August 16, 2006

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Dear Colleagues:

Attached for consideration at the August 28, 2006, Full UCC meeting is a request from the College of Veterinary Medicine and the Graduate School for a dual degree program DVM/PhD.

Sincerely,

Dr. William K. Vencill, Chair
University Curriculum Committee

cc: Dr. Arnett C. Mace, Jr.
    Dr. Delmer D. Dunn
COMBINED DEGREE PROPOSAL  
D.V.M./Ph.D. Program  

Veterinary Medical Scientist Training Program (VMSTP)  

Institution: University of Georgia  

Date: November 29, 2005  

Schools: 1. The College of Veterinary Medicine  
         2. The Graduate School  

Departments: Departments at UGA campus offering Ph.D. degrees  

Degrees to be offered: D.V.M. and Ph.D.  

Majors: N/A  

Starting Date: as soon as approved  

Signatures of Deans:  

Sheila Allen, DVM, MS  
Dean, College of Veterinary Medicine  
Date: 11-29-05  

Maureen Grasso, Ph.D.  
Dean, Graduate School  
Date: April 19, 2006
Program Abstract

In today’s society, there is a great need for veterinarians trained in the methodology of basic research. There is also a need for future academicians within veterinary medicine. The expansion of biotechnology frontiers such as animal cloning and transgenics, stem cell research, functional genomics and gene targeting require contributions by veterinary scientists capable of evaluating whole animal health issues, while being familiar with the rapidly evolving technologies. Evaluation of new and existing animal models for pathophysiological alterations is an optimal role for veterinarians trained in research. The Veterinary Medical Scientist Training Program (VMSTP) has been developed at the University of Georgia to encourage and financially support students during their pursuit of the DVM and PhD degrees. The proposed DVM/PhD dual degree program, which is the academic center of the VMSTP, is modeled after similar programs at other veterinary schools, and also after the MD/PhD program as it exists at medical schools including the Medical College of Georgia in Augusta. The individual degree objectives and course/credit requirements of the D.V.M. and Ph.D. degrees will not change with the development of this dual degree program. Rather, this proposal is meant to describe the administrative and advisory structure to support students concurrently pursuing D.V.M. and Ph.D. degrees. The flexibility of the veterinary curriculum has recently increased with the offering of elective courses to allow students more in-depth training in areas of veterinary clinical practice or non-practice (e.g. research, government, public health). The choice of Ph.D. department will be made by the student with advice from the director of the dual degree program, and in concert with the student’s career goals. The student will be assigned a dual degree program mentor, and advisors in the chosen graduate department and the veterinary school. Aside from student satisfaction with advisement, the program will be evaluated by the extent to which it fulfills its goal of training future veterinary medical scientists who ultimately enter careers in biomedical research.

Objectives of the Program

This proposal seeks to formalize the administrative and educational structure for veterinary students to pursue a Ph.D. degree upon admission to both programs or early in training, or allow a graduate student to enter the D.V.M. degree program to provide both clinical training and a broader species perspective. Formalization of this program will facilitate the early recruitment of students with research interests, and through the Veterinary Medical Scientist Training Program structure of non-credit seminars and events, the encouragement of the “culture” of research within the context of veterinary medicine, and vice versa. This will help in recruiting some of the many students participating in undergraduate biomedical research who are interested in the broader training of a clinical degree. Furthermore, the formalization of this project will indicate the institutional support for such training, enhancing our competitiveness for training grant opportunities designed to support the research training (National Institutes of Health T32 and T35 mechanisms amongst others). It is anticipated that upon completion of the VMSTP, graduates will be well-positioned to meet the burgeoning need for biomedical researchers with a veterinary medical background in academia, industry and in federally sponsored research. Financial aid is already earmarked by the College of Veterinary Medicine to provide substantial D.V.M. tuition support to encourage 2 students per year to pursue both degrees. Admission policies will consider applicants
entering the program upon completion of an undergraduate program, or following 1 or 2 years of the graduate or veterinary professional program.

