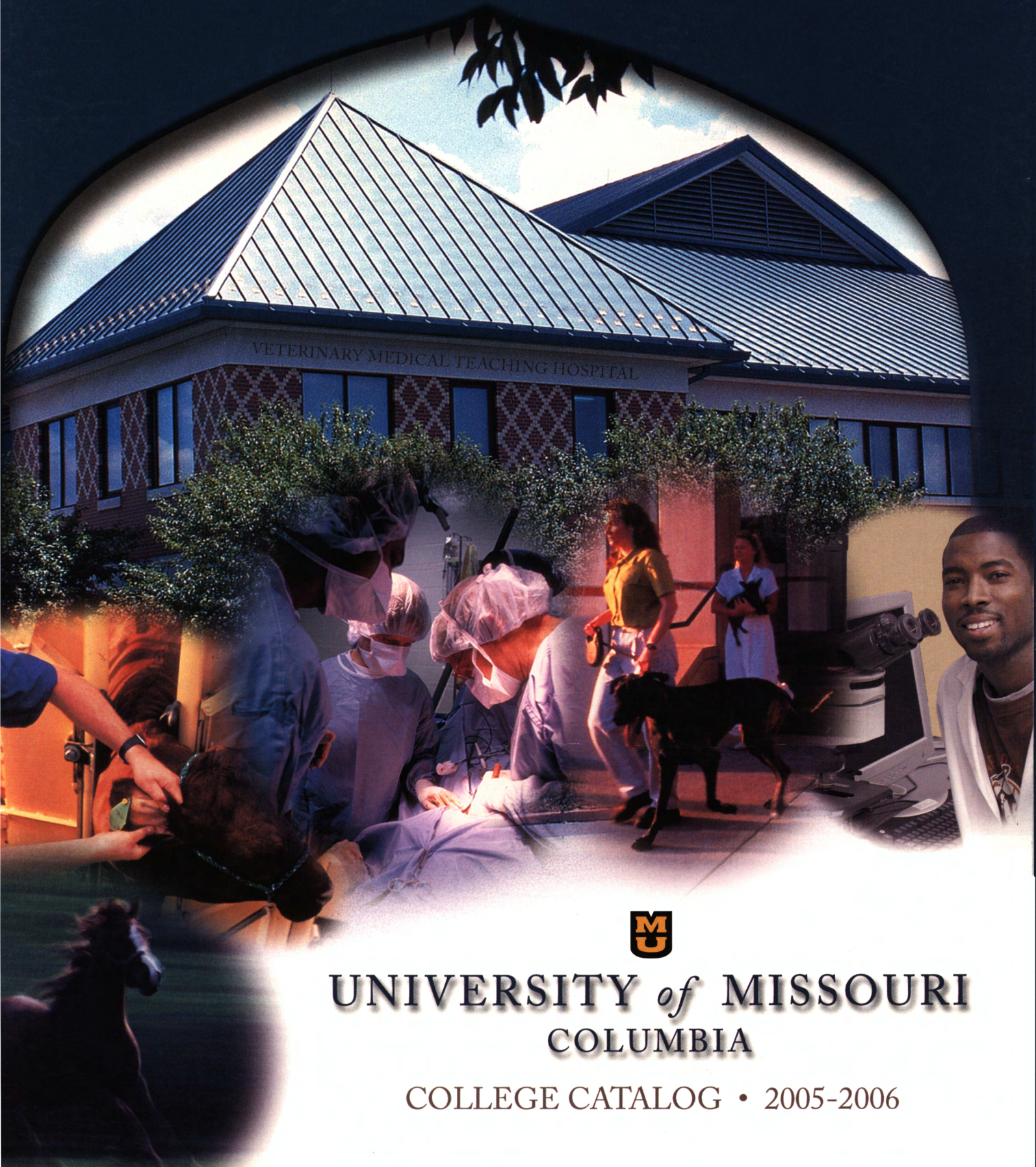


*College of*  
**VETERINARY MEDICINE**



**UNIVERSITY** *of* **MISSOURI**  
**COLUMBIA**

COLLEGE CATALOG • 2005-2006





Published once every two years by the College of Veterinary Medicine, University of Missouri-Columbia. All statements in this publication concerning requirements, prerequisites, conditions, or other matters are for informational purposes only. They are not to be regarded as offers to contract. Although the outcome of this professional curriculum is the DVM, the actual design, organization, and presentation of courses comprising the curriculum are subject to change at any time.



## The Oath

Being admitted to the profession of veterinary medicine, I solemnly swear to use my scientific knowledge and skills for the benefit of society through the protection of animal health, the relief of animal suffering, the conservation of livestock resources, the promotion of public health, and the advancement of medical knowledge.

I will practice my profession conscientiously, with dignity, and in keeping with the principles of veterinary medical ethics.

I accept as a lifelong obligation the continual improvement of my professional knowledge and competence.

*Adopted by the AVMA House of Delegates July, 1969*



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*Editorial Office*

W-203 Veterinary Medicine Building  
 Columbia, MO 65211  
 (573) 882-3554  
 www.cvm.missouri.edu  
 www.vmeth.missouri.edu

*Dean of the College*

Joe N. Kornegay, DVM, PhD

*Associate Dean for Academic Affairs*

C.B. Chastain, DVM, MS

*Associate Dean for Student and  
 Alumni Affairs*

Ron Cott, DVM

*Associate Dean for Research and  
 Post Graduate Studies*

Ronald Terjung, PhD

*Editor*

Randy Mertens

*Graphic Design*

Sandy Hockenbury  
 MU Printing Services

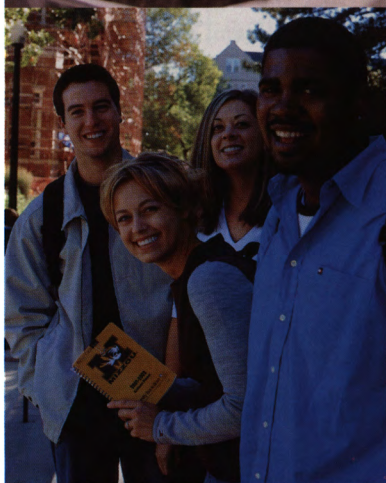
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Additional information on the University of Missouri, College of Veterinary Medicine may be obtained by writing to: Dean's Office, W-203 Veterinary Medicine Building, MU College of Veterinary Medicine, Columbia, MO 65211 or call (573) 882-3554. Information is also available on the World Wide Web at: www.cvm.missouri.edu and www.vmeth.missouri.edu.



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Dean of the College,  
Dr. Joe N. Kornegay

## Greetings from the Dean

The MU College of Veterinary Medicine has graduated more than 2,700 DVMs in its 50+ year history. Alumni live and work all over the world in a variety of areas.

*Thank you* for your interest in the University of Missouri's College of Veterinary Medicine. The College enters the 21st Century committed to building on its rich tradition of educating veterinarians, providing service to the animal-owning public, and advancing knowledge of animal disease. We hope this catalog will answer questions regarding our programs and provide insight into the exciting career opportunities in veterinary medicine.

The MU College of Veterinary Medicine has a three-fold mission in teaching, service, and research. It is the only Missouri institution that awards the Doctor of Veterinary Medicine degree, graduating about 68 new veterinarians each year. Prior to admission, students must complete a minimum of 60 semester hours of college-level courses. Those admitted to the professional

program progress through a rigorous four-year curriculum. Courses in the first two years provide a solid foundation in basic science, followed by two years of largely hospital-based instruction. Our graduates are qualified to pursue a host of career options. Most enter private clinical practice, but others choose careers in government, industry, and academia. The College also offers post-graduate training to interns, residents in various specialties, and graduate students. These individuals are among the most dedicated and hard working people you will ever meet. They generally have trained elsewhere and bring a different perspective. The interaction among faculty and both veterinary and postgraduate students creates a special synergy, ideal for learning.

Have you noticed that people today want to provide their animals with the same qual-

ity health care they receive themselves? We have! These needs are met through the College's Veterinary Medical Teaching Hospital and Veterinary Medical Diagnostic Laboratory. The teaching hospital has been housed since 1993 in Clydesdale Hall, a truly state-of-the-art facility with 140,000 square feet of floor space spread over three hospitals for small companion animals, horses, and farm animals. Our clinical faculty provide both primary care and a host of sophisticated diagnostic procedures and treatment options not available in most private practices. Examples include a linear accelerator to administer radiation therapy, hip replacement surgery, a treadmill for evaluation of lameness in horses, and herd-health consultation for farmers. Overall, each year, we care for approximately 17,000 hospitalized animals and thousands more on farms. Many of these animals are referred to the hospital by veterinarians in private practice. The Veterinary Medical Diagnostic Laboratory provides comprehensive services for companion and farm animals. In particular, the laboratory works conscientiously with veterinarians and farmers to protect Missouri's 3 billion-dollar animal agriculture industry. The diagnosis of animal diseases has become increasingly complex, as new conditions emerge and we learn more about previously-recognized syndromes. Our faculty have taken the lead in developing advanced diagnostic techniques based on methods such as polymerase chain reaction (PCR) and immunohistochemistry. Around 40,000 accessions are processed through the laboratory each year.

Through its research mission, the College fulfills a solemn obligation to advance our understanding of diseases affecting not just animals but also people. After all, we share the same environment and are exposed to the same infectious organisms and environmental pollutants. It should come as no surprise, therefore, that animals and their owners develop many of the same diseases. To pursue the causes of these conditions, faculty of the College of Veterinary Medicine now collaborate extensively with our colleagues in agriculture, human medicine, and other scientific disciplines. As an example, the College recently received notification that a \$7 million dollar grant from the National Institutes of Health to study the protective effects of exercise on cardiovas-





► Cardiology is one "area of excellence" at the MU College of Veterinary Medicine.

cular function has been funded for a second five-year cycle. Working closely with colleagues from other divisions, our faculty continue to critically study diseases affecting farm animals, with particular emphasis on infectious conditions and reproductive disorders. College faculty have also received funding to establish a regional biocontainment laboratory that will contribute to the nation's biodefense network. Additional support from NIH will allow construction of a national laboratory to characterize swine models of human disease.

A special faculty is required to fulfill such a diverse set of responsibilities in teaching, service, and research. Fortunately, the College of Veterinary Medicine has always had a strong group of educators. And, the good news is that our faculty has been further bolstered in recent years through the generosity of individual and corporate friends. Seven endowed professorships or programs have been established at the College since 1994. These include the Ruth M. Kraeuchi-Missouri Professorship in Veterinary Ophthalmology, the Gilbreath-McLorn-Missouri Professorship in Comparative Medicine, the Nestlé Purina-Missouri Program in Small Animal Nutrition, the E. Paige Laurie-Missouri Program in Equine Lameness, the Tom and Betty Scott-Missouri Program in Vet-

erinary Oncology, the Charles and Charlene McKee-Missouri Professorship in Microbial Pathogenesis, and the Thelma Zalk-Missouri Professorship in Tumor Angiogenesis. What a difference these endowments have made, not just in fulfilling our responsibilities, but also in enhancing the College's national reputation! Through the collective efforts of our dedicated faculty, staff, and students, the University of Missouri College of Veterinary Medicine is increasingly viewed as a leader in the profession.

This catalog outlines the multiple dimen-

sions of veterinary medicine and details the teaching, service, and research programs of the College. Information on admissions requirements, the DVM curriculum, and career opportunities are also included. We hope you share our enthusiasm for veterinary medicine and, in particular, MU's College of Veterinary Medicine. If you have questions, please call.

*Joe N. Kornegay, DVM, PhD  
Dean*

## *the* Mission

The mission of the University of Missouri-Columbia College of Veterinary Medicine is to provide excellent veterinary medical education to undergraduate veterinary medical students and graduate students and veterinarians while concurrently providing primary care and referral diagnostic and therapeutic services for the animal owning public. Research excellence is an integral part of evaluating the current knowledge being taught and expanding the biomedical knowledge of the future. Each of the three basic missions (teaching, service, and research) provided by the MU College of Veterinary Medicine and the State Veterinary Diagnostic Laboratory contribute to the protection and continued growth of the more than \$2 billion per year livestock industry in Missouri, a livestock producing leader in the Midwest and the nation.





## the Locale

Columbia is blessed with abundant outdoor activities, sporting and cultural events, and is located between two major metropolitan areas.



*In recent years*, Columbia, Mo. has been listed consistently among the top 20 U.S. cities in several national rankings. This assessment is based on the community's low cost of living; its stable, service-oriented economy and low crime rate; and the availability of affordable housing and outstanding health care. Columbia's excellent public schools, its weather, and its leisure and cultural activities also were highly rated in the assessment.

Columbia is centrally located 120 miles from both Kansas City and St. Louis. The college community of more than 85,000 offers an unusual combination of rural and metropolitan experiences.

There are more than 3,000 acres of state park lands within ten miles of Columbia. The city itself has 1,500 acres of beautiful parks. Federal forests and wildlife refuges are nearby, as is the Katy Trail—a hiking and biking trail that stretches across Missouri and is accessible throughout Columbia.

Hunting and fishing opportunities abound in central Missouri and the Lake of the Ozarks area. Columbia is only a few hours' drive from scenic lakes and streams that are ideal

for float trips, camping, and backpacking. Kansas City and St. Louis both have major-league sports teams, and the University offers Big 12 Conference football, basketball, baseball, and other sports. Columbia has a 65,000-seat stadium, a 15,000-seat multipurpose auditorium, a new basketball arena, several 18-hole golf courses, an indoor recreation building, tennis courts, racquetball courts, squash courts, and indoor and outdoor swimming pools.

Living conditions in Columbia are good and housing is plentiful. Many students elect to live in the country, which is only a short distance from the MU College of Veterinary Medicine. The climate is mild with four distinctive seasons.

Companion animals and livestock are important to Missouri. Missouri is second in the nation in the number of beef cattle operations and calf production. It is fifth in hog operations and turkeys raised and third in horses and dairy operations. More than half of all households in Missouri own companion pets.





# *the* University



*The University of Missouri* was established in Columbia in 1839 as the first public university west of the Mississippi River. In 1870, the University was approved as a land-grant university under the Morrill Act of 1862.

The University of Missouri-Columbia today is a major research university that enrolls about 24,000 students and is accredited by the North Central Association of Colleges and Secondary Schools. Various schools, colleges, and departments also are accredited by their respective professional associations and accrediting agencies.

In 1989, MU celebrated its Sesquicentennial, marking 150 years of service to the citizens of Missouri. The University of Missouri-Columbia continues its historic mission through its emphasis on excellence in instruction,

scholarship, and service on the residential campus and throughout the state through extension courses.

The University, with its 17 schools and colleges on a 1,335-acre campus, has the breadth of programs associated with a nationally competitive institution. MU is the premier public institution of graduate and professional training in selected areas and offers the only college of veterinary medicine in Missouri. In 1999, U.S. News & World Report magazine ranked MU as the best value of major institutions in terms of academic quality and educational cost.

In addition, it is one of only 31 public universities in the Association of American Universities and has a Research University 1 ranking from the Carnegie Foundation for the Advancement of Teaching.







The College's  
missions —  
teaching, healing,  
research, and  
leadership

## Veterinary Medicine The College and the Profession

*Veterinary medicine* at the University of Missouri began in 1884. It progressed through five stages—a course in veterinary science, a department of veterinary science, a school of veterinary medicine in the division of agricultural sciences, a school of veterinary medicine as a separate division, and finally, a college of veterinary medicine.

In 1885, the first vaccine-virus laboratory in the United States was established at the veterinary science department. A veterinary laboratory was erected in 1887. In early years, staff veterinarians taught courses to medical and agricultural students, conducted research on tick fever, and investigated livestock disease throughout the state.

The College's first building, Connaway Hall, was built in 1910-11 to house veterinary science faculty who taught courses to agricultural students, investigated animal and poultry diseases, performed diagnostic and extension work, and produced animal vaccines.

The professional curriculum leading to the DVM degree was established in 1946 to offer educational opportunities to World War II veterans. In 1950, 26 new veterinarians graduated in the first class.

From 1946-65 there were 30 students, all Missouri residents, in each of the four classes studying for the DVM degree. In 1965, class size doubled and non-residents were admitted in

response to federal funding incentives. These federal “capitation” funds were provided to alleviate a national shortage of veterinarians and stimulated another class size increase (to 76 students) in 1976. In the early 80's, the national need for veterinarians stabilized, federal funding was withdrawn and the class size was lowered to 64 in the interest of quality education and efficient space planning. The College has graduated more than 2,700 veterinarians since 1946.

A teaching hospital was built in 1961, and a diagnostic laboratory and a teaching-research building were added in 1977. Clydesdale Hall, a 149,000-sq.-ft. medical teaching hospital, was completed and occupied in March 1993. A multi-million dollar renovation to the veterinary diagnostic laboratory and Connaway Hall were completed in 1997 and 1999, respectively. The 1961 teaching hospital was renovated in 1997 and 2002 to enhance classrooms, provide new research space, and add a conference center.

### Statement of Accreditation

The MU College of Veterinary Medicine is fully accredited by the Council on Education of the American Veterinary Medical Association.



## The Administrative Structure

The College has three departments: biomedical sciences, pathobiology, and medicine and surgery. Also, there is a veterinary diagnostic laboratory, a veterinary medical teaching hospital, and a research farm.

### Administrators

#### Dean:

Joe N. Kornegay

#### Associate Dean for Academic Affairs:

C.B. Chastain

#### Associate Dean for Research and Postdoctoral Studies:

Ronald Terjung

#### Associate Dean for Student and Alumni Affairs:

Ron K. Cott

#### Chair of Veterinary Medicine and Surgery:

Cecil P. Moore

#### Chair of Biomedical Sciences:

M. Harold Laughlin

#### Chair of Veterinary Pathobiology:

Gerald M. Buening

#### Director of Student Recruitment and Retention:

Barbra A.B. Horrell

#### Director of Development:

Greg Jones

#### Manager of Business and Fiscal Operations:

Vicki L. Miller

#### Director of the Veterinary Medical Teaching Hospital:

Cecil P. Moore

#### Director of the Veterinary Medical Diagnostic Laboratory:

Stan Casteel

#### Director of Research Animal Diagnostic Laboratory:

Lela K. Riley

#### Director of the Office of Animal Resources:

Lon W. Dixon

#### Director of Veterinary Continuing Education and Extension:

Robert Larson

#### Director of Information Technology:

Zac March

#### Director of Clinical Research:

Jeff Tyler

### Programs and Distinctive Features

The MU College of Veterinary Medicine is the only institution in Missouri that awards the Doctor of Veterinary Medicine degree (DVM). The professional curriculum is integrated with College services including statewide animal disease diagnostic services, extension and continuing education programs for animal owners and veterinarians, patient care referral and consultation services for all species of animals, research programs in animal and human diseases, and advanced specialized training in veterinary and comparative medicine.

The curriculum is carefully monitored by the Council on Education of the American Veterinary Medical Association. To be accredited, the College must maintain high teaching standards, and students must develop knowledge, skills, and experience in diseases and health-related conditions of all species of domestic animals.

Animal facilities and management are fully accredited by the Association for Assessment and Accreditation of Laboratory Animal Care (AALAC).

### Facilities of the College

The MU College of Veterinary Medicine has administrative and academic support offices, three academic departments, a teaching hospital, and a diagnostic laboratory. These units are in five buildings in the southeast corner of the MU campus.

The veterinary medical complex includes Connaway Hall, the Veterinary Medical Diagnostic Laboratory, the Veterinary Medicine Building, the Veterinary Medical Teaching Hospital (Clydesdale Hall), and the Veterinary Medical Science Building.



► Computer labs are available to students on a 24-hour-a-day basis. Classroom-based presentations and examinations have rendered paper-and-pencil work obsolete.





► Connaway Hall, the College's first building that, a century after its construction, has been extensively remodeled to house advanced programs and laboratories to research, diagnose, and cure various diseases.



► The Veterinary Medicine Building houses the College's classrooms and laboratories used by the first- and second-year students. Its east wing was recently renovated to establish ophthalmology and comparative medicine research laboratories.



► The Equine and Food Animal Clinics at the MU College of Veterinary Medicine are important referral centers for large animal owners from all over the Midwest. Students in these areas see a large and varied caseload.

**The Veterinary Medical Diagnostic Laboratory.** The Veterinary Medical Diagnostic Laboratory houses mammalian and avian postmortem examination rooms. Supporting laboratory spaces for toxicology, histopathology, serology, bacteriology, virology, and a large incinerator are provided. This facility offers the opportunity for veterinary medical students to receive instruction in diagnostic laboratory medicine. It is one of only 37 veterinary medical diagnostic laboratories in the nation accredited by the American Association of Veterinary Laboratory Diagnosticians.

**The Veterinary Medicine Building.** The Veterinary Medicine Building houses teaching laboratories, classrooms, seminar rooms, computer laboratories, a large amphitheater and conference room, and the veterinary medical library.

The library, a branch of Ellis Library, has two learning centers with individual autotutorial carrels. Open daily, it is designed to serve veterinary medical and graduate students, and the teaching and research needs of the College. It supplements the libraries in the University's system.

Teaching laboratories facilitate learning through visual aids and demonstration materials, and provide work and storage space for each student.

Administrative offices in the Veterinary Medicine Building include those of the dean, associate deans, and the director of student recruitment and retention. Student, faculty and alumni records, and the College's fiscal office are also here.

The College houses campus cores for electron microscopy and transgenic animals.

