

Texas A&M University
College of Veterinary Medicine & Biomedical Sciences
Department of Veterinary Pathobiology
Information for Candidates

University Environment:

Texas A&M University is a land-, space- and sea-grant designated institution with an enrollment of more than 43,000 students in 10 academic colleges at the College Station campus. The university is centrally located, approximately equidistant from three of the 10 largest cities in the United States (Houston, Dallas and San Antonio) and the State Capital (Austin).

Texas A&M University is dedicated to the discovery, development, communication, and application of knowledge in a wide range of academic and professional fields. Its mission of providing the highest quality undergraduate, professional and graduate programs is inseparable from its mission of developing new understandings through research and creativity. These missions have been energized by the addition of approximately 215 new faculty members hired in the first three years of a faculty reinvestment program, an ambitious program that aims to add a total of 447 new faculty positions. The campus itself is in the midst of a physical makeover, driven by the reinvestment program. The university is in the detailed planning stage for a \$100-million interdisciplinary life sciences building, the largest investment in teaching and research in the school's history.

Texas A&M University prepares students to assume roles of leadership, responsibility, and service to society. It assumes as its historic trust the maintenance of freedom of inquiry and an intellectual environment nurturing the human mind and spirit. It welcomes and seeks to serve persons of all racial, ethnic, and geographic groups, women and men alike, as it addresses the needs of an increasingly diverse population and a global economy. In the twenty-first century, Texas A&M University seeks to assume a place of preeminence among public universities while respecting its history and traditions. For more information, visit <http://www.tamu.edu>.

College Environment:

The College of Veterinary Medicine and Biomedical Sciences (CVM) was established in 1916 and is comprised of five departments, Veterinary Integrative Biosciences, Veterinary Pathobiology, Veterinary Physiology and Pharmacology, Veterinary Small Animal Clinical Sciences, and Veterinary Large Animal Clinical Sciences. The annual state budget of approximately \$42 million drives 2 bachelors, 11 masters, 4 doctoral and 1 veterinary medical degree programs as well as multiple clinical specialty training programs. The 155 tenured and tenure-track faculty, other professionals, and staff of the college are committed to exceptional teaching, research and patient care.

Our student population includes, at any one time, over 500 professional DVM students, nearly 2300 undergraduate Biomedical Science Program majors, and 150 outstanding graduate students participating in quality research programs throughout the college. Our research addresses significant problems in both animal and human health.

The three parallel educational programs of the CVM (professional, undergraduate, and graduate) interface and bridge at several points that increase the value for all students. TAMU is ranked in the top five veterinary programs in the US and annually admits the third largest class of veterinary medical students in the nation. Our

students' success rate on the national veterinary medical licensing exam is above the national average, and each year an increasing number of students are selected for highly competitive clinical internships and post-DVM graduate studies. New dual degree programs seek to broaden the opportunities for our professional students by combining DVM training with MBA, PhD or Masters of Public Health degree plans. The quality and diversity of our large undergraduate Biomedical Science (BIMS) program is enhanced by articulation agreements between our college and selected community colleges.

The CVM has a long history of research beginning in 1916 when its founder, Dr. Mark Francis, began research on the control of ticks to prevent Texas Cattle Fever. Faculty members have been competitive nationally with extramural grants almost doubling research funding since 1998. During FY 2003-2004 funding reached \$21.9 million of which 76% (\$15.3 million) was from federal agencies, particularly the National Institutes of Health (\$10.1 million). CVM faculty members, graduate students and staff published 423 refereed journal publications, 425 non-refereed publications and made 720 presentations at state, national and international conferences, meetings, symposia and continuing education programs in 2004. Our animal research facilities are accredited by the American Association of Laboratory Animal Care to assure appropriate animal care. Research is facilitated by our centers, including the NIH-funded Center for Environmental and Rural Health, National Center for Foreign Animal and Zoonotic Disease Defense, Michael E. DeBakey Institute for Comparative Cardiovascular Science and Biomedical Devices, Schubot Center for Exotic Bird Health, and Center for Comparative Medicine. Our Signature Program initiatives are focused on the Pathobiology of Domestic Animals, Biotechnology and Comparative Genomics, Environmental Toxicology and Public Health, Equine Science, Cardiovascular Science, Reproductive Biology, and Beef Cattle. Additional areas of emphasis include neuroscience and immunology. For more information, visit <http://www.cvm.tamu.edu>.

The Veterinary Medical Teaching Hospital annually provides patient care services to thousands of animals and is a major tertiary care referral center for the southwestern United States. The VMTH caseload supports the training of residents in anatomic and clinical pathology and a proposed residency in clinical microbiology as well as many other clinical specialties. Areas of clinical research emphasis include equine infectious diseases, epidemiology, equine theriogenology, cardiovascular and renal diseases and gene therapy. The college, its teaching hospital and many centers and institutes of biomedical science excellence are designated the Texas Veterinary Medical Center. For more information, visit <http://vmth.tamu.edu>.