Justification and Need for the Program

a. Benefits of offering the DVM/PhD degree program at the University of Georgia

The College of Veterinary Medicine has developed the Veterinary Medical Scientist Training (D.V.M/Ph.D.) Program (VMSTP) to encourage students to simultaneously pursue both D.V.M. and Ph.D. degrees at the University of Georgia in a time and content-integrated fashion. The philosophy of this program is “One Medicine,” where veterinary medicine interacts with human medicine and both interdigitate with basic research to contribute to the advancement of biomedical research. With the offering of this dual degree program, the University of Georgia will be in a stronger position to recruit students interested in pursuing careers in biomedical research, and will contribute to the training of future scientists capable of addressing comparative medical concerns. We would note that many potential students are already being exposed to biomedical research on the UGA campus under the auspices of the BHSI, the Honors Program, and the Center for Undergraduate Research Opportunities (CURO). This dual degree program would provide an option for such students to remain at UGA for advanced biomedical training with a clinical component.

b. Success of Similar Programs at Other Institutions

The oldest dual (DVM/VMD)/PhD degree program has been in existence at the University of Pennsylvania since the late 1970s, and the director of the UGA program, Duncan C. Ferguson, VMD, PhD, of the Department of Physiology and Pharmacology, is a graduate of this program. Fifteen of the 28 colleges of veterinary medicine in the U.S. have publicized DVM/PhD programs. The NIH-funded program at the University of Pennsylvania has been highly successful at achieving its goal of preparing veterinary scientists. Of the graduates of the dual degree program, more than 90% now hold positions in scientific research at academic institutions, research institutes, or the pharmaceutical industry. The alumni show a high level of achievement, show positive progression in seniority of faculty positions, and have been successful in obtaining extramural funding. (http://www.vet.upenn.edu/research/programs/vmstp/)

The University of Georgia is well-positioned to contribute to the training of future veterinary scientists. The College of Veterinary Medicine has just initiated a scholarship to encourage entering students, as well as first and second year veterinary or graduate students to pursue both the D.V.M. and Ph.D. degrees. A $10,000 award of tuition assistance for each of the student’s veterinary years is being initiated with the 2005-6 academic year. Currently, this award provides support similar to the in-state tuition for veterinary school. Although these incentives are designed to encourage applications, the DVM/PhD program is open to any qualified student as determined by individual acceptance to the D.V.M. and Ph.D. programs, regardless of the funding source of their training.
c. Evidence for student demand for concurrent DVM/PhD training

Veterinary students have been attracted to summer research opportunities at the College of Veterinary Medicine for at least a decade. A formal summer research program for veterinary students has been in existence since 1995. Initiated by a challenge grant by Merck/Merial, 4 students have been supported by this commercial sponsor, and 4 by the UGA College of Veterinary Medicine in the Merck/Merial Georgia Veterinary Scholars Program (MMGVSP). First and second year veterinary students apply with 20-30 applications annually for the 8 positions. During the period between 1995 -2003, 83 student scholars graduated from veterinary school and were surveyed, with 40 students responding. These statistics indicate the impact of the program on future career and educational choices:

**Number of Scholars who have received advanced training and/or have careers in non-traditional fields, including careers in research, government or industry:** 16 (47%)

**National percentage of veterinary graduates who pursue advanced study:** 24.7% (2002 data).

The percentage of individuals pursuing advanced training and/or non-traditional careers after participating in the MMGVSP is well above school-wide and national percentages. Despite this experience, students have not previously had the programmatic option to concurrently register for a graduate degree while in veterinary school to pursue additional research experience. At the time of graduation from veterinary school, the decision to engage in research is often very difficult in the face of professional school debt. Through the Veterinary Medical Experiment Station (VMES) funding, the College of Veterinary Medicine has supported 10 graduate students in its Ph.D. programs, with priority for those with a veterinary degree from U.S. veterinary schools. However, while the summer program has had its distinct impact on ultimate career choices of UGA veterinary students, and post-graduate support for DVMs was available, the number of U.S. applicants with veterinary degrees had declined over the same period. For these reasons, we have decided to develop this dual degree option at an earlier stage in their veterinary training. With the coordinated advisement and planning offered by this dual degree program, accounting for summer enrollment in research/graduate opportunities, students are expected to be able to complete both degrees in 6-7 years instead of the minimum of 8 years when degrees are pursued sequentially.