**Connaway Hall.** Veterinary Pathobiology and its associated teaching and research programs are in several locations in this building. General teaching facilities include a lecture room. Additional facilities for teaching and research in diagnostic microbiology are in the diagnostic laboratory. Laboratory animal housing facilities occupy space on the first floor. In 1999 and 2002, Connaway Hall underwent a major renovation that created 10 new state-of-the-art research labs specializing in infectious disease research, genetic testing, and molecular biology.

**Veterinary Medical Science Building.** This building provides teaching and research laboratories for the physiology-pharmacology section of the Department of Biomedical Sciences. It houses research laboratories for faculty assigned to the diagnostic laboratory and carrels for graduate students.

**Veterinary Medical Teaching Hospital (Clydesdale Hall).** The Veterinary Medical Teaching Hospital (VMTH), housed in Clydesdale Hall, serves as a comprehensive medical center and as a setting for clinical instruction.

All levels of patient care, extending from routine preventative medicine to referral services in most clinical disciplines, are provided. Students pursuing the DVM degree and interns/residents engaged in postgraduate training actively participate with Department of Veterinary Medicine and Surgery faculty and staff in each phase of patient care.

The hospital is accredited by the American Animal Hospital Association and certified by the Missouri Veterinary Medical Board.

Clydesdale Hall actually includes three separate hospitals for horses, food animals, and companion animals. The Equine Hospital occupies half of the first floor and includes about 35 stalls, a neonatal unit, two large surgery suites, a special diagnostics room, an arena, and a treadmill for evaluation of lame horses. An equine ambulatory program was launched in 2001.

The Food Animal Hospital occupies the other half of the first floor and provides comprehensive health care for livestock. The design of the corrals, stalls, and chutes permits efficient, safe movement and restraint of cattle. About 35 stalls are available; some are designed to manage paralyzed cattle and recumbent calves. The Ambulatory Clinic provides





► Clydesdale Hall is three hospitals in one—equine, food animal, and companion animal. Various specialty areas are taught in the hospital including ophthalmology, cardiology, orthopedics, emergency and critical care medicine, herd health, nutrition, equine lameness, and oncology. Students spend two years in clinical work in Clydesdale.

individual and herd-health services for area livestock through the use of fully equipped vehicles.

The Companion Animal Hospital has 16 examination rooms (one specialized for dermatology examinations, two for cardiology exams, and two for specialized ophthalmology cases) with more than 150 cages and runs. Local clients are seen through the Community Practice Service. Veterinarians throughout the state and region refer clients to the Companion Animal Hospital to take advantage of its many specialized services and equipment. This includes computerized tomography, an MRI, a linear accelerator to administer radiation therapy, the Hill's Endoscopy Center, a cardiac catheterization laboratory, and joint replacement surgery. The hospital's intensive care unit (ICU), expanded in 2000, is staffed 24 hours a day. Doctors are always on site to ensure quality care.

The Companion Animal Hospital boasts one of the few veterinary medical cancer treatment programs in the country where many of the same cancer-fighting techniques and technology used in human hospitals are employed. Cancer diagnosis is aided by use of computed tomography and one of the few linear accelerators in the world dedicated to animal use. The College was a pioneer in using radiation therapy, and chemotherapy to fight cancer in animals.

**Middlebush Farm.** The 288-acre farm south of Columbia provides space and facilities for theriogenology instruction and veterinary medical research projects. A College-owned herd of cattle is maintained at this farm for teaching purposes.

**H. Richard Adams Conference Room and Auditorium.** A 250-seat conference center and auditorium is used for meetings, research, teaching, and other instructional purposes by the College. It features audiovisual and computer support equipment.

### Multi-User Equipment

The college houses campus cores for electron microscopy and transgenic animals. Additional equipment available to all departments include a confocal microscope, a computerized tomography unit, a radioanalytic imaging system, an MRI, an optic imaging platform and frame integrator for ethidium bromine gels, a research animal angiography laboratory, and still photograph and video digitizing equipment.

### Related Facilities

MU is one of the few universities in which a College of Veterinary Medicine and schools of medicine and nursing are on the same campus with a college of agriculture, of arts and science, and engineering.

Interdisciplinary programs within the University permit the sharing of additional facilities by the MU College of Veterinary Medicine.

**Low-Level Radiation Laboratory.** This laboratory is owned by the College of Agriculture, Food and Natural Resources, and contains a low-level, whole-body radiation counter, which measures natural and induced radioactivity in animals and humans. Several research projects in the MU College of Veterinary Medicine use this facility.

**Dalton Cardiovascular Research Center.** This center provides 60,000 square feet of general laboratories, offices, and a specialized branch of Ellis Library. Interdisciplinary projects in cardiovascular physiology and related technology are coordinated by the center.

**Nuclear Reactor Research Facility.** The largest university-based research nuclear reactor in the nation is in MU Research Park. College of Veterinary Medicine faculty have access to this facility to conduct radiobiological experiments.





► The companion animal hospital at the MU College of Veterinary Medicine is a major referral center for the Midwest. It sees a large variety of cases, giving students a broad variety of experience. Many of these cases are seen in the Intensive Care Unit—one of the most up-to-date in the nation.

**Ellis Library.** One of the largest university libraries in the United States, Ellis houses more than 2.5 million volumes and 17,500 serials and journals in its main and branch libraries.

**Missouri Agricultural Experiment Station.** Certain research activities in the School of Natural Resources, and the Colleges of Human Environmental Sciences, Veterinary Medicine, and Agriculture Food and Natural Resources are coordinated through the experiment station.

**Campus Computer Network.** This network of computing facilities assists the educational and research programs of all divisions at MU.

### Faculty Accomplishments

The faculty consists of more than 125 assistant, associate, or full professors. There are also 20 adjunct faculty members who assist in specialized areas. In addition, there are more than 50 graduate students and approximately 25 residents and interns.

The Comparative Medicine training program in veterinary pathobiology has been funded continuously by NIH for 36 years. This program provides post-DVM training in comparative medicine and has more than 75 alumni in the biomedical research community.

Faculty service in the Veterinary Medical Teaching Hospital's section of ophthalmology resulted in 1993 in the Ruth Krauechi-Missouri Professorship in Veterinary Ophthalmology, the first endowed professorship in the College. In 1994, the Gilbreath-McLorn-Missouri Professorship in Comparative Medicine was endowed. These were followed by the Ralston Purina-Missouri Program in Small Animal Nutrition, the E. Paige Laurie-Missouri Program in Equine Lameness, the Tom and Betty Scott-Missouri Program in Veterinary Oncology, the

Charles and Charlene McKee-Missouri Program in Microbial Pathogenesis, and the Thelma Zalk-Missouri Professorship in Tumor Angiogenesis.

Incalculable savings in money and animal and human lives have been achieved by the constant surveillance of the Veterinary Medical Diagnostic Laboratory and the Veterinary Medical Teaching Hospital. For example, Veterinary Medical Diagnostic Laboratory faculty found heptachlor, an insecticide, had contaminated milk from 700 cows in southwestern Missouri. Prompt action prevented widespread hazardous insecticidal exposure to humans.

Faculty have received several honors on a competitive basis campuswide, across the nation, and on an international scale. Among the faculty are Fulbright Scholarships, William T. Kemper Fellowship in Teaching, Academic Research Enhancement Awards, MERIT and FIRST Awards from the National Institutes of Health, the Orthopedic Research Society's New Investigator Award, and two Pravin Bhatt Young Investigator Awards.

College of Veterinary Medicine faculty also include the editor of the monthly "Current Therapy: Large Animal Theriogenology," and the editor of the journal "Advances in Small Animal Medicine and Surgery."

### Student Accomplishments

The College graduates annually approximately 70 new veterinarians from the rigorous four-year curriculum. Students in the College are involved in many activities related to veterinary medicine. Several have held offices in the national Student American Veterinary Medical Association. Many are active in the local community, especially participating in programs of animal care involving the elementary grades.



An Open House for the public is organized and conducted each year by veterinary student volunteers. The goal is to educate the public on the scope and depth of veterinary medicine. More than 3,000 people tour the College and attend demonstrations during Open House.

### Strengths

The MU College of Veterinary Medicine has several foci of strength. One is the unique clinical curriculum. The curriculum in the last two years requires six continuous weeks in each of seven clinical specialties. Teaching is done in a form of apprenticeship with as much involvement as possible in the Teaching Hospital. The design of teaching within blocks is highly flexible and permits frequent adaptation and improvement. Graduates are offered an average of nearly three jobs each.

The Veterinary Medical Teaching Hospital and the Veterinary Medical Diagnostic Laboratory are the only full-service veterinary diagnostic centers in the State of Missouri. They are among only five such centers in the Midwest.

The Comparative Medicine training program is the most successful in the nation. This program has been funded continuously by NIH for more than three decades. During the past five years, this program has been awarded more than \$18 million in extramural funds for research, research training, and clinical services. More than 80 scientists have received a MS, PhD, or training for clinical board certification. The faculty in this program have had key roles and are principal investigators in the establishment of the NIH Support Mouse, Rat and National Swine Resource and Research Centers. Faculty in Pathobiology were instrumental in obtaining a Regional Biocontainment Laboratory.

A cluster of molecular biologists have been established in the College. Current areas of research involve cell growth, hemotropic and infectious diseases, ocular diseases, breast cancer, prostate development, immunopathology, and cardiovascular diseases.

Biomedical Sciences has a highly active comparative medicine group for the study of cardiovascular diseases. A \$1 million angiography and cardiovascular surgery suite is located in this department and operated in conjunction with the MU School of Medicine to conduct comparative cardiovascular research. One biomedical sciences project will help future astronauts endure a journey to Mars.

In 2000, members of the Department of Biomedical Sciences received a second five-year, \$7 million grant from NIH to continue a study of the beneficial effects of exercise on cardiovascular disease using a pig model. The first part of this study, awarded in 1995, was the first NIH Program Project grant received by the University of Missouri.

The area of reproductive biology at the MU College of



► Veterinary medical students not only learn laboratory and clinical skills, but leadership techniques as well. Students organize and run several public events including the popular Dog Jog in the fall and Open House in the spring. The events give students an opportunity to share their love of animals with the citizens of Missouri.

Veterinary Medicine includes current studies on reproductive disorders, premature birth, embryo transfer, prostate development, endocrinology, and breast cancer mechanisms.

The MU College of Veterinary Medicine has some unique advantages compared to most other colleges of veterinary medicine. It is located in a major agricultural state with a large livestock industry. The opportunities for collaborative study in agriculture and comparative medicine are wide. For example, MU is one of only a few veterinary medical colleges on the same campus as a medical college and there are joint programs underway in orthopedics, ophthalmology, oncology, and other areas. The proximity and size of the MU Animal Science Research Center has resulted in many collaborative projects. The Dalton Cardiovascular Research Center and the MU Research Reactor are facilities that give MU investigators unique opportunities for many types of research. Washington University, St. Louis University, and Lincoln University have provided additional opportunities for collaborative research or instructional grants.

The Veterinary Medical Library is a regional resource of information for research and clinical investigations. Holdings include more than 20,000 books and 21,000 volumes.

The MU Veterinary Medical Teaching Hospital and the Veterinary Medical Diagnostic Laboratory are Midwestern regional referral centers for veterinary medicine.

Seven endowed professorships or programs have been established at the MU College of Veterinary Medicine since 1994.

Tom and Betty Scott from Kansas City endowed a program that will allow the College to become a major Midwestern referral center for animals suffering from cancer. This gift strengthened the College's already impressive veterinary cancer treatment program—one of only a few such programs in the



country. Cancer diagnosis is aided by the use of computed tomography and one of the few linear accelerators in the world dedicated for use on animals.

The E. Paige Laurie-Missouri Program in Equine Lameness, will facilitate research related to improving the diagnosis and treatment of lameness in horses. This endowment was made possible by a gift from Bill and Nancy Laurie, owners of Crown Center Farm in Columbia, Mo. and named in honor of their daughter, Paige. The Charles and Charlene McKee Missouri Professorship in Microbial Pathogenesis will allow recruitment of a leader in infectious disease research. The College's latest endowment is the Thelma Zalk-Missouri Professorship in Tumor Angiogenesis that will bridge the College's strong vascular biology and emergency cancer programs.

## Alumni

New graduates of the MU College of Veterinary Medicine receive more job offers at graduation than the national average for new veterinary medical graduates. Approximately 55 percent seek employment in small animal practices while 25 percent enter mixed animal practices and ten percent become predominantly large animal practitioners. Another ten percent go into advanced study programs.

The more than 2,700 alumni of the College have been very successful in their chosen areas of the profession. Many become involved in community affairs by becoming members of school boards, city councils, and mayors of towns and cities. Some are elected members of state legislative bodies. Many are elected to offices of state and national veterinary medical associations. Some have been prominent in federal positions. Others have advanced to prominence in veterinary medical colleges in teaching and research roles. Alumni have been active as administrators in veterinary medical colleges, industry, and government work. In the last 12 years, three of the presidents of the American Veterinary Medical Association, which represents 69,000 veterinarians, were graduates of the MU College of Veterinary Medicine.

The Missouri Veterinary Medical Alumni Association (MVMAA) is centered in the MU College of Veterinary Medicine Dean's Office. Officers are elected by the alumni. The Associate Dean of Student and Alumni Affairs is a permanent member of the Board of the MVMAA. Each autumn, in conjunction with the MVMAA, the MU College of Veterinary Medicine hosts an alumni reunion day. The MU College of Veterinary Medicine currently has the highest percentage of graduates who become members of the MU Alumni Association.

## College Publications

The official chronicle of College activities is *Veterinary Medical Review*, a five-color bian-



nual magazine. It is sent to all MU veterinary medical alumni, former faculty, current students, parents of students, friends of the College, and all veterinarians practicing in Missouri.

There are two newsletters produced for distribution outside the MU College of Veterinary Medicine, *Arkeology* and *The Vector*. *Arkeology* is a biannual five-color newsletter that reports the impact of gifts on the College and recognizes students, staff, and faculty for their achievements. It is mailed to MU Veterinary Medical Teaching Hospital clients, alumni, donors, and other interested people. *The Vector* is a monthly electronic newsletter directed to companion animal practitioners. It contains scientific updates and items from the news, particularly involving Missouri animal owners or veterinarians.

Two in-College newsletters, the *Research Update* and the *Veterinary Medical Update*, are published monthly and bimonthly, respectively.

The College's main web site is [www.cvm.missouri.edu](http://www.cvm.missouri.edu). The Veterinary Medical Teaching Hospital's web site is located at: [www.vmeth.missouri.edu](http://www.vmeth.missouri.edu). Department and program web sites are hyperlinked from these sites.

## Service Units

*The Veterinary Medical Teaching Hospital*, Clydesdale Hall, is a new state-of-the-art teaching and medical service facility. The VMTH is an integral component of the College, and is essential to the teaching mission since it is the required teaching laboratory for training students for the DVM degree. Faculty and students in the VMTH diagnose and treat more than 17,000 patients annually. Students are involved in all cases. The hospital is a clinical laboratory, providing specialty services to animal owners in Missouri and throughout the Midwest.

*The Veterinary Medical Diagnostic Laboratory* at the College conducts 200,000 diagnostic tests annually, including 2,000 necropsies. It is the only veterinary diagnostic laboratory in Missouri fully accredited by the American Association of Veterinary Laboratory Diagnosticians.

*The MU-CVM Information Technology Unit* (CVM-IT) maintains a state-of-the-art information management system supporting the College's teaching, service, and research missions. CVM-IT provides end-user support for the CVM's computing technology infrastructure for biomedical research, veterinary care, educational applications, specialized graphics arts production services, and College-wide administrative support. The unit assists faculty, staff, and students in the development of materials for educational and research presentations.







► Students in the teaching hospital learn veterinary medicine from instructors who have experience in large and small animal clinics, regulatory service, research, and specialty medicine. Such a depth of knowledge helps students better understand career options and issues facing the profession.

# Careers in Veterinary Medicine

## Practice Opportunities in Veterinary Medicine

*Today, most veterinarians* are self-employed or work for private practitioners in individual or group practices. Successful practitioners work long and irregular hours. They must be responsive to the emergency needs of their clientele, have well-developed interpersonal, managerial and communicative skills, and must be astute business people. The type of practice selected is usually based on the area or population center in which veterinarians choose to reside, their desired lifestyle, income expectations, and the type of animals with which they prefer working.

**General or Mixed Practice.** Veterinarians who treat all species of animals usually reside near rural areas. They are called general practitioners and work in mixed practices. There are more than 14,000 in the United States today. General practice is a rigorous, physically-demanding activity. It provides opportunity to become a dedicated public servant and earn a modest

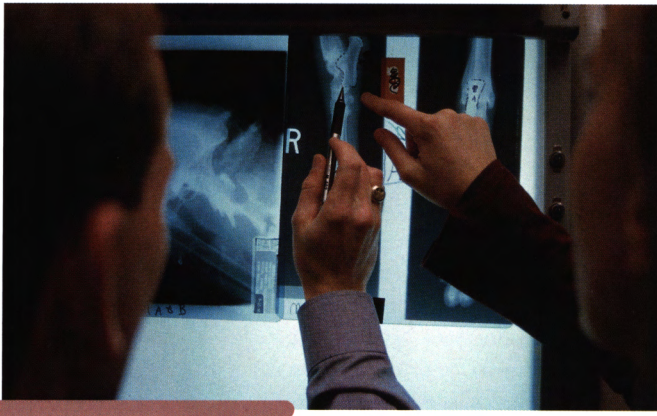
Veterinary  
medicine is a proud profession,  
offering challenging and rewarding  
career opportunities  
in private practice, government, industry,  
education, and the military.

income. Formal training beyond the DVM degree is not required. It presents the challenge of keeping abreast of developments in medical or surgical approaches to all diseases of animals through constant reading and attendance at continuing education programs.

**Large Animal Practice.** More than 7,500 veterinarians in the U.S. work predominantly with livestock or horses. Work with these large animals is rigorous and sometimes dangerous. It requires special knowledge, skills, and experience in safe handling of animals. An understanding of the economic constraints and management conditions under which they are raised is also required.

Usually large animal practitioners travel to farms. They spend many hours on the road and sometimes must function under challenging field conditions, where restraint facilities and sanitary conditions are less than optimal. Economic realities and the value of the patient are prime factors in medical decisions in large animal practice and are major determinants of practitioners' income. Formal training beyond the DVM degree





► Students learn best by doing. They are active participants in cases brought to the MU Veterinary Medical Teaching Hospital, the largest referral hospital in Missouri.

is not required, but to be successful, large animal practitioners must keep current on emerging knowledge and techniques in large animal medicine and must be familiar with advances in livestock technology and associated health problems.

**Small Animal Practice.** More than 34,000 small animal practitioners minister to the health needs of dogs, cats, exotics, and pet birds in the United States. The veterinarians usually reside in towns, cities, or the suburbs and operate in small animal clinics or pet hospitals that require considerable investment in buildings, furnishings, equipment, and upkeep. For the most part, the patients are brought to the clinic. Small animal veterinarians function in an environment conducive to practicing high-quality medicine and surgery with equipment and supplies comparable to a physician's office or a hospital. The DVM degree provides adequate background for small animal practice.

**Limited Practices.** Some veterinarians choose to develop expertise in the health problems of one species. For example, practitioners may specialize in horses, cattle, cats, exotics, or poultry. Equine practices are the most numerous of these species-limited practices. Equine practitioners understand the special needs of horses, speak the language of horse owners, and fill their special needs. Some practice exclusively on racehorses.

**Veterinary Medical Clinical Specialists.** Some veterinarians become specialists in one of 20 American Veterinary Medical Association-approved specialties, such as radiology (X-ray diagnosis and therapy), dermatology, internal medicine, small animal or equine surgery, theriogenology (reproductive diseases), or ophthalmology. They may have general practices or limit their activities to certain types of diseases. Some travel to several practices; others are specialists within group practices. Some are solo practitioners handling special cases referred by other veterinarians. Clinical specialists develop their expertise through training in formal residency programs at universities offering a veterinary medicine curriculum or specialists in practice. Specialty diplomate status is granted by boards or colleges. Diplomates are board certified.

**Veterinary Medical Consultants.** Veterinarians with special knowledge, skills, and extensive experience with certain aspects of the profession or livestock enterprises, serve as consultants to large farms, ranches, feedlots, pharmaceutical manufacturers,

government agencies, feed companies, or other organizations needing professional advice. Consulting veterinarians can be current or former practitioners, or employees of corporations, government agencies, or universities. The opportunity to serve as a consultant is usually based on expertise or national prominence developed through years of activity and achievement in a narrow area. Consulting activities provide supplemental income, travel opportunities, and involvement in a variety of interesting animal-related activities.

### Other Employment Opportunities in Veterinary Medicine

While most veterinarians are self-employed or in private practice, about 30 percent are salaried employees of government agencies, universities, or corporations. In these positions, they are involved in regulatory activities, diagnostic services, research, product development, sales, marketing, or teaching. Many assume administrative roles.

For the most part, new graduates work in private practice for a few years before employment in government and industry. Veterinarians seeking academic and research careers sometimes practice a few years first, but often immediately pursue advanced graduate studies leading to MS or PhD degrees or residency programs leading to board certification in clinical specialties.

**Government Service.** In municipal, state, and federal governments, veterinarians are employed mostly in health and agricultural agencies. The U.S. Department of Agriculture is the single largest employer of veterinarians. In the USDA, veterinarians are involved in research, food inspection programs, animal disease control and eradication programs, and in the quality supervision of vaccines and serum used in animals.

