VETERINARY MEDICAL SCIENCES (VMSC)

Graduate Degree Program
College: Agriculture and Natural Resources

Abstract
The Department of Veterinary Medicine under the College of Agriculture and Natural Resources (AGNR) at the University of Maryland is home to the Veterinary Medical Sciences (VMSC) Graduate Program, which is a collaborative program between the University of Maryland, College Park and Virginia Tech under The Virginia-Maryland Regional College of Veterinary Medicine.

The program offers both Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees. Members of the VMSC Graduate Program faculty specialize in a wide range of research interests in infectious diseases and zoonoses, including cell and molecular biology, microbiology, immunology, virology, and poultry health management and disease prevention.

Financial Assistance
A number of graduate assistantships are available and awarded to candidates with strong academic records. Teaching Assistantships, Research Assistantships, Scholarships, Fellowships are available on a competitive basis. Research Assistantships (RAs) are 12-month appointments and Teaching Assistantships (TAs) are 10-month appointments. Benefits for each assistantship include stipends, ten credits of tuition remission per semester, and health benefits. Generally, student assistantships are offered for two years for an M.S. degree and four years for a Ph.D. degree.

Sources of funding include the VMRCVM; Maryland Agricultural Experiment Station; Maryland Cooperative Extension; College of Agriculture and Natural Resources; Graduate School open-nomination and block grant fellowships (for recruitment of new students only); University diversity fellowships; endowed fellowships; and funds from faculty research contracts and grants. Inquiry about the stipends can be made to the VMSC Graduate Program.

Contact
Utpal Pal, Ph.D.
Professor & Director
VMSC Graduate Program
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Avrum Gudelsky Veterinary Center
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College Park, MD 20742
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Email: upal@umd.edu
Website: http://vetmed.umd.edu

Courses: ANSC BCHM BIOM MICB MOCB VMSC

Admissions
General Requirements
• Statement of Purpose
• Transcript(s)
• TOEFL/IELTS/PTE (international graduate students (https://gradschool.umd.edu/education/z069))

Program-Specific Requirements
• Letters of Recommendation (3)
• Graduate Record Examination (GRE)
• CV/Resume

Applicants with a minimum degree of Bachelor of Science (B.S.) in a biological science or related field of study are eligible for admission to the VMSC Graduate Program, either for Ph.D. or M.S. degree.

A minimum Grade Point Average (GPA) of 3.0 on a 4.0 scale (B or better) and a minimum Graduate Record Examination (GRE) combined score of 1100 (verbal and quantitative) are required.

For more admissions information or to apply to the program, please visit our Graduate School website: https://gradschool.umd.edu/admissions

Type of Applicant | Fall Deadline | Spring Deadline
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Domestic Applicants
US Citizens and Permanent Residents | 1 Nov | 14 Dec

International Applicants
F (student) or J (exchange visitor) visas; A,E,G,H,I and L visas and immigrants | 15 Mar | 28 Sep

Other Deadlines: Please visit the program website at http://vetmed.umd.edu

Requirements
• Veterinary Medical Sciences, Doctor of Philosophy (Ph.D.) (https://academiccatalog.umd.edu/graduate/programs/veterinary-medical-sciences-vmsc/veterinary-medical-sciences-phd)
• Veterinary Medical Sciences, Master of Science (M.S.) (https://academiccatalog.umd.edu/graduate/programs/veterinary-medical-sciences-vmsc/veterinary-medical-sciences-ms)

Facilities and Special Resources
The Avrum Gudelsky Veterinary Center, the University of Maryland home of the VMRCVM, lies in the heart of Maryland’s thriving biotechnology community, and is near Maryland’s major university research campuses and government laboratories, including the USDA Beltsville Agriculture Research Center, the National Institutes of Health, and Walter Reed Armed Forces Institute of Pathology. The Center contains 32,000 square feet of research and support laboratories, including animal care facilities. The 10,000 square-foot research laboratories are fully equipped with state-of-the-art facilities for molecular biology research, cell culture facilities, a confocal microscope, a fluorescence activated cell sorter, and a sophisticated electron microscope suite. Approximately 18,000 square feet of space comprise Biological Safety Levels 2 and 3 facilities and facilities for laboratory animals and poultry. The poultry
unit has 15 rooms for housing poultry, each equipped with 20 poultry isolators to contain any infectious pathogens and maintain a disease-free environment. The animal facility has a fully equipped necropsy room designed for postmortem analysis.

The Avrum Gudelsky Veterinary Center also houses the drug-testing laboratory of the Maryland Horse Racing Commission, and the Poultry Research and Development Unit of Syngenta Corporation. This co-location facilitates active collaboration in both applied and basic research on diseases of animals.

The Laboratory for Biological Ultrastructure in the Department of Biology is equipped with a transmission and scanning electron microscope, a confocal light microscope, ultramicrotomes, and equipment for freeze-fracture studies. The Department of Cell Biology and Molecular Genetics has a Fluorescence-Activated Cell Sorter for supporting cell biology research. The campus has Central Animal Resource Facilities (CARF) for maintaining laboratory animals to facilitate animal research. Extensive library facilities are available on campus. In addition, the College Park campus is close to the National Agricultural Library (NAL) and the National Library of Medicine (NLM). The Library of Congress and the National Archives, along with several other libraries of biomedical research and academic institutes, are located within a short driving distance.