We expect that greater national awareness of the opportunities in research careers for veterinarians together with the specific financial incentive provided by VMSTP funding will result in considerable interest in this program. In fact, in the first year of applications for such funding in 2005, despite minimal marketing amongst current and prospective veterinary and graduate students, there were 3 applicants from the first year veterinary class of 96 students, and 4 candidates from the pool of applicants for the incoming veterinary class.
d. National Public Sector Demand for Training of Veterinarians in Research

As indicated above, the philosophy of the VMSTP and the dual D.V.M./Ph.D. degree program is summarized in the statement “One Medicine.” This philosophy has been espoused by recent reports of the National Academy of Sciences: National Need and Priorities for Veterinarians in Biomedical Research (http://www.nap.edu/catalog/10878.html) in 2004 and Critical Needs for Research in Veterinary Science (http://www.nap.edu/catalog/11366.html) in 2005. These programs encouraged veterinary colleges to enhance the training of their graduates in Public Health and Food Safety, Animal Health and Welfare, and Comparative Medicine. Among the specific recommendations of the latter report were to:

1. The veterinary research community should facilitate and encourage collaborative research across disciplines, institutions, and agencies by reducing administrative barriers and nurturing and rewarding successful team-oriented investigators.

2. Additional veterinary researchers must be trained to alleviate the demands and meet societal needs for veterinary research.

3. To meet the nation’s need for research expertise in veterinary science, changes in recruitment and programming for graduate and veterinary students will be required. Changes would involve enhancing research cultures in veterinary colleges and strengthening of summer research programs, combined DVM/PhD degree paths (emphasis added), and the integration of basic science into clinical curricula.

In the summary of this report, we would note the following statement: “In this age of reductionist research and the ascension of disciplinary endeavors, veterinary research stands apart because of its breadth and interdisciplinary orientation. Veterinary research serves as the interface of basic science and animal and human health that is critical to the advancement of our understanding of and response to impending risks and to the exploitation of disciplinary advances in the pursuit of One Medicine.”

Process by Which D.V.M./Ph.D. Program was Developed

a. Ad Hoc Veterinary Faculty Committee

In 2003, The Dean of the College of Veterinary Medicine appointed a committee of 5 faculty to evaluate the need and feasibility for a DVM/PhD dual degree program. This committee concluded that the development of such a program was overdue, and proceeded to gather information from programs at other institutions, and to conduct focus groups with potential participating graduate departments.

b. Focus Groups with Graduate Faculty Departments, Undergraduate and Veterinary Students

The interest and need for a DVM/PhD dual degree path were derived fundamentally from national needs, and modeled after programs associated with other veterinary colleges. We conducted focus groups in 2004 with the graduate coordinators of departments offering Ph.D. degrees in the College of Pharmacy, Public Health, Arts and Sciences (Microbiology, Biochemistry and Molecular Biology, Genetics, Cell
Biology), and at the Veterinary College (Physiology and Pharmacology, Infectious Diseases). Faculty were also invited through the Biomedical Health Sciences Institute (BHSI) on campus, a self-identified group of faculty involved in biomedical research. Through this mechanism, we obtained input from developing graduate programs associated with the BHSI. Veterinary students and undergraduate Honors students were also invited to participate in the focus groups.