Other major governmental employers are the National Institutes of Health, which involve veterinarians in research and in laboratory animal medicine and comparative pathology, the Food and Drug Administration, the U.S. Public Health Service, the U.S. military, Homeland Security, and the Agency for International Development. These positions involve a variety of scientific, professional, and managerial activities, sometimes with international assignments.

**Corporate Employment.** Drug and pharmaceutical manufacturers, feed and pet food manufacturers, and corporate farms and feedlots use veterinarians in research and development, management consultation, herd-health programming, product complaint disposition, technical services, sales, and promotional activities and in management and executive capacities. In these organizations, the training and experience offered by veterinarians often provides specialized approaches and unique dimensions to the corporate structure.

**Academic Employment.** In the United States, more than 4,000 veterinarians are employed by colleges and universities. The majority are in veterinary medical colleges, medical schools, and colleges of agriculture, but some work throughout the academic world.

Those pursuing academic careers usually seek advanced training and earn an MS or PhD degree in a basic biomedical or clinical science or seek residency training leading to board certification in a clinical specialty.





► Modern veterinary medicine uses most of the same diagnostic techniques as human medicine. Students gain experience in these areas of veterinary medicine through rotations through various specialty areas.

# Admission

## Preparing for Admission

### High-School Study

Although there are no fixed requirements, high-school preparation for the pre-professional course work should be concentrated in three areas:

**Mathematics** - A good understanding and working knowledge of math is usually essential for success in quantitative sciences such as chemistry and physics.

**English and communication skills** - The abilities to read, write, and communicate verbally are absolutely essential for a professional career.

**Science, especially biology, chemistry, and physics** - These subjects should be appealing and comprehensible.

Therefore, it is advisable that a student take four years of math, four years of English, two years of biology, and as much chemistry and physics as possible. A working knowledge of personal computers is also advised.

### Pre-Professional Study

Students must satisfactorily complete at least 60 semester hours of college work by the end of the winter semester (spring quarter) of the year in which admission is sought. However, the average of those admitted is usually more than 100 semester hours. Students admitted with only two years of pre-professional work are usually those with exceptional scholastic records and aptitude scores.

Students interested in completing the pre-professional requirements at MU should write the Office of Admissions, 230 Jesse Hall, Columbia, Mo. 65211.

Students seeking admission to the College of Veterinary Medicine should prepare by taking undergraduate courses with a strong emphasis in mathematics, communication, and the physical and biological sciences.

Since admission into the College is competitive, the ability of most students entering the professional program is high. Summary profiles of the four classes currently enrolled contain the following statistics:

### Semester Credit Hours

Average total hours of enrollment as vet med student	160 (20 per semester)
Average cumulative grade point upon entry into the college:	3.63
Average physical science GPA upon entry into the college:	3.45
Average biological science GPA upon entry into the college:	3.60
Average last three semesters undergraduate GPA:	3.68



The last four graduating classes easily secured jobs. The number of job offers per student was more than 2.4. Most graduates go into private practice. More than 25 percent plan to seek postgraduate specialty training. Average scores and passing rates on the North American Veterinary Licensing Examination have frequently been above the national average.

The following courses and credit hours must be passed in residence at an accredited institution of higher learning to qualify for admission to the MU College of Veterinary Medicine. MU courses listed fulfill the requirements.

**English or courses in communication skills: 6 hours**

1000 Exposition, 1510 Creative Writing, 1000H Honors Exposition, 1530 Creative Writing, 2030 Technical Writing or more advanced courses, 1200 Introduction to Speech Communication or more advanced courses.

**Mathematics: 3 hours**

1100 College Algebra or more advanced courses.

**Inorganic chemistry: 8 hours**

1310, 1320, and 1330 General Chemistry I, II, and III or more advanced courses.

**Organic chemistry: 5 hours**

(requires laboratory)

2050 Introduction to organic chemistry (2100 and 2120 organic chemistry is highly recommended).

**Biochemistry: 3 hours**

(requires organic chemistry prerequisite)

3630 or higher.

**Physics: 5 hours**

1210 and 1220 Elementary College Physics or more advanced courses (comprehensive introductory course or courses must include electricity).

**Biological science: 10 hours**

General Botany or 1500 General Biology or more advanced courses. Required biological science courses must be for science majors and taken in either the area of biology or zoology.

**Social sciences or humanistic studies: 10 hours**

Can include courses from history, economics, political science, geography, literature, mythology, psychology, philosophy, sociology, and anthropology.

**Electives: 10 hours**

**TOTAL: 60 hours**

Students should incorporate the pre-professional curriculum into a degree program other than veterinary medicine, since only a limited number of applicants can be admitted into the MU College of Veterinary Medicine.

Equivalent courses at other accredited colleges or universities are accepted. If a student has credit by examination, a more advanced college-level course in the same discipline must be taken, except whenever the MU Registrar's Office transfers the credits to a MU transcript. P/F or S/U grading system courses are not counted for admission to the College of Veterinary Medicine. If a grade below D is made in a required course, the course must be repeated. Distance learning courses are not accepted for admissions purposes, except for those, which are accepted for partial fulfillment of the requirements toward a baccalaureate degree in biology, chemistry, or animal

sciences at the University of Missouri.

Courses taken that were restricted exclusively to students who strive for a two-year technical degree, such as veterinary technology or practical nursing, are included in the cumulative GPA calculations. However, restricted enrollment two-year technical degree courses are not accepted to meet minimum course requirements, nor included in the science GPAs, the last three semesters' GPA, or average course load.

**Selected Elective Courses**

Some of the faculty in the MU College of Veterinary Medicine believe certain electives provide information useful to the material taught in their classes. These are not required courses and not all faculty agree on whether these courses are more desirable than other courses taken in undergraduate studies. However, the types of courses identified by some faculty as potentially more useful than others are: animal nutrition, animal reproduction, anatomy, animal husbandry, physiology, business accounting, genetics, microbiology, psychology, and statistics.

**Admissions Guidelines**

Since the College is a state-supported institution and there are more applicants each year than can be admitted, it has been necessary to establish the following priorities concerning admission:

1. First preference is extended to residents of Missouri.
2. Secondary consideration is extended to applicants from other states.
3. Applicants must have a cumulative GPA of 2.5 on a 4.0 scale if a resident of Missouri or a minimum of 3.0 if a non-resident.
4. International students are not given consideration for the professional program, but they may enter graduate programs or the Evaluated Clinical Experience for Foreign Veterinary Graduates program, if qualified.
5. Transfers are only accepted from AVMA-accredited colleges.
6. A minimum score of 15 must be attained on the Medical College Admission Test (MCAT) to qualify for application.
7. Applicants are required to spend a minimum of 40 hours observing one of more veterinarians actively engaged in their normal work environment (more competitive applicants have 300, or more, hours observing veterinarians in various aspects of practice).
8. Each applicant must complete at least one semester as a full-time student (minimum caseload of 12 undergraduate or nine graduate semester hours) in an accredited college within the three years preceding February 1st of the year of desired admission. Within those three years, five credit hours in biology are required.

**Application Procedure**

All students interested in veterinary medicine should write or call the College's Associate Dean for Academic Affairs or the Admission Advisor for advisement during the fall semester preceding the year of application.



Residents of Missouri are required to apply directly to the MU College of Veterinary Medicine. Application forms, for Missouri residents, must be requested and submitted no later than November 1st of the year before admission is sought. Applications from the Veterinary Medical Colleges Application Services (VMCAS) will not be accepted from Missouri applicants.

Non-Missouri residents may apply either directly to the College (the recommended method) or through VMCAS. VMCAS applications may be requested from the Veterinary Medical Colleges Application Service, 1101 Vermont Ave. NW, Suite 710, Washington, DC 20005-3521, or through their web address at: [www.aavmc.org/vmcas](http://www.aavmc.org/vmcas). Non-residents must contact the Missouri Office by October 1 to register their intent to apply. *Supplemental applications for non-residents who apply through VMCAS must be requested directly from the College or its web-site, completed and postmarked no later than November 1.*

U.S. citizens or permanent residency is required. Missouri residents are interviewed in February and March. Non-residents are not interviewed.

Students seeking admission should follow this procedure:

1. All applicants requesting a direct application should request admission forms from the Office of the Associate Dean for Academic Affairs, College of Veterinary Medicine, W-203 Veterinary Medicine Bldg., Columbia, Mo. 65211. Non-resident supplemental applications must be requested directly from the MU College of Veterinary Medicine (or through its web site: [www.cvm.missouri.edu](http://www.cvm.missouri.edu)), completed, and returned to the College with a postmark no later than November 1. Application materials are available July 1 through October 15.
2. Applicants must take the general Medical College Admissions Test (MCAT). Information concerning this test is sent with other admission forms.

The College's Admissions and Scholarship Committee reviews all applications and determines an applicant's eligibility. After initial screening, the remaining applicants are evaluated on the basis of their application, academic records, MCAT scores, personal interviews (when required), experience, and personal references.

The committee selects students of good academic record with as many of the following characteristics as possible: high scholastic ability, reasonable judgment and common sense, moderately wide range of interests, evidence of leadership ability, pleasing and alert personality, willingness to work for a worthwhile objective, and understanding of the scope of veterinary medicine.

### **Pre-veterinary Medical (PVM) Scholars and AgScholars Programs**

**Definition** These programs guarantee acceptance into the MU College of Veterinary Medicine, upon satisfactory completion of the undergraduate requirements at the University of Missouri-Columbia.

**Eligibility** High school seniors and MU freshmen with an ACT composite score of at least 30 or equivalent SAT score are eligible to apply for the Pre-Veterinary Medical Scholars

Program. Required minimum ACT for AgScholars is 27.

**Veterinary Medical Mentors** Students qualifying for the PVM Scholars and AgScholars Programs will be assigned a faculty mentor in the MU College of Veterinary Medicine. Whenever possible, Scholars Program students will be invited to participate in veterinary medical research projects and other appropriate events in the MU College of Veterinary Medicine.

**How to Apply** Application forms will be available in the office of Academic Affairs in the MU College of Veterinary Medicine. Eligible applicants will be invited for an interview. The application deadline for current high school seniors is April 15, and for MU freshmen, September 15.

**Selection Process** Selection is based on meeting the academic eligibility requirements and attaining a satisfactory score from the interview. Eligibility is not limited to Missouri residents; however, the number of non-resident students who can be accepted may be limited. U.S. citizenship or permanent residency is required.

### **Requirements:**

1. To remain eligible, all scholars\* must satisfactorily complete the following requirements on the MU campus:
  - a. English or communications 6 hours
  - b. Mathematics 3 hours
  - c. Inorganic chemistry 8 hours
  - d. Organic chemistry 5 hours
  - e. Biochemistry 3 hours
  - f. Physics 5 hours
  - g. Biological sciences 10 hours
  - h. Social sciences or humanities 10 hours
  - i. VBMS/VPB/VMS 1-400 level 5 hours
- \*Additional courses are required of AgScholars
2. In addition, the student must:
  - a. Achieve a grade of B- or higher in all required courses.
  - b. Achieve a cumulative GPA of 3.3 or higher.
  - c. Acquire a minimum of 200 hours observation time of veterinary medicine (a minimum of 40 hours each with a small animal veterinarian, an equine veterinarian, and a food animal production veterinarian).
  - d. Maintain an average course load of 15 hours per semester.
3. Students who are eligible for formal acceptance must take the MCAT, scoring 24.
4. Program may be completed in two years and must be completed in four years.
5. At the time of admission, the student must complete all routine application requirements, including application forms, and pay an application fee.
6. Meet with his/her mentor each month during fall and winter semesters.
7. Become and remain an active member of the Pre-Veterinary Club and attend at least 10 meetings per year, or a pre-approved substitute.
8. Meet minimum attendance and participation requirements for supervised instruction in the MU Veterinary Medical Teaching Hospital.



**Academic Review During The Program** At the end of the fall and winter semesters, each PVM and AgScholar's cumulative academic performance will be reviewed by the Admissions and Scholarship Committee. A student may be placed on academic probation by the committee if:

1. The student's cumulative GPA falls below 3.3, or
2. The student earns less than a B- grade in any one of the required lecture or laboratory courses.

### Refund of Academic Fees

Students leaving the College may receive a refund of fees. Subject to certain exceptions and because of the nature of the curriculum, refunds will be calculated after the Cashier's Office receives a written request from the student. Fee refunds are paid in accordance with the following schedule:

- 100% refund before first day of class less \$10 for processing enrollment.
- 90% refund after 1st day and before 5th day of class.
- 50% refund after 5th day and before 11th day of class.
- 25% refund after 11th day and before 21st day of class.

If you have questions, contact the Office of the Associate Dean for Academic Affairs, College of Veterinary Medicine.

*The University of Missouri-Columbia complies with the guidelines set forth in the Americans with Disabilities Act of 1990. If you have special needs as addressed by the ADA and need assistance with any portion of the admissions process, notify us at (573) 884-6435, as soon as possible. Reasonable efforts will be made to accommodate your special needs.*

## 2004-2005 Academic Calendar COLLEGE OF VETERINARY MEDICINE UNIVERSITY OF MISSOURI-COLUMBIA

### AUGUST - OCTOBER

#### VM-1 Period 1

VBMS 5500	Veterinary Anatomy (Part 1)	2.5
VBMS 5502	Veterinary Microscopic Anatomy (Part 1)	1.5
VBMS 5504	Veterinary Physiology (Part 1)	3.0
VBMS 5506	Vet. Cellular & Molecular Biology (Part 1)	2.0

### OCTOBER - DECEMBER

#### VM-1 Period 2

VBMS 5500	Veterinary Anatomy (Part 2)	2.5
VBMS 5502	Veterinary Microscopic Anatomy (Part 2)	1.5
VBMS 5504	Veterinary Physiology (Part 2)	3.0
VBMS 5506	Vet. Cellular & Molecular Biology (Part 2)	2.0

### JANUARY - FEBRUARY

#### VM-1 Period 3

VBMS 5011	Veterinary Anatomy (Part 1)	4.0
VBMS 5503	Veterinary Microscopic Anatomy	2.0
VBMS 5051	Gastrointestinal Physiol. & Nutrition	2.0
VMS 6140	Nutrition	1.5

### MARCH - APRIL

#### VM-1 Period 4

VBMS 5012	Veterinary Anatomy (Part 2)	4.0
VBMS 5052	Veterinary Endocrinol. & Reprod. Biology	2.0
VPB 5511	Veterinary Immunology (Part 1)	1.5
	<i>(Same as VPB 4510, Introduction to Immunology)</i>	
VPB 5555	Epidemiology and Biostatistics	2.0
	<i>(Same as VPB 4550, Epidemiology and Biostatistics)</i>	

### MAY - JUNE

#### VM-2 Period 5

VPB 5512	Veterinary Immunology (Part 2)	1.5
	<i>(Same as VPB 4510, Introduction to Immunology)</i>	
VPB 5552	Veterinary Bacteriology	2.5
VPB 5575	General Veterinary Pathology	3.0
VPB 5579	Veterinary Genomics	1.5
VPB 5580	Introduction to Veterinary Informatics	1.0

### FIRST JULY - AUGUST VACATION

#### VM-2 Period 6

VPB 5553	Veterinary Bacteriology	3.0
VPB 5554	Veterinary Virology (Part 1)	2.0
	<i>(Same as VPB 4540, Domestic Animal Virology)</i>	
VPB 5557	Veterinary Parasitology	3.0
	<i>(Same as VPB 4570, Animal Parasitology)</i>	
VPB 5576	Veterinary Systemic & Special Pathology	3.0

#### VM-2 Period 7

VBMS 5507	Veterinary Pharmacology	3.0
VPB 5558	Veterinary Public Health	2.0
	<i>(Same as VPB 4580, Veterinary Public Health)</i>	
VPB 5577	Veterinary Systemic & Special Pathology	3.0
VMS 6130	Fundamentals of Veterinary Business Management	1.0

#### VM-2 Period 8

VBMS 5508	Veterinary Pharmacology	2.0
VPB 5578	Veterinary Clinical Pathology	3.0
VPB 6010	Laboratory Animal Medicine	1.5
VMS 6020	Veterinary Radiology	2.0

#### VM-2 Period 9

VBMS 5509	Veterinary Toxicology	3.0
VMS 6030	Veterinary Anesthesiology	2.0
VMS 6040	Companion Animal Medicine	4.0
VMS 6060	Small Animal Surgery	2.0

#### VM-3 Period 10

VMS 6050	Small Animal Medicine	2.5
VMS 6071	Small Animal Surgery	2.0
VMS 6072	Conventional Surgery and Anesthesia Lab	0.5
VMS 6081	Food Animal Medicine & Surgery	2.5
VMS 6090	Small Animal Critical Care	1.0
VMS 6151	Equine Medicine and Surgery	2.0

### SECOND JULY - AUGUST VACATION

#### VM-3 Period 11

VMS 6073	Fundamental Surgery/ Anesthesia Lab	0.5
VMS 6152	Equine Medicine/Surgery	1.5
VMS 6110	Theriogenology	3.0
VMS 6120	Veterinary Ophthalmology	1.0
VMS 6082	Food Animal Medicine and Surgery	2.0

*Electives 1-2*

The remainder of the VM-3 and all of the VM-4 years consist of 7 required six-to-eight-week clinical rotations:

1. Food Animal Medicine/Surgery
2. Equine Medicine/Surgery
3. Small Animal Surgery
4. Small Animal Medicine
5. Pathology
6. Medical Services: Anesthesiology, Radiology
7. Specialty mini-rotations: Small Animal Specialty Medicine, Theriogenology, Ophthalmology

In addition to the required rotations, each student must take 2 rotations in six-to-eight-week electives.

Each student is also scheduled 3 free rotations of six-to-eight weeks duration which are usually used as preceptorship time.

The sequence of rotations is different for each student. Sequences are chosen by students in the VM-2 year after a lottery to determine who has priority in their choice of rotation sequence.





MU has numerous scholarship and loan funds. Information on these funds is available from the Director of Financial Aid, or the Office of Academic Affairs, College of Veterinary Medicine.

► Community practice veterinary medicine is the bedrock of the profession. Students work with clients and their animals from their first week in the clinic under the supervision of faculty.

## Scholarships, Awards, Aid Programs and Student Employment Opportunities

### Fees and Expenses\*

The following schedule lists fees and estimated expenses of an unmarried student living off campus for the year 2003-2004.

#### **VM-1, First Year (August-July)**

Fees (32 hours)	\$14,360
includes MU educational fee, veterinary medicine supplemental fee, and student activity fee.	
Supplies, books, instruments	\$1,350
Living expenses	\$13,720
includes off-campus rent, utilities, food, transportation, clothing and personal items, insurance, and recreation.	
<b>Total estimated fees and expenses</b>	<b>\$29,430</b>
Non-resident tuition (additional)	\$13,230

#### **VM-2, Second Year (August-July)**

Fees (32 hours)	\$14,360
Supplies, books, instruments	\$1,996
Living expenses	\$16,460
<b>Total estimated fees and expenses</b>	<b>\$32,816</b>
Non-resident tuition (additional)	\$13,230

#### **VM-3, Third Year (July-July)**

Fees (32 hours)	\$14,420
Supplies, books, instruments	\$2,714
Living expenses	\$16,460
<b>Total estimated fees and expenses</b>	<b>\$33,594</b>
Non-resident tuition (additional)	\$13,230

#### **VM-4, Fourth Year (July-May)**

Fees (32 hours)	\$14,420
Supplies, books, instruments	\$3,408
Living expenses	\$15,090
includes expenses for job interviews	
<b>Total estimated fees and expenses</b>	<b>\$32,918</b>
Non-resident tuition (additional)	\$13,230

Detailed information on fees and expenses, including supplemental fees, is furnished in the Schedule of Courses. Upon request, the Admissions Office, 230 Jesse Hall, Columbia, Mo. 65211 will furnish the pamphlet, Residency and Educational Fee Rules.

The MU College of Veterinary Medicine provides students with high quality binocular microscopes that meet College requirements and receive periodic maintenance. IBM compatible computers are available for student use in two computer laboratories.

\* The University reserves the right to modify by increase or decrease the fees charged for attendance and other services at the University, including but not limited to educational fees, at any time when in the discretion of the governing board the same is in the best interest of the University, provided that no increases can or will be effective unless approved by the governing board not less than thirty (30) days prior to the beginning of the academic term (semester, etc.) to which the fees are applicable and such increase does not exceed ten (10) percent over the fee level existing immediately prior to the increase, with all modification of fees to be effective irrespective as to whether fees have or have not been paid by or on behalf of a student prior to the effective date of the modification.



## Scholarships, Awards, and Aid Programs

MU has numerous scholarship and loan funds. Information on these funds is available from the Director of Financial Aid, 11 Jesse Hall, Columbia, Mo. 65211, or the Office of the Associate Dean for Student and Alumni Affairs, W-213 Veterinary Medicine Building, College of Veterinary Medicine, University of Missouri, Columbia, Mo. 65211.

### Loans

Students should establish themselves as professional students before applying for money from the funds available to veterinary medicine. To apply for the Health Professional Loan, Perkins Loan, or the Ford Federal Direct Loan Program (subsidized or unsubsidized student loans), students must complete the Free Application for Federal Student Aid (FAFSA).

*Health Professions Student Loan Program (HPL)* - HPL loans are federal loans and are borrowed directly from the University of Missouri-Columbia. Eligibility is determined by information the student and his or her parents provide on the FAFSA. The yearly maximum is set by the Student Financial Aid Office, not to exceed financial need. HPL loans have a five percent interest rate and a twelve-month grace period. The Department of Health and Human Services makes the in-school and grace period interest payments. You must include parental financial information on your FAFSA regardless of age, marital status, or dependency status.