Computer facilities at the University of Maryland are outstanding. Veterinary Medicine provides computer access to all faculty and graduate students. Students are provided with e-mail accounts and free Internet access. The campus maintains both Unix and mainframe systems, and access to supercomputers for specific research projects. Software for graphics, modeling, statistics, and the analysis of molecular data is readily available.

The College Park campus is also ideally situated near a number of federal agencies involved in veterinary medical sciences. Collaborative initiatives are underway with the U.S. Food and Drug Administration's Centers for Veterinary Medicine (CVM) and Food Safety and Applied Nutrition (CFSAN); U.S. Department of Agriculture's Animal and Plant Health Inspection Services (APHIS), Food Safety and Inspection Service (FSIS), Agricultural Research Service (ARS), and Beltsville Agriculture Research Service (BARC); National Institutes of Health (NIH); Walter Reed Armed Forces Institute of Pathology (AFIP); World Bank; and Pan American Health Organization (PAHO). Scientists from some of these agencies have adjunct appointments with the College of Veterinary Medicine and participate on students' graduate committees.

### Faculty

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First/Middle Name</th>
<th>Graduate Faculty Status</th>
<th>Academic Credentials</th>
<th>Positions</th>
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<tbody>
<tr>
<td>Belov</td>
<td>Georgiy</td>
<td>Full Member</td>
<td>PhD Moscow State University, 2001</td>
<td>Associate Professor, Veterinary Medical Sciences Associate Professor, Biological Sciences</td>
</tr>
<tr>
<td>Mallinson</td>
<td>Edward</td>
<td>Non-Member</td>
<td>V.M.D., University of Pennsylvania, Professor Emeritus, Veterinary Medical Sciences</td>
<td>Professor Emeritus, Veterinary Medical Sciences</td>
</tr>
<tr>
<td>Mohanty</td>
<td>Sashi B.</td>
<td>Non-Member</td>
<td>B.V.Sc., DVM, PhD</td>
<td>Professor Emeritus, Veterinary Medical Sciences</td>
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Nelson Daniel Full Member B.S. University of California, Irvine, 1993; Ph.D. University of Georgia, Athens, 1999. Dr. Nelson's research focuses on several proteins derived from bacteriophage that possess an inherent antimicrobial potential against both human and animal pathogens. Research areas include protein engineering, catalytic mechanisms, biophysics, molecular evolution, and host-pathogen biology.

Pal Utpal Full Member B.S./M.S. University of Calcutta, India; Ph.D. University of Calcutta, India. Dr. Pal's research focuses on unraveling virulence mechanism of Lyme disease agents and Leptospira pathogens as well as better understanding of host-pathogen interaction and innate immunity involving arthropod vectors.

Patton John Full Member PhD Associate Professor, Veterinary Medical Sciences
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<tr>
<th>Name</th>
<th>Title</th>
<th>Full Member</th>
<th>Education</th>
<th>Research Focus</th>
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<tr>
<td>Samal</td>
<td></td>
<td>Full Member</td>
<td>B.V.Sc. &amp; A.H., Orissa University of Agriculture &amp; Technology, 1976; M.V.Sc., Veterinary Research Institute, 1978; M.S., Texas A&amp;M University, 1981; Ph.D., Texas A&amp;M University, 1985. Diplomate American College of Veterinary Microbiologists, 1988.</td>
<td>Dr. Samal's research focuses on paramyxovirus pathogenesis, engineering paramyxoviruses as vaccines and vaccine vectors against animal and human pathogens.</td>
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<tr>
<td>Shi</td>
<td></td>
<td>Full Member</td>
<td>D.V.M., Hunan Agricultural University, China, 1985; M.S., South China Agricultural University, 1988; Ph.D., Justus Liebig University of Giessen, Germany, 2000.</td>
<td>Dr. Shi's research focuses on imaging of host-pathogen interactions in vivo and immune responses to Cryptococcus neoformans and Trypanosoma brucei.</td>
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<tr>
<td>Tablante</td>
<td></td>
<td>Full Member</td>
<td>D.V.M., University of the Philippines, 1976; M.P.V.M., University of California Davis, 1985; M.S., University of Guelph, 1995.</td>
<td>Dr. Tablante's areas of expertise are in poultry medicine, epidemiology, and poultry health management, including biosecurity and emergency preparedness.</td>
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Zhang Yanjin Full Member DVM, Shandong Agricultural University, China, 1984; MS, China Institute of Veterinary Drug Control, 1989; PhD, Iowa State University, IA, 1998.

Dr. Zhang's research interests are on molecular virology, vaccine development and viral pathogenesis. His current projects are on elucidating virus-cell interactions of hepatitis E virus and porcine reproductive and respiratory syndrome virus, as well as vaccine development against the viral pathogens.

Zhu Xiaoping Full Member D.V.M., Ningxia University, China, 1984; M.S., China Agricultural University, 1987; Ph.D., University of Wisconsin-Madison, 1997.

Dr. Zhu's research focuses on the regulations of innate and adaptive immunity and inflammation at mucosal surfaces, host-pathogen interactions, and translational medicine.