In the focus groups, when the topic of unique curricular offerings or blended requirements (i.e. a specific prescribed DVM/PhD curriculum courses) was raised, it was very clear that graduate faculty did not favor alteration of graduate degree requirements. Specifically, no change to the current 30 hour requirement for 8000+ level graduate courses for a Ph.D. candidate was felt to be necessary or desirable. However, graduate coordinators did recognize the unique perspective the general training the D.V.M. degree might bring to a program, and left it open to departmental graduate coordinators and advisory committees to recognize other courses as fulfilling pre-requisites or possibly as electives. Regarding the wisdom to match up specific Ph.D. degree departments with this program, although it was recognized that most would associate with the departments polled, it was indicated that it would be unwise to limit students to a prescribed set of possible departments. The practical feasibility of accomplishing a dual degree with a Ph.D. program should be addressed by the VMSTP director and the graduate coordinator of the department, together with the student’s faculty mentor. In support of flexibility regarding a student’s choice of Ph.D. department, examples within other D.V.M./Ph.D. programs were noted where “non-biomedical” Ph.D. degrees (e.g. engineering) dual with the D.V.M. degree resulted in individuals who later made important contributions to science.

**Curriculum**

*There is no prescribed new curriculum being proposed as both D.V.M. and Ph.D. course requirements will remain unchanged. There is no set of prescribed Ph.D. departments for this dual degree program. This proposal is designed primarily to formalize the administrative structure to accommodate admissions, registration, advisement and academic credit procedures by the College of Veterinary Medicine and the Graduate School.*
Proposed Dual DVM/PhD Program Sequence

Please note that there is no prescribed program of accomplishing both degrees, nor a prescribed total duration, although it is expected that most programs will run between 6-8 years. However, it is anticipated that graduate school funding options and the logic of completing the clinical phase at a terminal stage make the following sequence a likely one.

Proposed Example Sequence(s) of DVM/PhD Program - Baccalaureate Entry
Example Program - 6-8 years

Year 1
Graduate enrollment and research – Optional – Summer before Year 1 (S0 on chart)
Fall, Year 1: Core Veterinary curriculum (V1)
Spring, Year 1: Core Veterinary Curriculum (V1)
Spring, Year 1: 5 weeks – Veterinary electives or Research
Summer, Year 1: Research and/or graduate courses (required registration for minimum of 9 credit hours in the Graduate School)

Year 2
Fall, Year 2: Core Veterinary Curriculum (V2)
Fall, Year 2: 5 weeks – Veterinary electives or Research
Spring, Year 2: Core Veterinary Curriculum (V2)
Spring, Year 2: 5 weeks -Veterinary electives or Research
Summer, Year 2: Research and/or graduate courses

Year 3
Fall, Year 3: Graduate curriculum (G1) –courses and research
Spring, Year 3: Graduate curriculum (G1) –courses and research
Summer, Year 3: Research and/or graduate courses

Year 4
Fall, Year 4: Graduate curriculum (G2) – courses and research
Spring, Year 4: Graduate curriculum (G2) – courses and research
Summer, Year 4: Research and/or graduate courses

Year 5
Fall, Year 5: Graduate curriculum –research
Spring, Year 5: Graduate curriculum – research and dissertation work

Year 6
Summer, Year 6: Research and graduate courses
Fall, Year 6: Core Veterinary Curriculum – Year 3
Fall, Year 6: 5 weeks –Veterinary Elective – Research or independent study or vet electives
Spring, Year 6: Core Veterinary Curriculum – Year 3 - clinical rotations
Spring, Year 6: 5 weeks- Veterinary Elective – Research or independent study or vet electives

Years 6-8 – as needed to complete DVM clinics (Veterinary Curriculum Year 4) or PhD research and dissertation

Note: During summers of any year but clinical year, as many as 9 graduate credits (likely mix of courses and research) could be earned.
<table>
<thead>
<tr>
<th>Year</th>
<th>Baccalaureate Entry</th>
<th>Possible Pathways for Completion of DVM and PhD</th>
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<tbody>
<tr>
<td>1</td>
<td>G1:S0/S1</td>
<td>V1</td>
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<tr>
<td>2</td>
<td>V2/G1</td>
<td>G1</td>
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<tr>
<td>3</td>
<td>G1/G2</td>
<td>V1</td>
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<tr>
<td>4</td>
<td>V3/G2</td>
<td>G2</td>
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<tr>
<td>5</td>
<td>V3/G3</td>
<td>V3/G3</td>
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<tr>
<td>6</td>
<td>V4/G4</td>
<td>V4/G4</td>
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<td>7-8</td>
<td>G4 if nec.</td>
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<td>G5 if nec.</td>
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Vet=V Grad=G: V2-G2-V2 or V3-G2-V1 or V2-G3-V2 (shown above) or V2-G2-V2-G1 with later years as fractions of V and G are possible. When separated by /, the student’s year may involve one or a combination of both of the listed options, with registration in the veterinary college or the graduate school potentially changing on a semester-by-semester basis. Registration for Graduate School credits within 12 months of Ph.D. program acceptance is required.
Existing approved requirements which could be followed by a student:

D.V.M./Ph.D. dual degree students will be referred to existing individual requirements for the D.V.M. degree and Ph.D. degrees available in the publications:

a. College of Veterinary Medicine, 2004-2006 Bulletin (copy included with this proposal), or future updated equivalents.

b. The Graduate School: General application and academic requirements are outlined at http://www.gradsch.uga.edu/. Within this site, the student can find specific links to information on individual department/institute Ph.D. requirements.

While we will not be limiting trainees to any particular set of Ph.D. departments, we do believe that those departments offering training related to biomedical research are the most likely ones to be chosen by students. Therefore, in looking at the Ph.D. departments represented by the Biomedical Health Sciences Institutes faculty, and also those of the 21 faculty participating in a recently submitted T32 training grant designed to support an assistantship year for these students, the most likely Ph.D. departments (disciplines) will be:

Veterinary College-based departments:
1. Physiology and Pharmacology
2. Infectious Diseases
3. Veterinary Pathology

Interdisciplinary Ph.D. programs involving some veterinary faculty
4. Neuroscience
5. Toxicology

Other university Ph.D. programs
6. Animal and Dairy Science
7. Biochemistry and Molecular Biology
8. Biological and Agricultural Engineering
9. Cell Biology
10. Ecology
11. Genetics
12. Microbiology
13. Poultry Science
Example Program with Student Pursuing Ph.D. in Physiology and Pharmacology

The following section outlines the published requirements for a student pursuing the D.V.M. degree together with a Ph.D. in Pharmacology from the Department of Physiology and Pharmacology. Following this section, a sample program with the trainee pursuing a D.V.M. degree and a Ph.D. in this department will be illustrated.

Program of Study for the Doctor of Philosophy Degree in Pharmacology

The program of study shall be compiled by the Advisory Committee and candidate. The Graduate School requires a minimum of 3 semester credit hours of dissertation research (VPHY 9300), at least 30 semester credit hours of course work including VPHY 9000, doctoral research, but excluding VPHY 9300, and at least 2 consecutive semesters of full-time work in resident study on campus. A total of 21 semester hours open only to graduate students is required. If not already taken as part of the course requirements for the M.S. degree at the University of Georgia, the following courses must be included in the Program of Study for the Ph.D.

Pharmacology

A. Prerequisites

VPHY 5200/7200 Principles of Pharmacology or equivalent (3.1 semester hours)

B. Departmental Requirements

VPHY 6090 and 6100 or equivalent. Comparative Mammalian Physiology (6 semester hours)
BCMB 8010. Advanced Biochemistry and Molecular Biology I (4 semester hours)
VPHY 8900. Physiology - Pharmacology Seminar (1 semester hour yearly)
VPHY 8460. Molecular Pharmacology (3 semester hours)
PHRM 8260. Pharmacokinetics (4 semester hours)

One of the following:
VPHY 8450. Advanced Clinical Pharmacology (Chemotherapy)
PHRM 8420. Cardiovascular Pharmacology
PHRM 8430. Advanced Neuropharmacology
PHRM 8440. Chemotherapy of Microbial and Neoplastic Diseases
PHRM 7210. Special Topics in Pharmacy
VPHY 8120. The Molecular Basis of Renal Physiology
VPHY 8200. Animal Molecular Biology: Concepts and Current Literature
ADSC 8400. Advanced Animal Reproduction
VPHY 8400. Neurophysiology
VPHY 8910. Organ System Toxicology I
VPHY 8920. Organ System Toxicology II
VPHY 8930. Chemical Toxicology
GENE 8920. Nucleic Acids
STAT 6210, 6220, and 6310. Statistical Methods (6 semester hours from 2 of the three courses)**

**Substitution of other statistics courses is allowed if approved by the Advisory Committee, Department, and Graduate School.