*Perkins Loan* - This is a federal loan borrowed directly from the University of Missouri-Columbia. Eligibility is determined by the information provided on the FAFSA by the student. The yearly maximum is set by the Student Financial Aid Office, not to exceed the \$6,000 federal allowed maximum. This loan has a five percent interest rate and a nine-month grace period. The Department of Health and Human Services makes the in-school and grace period interest payments.

*Ford Federal Direct Loan Program-Subsidized Loan (FFDL-S)* - FFDL-S's are loans borrowed from the federal government and are based on eligibility determined by the FAFSA. The yearly maximum is \$8,500, and for new borrowers, the interest rate is variable with an 8.25 percent ceiling. The federal government makes the in-school and grace period interest payments. There is a six-month grace period after graduating or dropping below half-time enrollment.

*Ford Federal Direct Loan Program-Unsubsidized Loan (FFDL-U)* - FFDL-U loans are federal loans borrowed directly from the federal government. Eligibility is based on the cost of education. A FAFSA is required. The yearly maximum is \$30,000, plus any amount you did not borrow on the FFDL-S, or a total maximum of \$38,500 for the two programs. The interest rate for new borrowers is variable with an 8.25 percent ceiling. Students are responsible for the in-school and grace period interest payments, but they can be deferred. There is a six-month grace period after graduating or dropping below half-time enrollment.

For more information about financial aid, contact Ms. Cheri Marks, 11 Jesse Hall, University of Missouri, Columbia, Mo. 65211. Phone: 573/882-7506 or 800/225-6075 (in Missouri).

### College Maintained Emergency Loan Programs

The College maintains several emergency loan programs. Information about these loans is available through the Director of Financial Aid, 11 Jesse Hall, Columbia, Mo. 65211.

### College Maintained Scholarships and Awards

The College maintains several scholarships and awards, often funded by alumni and friends of the College, that are awarded to students each spring during the College's Honors Banquet. In 2004 these awards totaled more than \$200,000. More information about these scholarships and awards is available through the Office of the Associate Dean for Student and Alumni Affairs, W-213 Veterinary Medicine Building, College of Veterinary Medicine, University of Missouri, Columbia, Mo. 65211.

Following is a list of many of these awards.

#### *Awards for Proficiency, Scholarship, and Activity During the First Two Years of Study*

- Physiology Award
- Anatomy Award
- Microscopic Anatomy Award
- Microbiology Award
- Dr. and Mrs. Leslie C. Murphy Scholarship
- Frank E. and Ena Hickerson Rhoads Scholarships
- Ruth Elizabeth Johnston Memorial Veterinary Medicine Scholarship
- Robert J. and E. Marlese Gourley Scholarship
- Paul and Earlene Nicoletti Scholarship in Veterinary Medicine
- Kevin Wayne King Memorial Scholarship
- A.H. Groth Student Research Award
- Pfizer Award
- Nestle Purina Pet Care Scholarship
- Frank Wells Scholarships
- J.E. Salsbury Scholarships
- The Hazel C. and Edgar F. Ebert Memorial Scholarship Fund in Veterinary Medicine
- Hill's "Buddy" Award
- Joseph Worthington Crane Memorial Scholarship
- Comparative Orthopaedic Laboratory Clinical Aptitude Award
- Comparative Orthopaedic Laboratory Excellence in Research Award
- Cecil Elder Award
- Pre-Veterinary Medicine Club Scholarship
- West Central VMA Leadership Award
- MVMA Auxiliary Scholarship
- Miss America Scholarship in Veterinary Medicine
- Veterinary Medicine Memorial Scholarship
- Phi Zeta Award
- Schering-Plough Animal Health Award



- Orthopedic Foundation for Animals Award
- Niemeyer Award in Veterinary Medicine
- Virginia L. Busch Scholarship
- Eagle Animal Hospital Scholarship

*Awards for Proficiency, Scholarship, and Activity  
During The Last Two Years of Study*

- Simmons & Associates Educational Trust Fund Award
- Rolf Memorial Award
- AVMA Auxiliary Award
- Columbia (MO) Kennel Club Award
- Kintner Veterinary Diagnostic Laboratory Award
- Lloyd Selby Award
- Adrian J. Durant Award
- Emmett McCune Avian Medicine Award
- Gary Weddle Wildlife and Exotic Animal Award
- American Association of Feline Practitioners Award
- The Nancy L. Roth Equine Award
- Harlan E. Jensen Ophthalmology Award
- The American College of Veterinary Radiology
- American College of Veterinary Surgeons Student Award
- Lucy B. Davis Scholarships in Small Animal Medicine and Surgery
- Pfizer Small Animal Proficiency Award
- Dr. Edgar Ebert Memorial Awards
- English Practitioner Award
- Randolph Practitioner Award
- Mary T. Wernert, DVM '86 Memorial Scholarship
- Swine Proficiency Award
- Theriogenology Award
- Food Animal Proficiency Award
- Anesthesiology Award
- Cardiology Award
- Allan Hart Clinical Proficiency Scholarship
- Philip J. Shanker Scholarship in Feline Medicine
- Aronson Veterinary Radiology Award
- Ives Cardiff Scholarship
- Ivan Award in Veterinary Oncology
- Judy Roberts Memorial Endowment in Veterinary Medicine
- AAHA Small Animal Medicine and Surgery Award
- Cora and Ben Geisert Heritage Fund
- Equine Medicine and Surgery Award
- Jackson Caleb Matthews Scholarship
- Dr. Jeffrey Shikles, Class of 1988, Memorial Scholarship
- Gerald L. Johnson Memorial Scholarship
- Veterinary Emergency and Critical Care Medicine Award (VECCS)
- Veterinary Pet Insurance "Skeeter" Foundation Scholarship
- Needles Brooker Scholarship
- H. Richard Adams Scholarship in Veterinary Medicine
- Carl Frederick Fischer & George Franklin Fischer Veterinary Medicine Scholarship Fund
- The Nestle Purina Veterinary Scholarship for Excellence in Orthopedic Disease Management & Related Nutritional Issues
- Bil Jac Award
- Hills Sponsored SCAVMA Student Scholarships
- SCAVMA Auxiliary Award
- SCAVMA Lillie Grossman Award
- Mable McCune Auxiliary Award

*Scholastic Awards*

- Dr. and Mrs. Leslie C. Murphy Scholarship
- Frank E. and Ena Hickerson Rhoads Scholarships
- Ruth Elizabeth Johnston Memorial Veterinary Medicine Scholarship
- Robert J. and E. Marlese Gourley Scholarship
- Paul and Earlene Nicoletti Scholarship in Veterinary Medicine
- Kevin Wayne King Memorial Scholarship
- A.H. Groth Student Research Award
- Pfizer Award
- Nestle Purina Pet Care Scholarship
- Frank Wells Scholarships
- J.E. Salsbury Scholarships
- The Hazel C. and Edgar F. Ebert Memorial Scholarship Fund in Veterinary Medicine
- Hill's "Buddy" Award
- Joseph Worthington Crane Memorial Scholarship
- Comparative Orthopaedic Laboratory Clinical Aptitude Award
- Comparative Orthopaedic Laboratory Excellence in Research Award

**Student Employment**

Many students work part time while attending school. Because of the higher number of classroom and laboratory hours required of veterinary medical students, it is recommended that outside work be kept at a minimum, especially during the first year. Some students are employed on research projects in laboratories and in clinics. Other students find employment for board, or room and board. The Office of Financial Aid, 11 Jesse Hall, provides information and assistance to students seeking part-time work. If you have questions regarding student employment call (573) 882-7506.

Student Government

**Code of Ethics (Honor Code)**

Honesty is an essential part of professionalism. The Code of Ethics places the responsibility for honor and honesty on the student.

Examinations are not closely proctored by faculty members. Drugs and equipment used in clinics and laboratories are made available for instruction with the understanding that the DVM degree candidate will use these materials only for their intended purposes without being policed by faculty members.

The code applies to all students in the MU College of Veterinary Medicine and helps to promote ethical standards of personal and professional conduct among students. Reports of violations of this code are carefully investigated by the Student Honor Committee, and every precaution is taken to arrive at a just decision. A student found guilty of violating the code may be dismissed from the College. Anyone unwilling to accept the responsibility for maintaining the code should not apply for admission to the MU College of Veterinary Medicine.





➤ Modern diagnostic tools include ultrasound, a device that painlessly sends sound waves into an animal to provide a color image of potential problems.

### **Student Honor Committee**

As set forth in the preamble to the MU College of Veterinary Medicine Honor Code, the students of the College have established a code deserving of the high trust and irreplaceable conduct demanded by their chosen profession. The honor committee is composed of two regular and two alternate members from each class. The president of SCAVMA, with approval of the membership, appoints the Student Honor Committee. The committee is led by a fourth year member.

### **Student Chapter of the American Veterinary Medical Association (SCAVMA)**

All veterinary medical students are eligible for membership in the Missouri Student Chapter of AVMA. Activities include a picnic given by the second year class to welcome the incoming class, a fall meeting at which new students and faculty members are welcomed by the other three classes, and an annual junior-senior banquet in the spring.

The student chapter is a divisional arm of Missouri Students Association and functions as the Veterinary Medical Student Council. The chapter sends delegates to the national convention, offers support for members to attend national educational symposiums, and provides numerous benefits for new graduates.

Members of the student chapter of the AVMA elect a president, vice president, secretary, and treasurer who, along with several members of each class, make up the executive council. Committees for the student chapter of the AVMA are appointed by the president.

Membership requirements are annual dues and the commitment to work at the SCAVMA booth at least one football game while being a VM-1 and VM-2.

Benefits of membership include:

- Reduced subscription rate for the Journal of the AVMA.
- Free registration to national AVMA meetings.
- Surgery instrument rental program.
- Beeper use during clinical rotations.
- Free AVMA dues first year after graduation.
- Eligibility for emergency loans through the auxiliary.
- Financial support to attend symposiums and meetings.

### **SCAVMA Auxiliary**

The SCAVMA Auxiliary is an organization of spouses and significant others of veterinary medical students. Goals are to educate the community about the MU College of Veterinary Medicine, provide moral and social support to student spouses, recognize the importance of the role of the veterinary medical student spouse, promote involvement of spouses with the College, and present a donation in the name of the auxiliary to the students at the annual awards banquet.

### **Class Officers**

Annually, each class elects a president, vice president, secretary-treasurer, and a class representative. Each class president and the AVMA student chapter president serve on the student advisory council, which meets regularly with the dean, associate dean for academic affairs, and the associate dean for student and alumni affairs to discuss College concerns.



# The Professional Curriculum

The first two years of the professional curriculum are designed to provide the student with a solid foundation in basic medical science. Courses of study include gross and microscopic anatomy, molecular biology, physiology, microbiology, pathology, pharmacology, parasitology, toxicology, public health, clinical pathology, radiology, clinical medicine and surgery, and anesthesiology.

These courses are taught in laboratory and lecture format familiar to science students. In some areas, the autotutorial teaching approach is used. Other areas use problem-based teaching methods.

After successfully completing the second year of the professional program, the student enters a segmented curriculum for the years of clinical training. In this concept of veterinary medical training, the final two years are divided into 12 six-to-eight-week rotations. Students must successfully complete seven required rotations for graduation. Each six-to-eight-week rotation is a complete instructional unit. Students are given the opportunity to concentrate their studies in an area of special interest while gaining exposure to all aspects of veterinary medicine. The required rotations are food animal medicine and surgery, equine medicine and surgery, small animal medicine, small animal surgery, medical services (radiology and anesthesiology), diagnostic pathology and special species medicine, and focused specialties (ophthalmology, theriogenology, and small animal specialty medicine).

In addition to the seven required rotations, 2 six-to-eight-week rotations are required in elective courses. Clinical year students are also scheduled 3 six-to-eight-week periods of free time for preceptorships in private practice, industry, additional course work, or vacation.

As stated in the Veterinarian's Oath, among the missions of the MU College of Veterinary Medicine are the protection of animal health, relief of animal suffering, promotion of public health, and the advancement of medical knowledge. To pursue these missions with success often requires the use of live animals as teaching models. The University of Missouri, College of Veterinary Medicine considers the judicious and compassionate use of live animals in teaching essential to the development of professional competency of veterinary medical students.

Applicants seeking admission to the University of Missouri, College of Veterinary Medicine should be aware that the professional degree curriculum includes the use of live animals and cadavers in required courses such as laboratories in anatomy, physical diagnosis, and surgery. Some of these use terminal procedures on the animals. In all cases, animals are legally acquired, properly housed, fed, cleaned, and cared for to ensure reasonable comfort and well being. U.S. Department of

The DVM degree is achieved after a four-year course of study. At the University of Missouri, the first two years are largely spent in classroom and laboratories with the second two years devoted to clinical study in the MU Veterinary Medical Teaching Hospital.

Agriculture and National Institutes of Health guidelines on animal care and use constitute the minimum basis for the care provided MU animals. All live animals used in teaching are obtained from sources approved by the U.S. Department of Agriculture, the governing authority for the humane use of animals in research and teaching in the United States. Procedures performed on these animals must be approved in advance by the MU Animal Care and Use Committee, which comprises faculty from multiple disciplines and includes an at-large member not affiliated with the University. Each procedure is evaluated for evidence of its instructional value, the availability of alternative means of teaching, and the adequacy of pain control. All procedures performed on patients of the Veterinary Medical Teaching Hospital are done with the consent of the animal's owner and in compliance with the standard practice of veterinary medicine.

## Prefix Codes

**VBMS** Veterinary Biomedical Sciences  
**VMS** Veterinary Medicine and Surgery  
**VPB** Veterinary Pathobiology

## Pre-Veterinary Medical Courses

**VMS 1010** Biomedical Career Explorations (1 credit hour)  
**VMS 2140** Companion Animals (3 credit hours)  
**VPB 2210** Microbiology for Health Sciences (5 credit hours)  
**VMS 2230** Animal Sanitation & Disease Prevention (3 credit hours)  
**VMS 2235** Domestic Animal Behavior (3 credit hours)  
**VMS 3219** Elements of Veterinary Anatomy (4 credit hours)  
**VPB 3250** Parasitology (4 credit hours)  
**VMS 3300** Animal Welfare and Ethics (1 credit hour)  
**VMS 3310** Equine Health Topics (3 credit hours)  
**VBMS 3326** Veterinary Pharmacology (3 credit hours)  
**VBMS 4333** Veterinary Cell Biology (3 credit hours)



**First Year: Normality VM-1 Students  
(Instructional Periods 1-4)***Period 1*

- VBMS 5500** Veterinary Anatomy - Part 1 (2.5 credit hours)  
**VBMS 5502** Veterinary Microscopic Anatomy - Part 1 (1.5)  
**VBMS 5504** Veterinary Physiology - Part 1 (3)  
**VBMS 5506** Veterinary Cellular and Molecular Biology - Part 1 (2)

*Period 2*

- VBMS 5500** Veterinary Anatomy - Part 2 (2.5)  
**VBMS 5502** Veterinary Microscopic Anatomy - Part 2 (1.5)  
**VBMS 5504** Veterinary Physiology - Part 2 (3)  
**VBMS 5506** Veterinary Cellular and Molecular Biology - Part 2 (2)

*Period 3*

- VBMS 5011** Veterinary Anatomy - Part 1 (4)  
**VBMS 5503** Veterinary Microscopic Anatomy (2)  
**VBMS 5051** Gastrointestinal Physiology & Nutrition (3.5)

*Period 4*

- VBMS 5012** Veterinary Anatomy - Part 2 (4)  
**VBMS 5052** Veterinary Endocrinology & Reproductive Biology (2)  
**VPB 5511** Veterinary Immunology - Part 1 (1.5)  
 (Same as VPB 4510, Introduction to Immunology)  
**VPB 5555** Epidemiology and Biostatistics (2)  
 (Same as VPB 4550, Epidemiology and Biostatistics)

**Second Year: Abnormality  
VM-2 Students***Instructional Period 5-9**Period 5*

- VPB 5512** Veterinary Immunology - Part 2 (1.5)  
 (Same as VPB 4510, Introduction to Immunology)  
**VPB 5552** Veterinary Bacteriology I (2.5)  
**VPB 5575** General Veterinary Pathology (3)  
**VPB 5579** Veterinary Genomics (1.5)  
**VPB 5580** Introduction to Veterinary Informatics (1)

*Period 6*

- VPB 5553** Veterinary Bacteriology II (3)  
**VPB 5554** Veterinary Virology (2)  
 (Same as VPB 4540, Domestic Animal Virology)  
**VPB 5557** Veterinary Parasitology (3)  
 (Same as VPB 4570, Animal Parasitology)  
**VPB 5576** Veterinary Systemic and Special Pathology I (3)

*Period 7*

- VBMS 5507** Veterinary Pharmacology (3)  
**VPB 5558** Veterinary Public Health (2)  
 (Same as VPB 4580, Veterinary Public Health)  
**VPB 5577** Veterinary Systemic & Special Pathology II (3)  
**VMS 6130** Fundamentals of Veterinary Business Management (1)

*Period 8*

- VBMS 5508** Veterinary Pharmacology (2)  
**VPB 5578** Veterinary Clinical Pathology (3)  
**VPB 6010** Laboratory Animal Medicine (1.5)  
**VMS 6020** Veterinary Radiology (2)

*Period 9*

- VBMS 5509** Veterinary Toxicology (3)  
**VMS 6030** Veterinary Anesthesiology (2)  
**VMS 6040** Companion Animal Medicine (4)  
**VMS 6060** Small Animal Surgery (2)

**Third and Fourth Years: Clinical Experience  
VM-3 and VM-4 Students***Instructional Period 10*

- VMS 6050** Small Animal Medicine (2.5)  
**VMS 6071** Small Animal Surgery (2)  
**VMS 6072** Conventional Small Animal Surgery and Anesthesia Lab (0.5)  
**VMS 6081** Food Animal Medicine and Surgery (4)  
**VMS 6082** Food Animal Medicine and Surgery (4)  
**VMS 6090** Small Animal Critical Care (1)

*Instructional Period 11*

- VMS 6073** Fundamental Small animal Surgery and Anesthesia Lab (0.5)  
**VMS 6151** Equine Medicine and Surgery (3)  
**VMS 6152** Equine Medicine and Surgery (3)  
**VMS 6110** Theriogenology (3)  
**VMS 6120** Veterinary Ophthalmology (1)  
**VPB 5991** Introduction to Avian Medicine  
**VMS 6990** Zoological Medicine  
**VMS 6991** Advanced Equine Lameness  
**VMS 6992** Small Animal Endoscopy  
**VMS 6993** Advanced Veterinary Anesthesia  
**VMS 6994** Advanced Techniques in Small Animal Surgery  
**VMS 6997** Food Animal Diagnostic Exercises  
**VMS 6998** Small Animal Behavioral Medicine  
**VMS 6999** Food animal Surgery Lab

*Required Clinical Blocks*

- VMS 6400** Food Animal Medicine and Surgery I (6)  
**VMS 6410** Small Animal Medicine I (6)  
**VMS 6420** Equine Medicine and Surgery I (6)  
**VMS 6430** Small Animal Surgery I (6)  
**VMS 6441** Clinical Radiology I (3)  
**VMS 6442** Clinical Anesthesiology I (3)  
**VMS 6450** Theriogenology I (2)  
**VMS 6460** Clinical Ophthalmology I (2)  
**VPB 6647** Diagnostic Pathology and Special Species Medicine I (8)  
**VMS 6490** Small Animal Specialty Medicine I (2)

*Clinical Rotation (2-6)*

- Electives** (Requires special consent)  
**VMS 6700** Food Animal Medicine and Surgery II  
**VMS 6710** Small Animal Medicine II  
**VMS 6720** Equine Medicine and Surgery II  
**VMS 6730** Small Animal Surgery II  
**VMS 6741** Clinical Radiology II  
**VMS 6742** Clinical Anesthesiology II  
**VMS 6750** Theriogenology II  
**VPB 6676** Laboratory Animal Medicine & Management II  
**VMS 6770** Herd-Health Management and Nutrition II \*  
**VPB 6678** Epidemiology and Community Health  
**VPB 6679** Diagnostic Pathology & Special Species Medicine II  
**VMS 6800** Clinical Ophthalmology II  
**VMS 6810** Cardiology II  
**VMS 6820** Small Animal Emergency and Critical Care  
**VMS 6830** Food Animal Production Medicine (once yearly)  
**VPB 6684** Research Techniques in Veterinary Pathobiology  
**VMS 6850** Small Animal Specialty Medicine II

\*To follow Food Animal Medicine and Surgery, and Theriogenology blocks.



## Preceptorships

Missouri students may use free blocks as preceptorships to meet the two-month internship/preceptorship requirement of Missouri's Veterinary Medical Practice Act. Preceptorships require the signing of a log book indicating intent to spend free block time involved in actual work experience in the practice of veterinary medicine under the direct supervision of a licensed veterinarian in any state. The work experience should include, at a minimum, 320 hours of diagnosis, treatment, surgery, and practice management.

Evaluation forms are required by the Missouri Veterinary Medical Board and must be completed by the student and the supervising veterinarian at the completion of the preceptorship. The Board, not the MU College of Veterinary Medicine, has the sole discretion as to whether or not the preceptorship qualifies in lieu of a post-graduate internship. The MU College of Veterinary Medicine does not have the authority to approve the use of student free block time or the veterinarians with whom they gain experience.