Departmental Environment:

The Department of Veterinary Pathobiology at Texas A&M University is one of the largest and most active in the country. Scholarly breadth across faculty members is excellent with areas of emphasis that include anatomic and clinical pathology, genetics, infectious disease and host/pathogen interactions, immunology, and neuroscience. The department is strengthened by its interfaces with several interdisciplinary faculties and centers. These include the interdisciplinary faculties of genetics, virology, toxicology and nutrition and the NIH-funded Center for Environmental and Rural Health, the National Center for Foreign Animal and Zoonotic Disease Defense, and the Schubot Center for Exotic Bird Health. Extramural affiliations include the Texas A&M Health Science Center, MD Anderson Cancer Center, Texas Agricultural Experiment Station, Texas Veterinary Medical Diagnostic Laboratory, Baylor College of Medicine, WHO Institute of Tropical Diseases at the University of Texas-Galveston, University of Texas School of Public Health, and The Texas Heart Institute. For more information, visit <http://vtpb-www.cvm.tamu.edu/>.

Research:

The department offers programs of graduate instruction that lead to the degrees of Master of Science and Doctor of Philosophy. Residency training in pathology may also be combined with completion of a graduate degree. Doctoral and masters degrees are offered in microbiology and pathology, through the interdisciplinary faculties

of genetics, toxicology and nutrition, and through college-level degrees in biomedical sciences. PhD programs in virology and neuroscience are under development. Masters degrees are also offered in laboratory animal medicine and parasitology. Areas of research emphasis are as listed below.

- **Genetics.** Current genetics research programs include comparative gene mapping, immunogenetics, and comparative medical genetics. Internationally recognized efforts in gene discovery, mapping and genomics anchor this area. The immunogenetics research program focuses on the genetics of disease resistance and immune responses in both host and infectious species. The comparative medical genetics research program includes studies of spontaneous and induced animal models of human genetic diseases and deleterious gene traits of domestic animals.
- **Infectious Diseases of Domestic Animals.** Faculty with expertise in pathology, immunology, microbiology, parasitology, molecular biology, immunogenetics, and molecular genetics are involved in studies of host resistance and the pathogenesis of particular infectious diseases of domestic animals. Understanding host resistance is a primary research objective. The comparative pathogenesis of viral infection is studied from the aspect of those factors encoded in the viral genome and includes studies of viral antigenicity and host immune responses. Avian disease research, including diseases of exotic birds and poultry, is strengthened through connections with the Schubot Center for Exotic Bird Health and the Department of Poultry Science.
- **Immunology.** Research covers a wide variety of areas including: comparative immunology, avian immunology, evolution of the immune system, neuroimmunology, immune-neuroendocrine interactions, autoimmune diseases, viral immunology, immunogenetics of innate immunity, immunopathology, inherited disorders of the immune system, host immune responses related to infectious diseases such as, tuberculosis, paratuberculosis, brucellosis, babesiosis, coccidiosis, avian influenza, SARS, coronavirus, Lyme disease, and models for multiple sclerosis.
- **Neuroscience.** Individual and collaborative programs emphasize neuropathology, molecular neurobiology, neuroanatomy, developmental neurobiology, neurochemistry, neuroendocrinology, neurogenetics, neuropharmacology, neurotoxicology, neurophysiology, physiological psychology, ethology and the study of neurological tumors. Neurodegenerative diseases under investigation include: retroviral-induced neurodegeneration, multiple sclerosis, retinal degeneration, and the role of calcium signaling in neurodegenerative disease.

Service:

The department provides diagnostic services in clinical, surgical and necropsy pathology, immunology, microbiology and parasitology to the Veterinary Medical Teaching Hospital. National dermatopathology and orthopedic pathology referral services are strong subspecialties. Faculty teach courses in the undergraduate biomedical science, veterinary medicine, and graduate programs.

Residency training programs are offered in clinical and anatomic pathology, along with graduate study in many disciplines related to veterinary pathology. The residency program consists of diagnostic service rotations, formal courses in pathology, laboratory animal medicine and related fields, and seminars in pathology. Residents participate in the pathology service laboratories of the Veterinary Medical Teaching Hospital and in the teaching missions of the College of Veterinary Medicine. The many diverse areas of faculty specialization within Veterinary Pathobiology provide excellent opportunities for graduate study leading to a PhD in pathology. The department has an outstanding record of trainees becoming ACVP diplomates. A new residency in Clinical Microbiology has recently been advertised.

The department or college maintains laboratories for electron microscopy, scanning and flow cytometry, image analysis, transgenics, peptide synthesis, nucleotide sequencing, and genotyping. Extensive immunohistochemistry, and other histologic techniques, are available within the histology service laboratory.

Teaching:

The Department of Veterinary Pathobiology values teaching and pedagogical scholarship and is actively engaged in the education of undergraduate, professional and graduate students. A number of Veterinary Pathobiology faculty members have been recognized with college, university and national level teaching awards. Instruction at the undergraduate level includes courses in microbiology, virology, parasitology, mycology, clinical pathology, poultry, fish and wildlife diseases, and great diseases of the world. Courses in the professional curriculum include first year immunology and microbiology/virology, second year anatomic and clinical pathology and parasitology and, in the third year, a variety of electives. The department provides two core rotations for fourth-year students: a necropsy and clinical pathology rotation and a combined clinical microbiology/immunology/parasitology rotation. A wide range of graduate courses are offered in microbiology, immunology, parasitology, pathology, genetics and molecular biology.