Under the guidance of the major professor and the Advisory Committee, a student may petition the graduate faculty to have substitutions made for any of the above required courses or to have them waived. For example, a program with emphasis in cell biology, molecular genetics, and/or animal biotechnology will be expected to include alternative requirements if these requirements cannot be met by elective courses in the program of study. Previous course work and/or experience would be considered a valid reason for omitting certain courses. A majority vote of the graduate faculty will be
required for approval of petitions on a case by case basis. Letters of petition should be addressed to
the graduate coordinator and should contain detailed reasons to justify the requested changes or
waivers.

Example DVM/PhD Program linked to a Ph.D. in Pharmacology

*Courses listed in italics are those which are considered as fulfilling prerequisite or required Ph.D.
courses.*

**Year 1 – Semester 1:** Core Veterinary curriculum (V1)
Including:
- VPHY 5100: Animal Physiological Chemistry: 2 hours
- VARB 5150: Principles of Veterinary Anatomy and Embryology: 4.5 hours
- VARB 5120 or VARB 5160: Laboratory in Anatomy of the Horse or Laboratory in Anatomy of the Dog and Cat: 4.6 hours
- VARB 5180-5180L: Microscopic Anatomy of Domestic Animals: 3 hours
- VARB 5170 Veterinary Cell Biology: 1 hour
- IDIS 5130-5130L: Veterinary Bacteriology and Mycology – 3.4 hours

*VPHY 5120: Cardiovascular Physiology -0.8 hours*
*VPHY 5140: Gastrointestinal Physiology -0.6 hours*
*VPHY 5190: Veterinary Neuroanatomy and Neurophysiology 2.6 hrs*

Total: 17.7 hours including 4 hours of physiology pre-requisites for Ph.D. program

Student should now apply for formal consideration by graduate program of choice.

**Year 1 – Semester 2:** Core Veterinary Curriculum (V1)
Including:
- VETM 5110: Veterinary Medicine: An Umbrella of Opportunities – 1 hour
- IDIS 5140-5140L: Veterinary Virology – 2.2 hours
- IDIS 5150-5150L: Veterinary Immunology – 2.5 hours
- VPHY 5170: Basic Comparative Animal Nutrition – 1.6 hours
- VETM 5100: Veterinary Ethics and Jurisprudence – 0.6 hours
- LAMS(SAMS)5150: Physical Diagnosis – 1.3 hours

Last 5 weeks of semester: Veterinary electives and/or **Research (VPHY 9000)** - 5-6 hours

*VPHY 5130: Respiratory Physiology – 0.6 hours*
*VPHY 5150: Endocrinology and Reproduction: 2.3 hours*
*VPHY 5160: Renal and Body Fluid Physiology: 1.3 hours*

Total 13.4 hours required including 4.2 hours of physiology pre-requisites for Ph.D. program and 5-6 hours of electives

Total credits in 1st year = 35.9 hours including 8.2 hours of Physiology which is considered equivalent to VPHY 6090 and 6100 as a pre-requisite. The course credit is not co-credited to both D.V.M. and Ph.D. degrees for course credit purposes however.
Summer, Year 1: Registration as graduate student Research and/or graduate courses (required registration for minimum of 9 credit hours in the Graduate School)

STAT 6210: Statistics I – 3 hours
VPHY 9000: Doctoral Research -6 hours

Year 2 – Semester 1: Core Veterinary Curriculum (V2)

VPHY 5200/7200: Principles of Pharmacology – 3.1 hours
VARB 5240: Veterinary Animal Behavior – 1.2 hours
VPAT 5200/5200L General Animal Pathology -2.8 hours
IDIS 5250: Epidemiology and Preventive Medicine -2.7 hours
(SAMS)(LAMS)VPAT 5205-5205L Dermatology and Integumentary Pathology -1 hour
IDIS 5200/5200L: Veterinary Parasitology- 3.7 hours
LAMS 5280: Applied Preventive Health -0.4 hours
Veterinary electives and/or Research (VPHY 9000): 5-6 hours
Total 14.9 hours required and 5-6 hours electives