## Academic Regulations

### Schedule and Completion of Required Courses

In the first two years, courses must be completed in sequence because they are offered only once a year.

In the final two years of the professional program, the student must successfully complete the seven required clinical blocks in the curriculum for the fulfillment of graduation requirements.

It is the prerogative of the veterinary medical faculty to determine the curriculum and to require that such lectures, demonstrations, exercises, and experiences using live animals, cadavers, or clinical patients are important, required, or necessary. To receive the DVM degree, students must pass all required courses. In addition to passing examinations, attendance and participation in all lectures, laboratories, and clinical exercises is necessary.

The doctor of veterinary medicine degree is awarded after successful completion of the professional program.

### Academic Probation

*Cumulative:* Any student who receives a grade of D in any required course of the professional curriculum and whose cumulative GPA is less than 2.0 will be placed on academic probation. Probation must be removed by the end of the next two successive grading periods.

*Term:* Any student whose term GPA is less than 2.0 will be placed on academic probation. Probation must be removed by the end of the next successive grading period.

### Dismissal from the College on Academic Grounds

A student who receives a grade of F in any required course of the professional curriculum will be dismissed. Any student failing to remove probation in the prescribed time will be dismissed. Students on academic probation will not be permitted to graduate. Students who accumulate in excess of 9.0 credit hours of "D" grades in the professional curriculum will be dismissed.

## Graduate Degree and Other Advanced Study Programs

Graduate education and research are integral parts of veterinary medical training. All departments of the College offer advanced training leading to the master of science degree. The department of Biomedical Sciences administers an Area of Physiology doctor of philosophy degree (PhD) program. The department of Veterinary Pathobiology administers an Area of Pathobiology.

Research programs in the MU College of Veterinary Medicine contribute to the advancement of science and significantly enhance the quality of professional education. Participation by students provides a clearer understanding of disease processes, methods of prevention, and treatment of diseases of animals and humans.

Members of the veterinary medical profession, because of their versatility of training, can work in a variety of research areas such as: infectious and noninfectious diseases of livestock, poultry and companion animals, zoonoses (diseases transferred from animal to human), reproductive biology, comparative anatomy, physiology, pharmacology, pathology, neoplasia, laboratory animal medicine, veterinary public health, environmental health, radiation biology, clinical research and drug evaluation, and nutritional studies.

College research projects are supported by federal grants, state funds, foundation awards and grants, contracts from industries, livestock producer association funds, and money from other groups.

### Internships

Internships are available in small animal medicine and surgery and equine medicine and surgery.

### Residency Programs

Residencies are available in small animal internal medicine, small animal surgery, equine medicine, equine surgery, oncology, ophthalmology, radiology, toxicology, pathology, cardiology, clinical pathology, theriogenology, neurology, small animal emergency medicine and critical care, and comparative medicine.

### Combined DVM/Graduate Degree (Dual) Programs and Leave of Absence

Veterinary Medical Students with a baccalaureate degree and who otherwise qualify for graduate school may take graduate courses during the DVM program when permitted by the DVM schedule and DVM degree requirements. Departments and graduate committees establish specific requirements to achieve graduate degrees. Interested students should contact the Associate Dean for Academic Affairs or the Associate Dean for Research and Post-Graduate Studies for further information.

To facilitate progression toward graduate degrees in combined DVM-graduate degree programs, an academic leave of absence for one year to take graduate courses may be requested. The time of absence will typically occur from the end of Instructional Period 7 to the next academic year's Instructional Period 8. Permission is required from the student's graduate program committee and from the Committee on Admissions and Scholarship. Requests for deferment must be received at least two weeks prior to the beginning of Instructional Period 7.



# Student Clubs and Special Interest Organizations



► Missouri is the second leading state in cow and calf production. The teaching hospital's food animal clinic is one of the busiest in the nation, giving students exposure to many cases for clinical study and research. MU has a strong research programs in herd health, disease processes, and production medicine.

## **Student Chapter of the American Veterinary Society of Animal Behavior**

The SCAVSAB is an organization dedicated to promoting the importance of understanding animal behavior in veterinary medicine and providing students with educational opportunities in this area of science.

## **Student Chapter of the American Animal Hospital Association**

The American Animal Hospital Association is a national organization designed to enhance the ability of veterinarians to provide quality medicine to companion animals, successfully conduct their practices, maintain their facilities with high standards of excellence, and meet the public's needs as they relate to animals.

## **Student Chapter of the American Association of Bovine Practitioners**

The Bovine Club is for students who have an interest in learning about, or working with, cattle. Monthly meetings are held with various speakers talking about reproduction, nutrition, lameness, gastrointestinal problems, and other related subjects.

## **Student Chapter of the American Association of Equine Practitioners**

The Equine Club is a student organization with an interest in horses. This club is not just for students who plan to practice equine medicine, but for all who enjoy riding, showing, or learning more about horses. Seminars and monthly lectures by

The Feline Club is part of a national organization that promotes awareness of the special needs of cats. The club provides information on feline idiosyncrasies through monthly lectures, special projects, and public presentations.

## **Student Chapter of the American Holistic Veterinary Medical Association**

The Holistic Medicine Club provides veterinary students with education opportunities in holistic veterinary medicine-alternatives to traditional methods of healing. (Note: the American Veterinary Medical Association categorizes holistic medicine as an alternative and unconventional form of medical practice.)

## **Student Chapter of the American Association of Swine Practitioners**

The Swine Club is for students who have an interest in learning about or working with pigs. Field trips and hands-on laboratories dealing with various aspects of swine medicine are offered throughout the year.

## **Student Chapter of the American Association of Zoo Veterinarians**

The scope of this club goes beyond zoo medicine covering aspects of wildlife medicine and conservation, pet bird medicine, reptile and amphibian medicine, aquatic mammals, and fish medicine. Guest speakers, symposiums, and hands-on projects are offered.

## **Student Chapter of the Veterinary Emergency and Critical Care Society**

This club is devoted to enhancing knowledge, skills, and ability in the emergency and critical care of small animals. Students involved in this club can serve on the Small Animal Emergency and Critical Care Team who work in the teaching hospital's ICU. This club also oversees the Colic Team who responds to after-hours colic surgeries in the equine clinic.

## **Student Chapter of the Society of Veterinary Medical Ethics**

The SCSVME was created to provide a forum for students, faculty, and staff to discuss ethical issues in veterinary medicine. This is the first such student chapter in the nation.

## **Student Chapter of the American College of Veterinary Pathologists**

The Pathology club encourages veterinary medical students to gain additional professional knowledge in this field. Activities include wet labs, case presentations, and visits to conferences. Areas of interest include diagnostic and clinical pathology, wildlife/zoo pathology, toxicology, and career exploration.

## **Big Dawgs, Little Dawgs**

Big Dawgs, Little Dawgs is the MU College of Veterinary



Medicine's chapter of the Big Brothers, Big Sisters organization. This club is for students who have an interest in being a mentor and friend to young people from single-parent homes. Monthly field trips and social gatherings also help the young people learn about veterinary medicine.

#### **Christian Veterinary Fellowship**

The CVF is a non-denominational fellowship of veterinary medical students, faculty, and staff who are committed to live their faith through the profession of veterinary medicine. CVF is a chapter of the Christian Veterinary Missions that sends veterinarians and veterinary medical students on mission trips to countries throughout the world.

#### **Mule Club**

Tim and Terry, the MU College of Veterinary Medicine's mascot mules, have traveled far and wide representing the College. The Mule Club maintains the mules and the relationships they have established with the citizens of Missouri. No membership fee or qualifications are required to join the Mule Club. Members drive the mule wagon, sleigh, and buggy in parades.

#### **PALS (Pet-Assisted Love and Support)**

PALS provides training sessions to volunteers and their pets to prepare them for assisting with visitations to children's hospitals, retirement homes, and other sites where pet-assisted therapy can be advantageous to the mental, physical, and emotional well-being of people without companion animals.

#### **Pre-Veterinary Medicine Club**

Students engaged in pre-veterinary medical study qualify to join this club. A faculty member acts as adviser. At regular meetings, guest speakers discuss various aspects of the profession. One objective of the club is to bring about a closer fellowship among students who have a common interest in seeking admission to the MU College of Veterinary Medicine.

#### **The Vet School Band**

The Vet School Band is made up of faculty, students, and staff who have an interest in music. It typically is made up of about 18 members who play a variety of instruments. The

band is open to anyone with an instrument and a desire to play. The band performs at several College events and specializes in concert music and jazz.

#### **Veterinary Business Club**

This club is for students with an interest in the business aspects of veterinary medicine. It instructs students in ways to establish and meet personal and business financial goals.

#### **Vetrospect (College Yearbook)**

The MU CVM yearbook, the Vetrospect, is an opportunity to exercise journalism creativity and create memories that will last your classmates a lifetime. No experience in journalism or photography is needed.



#### **Raptor Rehabilitation Project**

The Raptor Rehabilitation Project was founded by students to educate themselves about birds of prey, educate veterinary medical students about the husbandry and medicine of wild birds of prey, educate the public about birds of prey, and, most importantly, to treat injured raptors and return them to the wild.

#### **Honor Societies**

##### *Phi Zeta*

This is a scholastic honorary society to which third and fourth year veterinary medical students may be elected.

##### *Gamma Sigma Delta*

This national organization recognizes students of the Colleges of Agriculture, Food and Natural Resources; Veterinary Medicine; Human Environmental Sciences; and the School of Natural Resources, who have shown exceptional ability during undergraduate or graduate work.

##### *Graduate Honor Societies*

The Rollins Society is the graduate-level organization that recognizes leadership, service, and scholastic achievement.

#### **Other Campus Activities**

All students are members of the Missouri Students Association and have a voice in campus affairs. They are offered opportunities to fulfill their responsibilities to the student community through participation in a system of student self-government, with emphasis at the divisional level. There are social fraternities and sororities on campus with national affiliation.



► Students can join faculty and staff in keeping musical talents sharp through the College's Vet School Band. The band, that specializes in concert and jazz music, practices weekly and plays at many college events.



# Sections and Divisions of the College

Biomedical Sciences

Veterinary Pathobiology

Veterinary Medical Diagnostic Laboratory

Veterinary Medicine and Surgery

Comparative Medicine

Extension and Continuing Education

## Biomedical Sciences

### *Professional Program*

During the first year, students in veterinary medicine study the gross and microscopic anatomy of food-producing animals, companion animals, and selected laboratory animals. They study normal cell function, tissues, organs and body systems in physiology, and cellular and molecular biology. These studies provide the basis for understanding disease processes and the recognition and treatment of animal diseases.

First-year veterinary medical students study anatomy in laboratory exercises in gross anatomic dissection, microscopic examination of cells and tissues, and study of embryologic and neuroanatomy specimens. Laboratories in physiology provide opportunities for the student to observe and measure activity of animal organs and tissues.

During the second year, students study pharmacology, which includes actions of drugs and factors influencing the responses of animals to drugs. In the study of toxicology, the student studies disease conditions resulting from poisonous materials including plants, agricultural and industrial chemicals, feed additives, and drugs.

During the third and fourth years of the professional curriculum, the departmental faculty participate in instruction concerning nutrient requirements of domestic animals, breeding, and genetics. Applied anatomy is part of the clinical training in physical examination, clinical diagnosis, and surgery.

### *Graduate Program*

The graduate program in Biomedical Sciences offers graduate training leading to the Doctor of Philosophy or the Master of Science degree. The program in Biomedical sciences provides in-depth, multidisciplinary training to prepare scientists in comprehensive research at the integrative, organ, cellular, and molecular levels.





Individuals who successfully complete this program will have diverse backgrounds in state-of-the-art research methodologies and approaches that will make them well-rounded, competitive scientists. Departmental faculty represent a diversity of medical and related basic science disciplines. They provide a rich environment for graduate study and a unique opportunity for training scientists in comprehensive interdisciplinary research.

Department of Biomedical Sciences faculty are committed to the training of research scientists. The research activities of the department address biomedical issues that have a critical impact on health problems of people and animals. Well-developed research programs evaluate cellular, molecular, and organismal aspects of biomedical problems. Current faculty interests include cardiovascular science, membrane transport, neurohumoral regulation, and reproductive endocrinology.

Departmental faculty maintain research laboratories in the College of Veterinary Medicine and the Dalton Cardiovascular Research Center. State-of-the-art techniques and equipment are used for analysis of biomedical questions at the whole animal, organ, cellular, and molecular levels.

The course curriculum centers on the strategy of developing, in the student, a multidisciplinary understanding of biomedical research. Core courses include physiology, cell biology, and multidisciplinary approaches to biomedical research. Students also take a minimum of one additional course in each of the areas of molecular biology, cellular biology, and integrative biology.

## Veterinary Pathobiology

### Professional Program

Courses offered in the microbiology section provide instruction on special properties of pathogenic microorganisms, the host response to invading microorganisms, and techniques for isolation and identification of microorganisms. Special emphasis is placed on the transmission, prevention and control of infectious and parasitic diseases, veterinary community health, epidemiology, and immunology. Lectures, laboratory exercises, special demonstrations, special projects, computer-assisted programs, and problem-based programs are offered.

The primary function of the veterinary pathology section is to teach professional courses in morphologic and biochemical alterations which form the basis for changes that occur in tissues and fluids of diseased animals. The teaching is conducted in didactic and applied courses. Second year veterinary medical students study general, systemic and special pathology; veterinary

clinical pathology; and laboratory animal medicine. The extensive and varied case loads in clinical pathology and Veterinary Medical Diagnostic Laboratory programs are used as teaching resources during the third and fourth years of the professional curriculum.

### Graduate Program

The department offers a graduate program leading to the master of science degree in biomedical sciences with a specialization in veterinary pathobiology and comparative medicine. For admission, the candidate should have completed the DVM or an acceptable baccalaureate degree. Parts I, II, and III of the GRE must be taken before entering the Graduate School. Students should rank in the upper third of their class. Further details for requirements of the degree are listed in the Graduate Catalog available through the Graduate School, 205 Jesse Hall, Columbia, Mo. 65211.

The PhD program in the area of pathobiology is presented by faculty in the departments of Pathology in the School of Medicine and Veterinary Pathobiology in the College of Veterinary Medicine. PhD candidates may choose their research areas to take advantage of the interests and specialties of advisers in the departments. Research is conducted in areas such as morphologic alterations in response to disease, ultrastructural and histochemical changes, clinical chemistry, molecular biology, and pathology, all of which are related to host-agent interrelationships in the pathogenesis of disease. Included in these studies are food animals, companion animals, laboratory animals, and some exotic or wild animals.

## Veterinary Medical Diagnostic Laboratory

The Veterinary Medical Diagnostic Laboratory is interdisciplinary, with responsibility for diagnostic service, teaching, continuing education, extension, and research. Two blocks of instruction titled Diagnostic Pathology and Special Species Medicine I and II are offered.

Students conduct necropsy examinations under the supervision of faculty and learn interpretation of laboratory tests such as bacteriologic culturing, serological tests, viral isolation, and parasitological, histopathological, and toxicologic examinations. Students also are assigned to the clinical pathology laboratory in the Veterinary Medical Teaching Hospital to learn to conduct and interpret clinical pathology tests. Graduate students in pathology and related disciplines receive part



► The safe handling of large animals is an essential part of instruction in the food animal clinic.



of their graduate experience in the diagnostic laboratory.

The laboratory is a valuable training resource through its daily access to disease conditions in more than 60 different animal species. Approximately 40,000 accessions are received by the laboratory annually, including 1,500 specimens for necropsy, and a variety of disease specimens for examination by virologists, bacteriologists, serologists, toxicologists, chemists, and clinical pathologists.

Laboratory faculty members have appointments in the academic department of their specialty and have advanced training in the disciplines of anatomic pathology, clinical pathology, bacteriology, mycology, virology, parasitology, serology, and toxicology. Immunohistochemistry and molecular diagnostics are two rapidly expanding areas offering enhanced specificity and sensitivity to diagnosticians of infectious disease and certain undifferentiated tumor types. Faculty of the diagnostic laboratory also consult with other faculty members of the College and MU scientists on a variety of disease problems encountered.

Various services are performed in the laboratory for clinicians of the Veterinary Medical Teaching Hospital, veterinary medical practitioners throughout Missouri, livestock and poultry interests, companion animal interests, wildlife conservationists, scientists utilizing animals in their research throughout the University, and state and federal animal disease regulatory officials. The laboratory is accredited by the American Association of Veterinary Laboratory Diagnosticians as a full-service veterinary medical diagnostic laboratory.

### **Veterinary Medicine and Surgery**

#### *Professional Program*

During the third and fourth clinical years of the professional curriculum, students learn to combine the art and science of clinical veterinary medicine and surgery. Two didactic blocks in the VM-3 year provide instruction in clinical subjects not addressed earlier. Practical application of basic principles of medicine and surgery to diagnosis, prevention, and treatment of disease in all animals presents a challenge to the student's mental and physical resources.

Proficiency in clinical medicine is gained by working closely with experienced clinicians in the small animal, food animal, equine, and ambulatory areas of the Veterinary Medical Teaching Hospital. Through the patient-care method of study, professional students are given considerable responsibility for the total health requirements of animals assigned to their care. Discussion periods, formal lectures, rounds, and laboratory training guide the clinical student's progress in systematic medicine and surgery. Broad exposure to clinical practice is gained through curriculum design.

In addition to the required clinical rotations involving care for a spectrum of domestic species, a number of elective experiences are also part of the clinical curriculum.



► Modern veterinary medicine closely parallels modern human medicine with many of the same techniques and equipment used by both professions. The MU College of Veterinary Medicine provides the next generation of veterinarians with the most modern skills through exposure to state-of-the-art equipment such as a CT scanner.

### *Master of Biomedical Sciences*

Graduate education and research are integral parts of veterinary medicine. Research programs are needed to provide a better understanding of normal and disease states, and the prevention of diseases of animals and humans. Such efforts contribute to the advancement of biomedical science and significantly enhance animal and human health.

The MU College of Veterinary Medicine offers graduate study leading to the Master of Biomedical Sciences degree in the following areas of specialization: Biomedical (basic) Sciences,

Clinical Sciences, Laboratory Animal Medicine and Pathobiology

If students elect two areas of specialization, they must enroll in appropriate courses to assure competence in both areas,

Candidates must have completed a baccalaureate, DVM, or MD degree.

Completion of the DVM degree is a prerequisite for admission to the MS degree program in the area of Laboratory Animal Medicine. This program includes residency training and is designed to prepare trainees for board certification, and is the basis for a career in teaching, research, and/or public or private practice.

The MU Graduate School requires that the Graduate Record Examination (GRE) be taken prior to application. Minimum GRE scores for Parts I (Verbal), II (Quantitative), and III (Analytical) are established by the faculty of the area. MU Graduate School acceptance is required of all applicants. The application must include a complete curriculum vitae, a statement of professional and academic goals, three letters of reference, and copies of all university transcripts. The Director of Graduate Studies of each area will evaluate the adequacy of academic records and will act on admission. Prior to acceptance, each applicant must have a major advisor who is a member of the emphasis area.

### **Comparative Medicine Program**

This postdoctoral (post-DVM) program prepares graduates for research and service careers in comparative medicine and laboratory animal medicine and meets the training requirements for eligibility for the American College of Laboratory Animal Medicine (ACLAM) certification examination.

Acceptance for advisement requires a DVM or equivalent from an accredited college of veterinary medicine or successful completion of the foreign equivalency examination and approval by the Comparative Medicine Program (CMP) faculty. In addition, applicants must meet standards for admission to the Graduate School.

The CMP emphasizes comparative medicine research training and includes graduate course work and residency rotations. In the first year of training, trainees rotate in diagnostic laboratory animal pathology and microbiology in the Research Animal Diagnostic Laboratory (RADIL) and clinical medicine





► In addition to its excellence in clinical service, the MU College of Veterinary Medicine has a reputation of being a champion of the human-animal bond. Dr. Amy Rucker, the College's equine ambulatory specialist, was recognized for her commitment to animals, their owners, and the teaching of veterinary medicine by winning the 2002 Dadd Award. The Dadd Award is named in honor of the 1800's veterinarian and physician who was instrumental in helping establish veterinary medicine as a profession.

and animal resource management in the Office of Animal Resources (OAR). The remaining two to four years of the training time are primarily devoted to research training under an established investigator. Throughout the program, fellows participate in teaching and instructional programs offered to veterinary students and research personnel.

Both MS and PhD programs are available. The MS degree requires the completion of a significant manuscript suitable for publication in a refereed journal or an approved equivalent scholarly effort. Trainees desiring to obtain a PhD have opportunities to do so in a variety of programs including Veterinary Pathobiology and Biomedical Sciences.

Requirements for elective course work, residency, and teaching experience are determined with the student's advisory committee. Graduate courses include pathology of laboratory animals, methodology of animal experimentation, biology of laboratory animals, laboratory animal resource management, and seminars. Elective courses frequently taken by trainees include immunology, molecular biology, mechanisms of disease, and virology. Research typically involves an animal model in the investigation of human diseases or the study of naturally occurring disease of laboratory animals.

Programmatic strengths include:

- The opportunity for comparative studies in a joint veterinary medical and human medical environment.

- The multidisciplinary nature of the faculty participating in the training program.
- The emphasis on research, laboratory animal medicine and comparative and diagnostic pathology.
- The opportunity for combined residency and graduate study.
- Networking and sharing of experiences and cooperation among 10-12 postdoctoral fellows.
- A long history of successful training in laboratory animal medicine, and a substantial number of board-certified faculty in laboratory animal medicine.

More information about this program is available at its web site: [www.radil.missouri.edu/cmp](http://www.radil.missouri.edu/cmp)

### **Veterinary Medical Extension and Continuing Education**

MU Outreach and Extension serves the people and institutions of the state.

Veterinary medical extension faculty and staff interact with College faculty and the university community to plan and deliver educational programs.

Veterinary Medical Extension provides opportunities for continuing education for practicing veterinarians and the general public. The objective is to increase the professional knowledge of veterinarians and improve the quality of veterinary medicine.

Continuing professional education activities include articles in newsletters, guide sheets, conferences, seminars, and short courses. A mid-career program is conducted to give in-depth individualized training in special areas to practicing veterinarians or those veterinarians changing their focus.

Veterinary Medical Extension works in conjunction with their Extension colleagues throughout the state to acquaint owners of food producing and companion animals to current medical services and principles of preventive medicine. Information regarding disease problems is presented to animal owners and allied interest groups in several ways, including phone consultation, field investigative visits, seminars, and newsletters. Group meetings on general subjects are requested by, or scheduled through, area and state extension specialists. Participants are encouraged to ask questions and to relate their experiences and problems. Local practicing veterinarians also are invited to attend and participate in these programs. Veterinary Medical Extension strives to provide the practicing veterinarian and general public with the latest information available.





► Ophthalmology is one of several specialty areas in the teaching hospitals with several board-certified faculty members providing instruction.

# Department Courses

► Note: 5000-6000 level courses are restricted to veterinary medical students. Graduate standing required for all 8000 level courses.

## Biomedical Sciences

- 2085** *Problems* (cr. arr). Assignment of special problems or topics for training in research.
- 2222** *Fundamentals of Animal Physiology* (3). For students not enrolled in the professional veterinary medical curriculum. Relationship of structure and function in common domestic animals. Study of cells, tissues, organs, and systems.
- 3326** *Veterinary Pharmacology* (3). General principles of pharmacodynamics in domesticated animals.
- 7085** *Problems* (cr. arr). Assignment of special problems or topics for training in research.
- 7302** *Cytology, Histology, and Organology of Domestic Animals I* (3). Detailed study of the structure and function of the cell, basic tissues (epithelium, connective tissue, nervous tissue, muscle), and several organ systems (cardiovascular, lymphatic, integument, digestive, visual, auditory) of domestic mammals and birds. Prerequisites: graduate standing, background in biological sciences, and instructor's consent.
- 7303** *Cytology, Histology, and Organology of Domestic Animals II* (2). Continuation of 7302. Detailed study of the urinary system, respiratory system, endocrine glands, female reproductive system, placenta, male reproductive system, and integument (hoof and claw) of domestic mammals and birds. Prerequisites: 7302 and instructor's consent.
- 7307** *Embryology and Development of Domestic Animals* (2). Developmental anatomy of domestic animals. Special written report or review required. Prerequisites: background in biological sciences and departmental consent.
- 7326** *Veterinary Pharmacology* (3). General principles of pharmacodynamics in domestic animals.
- 7327** *Principles of Physiologic Adaptation* (3). Physiologic mechanisms, in individual mammals, in coping with acute and chronic alterations in the physical environment. Pressure, temperature, gravity, and radiation are considered. Prerequisites: four hours of vertebrate physiology or physiological zoology and five hours of chemistry, or instructor's consent.
- 7333** *Veterinary Cell Biology* (4) (same as Biomedical Sciences 5506). A comprehensive overview of molecular and biochemical issues of cell function especially as related to medicine and the underlying molecular causes of disease.
- 8085** *Problems* (cr. arr.). Selected problems and topics for advanced study in special areas to meet needs of individual students.
- 8010** *Comparative Anatomy of the Cardiovascular System* (1). The systemic and pulmonary circulation. The heart and vessels in detail. One midterm exam and final term paper. (8 hrs. lecture and 16 hrs. laboratory).
- 8405** *Membrane Structure and Function* (3). The structure and function of biological membranes are examined from a biochemical perspective. Topics include membrane proteins, transport, membrane biogenesis, and analytical techniques. Prerequisites: 7333 or equivalent, graduate standing, and instructor's consent.
- 8409** *Advanced Microscopic Anatomy* (cr. arr). Advanced study of selected topics in vertebrate microscopic anatomy. Special report required. Prerequisite: departmental consent.
- 8410** *Seminar* (1). Presentation and discussion of investigations and topics in anatomy, physiology, or related fields, by qualified students, instructors, and guests. Prerequisite: departmental consent.
- 8420** *Veterinary Physiology* (6). Systemic physiology for graduate students with primary interest in nonhuman mammals. Function of nervous, muscular, circulatory, renal, and respiratory systems. Prerequisites: Biochemistry 4270 and 4272.
- 8421** *Veterinary Physiology* (4). Continuation of 8420. Physiology of the gastrointestinal tract, exocrine pancreas and liver, comparative endocrinology, and reproductive biology. Lecture and lab are designed to emphasize principles important to the practice of veterinary medicine.



- 9425 *Microvascular Circulatory Function*** (3). An in-depth study of microcirculatory structure and function in various tissues, with emphasis on recent developments in the understanding of the mechanisms involved in nutrient supply, edema formation, lymphatic function, and fluid balance. Prerequisites: Veterinary Physiology 8420 and 8421 or Medical Pharmacology and Physiology 8411 or equivalent.
- 9427 *Fate of Drugs in the Animal Body*** (2) (same as Medical Pharmacology and Physiology 9427). Principles concerned with absorption, distribution, excretion, and biotransformation of drugs. Prerequisites: ten hours of physiology, five hours of pharmacology, and five hours of biochemistry.
- 9434 *Advanced Clinical Pathology*** (3) (same as Animal Sciences 9434, Gonadal Function). Survey of current and in-depth mechanisms involved in ovarian, testicular, and epididymal function. Emphasis will be given to comparative differences in gonadal functions among domestic animals. Prerequisites: Animal Sciences 4314 (Physiology of Reproduction) or equivalent, a course in endocrinology, and biochemistry or cell biology.
- 8450 *Research*** (cr. arr.). Open to graduate students with requisite preparation. Research expected to be presented as a thesis.
- 8490 *Research*** (cr. arr.). Open to graduate students with requisite preparation. Research expected to be presented as a thesis.
- 5500 *Veterinary Anatomy***. (5) Correlative study of the structure of domestic and laboratory animals in which gross anatomy is emphasized. A segment is devoted to neuroanatomy. Dissection includes the dog, cat, and common laboratory animals.
- 5011 *Veterinary Anatomy I***. (4). Detailed study of the macroscopic structure of the domestic ungulates and birds and the Developmental Anatomy of the domestic mammals. All of Biomedical Sciences 5011 and the first 6.5 weeks of Biomedical Sciences 5012 are concerned primarily with: 1) the Gross Anatomy of the horse and ox, especially the anatomic structures of clinical significance; and 2) mammalian Developmental Anatomy. Clinically significant structures of the other domestic ungulates (pig, sheep, and goat) are also presented, as well as comparative references to the structure of the dog and cat.
- 5012 *Veterinary Anatomy II***. (4). Continuation of 5011. The last 1.5 weeks deal with the structure of the domestic birds.
- 5502 *Veterinary Microscopic Anatomy***. (3) Detailed study of the structure and function of the cell, basic tissues (epithelium, connective tissue, nervous tissue, muscle), and several organ systems (cardiovascular, lymphatic, integument, digestive, visual, auditory) of domestic mammals and birds.
- 5503 *Veterinary Microscopic Anatomy***. (2) Continuation of 5052. Detailed study of the urinary system, respiratory system, endocrine glands, female reproductive system, placenta, male reproductive system, and integument (hoof and claw) of domestic mammals and birds.
- 5504 *Veterinary Physiology***. (6) Physiology of nervous, muscular, circulatory, renal, and respiratory systems. Lecture and lab are designed to emphasize principles important to the practice of veterinary medicine.
- 5051 *Veterinary Gastrointestinal Physiology*** (2). Continuation of 5504. Physiology of the gastrointestinal tract, exocrine pancreas, and liver. Lecture and lab are designed to emphasize principles important to the practice of veterinary medicine.
- 5052 *Veterinary Endocrinology and Reproductive Biology*** (2). Continuation of 5051. Comparative endocrinology and reproductive biology.
- 5506 *Veterinary Cell Biology***. (4). A comprehensive overview of molecular and biochemical issues of cell function especially as related to medicine and the underlying molecular causes of disease.
- 5507 *Veterinary Pharmacology***. (3) General principles of pharmacy, pharmacokinetics, and pharmacodynamics, with emphasis on drugs affecting the central and autonomic nervous systems, cardiovascular, and hematologic systems.
- 5508 *Veterinary Pharmacology***. (2) Continuation of 5507. Antiseptics, autocoids, hemostatics and anticoagulants, fluid and electrolytes, reproductive, endocrine, and gastrointestinal drugs.
- 5509 *Veterinary Toxicology***. (3) Local and various systemic clinical responses of domestic animals to foreign chemicals including metals, pesticides, water-and food-borne agents, biotoxins, industrial and plant toxins. The principles, mechanism(s) of action, diagnosis, prevention, and treatment of chemical intoxications are also presented.
- Veterinary Pathobiology**
- 2085 *Problems*** (cr. arr.). Assignment of special topics for research training in veterinary pathobiology. Prerequisite(s): instructor's consent.
- 2210 *Microbiology for Health Sciences***
- 3250 *Parasitology*** (4). Parasitism is considered a fundamental type of interspecies interaction. Principles of parasitism that apply to humans and animals are presented with emphasis on parasitic morphology, biology, control, and host-parasite relationships. Prerequisite(s): 8 hrs. of biology.
- 3085 *Problems*** (cr. arr.). Prerequisite(s): DVM and departmental consent.
- 3335 *Techniques in Pathology*** (cr. arr.). Methods and techniques in fixing, preparing, and staining pathological specimens.
- 3345 *Veterinary and Human Parasitology*** (4). Protozoa and helminths of veterinary and human importance; three one-hour lectures, one two-hour lab each week. Advanced undergraduate or graduate standing in biological, veterinary or medical sciences. Prerequisite(s): Biological Sciences 2210 or equivalent and instructor's consent.
- 3347 *Clinical Epidemiology and Environmental Health*** (1-10). Ecologic basis of health and disease and cause-effect relationships. Evaluation of control programs. Includes epidemiology of important acute and chronic animal diseases.
- 8401 *Topics*** (cr. arr.). Courses with lectures in various topics in veterinary pathobiology will be given on a trial basis, depending on faculty expertise and student demand. Credit hours are usually one or three. Specialized topics will be covered. Prerequisite(s): instructor's consent.
- 8410 *Seminar*** (1). Discussion of current research methods in veterinary pathology and Air Force Institute of Pathology case studies.
- 8411 *Seminar in Histopathobiology*** (1). Discussion of current research and/or case studies in pathology of diseases of domestic animals, laboratory animals and avian species. Team taught.
- 8421 *Advanced Epidemiology*** (3). (same as Family & Community Medicine 8421). w., even years.
- 8430 *Comparative Pathology*** (3). Biochemical and morphologic lesions related to the mechanisms of disease expression in plants and animals.
- 8431 *Research Methods and Data Analysis*** (1-5). Specific assignments on diagnostic methods including surgical pathology, necropsies, toxicology. Prerequisite(s): departmental consent.
- 8432 *Advanced Histopathology*** (5). Advanced microscopic studies of pathological tissues. Prerequisite(s): departmental consent.
- 8433 *Veterinary Oncology*** (2). History and molecular biology of neoplasia; laboratory for discussion of practical aspects of diagnosis. Prerequisite(s): graduate standing and instructor's consent.



- 8434** *Advanced Clinical Pathology* (4). Lecture/tutorial teaching; pathogenesis of clinical abnormalities with emphasis on abnormal clinical laboratory test results. Lab: recognition and pathogenesis of abnormalities found via microscopic or other clinical laboratory analysis. Prerequisite(s): departmental consent.
- 8436** *Pathogenic Mechanisms in Veterinary Pathobiology* (3). This course will include disease mechanisms, described at the cellular and molecular level, which result in tissue morphologic (gross and microscopic) and clinical abnormalities. Examples of discussion topics include soluble mediators of inflammatory processes, host-agent interactions, and host defense mechanisms. Prerequisite(s): instructor's consent.
- 8437** *Pathology of Laboratory Animals* (4). Gross and microscopic study of spontaneous and naturally occurring diseases in laboratory animals. Prerequisite(s): departmental consent.
- 8438** *Primatology* (3). Diseases and pathology of primates. Prerequisite: departmental consent.
- 8441** *Topics in Veterinary Pathobiology* (1-3). Subjects appropriate to veterinary pathobiology or epidemiology, taught on a one-time basis or infrequently. May include highly specialized topics. Specific course must be approved by departmental faculty. Prerequisite(s): graduate standing and instructor's consent.
- 8442** *Advanced Veterinary Pathogenic Bacteriology* (3). Study of pathogenic bacteria causing animal disease. Pathogenic mechanisms and host-parasite relationships are emphasized. Laboratory procedures for isolation and identification of pathogens are included. Prerequisite(s): graduate standing and instructor's consent.
- 8443** *Viral Infection and Immunity* (3). Study of virus infection at the level of the intact animal. Includes immunology of domestic animal species. Prerequisite(s): graduate standing and instructor's consent.
- 8445** *Advanced Veterinary Parasitology* (3). Parasitic diseases of domestic and exotic animals and those of public health significance. Prerequisite(s): one course in general parasitology and graduate standing.
- 8446** *Advanced Immunology and Immunopathology* (3). Study of the immune system at the level of the intact animal. Includes a discussion of immunity-infectious diseases. Prerequisite(s): Microbiology 4304 (Immunology), graduate standing and instructor's consent.
- 8447** *Oncogenic Animal Viruses* (3). Biology of RNA and DNA containing animal tumor viruses and their in vitro and in vivo interactions with host cells. Prerequisite(s): 343 or Microbiology 405, or equivalent, general biochemistry or instructor's consent.
- 8448** *Molecular Methods in Nucleic Acids* (3). The course focuses on the most recent developments in technology related to eukaryotic and prokaryotic molecular biology such as analysis and manipulation of nucleic acids and their application to define structure, function, and biosynthesis of macromolecules. Prerequisite(s): instructor's consent.
- 8450** *Non-Thesis Research* (cr.arr.). Research not expected to terminate in dissertation.
- 8451** *Introduction to Immunology* (3) (Same as Veterinary Pathology 5512 & 5551). Fundamentals of immunology as applied to domestic animals.
- 8452** *Cell and Molecular Electron Microscopy* (4). Lecture class that describes the use of electron microscopy (transmission and scanning) in biomedical research. Students receive hands-on experience by completing a laboratory project.
- 8454** *Domestic Animal Virology* (2) (Same as Veterinary Pathobiology 5554). Classification and properties of viruses. Considers the etiologic, pathologic and immunologic aspects of viral diseases of animals. Instructional periods 6 and 7. Prerequisite(s): Instructor's consent.
- 8455** *Epidemiology and Biostatistics* (2). Prerequisite(s): instructor's consent. (Same as VPB 5555)
- 8457** *Animal Parasitology* (5). Prerequisite(s): instructor's consent. (Same as VPB5557)
- 8458** *Veterinary Public Health* (2). Prerequisite(s): instructor's consent. (Same as VPB 5587)
- 8468** *Laboratory Animal Biology* (4). Taxonomy, anatomy, physiology, nutrition and behavior of laboratory animals including non-human primate and less common species are covered. Genetics, gnotobiology, housing and production are also presented. Prerequisite(s): instructor's consent.
- 8490** *Thesis Research* (cr.arr.). Open to graduate students with requisite preparation. Research on specific animal diseases, prevention and treatment. Graded on a S/U basis only.
- 5511** *Veterinary Immunology* (1.5) (Same as Veterinary Pathobiology 8451). Fundamentals of immunology as applied to domestic animals. Part I Instructional period 4 & 5.
- 5512** *Veterinary Immunology* (1.5) Continuation of 5511. Fundamentals of immunology as applied to domestic animals Part II. Instructional period 4 & 5.
- 5552** *Veterinary Bacteriology I* (2.5). Classification and properties of pathogenic bacteria and fungi of animals; relationship to public health; considers pathogenesis, immunology of infection. Instructional period 5.
- 5553** *Veterinary Bacteriology II* (3). Continuation of 5552. Instructional period 6.
- 5554** *Veterinary Virology* (2). (Same as Veterinary Pathobiology 8454). Classification and properties of viruses. Considers the etiologic, pathologic and immunologic aspects of viral diseases of animals. Prerequisite: enrollment in the College of Veterinary Medicine. Instructional period 6.
- 5555** *Epidemiology and Biostatistics* (2). Instructional period 4. (Same as VPB 8455, Epidemiology and Biostatistics)
- 5557** *Veterinary Parasitology* (5). Instructional period 6. (Same as VPB 8457, Animal Parasitology)
- 5558** *Veterinary Public Health* (2). Instructional period 7. (Same as VPB 8458, Veterinary Public Health)
- 5575** *General Veterinary Pathobiology* (3). Fundamental biochemical and anatomic alterations of disease. Includes disturbances in metabolism, circulation, growth and cell differentiation. Also includes the Pathology of Tumors. Instructional period 5.
- 5576** *Veterinary Systemic and Special Pathology I* (3). Pathologic manifestations of disease in the organ systems includes changes caused by infectious agents and metabolic disturbances. Stresses the gross and microscopic criteria by which definitive diagnosis are made. Instructional Period 6.
- 5577** *Veterinary Systemic and Special Pathology II* (3). Continuation of 5576. Instructional period 7.
- 5578** *Veterinary Clinical Pathology* (3). Physiologic basis, interpretation and clinical application of laboratory assays in hematology, chemistry, cytology, and urinalysis, utilization of laboratory methods to define pathological states and to diagnose disorders of domestic animals. Prerequisite: enrollment in College of Veterinary Medicine. Instructional period 8.
- 5579** *Veterinary Genomics* (1.5) Instructional period 5.
- 5580** *Introduction to Veterinary Informatics* (1). Instructional period 5.
- 5991** *Introduction to Avian Medicine* (1)
- 6010** *Laboratory Animal Medicine* (1.5) Principles of Veterinary Medicine applied to laboratory animals as pets and in research. Husbandry, handling and clinical techniques, diseases, and use as disease models are discussed. Offered in Instructional period 8.



- 6647** *Diagnostic Pathology and Special Species Medicine I* (8). Application of laboratory techniques used to diagnose disease by macroscopic, microscopic, biochemical, microbiologic, and toxicologic findings. Case method of teaching. Domestic avian species and laboratory animals included. Six times yearly.
- 6676** *Laboratory Animal Medicine and Management*. Elective offered 3rd- and 4th-year students, subject to approval of course coordinator and supervising faculty. Concentrated study/experience in laboratory animal disease(s)/colony management. Available to veterinarians as a continuing education program.
- 6678** *Epidemiology and Community Health* (2-6). Elective covering advanced aspects of epidemiology and community health. Emphasizes problem solving and is designed to meet needs of the individual student. Prerequisite: 5558 or instructor's consent.
- 6679** *Diagnostic Pathology and Special Species Medicine II*. Third- and fourth-year students. Elective. Approval of coordinator and supervisory staff. Continuation of 6647 with more depth. Available to DVMs as part of continuing education program. Prerequisite: 6647 or equivalent.
- 6684** *Research techniques in Veterinary Pathobiology*.

### Veterinary Medicine and Surgery

- 1010** *Biomedical Career Explorations*. (1) An introduction to the variety of career possibilities within the growing field of biomedical sciences. Speakers from various aspects of biomedical sciences will be invited to present opportunities within their respective disciplines. Prerequisite: none. Grading based on S/U basis. Fall semester
- 2140** *Companion Animals*. (3) Same as Animal Science 2140. Focus on companion dog, cat, horse owners concerns re: health, zoonoses, legal responsibilities, inbreeding, choice of breeds, behavioral problems and loss of companion animals.
- 3219** *Elements of Veterinary Anatomy*. (4) Introductory comparative gross anatomy of agriculture and other students desiring a basic knowledge of functional comparative anatomy of domestic animals. Prerequisites: five hours of biological science or zoology or equivalent and instructor's consent. Graded on A/F basis only, Fall only.
- 2230** *Animal Sanitation and Disease Prevention* (Fall only). (3) Preventative measures for disease and parasites of farm animals.
- 2235** *Domestic Animal Behavior*. (3) An examination of the effects of domestication on the behavior of companion and food animal species. Comparisons to similar animals in feral or wild conditions will be made. The causes, development and potential treatments of abnormal behavior will also be examined. Prerequisite: Biological Science 1500 or equivalent, Sophomore or above. Winter semester.
- 7385** *Problems* (cr. arr.). Studies in specific areas of veterinary medicine and surgery.
- 7301** *Topics* (cr. arr.). Organized study of select topics. Prerequisites: junior standing and instructor's consent.
- 7303** *Advanced Topics in Veterinary Anesthesia* (1). (Same as VMS 6993.)
- 7304** *Advanced Equine Surgery* (2). The purpose of the course is to aid in the preparation of the resident for Board certification in the American College of Veterinary Surgeons. Prerequisites include a DVM or equivalent degree, acceptance to the graduate school, acceptance to the residency program, and instructor approval.
- 3300** *Animal Welfare and Ethics* (1). An introductory examination of contemporary ethical issues related to biomedical science including animal welfare, agriculture, and cloning.
- 3310** *Equine Health Topics*. (3) In-depth examination of equine disease and health topics pertinent to today's horse owner and veterinarian. The course will integrate horse management practices with disease recognition, control and prevention. Prerequisites: Horse Production (Animal Science 325) or equivalent or consent of instructor. Grading based on A/F. Fall Semester.
- 7328** *Introductory Radiation Biology* (3). Same as Nuclear Engineering 328, Radiology 328, Biological Sciences 328. Prerequisite: junior standing sciences/engineering; one course in biological sciences and physics/chemistry; or instructor's consent.
- 7351** *Advanced Surgical Techniques* (cr. arr.). Special application to large, small animals. Prerequisite: DVM.
- 7355** *Advanced Techniques in Radiology* (cr. arr.). Special application to domestic animals. Prerequisite: DVM.
- 8485** *Problems in Veterinary Clinical Sciences* (1-3). Supervised individuals studies arranged with a faculty member and approved by the advisory committee.
- 8401** *Topics in Clinical Veterinary Sciences* (1-3). Current topics, infrequently-taught courses, or new courses not yet designated by a permanent course number.
- 8402** *Seminars in Veterinary Clinical Sciences* (1). Graduate seminars and conferences with a focus on current literature within a specialty area. Graded on S/U basis only.
- 8021** *Seminars in Veterinary Medicine and Surgery-Neurology Seminar and Journal Review* (1). Weekly journal review and seminar on current topics in veterinary neurology, related clinical disciplines, and basic neurosciences. Prerequisites: DVM degree. Graded on S/U basis only.
- 8022** *Internal Medicine Clinicopathologic Conference* (1). Graded on S/U basis only.
- 8023** *Internal Medicine Journal Review* (1). Graded on S/U basis only.
- 8024** *Medicine-Surgery-Pathology Conference* (1). Graded on S/U basis only.
- 8025** *Equine Medicine Journal Review* (1). Graded on S/U basis only.
- 8026** *Surgery Journal Review* (1). Graded on S/U basis only.
- 8027** *Food Animal Medicine Journal Review* (1). Graded on S/U basis only.
- 8028** *Cardiovascular Medicine Journal Review* (1). Graded on S/U basis only.
- 8029** *Emergency and Critical Care Journal Review* (1). This course will concentrate on review of emergency and critical care literature. Prerequisite: DVM degree. Graded on S/U basis only.
- 8030** *Seminars in Veterinary Medicine and Surgery-Ophthalmology Pathology Seminar* (1). Review of clinical cases presented in two formats: histopathology slides and kodachrome slides. Prerequisite: DVM degree or equivalent and acceptance into an ophthalmology residency program. Graded on S/U basis only.
- 8031** *Seminars in Veterinary Medicine and Surgery-Ophthalmology Seminar and Journal Review* (1). Weekly journal review and seminar on current topics in veterinary ophthalmology, review of pertinent literature in human ophthalmology, and review of ophthalmic texts. Prerequisite: DVM or equivalent degree and acceptance into the ophthalmology residency program. Graded on S/U basis only.
- 8032** *Seminars in Veterinary Anesthesiology* (1). A journal review will focus on advances in veterinary anesthesiology, pharmacology, and physiology. Prerequisites: DVM and graduate school enrollment or instructor's consent. Graded on S/U basis only.
- 8033** *Seminars in Clinical Sciences-Equine Surgery Journal Review* (1). Journal review will focus on advances in equine surgery and will consist of a review of recent manuscripts pertaining to equine surgery in current journals and review of pertinent book chapters. Graded on S/U basis only.
- 8405** *Comparative Respiratory Pathophysiology* (1). A consideration of clinical pathophysiology of the respiratory system relative to diseases of the thorax and clinical anesthesiology.



- 8410** *Veterinary Medicine and Surgery Research Seminar* (1). Current research in veterinary medicine and surgery. Literature reviews and presentation or original graduate student research. Graded on S/U basis.
- 8411** *Clinical Veterinary Endocrinology* (2). Graduate standing required. A 2-hour course for post-DMV graduate students. It will focus on clinically relevant physiology, pathophysiology, and diagnostic evaluation of hormone systems.
- 8413** *Equine Internal Medicine* (2). Prerequisite: DVM degree or equivalent.
- 8415** *Advanced Veterinary Internal Medicine-Neurology* (2). Basic neuroscience as it relates to clinical neurology and the pathophysiology of diseases of the brain, spinal cord, peripheral nerve and muscle in domestic animals. Prerequisites: DVM degree. A/F grading only.
- 8416** *Advanced Veterinary Internal Medicine-Cardiovascular Medicine* (3). Graduate standing required. Pathologic, pathophysiologic, hemodynamic, and pharmacologic mechanisms of important to the diagnosis, assessment, management, and research of cardiovascular diseases of animals.
- 8417** *Advanced Veterinary Internal Medicine-Clinical Oncology* (2). Provides graduate students in the clinical and basic sciences alike with a working knowledge of the biological mechanisms of cancer development and progression and the related approaches to cancer prevention and therapy. It is assumed that students will have a strong background in biology as a foundation for discussions. Prerequisites: graduate standing; DVM or equivalent degree recommended.
- 8418** *Advanced Veterinary Internal Medicine: Food Animal Medicine* (2). Current concepts in the pathophysiology, diagnosis, and management of medical disorders, diseases of the limbs, and infectious diseases of cattle and food producing animals.
- 8421** *Advanced Veterinary Surgery: Small Animal Surgery* (2-4). Current concepts in the pathophysiology, diagnosis and management of surgical disease of the dog and the cat. Includes laboratories of advanced surgical techniques.
- 8423** *Comparative Arthrology* (3). Lectures and discussion covering anatomy, physiology, biomechanics, pathophysiology, and clinical aspects of mammalian diarthrodial joints.
- 8425** *Advanced Veterinary Surgery: Equine Surgery* (2-4). Current concepts in the pathophysiology, diagnosis, and management of surgical disorders of the horse. Taught yearly as sections A, B, C. Repeatable to a maximum of 10 credit hours (individual sections may be taken once).
- 8426** *Advanced Veterinary Surgery-Ophthalmic Surgery* (2-4). Surgery labs consisting of 2-4 hours of surgical instruction per week. Prerequisite: DVM or equivalent degree and acceptance into the ophthalmology residency program. Graded on A/F basis only.
- 7430** *Medical Informatics* (3). Examines clinical research and administrative application of the computer in health services delivery. Provides an introduction to medical informatics. Prerequisite: appropriate class in computer methods/application or instructor's consent. (Same as HSM 430 Computer Applications in Health Services.)
- 8431** *Research Methods and Data Analysis* (2-4). A consideration of research methods, data analysis, and practical approaches to analyzing data sets derived from veterinary and biomedical studies. (Same as Veterinary Pathobiology 8431.)
- 8435** *Veterinary Clinical Sciences: Clinical Immunology* (2). Advanced concepts in veterinary immunology and immunopathology.
- 8436** *Veterinary Clinical Sciences: Clinical Pharmacology* (1). Advanced concepts in veterinary clinical pharmacology, pharmacokinetics, and anesthesiology.
- 8437** *Advanced Topics in Veterinary Medicine (Nuclear Medicine)* (1). An in-depth review of veterinary nuclear medicine. Includes the physics of nuclear medicine, common imaging techniques, common radiopharmaceuticals, radiopharmaceutical kinetic evaluation, and some common physiological applications. Graduate standing required.
- 8439** *Advanced Veterinary Ultrasonography* (2-3). Advanced concepts in veterinary ultrasonography; including ultrasound and Doppler physics, instrumentation, examination methodology, and interpretation of studies.
- 8440** *Advanced Veterinary Clinical Sciences-Advanced Clinical Ophthalmology* (1-3). Case-based discussion course. Prerequisite: DVM or equivalent degree and acceptance into the ophthalmology residency program. Graded on A/F basis only.
- 8445** *Veterinary Critical Care and Emergency Medicine* (2-3). Advanced study of veterinary critical care and emergency medicine and surgery focusing on current research and literature as well as clinical application
- 8450** *Research* (cr. arr.). (Non-thesis.) Open to graduate students with requisite preparation.
- 8487** *Nuclear Medicine* (3). Principles of radiation detection instrumentation, monitoring radiological safety, and diagnostic procedures used in veterinary nuclear medicine. Prerequisite: one year college physics, DVM degree, and departmental consent.
- 8488** *Radiation Therapy* (3). Prerequisite: one year college physics, DVM degree, and departmental consent.
- 8090** *Research* (cr. arr.). (Thesis.)
- 6000** *Problems* (cr. arr.). Studies in specific areas of veterinary medicine and surgery.
- 6020** *Veterinary Radiology* (2). Instructional period 8. Introduces through lectures and demonstrations the principles of radiographic examination and interpretation of disease processes of domestic animals.
- 6030** *Veterinary Anesthesiology* (2). Instructional period 9. Basic principles of anesthesiology for any species of domestic and exotic animals.
- 6040** *Companion Animal Medicine* (4). Instructional period 9. Covers basic principles of veterinary internal medicine and selected sub disciplines.
- 6050** *Small Animal Medicine* (2.5). Instructional period 10. Didactic presentations regarding pathophysiology, diagnosis, and therapeutic management of organ system diseases in small animals.
- 6060** *Small Animal Surgery* (2). Instructional period 9. Basic principles including suture materials and patterns; operative techniques, wound healing of soft tissue surgery.
- 6071** *Small Animal Surgery* (2). Instructional period 10. Continuation of 6060 lectures, focusing primarily on orthopedics.
- 6072** *Conventional Surgery and Anesthesia Laboratory* (0.5). Designed to teach entry-level surgical and anesthesia skills terminal procedures. Instructional period 10.
- 6073** *Fundamental Surgery and Anesthesia Laboratory* (0.5). Instructional period 10. Designed to teach entry-level surgical and anesthesia skills using cadavers and survival spay and neuter procedures. This laboratory is offered as a substitute to VMS 6072 for students with objections to participating in terminal procedure laboratories.





- 6081 Food Animal Medicine and Surgery** (2.5). Instructional Period 10. Covers the important diseases of cattle, goats, sheep, and swine. Recognition, management and prevention of diseases are stressed.
- 6082 Food Animal Medicine and Surgery.** (2.0) Instructional Period 11. Continuation of 6981. Covers the important diseases of cattle, goats, sheep, and swine. Recognition, management and prevention of diseases are stressed.
- 6090 Small Animal Critical Care** (1). Instructional period 10. Basic principles of emergency and critical care of companion animals.
- 6151 Equine Medicine and Surgery** (2). Instructional period 10. Covers the fundamentals of diseases of the equine species. Case Management approaches are utilized to provide examples of disease conditions.
- 6152 Equine Medicine and Surgery.** (1.5) Instructional Period 11. Continuation of 6151. Covers the fundamentals of diseases of the equine species. Case Management approaches are utilized to provide examples of disease conditions.
- 6110 Theriogenology** (3). Instructional period 11. Fundamentals for reproductive function of domestic animals, medical, and surgical management of diseases of reproductive systems.
- 6120 Veterinary Ophthalmology** (1). Instructional period 11. Covers examination, diagnostic procedures, and treatment of important eye diseases of domestic animals.
- 6130 Fundamentals of Veterinary Business Management** (1). To realistically present to the second-year veterinary student a basic explanation of the essential need for a strong base of knowledge pertaining to business and management in order to successfully operate a veterinary practice.
- 6140 Nutrition With Lab**
- 6400 Food Animal Medicine and Surgery I** (6). Six times per year. Technical, diagnostic and therapeutic procedures common to the practice of large animal medicine and surgery. Experience in the operation of a large animal hospital and farm outpatient practice.
- 6410 Small Animal Medicine I** (6). Six times per year. Practical discussion of medical diseases of dogs, cats, and exotic pets as they affect body systems. Practical experience in the operation of a small animal hospital and outpatient practice.
- 6420 Equine Medicine and Surgery I** (6). Six times per year. Technical, diagnostic and therapeutic procedures common to equine practice. Emphasis on fundamental principles.
- 6430 Small Animal Surgery I** (6). Six times per year. Diagnostic procedures and surgical techniques applicable to companion animal surgery. Practical experience in the operation of a small animal surgical practice.
- 6441 Clinical Radiology I** (3). Twelve times per year. Fundamentals of radiology: indications for use, techniques, pathophysiologic alterations, interpretation of results, patient aftercare, protective measures against radiation hazards.
- 6442 Clinical Anesthesiology I** (3). Twelve times per year. Fundamentals of anesthesiology: indications for use, techniques, pathophysiologic alterations, and interpretation of results, patient aftercare.
- 6450 Theriogenology I** (2). Eighteen times per year. Practical experience in reproductive techniques, obstetrics, breeding soundness, and heard reproductive problems.
- 6460 Clinical Ophthalmology I** (2). Eighteen times per year. Practical application in problem solving and medical and surgical management of eye conditions of domestic animals.
- 6480 Cardiology**
- 6490 Small Animal Specialty Medicine I** (2). Eighteen times per year. Clinical rotation in small animal oncology. Taught in the clinical setting using animals presented to the VMTH for evaluation and treatment of oncologic diseases.
- 6700 Food Animal Medicine and Surgery II** (2-6). Prerequisite: VMS 6400.
- 6710 Small Animal Medicine II** (2-6). Continuation elective offered to 3rd- and 4th-year students. Opportunity for concentrated study and experience in medical areas. Enrollment subject to approval of course coordinator. Prerequisite: 6410.
- 6720 Equine Medicine and Surgery II** (2-6). Continuation of VMS 6420. Open to 3rd- and 4th year students, subject to approval of course coordinator. Opportunity for concentration in specific area of interest.
- 6730 Small Animal Surgery II** (2-6). Prerequisite: VMS 6430 or equivalent. Opportunity for concentrated study and advanced surgical experience.
- 6741 Clinical Radiology II** (2-6). Continuation of VMS 6441.
- 6742 Clinical Anesthesiology II** (2-6). Continuation of VMS 6442. This elective will focus on anesthetizing and monitoring the more challenging anesthetic cases during rotation. Required projects include a review paper on a relevant topic of choice, a written case report and assistance in research activities.
- 6750 Theriogenology II** (2-6). Continuation of the prerequisite VMS 6450. Opportunity for concentrated study and experience. An elective, subject to approval of course coordinator and faculty member(s) who supervise student's work.
- 6770 Herd Health Management and Nutrition II** (2-6). Prerequisite: VMS 6400 and VM-4 status. Concentrated study/experience in feed lot, dairy, cow/calf, swine herd agribusiness enterprises applicable to veterinary practice.
- 6810 Cardiology 2**
- 6800 Clinical Ophthalmology II** (2-6). Opportunity for concentrated study and experience. An elective, subject to approval of course coordinator and faculty member(s) who supervise student's work.
- 6820 Small Animal Emergency and Critical Care** (2-6). Elective offered to 3rd and 4th year veterinary students. Opportunity for concentrated study and experience in small animal emergency and critical care.
- 6830 Food Animal Production Medicine** (2-6). This 6-week rotation will focus on the reproductive, metabolic and immunologic physiology of beef, dairy and swine with additional emphasis on spreadsheet and data base applications.
- 6850 Small Animal Specialty Medicine II** (2-6). Clinical rotation in small animal oncology. Taught in the clinical setting using animals presented to the VMTH for evaluation and treatment of oncologic diseases.
- 6990 Zoological Medicine**
- 6991 Advanced Equine Lameness With Lab**
- 6992 Small Animal Endoscopy**
- 6993 Advanced Veterinary Anesthesia**
- 6994 Advanced Techniques in Small Animal Surgery With Laboratory**
- 6995 Clinical Cardiology**
- 6996 Introduction to Veterinary Practice Management**
- 6997 Food Animal Diagnostic Exercises**
- 6998 Small Animal Behavioral Medicine**
- 6999 Food Animal Surgery Laboratory**
- 6989 Advanced Oncology - Companion Animal**







# Faculty

## Biomedical Sciences

- M. Harold Laughlin**, PhD, professor and chair; professor, department of physiology, school of medicine; research investigator, Dalton Cardiovascular Research Center (DCRC)
- Ronald L. Terjung**, PhD, professor and associate chair; associate dean for research and post-graduate affairs; professor, department of physiology, Medicine; research investigator, DCRC
- Frank Booth**, PhD, professor; research investigator, DCRC; professor, department of physiology, School of Medicine
- Douglas K. Bowles**, PhD, assistant professor; research investigator, DCRC
- Lane L. Clarke**, DVM, PhD, associate professor; director of graduate studies; research investigator, DCRC
- Gheorghe M. Constantinescu**, DVM, PhD, Dr.h.c., professor
- Ileana A. Constantinescu**, DVM, MS, clinical instructor
- John R. Dodam**, DVM, PhD, associate professor, department of veterinary medicine and surgery
- Brian L. Frappier**, DVM, PhD, clinical associate professor; director of professional curriculum
- Venkateshu K. Ganjam**, B.S., DVM, PhD, professor; research investigator, DCRC

► Several instructors come back to teach at the MU College of Veterinary Medicine after long and successful careers in private practice.

- Calvin C. Hale**, PhD, associate professor; research investigator, DCRC
- Marc T. Hamilton**, PhD, assistant professor
- Eileen M. Hasser**, PhD, professor; research investigator, DCRC
- Meredith Hay**, PhD, associate professor; research investigator, DCRC
- Cheryl M. Heesch**, PhD, associate professor; research investigator, DCRC
- Salman M. Hyder**, associate professor, DCRC
- Pat Porter**, MS, clinical instructor
- Elmer M. Price**, PhD, associate professor; research investigator, DCRC
- Chada S. Reddy**, BVSc., PhD, associate professor
- Leona J. Rubin**, PhD, associate professor; research investigator, DCRC
- James C. Schadt**, PhD, associate professor; research investigator, DCRC
- Simon H. Slight**, PhD, research assistant professor
- Richard W. Tsika**, PhD, associate professor; research investigator, DCRC; associate professor, department of biochemistry
- James R. Turk**, DVM, PhD, associate professor, diplomate, ACVP
- Wade V. Welshons**, PhD, associate professor
- Steve HT Yang**, PhD, research associate professor
- Chris Woodman**, PhD, research assistant professor

## Adjunct Faculty

- C. Trenton Boyd**, BS, MA, librarian; adjunct assistant professor
- Marybeth Brown**, PT, PhD, professor
- Virginia H. Huxley**, PhD, adjunct professor; professor, department of physiology, School of Medicine
- George E. Rottinghaus**, PhD, adjunct associate professor; associate professor, Veterinary Medical Diagnostic Laboratory
- Colette Wagner-Mann**, DVM, PhD, adjunct assistant professor; assistant professor, cardiothoracic surgery, School of Medicine

## Emeriti Faculty

- Esther M. Brown**, PhD, professor emeritus
- Roger E. Brown**, PhD, professor emeritus
- Homer E. Dale**, DVM, PhD, professor emeritus
- Robert McClure**, DVM, PhD, professor emeritus

## Veterinary Pathology

- Gerald M. Buening**, DVM, PhD, interim chair, professor
- Yuksel Agca**, DVM, PhD, assistant professor
- Brenda T. Beerntsen**, PhD, assistant professor
- Beth Bauer**, DVM, clinical assistant professor
- Linda Berent**, PhD, clinical assistant professor
- John N. Berg**, DVM, PhD, professor emeritus
- Alex J. Bermudez**, DVM, MS, associate professor
- Cynthia Besch-Williford**, DVM, PhD, associate professor
- Charles Brown**, PhD, assistant professor
- Elizabeth Bryda**, PhD, associate professor
- Michael Calcutt**, PhD, assistant professor
- C. Andrew Carson**, VMD, PhD, professor, director of WHO Collaborating Center for Enteric Zoonoses
- D. Bart Carter**, DVM, MS, clinical assistant professor, assistant director of Office of Animal Resources
- Stan W. Casteel**, DVM, PhD, professor, director of VMDL
- John Critser**, PhD, Gilbreath-McLorn Professor of Comparative Medicine
- Maisie Dawes**, DVM, PhD, clinical instructor
- Timothy Evans**, DVM, assistant professor
- William H. Fales**, PhD, professor
- Craig Franklin**, DVM; PhD; associate professor; director of graduate studies, Lab. Animal Medicine (Comparative Medicine)
- Gary S. Johnson**, DVM; PhD; associate professor; director of graduate studies, pathobiology
- Gayle C. Johnson**, DVM, PhD, associate professor
- Steve Kleiboeker**, DVM, PhD, assistant professor
- Robert Livingston**, DVM, PhD, clinical assistant professor
- Christie Loiacono**, DVM, PhD, assistant professor



Christian Lorson, PhD, assistant professor  
**J. Zachary March**, MS, clinical assistant professor, director of information technology  
**William J. Mitchell Jr.**, DVM, PhD, assistant professor  
**Alpana Ray**, PhD, research associate professor  
**Bimal K. Ray**, PhD, professor  
**Thomas Reilly**, PhD, clinical assistant professor  
**Lela K. Riley**, PhD, professor, director of RADIL  
**Audrey Rottinghaus**, MS, instructor  
**Heide Schatten**, PhD, associate professor  
**Earl K. Steffen**, PhD, research assistant professor  
**Ron Tessman**, DVM, PhD, clinical instructor  
**Larry P. Thornburg**, DVM, PhD, associate professor  
**James G. Thorne**, DVM, PhD, MPVM, professor emeritus  
**James R. Turk**, DVM, PhD, professor  
**Marlyn Whitney**, DVM, PhD, clinical associate professor  
**Charles Wiedemeyer**, DVM, PhD, clinical instructor

#### *Adjunct Faculty:*

**Gary K. Allen**, DVM, PhD, associate professor, director of Bioinformatic Consortium  
**William J. Boever**, DVM, adjunct assistant professor  
**James Cook**, DVM, PhD, adjunct assistant professor  
**Lonny W. Dixon**, DVM, MS, clinical associate professor, director of Office of Animal Resources  
**Mary Duncan**, adjunct assistant professor  
**Katz, Martin**, PhD, adjunct assistant professor  
**R. Michael Roberts**, PhD, adjunct professor

#### *Emeriti Faculty*

**Hans K. Adldinger**, DVM, PhD, professor emeritus  
**John N. Berg**, DVM, PhD, professor emeritus  
**Harry H. Berrier**, DVM, MS, associate professor emeritus  
**Gerald M. Buening**, DVM, PhD, professor emeritus  
**Harvey S. Gosser**, DVM, PhD, professor emeritus  
**Theodore Green**, PhD, associate professor emeritus  
**Reuel R. Hook**, PhD, professor emeritus  
**Robert Kahrs**, DVM, PhD, professor and dean emeritus  
**Loren D. Kintner**, DVM, MS, professor emeritus  
**Ronald McLaughlin**, DVM, MS, professor emeritus  
**Lawrence G. Morehouse**, DVM, PhD, professor emeritus  
**Bonnard Moseley**, DVM, MS, associate professor emeritus  
**Stuart Nelson**, DVM, PhD, professor emeritus

**LeRoy D. Olson**, DVM, PhD, professor emeritus  
**Donald Rodabaugh**, DVM, MS, professor emeritus  
**Bruce D. Rosenquist**, DVM, PhD, professor emeritus  
**Donald A. Schmidt**, DVM, PhD, professor emeritus  
**Robert F. Solorzano**, MS, PhD, professor emeritus  
**James G. Thorne**, DVM, PhD, MPVM, professor emeritus  
**Joseph E. Wagner**, DVM, PhD, MPH, professor emeritus

#### *Residents, Postdoctoral Fellows, and Research Associates*

**James Abshier**, BS  
**Tomoyuki Awano**, BS, DVM  
**Travis Baughan**, BS  
**Victoria Blaho**, BS  
**Jeng Cheng**, AA  
**Tristan Coady**, BS  
**Kristen Correll**, BS  
**Melissa Combs**, BS, DVM  
**Alexis Epps**, BS, BA  
**Genevieve Fent**, BS, DVM  
**Lillian Folk**, BS, BA  
**David Garcia-Tapia**, MS, DVM  
**Tara Greer**, BS  
**Rangan Gupta**, BS, MS  
**Yi Han**, BS  
**Charlie Hsu**, BS, DVM  
**Miranda Hvinden**, BS  
**Christopher Johnson**, BS, DVM  
**Kim Johnson**, BS, DVM  
**Corinna Kashuba**, BS, DVM  
**Bethany Kent**, BA  
**Scott Korte**, BS, DVM  
**Kurt Kreutzer**, BS, DVM  
**Aric Krogstad**, BS, DVM  
**Deepak Kumar**, BVSc., MVSc.  
**Sang-Myeong Lee**, MVM, DVM  
**Lei Lei**, PhD  
**Virginia Mattis**, BS  
**Hongsheng Men**, PhD  
**Dusty Nagy**, BS  
**Calvin Patten, Jr.**, BS, DVM  
**Ingrid Pardo**, BS, DVM  
**Rachel Rabino**, BS  
**Arvind Shakya**, BVS  
**Susan Schommer**, PhD  
**Janet Simpson**, MS  
**Aaron Stoker**, MS  
**Alexa Turner**, BS  
**Fred Williams III**, BS, DVM  
**Chris Winklemann**, BS, DVM  
**Elizabeth Wolstencroft**, PhD  
**Renita Woods**, BS, DVM  
**Phillip Young**, PhD

#### **Veterinary Medical Diagnostic Laboratory**

**Stan W. Casteel**, DVM, PhD, professor of veterinary pathobiology; diplomate ABVT; director, Veterinary Medical Diagnostic Laboratory  
**Linda Berent**, PhD, clinical assistant professor

**Alex J. Bermudez**, DVM, MS, associate professor of veterinary pathobiology, diplomate, ACPV  
**Timothy Evans**, DVM, assistant professor  
**William H. Fales**, PhD, professor of veterinary pathobiology, honorary diplomate ACVM  
**Gayle C. Johnson**, DVM, PhD, associate professor of veterinary pathobiology; diplomate, ACVP  
**Steven B. Kleiboeker**, DVM, PhD, assistant professor pathobiology, diplomate ACVM  
**Christie Loiacono**, DVM, PhD, assistant professor  
**Thomas Reilly**, PhD, clinical assistant professor  
**Audrey A. Rottinghaus**, MS, instructor in veterinary pathobiology (virology)  
**George E. Rottinghaus**, PhD, associate professor of veterinary biomedical sciences (analytical chemistry)  
**Marlyn Whitney**, DVM, PhD, clinical associate professor of veterinary pathobiology, diplomate, ACVP  
**Charles Wiedmeyer**, DVM, PhD, clinical instructor of veterinary clinical pathobiology

#### *Emeriti Faculty*

**Harvey Gosser**, DVM, PhD, professor emeritus

#### *Residents*

**Kurt Kreutzer**, BS, DVM, clinical pathology resident  
**Ingrid Pardo**, BS, DVM  
**Fred Williams III**, BS, DVM

#### **Veterinary Medicine and Surgery**

**Joe N. Kornegay**, DVM, PhD, diplomate ACVIM, professor and dean; investigator, DCRC  
**C. B. Chastain**, DVM, MS, diplomate ACVIM, professor, associate dean for academic affairs  
**Ron Cott**, DVM, clinical assistant professor and associate dean for student and alumni affairs  
**Cecil P. Moore**, DVM, MS, diplomate ACVO, professor, veterinary medicine and surgery chair and hospital director  
**David A. Wilson**, DVM, MS, diplomate ACVS, associate professor, associate chair for clinical affairs  
**Robert S. Youngquist**, DVM, diplomate ACT, professor, associate chair for academic affairs  
**Robert C. Backus**, MS, DVM, PhD, assistant professor  
**Keith R. Branson**, DVM, MS, diplomate ACVA, clinical assistant professor  
**Lisa Britt**, DVM, MS, clinical assistant professor  
**Joan R. Coates**, DVM, MS, ACVIM (Neurology), associate professor  
**Leah A. Cohn**, DVM, PhD, diplomate ACVIM, associate professor



**Cristi R. Cook**, DVM, MS, diplomate ACVR, clinical assistant professor  
**James L. Cook**, DVM, PhD, diplomate ACVR, associate professor  
**Ross P. Cowart**, DVM, MS, diplomate ABVP, associate professor  
**David Cross**, DVM, PhD, clinical assistant professor  
**Craig Datz**, DVM, diplomate ABVP clinical assistant professor  
**Masie E. Dawes**, DVM, clinical instructor  
**John R. Dodam**, DVM, PhD, diplomate ACVA, associate professor  
**Stephanie Essman**, DVM, MS, clinical assistant professor  
**Thomas J. Fangman**, DVM, MS, clinical associate professor, commercial agriculture veterinary swine extension specialist  
**Deborah Fine**, DVM, MS, diplomate ACVIM (Cardiology), assistant professor  
**Derek Fox**, DVM, PhD, diplomate, ACVS, assistant professor  
**Laurence E. Galle**, DVM, diplomate ACVO, assistant professor  
**V. K. Ganjam**, DVM, PhD, professor; professor, biomedical sciences  
**Elizabeth Giuliano**, DVM, assistant professor  
**Marjorie E. Gross**, DVM, MS, diplomate ACVA, clinical associate professor  
**Carolyn J. Henry**, DVM, MS, diplomate ACVIM, associate professor  
**Rick D. Howard**, DVM, MS, PhD, associate professor; director, E. Paige Laurie Endowed Program in Equine Lameness  
**Philip J. Johnson**, BVSC, MRCVS, MS, diplomate ACVIM, professor  
**Kevin Keegan**, DVM, MS, diplomate ACVS, associate professor  
**Marie E. Kerl**, DVM, diplomate ACVIM and ACVECC, clinical assistant professor  
**Joanne Kramer**, DVM, clinical assistant professor  
**Alison LaCarrubba**, DVM, clinical instructor  
**Robert Larson**, DVM, PhD, diplomate ACT, clinical associate professor of veterinary medical extension, commercial agriculture veterinary beef extension specialist  
**Jimmy C. Lattimer**, DVM, MS, diplomate ACVR, associate professor  
**Bo Lei**, MD, MSc, PhD, assistant professor  
**Michael R. Lewis**, PhD, assistant professor (tumor biology)  
**F. Anthony (Tony) Mann**, DVM, MS, diplomate ACVS, ACVECC, associate professor  
**Dudley L. McCaw**, DVM, diplomate ACVIM, associate professor  
**Richard L. Meadows**, DVM, diplomate ABVP, clinical associate professor  
**Nat T. Messer**, DVM, diplomate ABVP, associate professor  
**John Middleton**, DVM, PhD, diplomate ACVIM, assistant professor  
**R. Eric Miller**, DVM, PhD, diplomate ABVP, associate professor; associate professor, veterinary pathobiology  
**Kristina Narfstrom**, DVM, PhD, diplomate ECVO, Ruth M. Kraeuchi-Missouri

Endowed Professor in Veterinary Ophthalmology  
**Carol R. Norris**, DVM, diplomate ACVIM, assistant professor  
**Dennis O'Brien**, DVM, PhD, diplomate ACVIM, professor  
**Eric Pope**, DVM, MS, diplomate ACVS, associate professor  
**Richard Randle**, DVM, MS, clinical associate professor, ruminant health veterinary extension specialist  
**Amy Rucker**, DVM, clinical instructor  
**Kimberly Selting**, DVM, MS, diplomate ACVIM (Oncology), assistant professor  
**Loren Schultz**, DVM, MS, assistant professor  
**Alan W. Spier**, DVM, PhD, diplomate ACVIM (Cardiology), assistant professor  
**Ron Tessman**, DVM, clinical instructor  
**James L. Tomlinson**, DVM, MVetSci, diplomate ACVS, professor  
**Jeffrey Tyler**, DVM, MPVM, PhD, diplomate ACVIM, professor, director of clinical research  
**Suzanne Whitaker**, DVM, clinical instructor

#### Adjunct Faculty

**Eugene H. Hinds**, DVM, adjunct professor  
**Debra F. Horwitz**, DVM, diplomate ACVB, adjunct assistant professor  
**Rebecca A. Johnson**, PhD, RN, adjunct associate professor; associate professor, Sinclair School of Nursing  
**Brent D. Jones**, DVM, adjunct associate professor  
**Randall E. Junge**, DVM, MS, adjunct assistant professor; associate veterinarian, St. Louis Zoological Park  
**G. George Keller**, DVM, MS, adjunct instructor; associate project director, OFA  
**Wayne E. Loch**, PhD, adjunct associate professor; associate professor, Animal Science-UMC  
**Charles A. Martin**, DVM, MS, adjunct assistant professor; staff veterinarian and swine specialist, MFA, inc.  
**Robert E. Miller**, DVM, adjunct assistant professor; director, animal health and research, St. Louis Zoological Park  
**David A. Senter**, DVM, diplomate DACVD, adjunct clinical assistant professor  
**Kirk Suedmeyer**, DVM, adjunct assistant professor; senior staff veterinarian, Kansas City Zoological Gardens  
**Debrah L. Turner**, DVM, adjunct instructor

#### Emeriti Faculty

**Clarence J. Bierschwal**, DVM, MS, diplomate ACT, professor emeritus  
**E. Allen Corley**, DVM, PhD, diplomate ACVR, professor emeritus  
**Louis A. Corwin, Jr.**, DVM, PhD, diplomate ACVR, professor emeritus  
**James E. Creed**, DVM, MS, diplomate ACVS, professor emeritus  
**Harold E. Garner**, DVM, PhD, professor emeritus  
**Allen Hahn**, DVM, PhD, diplomate ACVIM, professor emeritus

**Harlan E. Jensen**, DVM, PhD, professor emeritus  
**Joseph T. McGinity**, DVM, MS, professor emeritus  
**Kenneth H. Niemeyer**, DVM, MS, professor emeritus  
**Louis G. Tritschler**, DVM, MS, professor emeritus  
**A. David Weaver**, DrMedVet, PhD, RCVS member, professor emeritus

#### Interns

**Domenico Bianco**, DVM  
**Michelle D. Brogan**, DVM  
**Elizabeth Cole**, DVM  
**Tracy L. DePuy**, DVM  
**Christopher G. Downs**, DVM  
**Daniel B. Guastella**, DVM  
**Matthew D. Johnson**, DVM  
**Jill D. Muno**, DVM  
**Wendi V. Rankin**, DVM  
**Mary K. Zarfoss**, DVM

#### Residents

**Lee A. Breshears**, DVM  
**Jeffrey Bryan**, DVM  
**Munasher Chigerwe**, DVM  
**Christopher D. Calloway**, DVM  
**Amy DeClue**, DVM  
**Rebecca J. Greer**, DVM  
**Kim Johnson**, DVM  
**John C. Janicek**, DVM  
**Michael H. Karagiannis**, DVM  
**Gia Klaus**, DVM  
**David Kunz**, DVM  
**Jonathan M. Levine**, DVM  
**Christopher D. Luby**, VetMB, MRCVS  
**Isabelle Masseur**, DVM  
**Juri Ota**, DVM  
**Rebecca A. Packer**, DVM, MS  
**Jacqueline Pearce**, DVM  
**Jon Perlis**, DVM  
**Steven A. Ringold**, DVM  
**Julie Robb**, DVM  
**Elizabeth K. Schooley**, DVM  
**Heidi Shafford**, DVM  
**Emily Southward**, DVM  
**Heather Streppa**, DVM  
**Juliene Throop**, DVM  
**Erika Travis**, DVM  
**Jennifer Warnock**, DVM  
**Efrat Yagil-Kelmer**, DVM

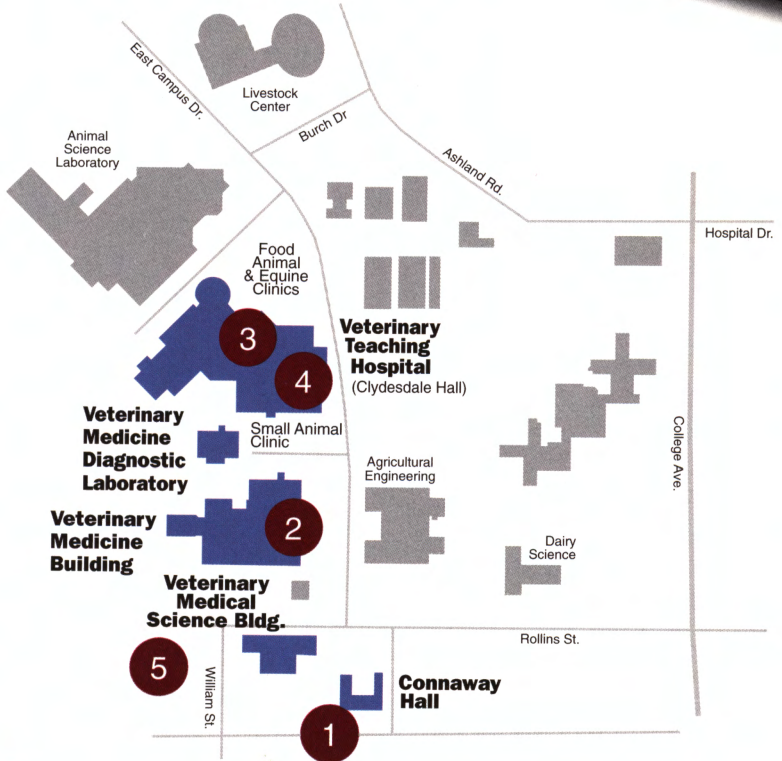
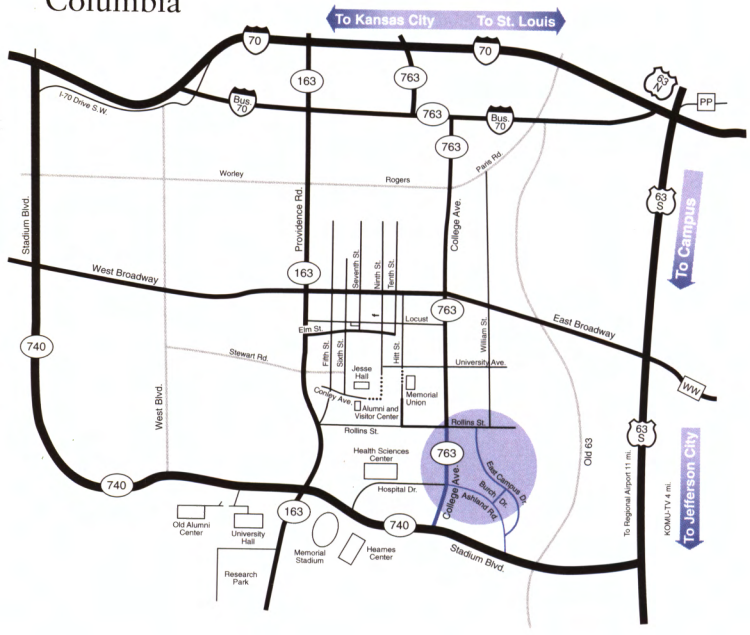
#### Graduate Students

**Satish Adusumilli**, DVM  
**Mirta Caro**, DVM  
**Dusty W. Nagy**, DVM, MS, diplomate ACVIM





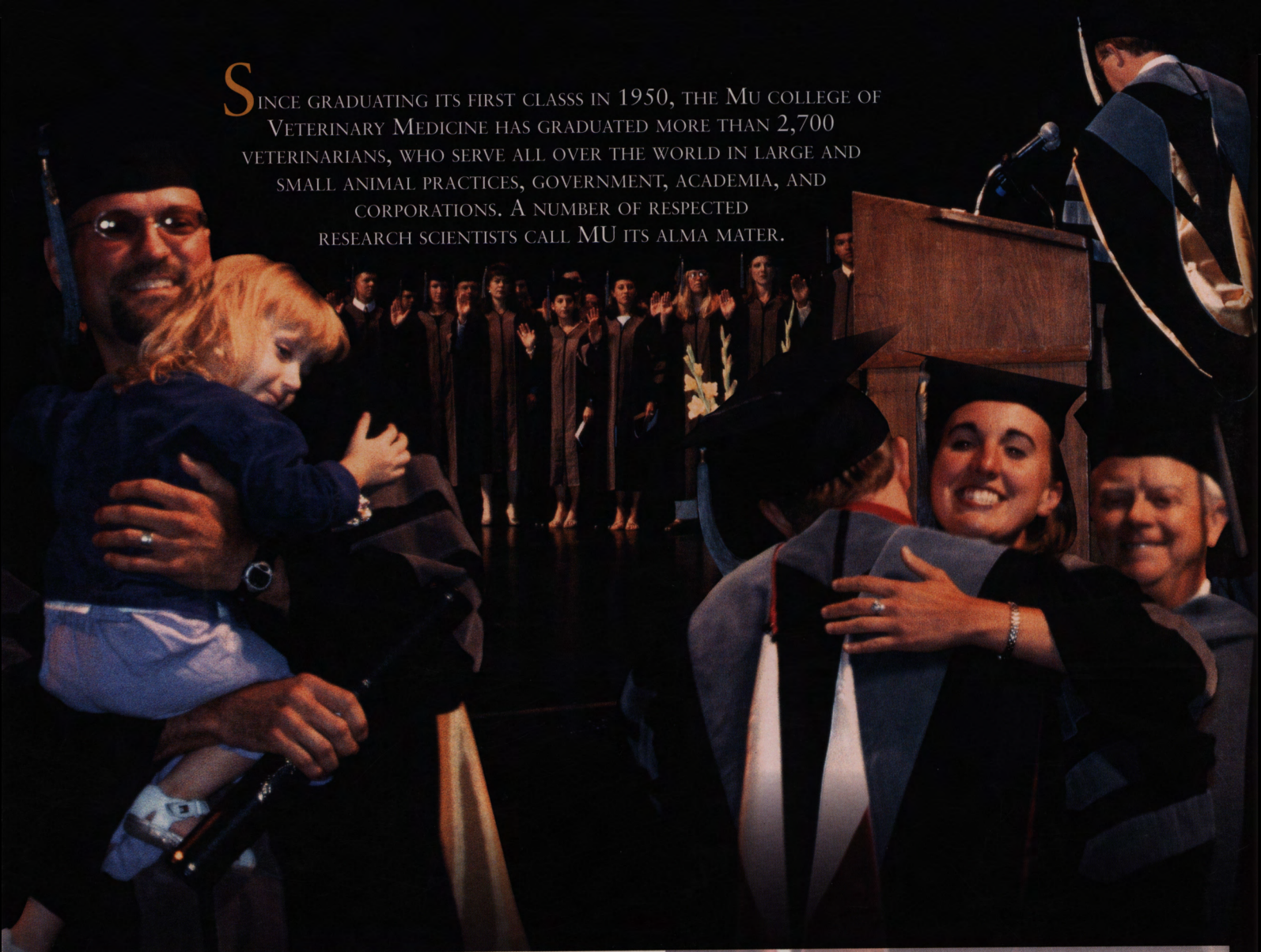
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