Year 2 – Semester 2

VPHY 5220: Veterinary Toxicology – 1.2 hours
LAMS(SAMS) 5203: Principles of Anesthesiology – 1 hour
VPAT 5215: Systemic Pathology I -2.0 hours
VPAT 5250-5250L: Clinical Pathology -3.6 hours
SAMS 5200: Veterinary Ophthalmology – 1.3 hours
SAMS 5220: Polysystemic Diseases: Hematology and Endocrinology – 1.3 hours
SAMS 5240 Principles of Surgery -0.7 hours
SAMS 5250: General Surgery Practicum – 1 hour
Requirements: 12.1 hours
Veterinary Electives and/or Research (VPHY 9000) – 5-6 hours

Entry fulltime into Ph.D. program
Summer, Year 2: Research and/or graduate courses

STAT 6220 – Statistical Methods II -3 hours
VPHY 9000 – Doctoral Research Physiology - 6 hours

Year 3 – Fall : Research and/or graduate courses

BCMB8010. Advanced Biochemistry and Molecular Biology I - - 4 hours
VPHY 8900. Physiology Pharmacology Seminar- 1 hour
PHRM 8260. Pharmacokinetics- 4 hours
VPHY 9000. Doctoral Research Physiology: 6 hours

Year 3 – Spring : Research and/or graduate courses

VPHY 8460. Molecular Pharmacology- 3 hours
BCMB 8020. Advanced Biochemistry and Molecular Biology II- 4 hours
VPHY 9000. Doctoral Research Physiology -8 hours

Year 3 - Summer: Research and/or graduate courses

VPHY 8450. Advanced Clinical Pharmacology (Chemotherapy) -2 hours
VPHY 9000. Doctoral Research Physiology- 7 hours
Take prelims
Year 4 – Semester 1

**VPHY 8900** Physiology - Pharmacology Seminar - 1 hour  
**VPHY 9000.** Doctoral Research Physiology - 10 hours

Year 4 – Spring

**VPHY 9000.** Doctoral Research Physiology - 10 hours

Year 4 – Summer

**VPHY 9000.** Doctoral Research Physiology - 6 hours  
**VPHY 9300.** Doctoral Dissertation - 3 hours  
**VPHY 8900** Physiology - Pharmacology Seminar - 1 hour – Thesis defense if complete (if not, student has option to continue in year 5 to complete thesis, or proceed to “3rd year” of veterinary curriculum – candidates may have completed from 31 up to 61 hours of doctoral research, depending upon how veterinary elective time was used.

Year 5 - Fall  
**Core Veterinary Curriculum – “Year 3”**  
**VARB 5310** – Veterinary Radiology – 3.5 hours  
**VPAT 5316:** Systemic Pathology II – 2 hours  
**LAMS 5310:** Large Animal Theriogenology Selective – 2.6 hours  
**LAMS 5311:** Small Animal Theriogenology Selective -1.4 hours  
**SAMS 5350:** Small Animal Digestive Diseases – 1.2 hours  
**SAMS (LAMS) 5373:** Small Animal and Large Animal Basic Surgical Techniques – 1.5 hours  
Total 12 hours of required core courses

Fall, Year 5: - 5-6 hours of Veterinary Electives or Research (VPHY 9000, VPHY 9300, or VPHY 8900 if necessary)

Year 5- Spring  
Core Veterinary Curriculum – “Year 3”  
**SAMS (LAMS) 5305:** Neurology -1.2 hours  
**LAMS (SAMS) 5333:** Respiratory Diseases – 1.3 hours  
**SAMS (LAMS) 5355:** Cardiology – 0.4 hours  
**LAMS 5350 Large Animal Digestive Diseases -1.9 hours**  
**LAMS (SAMS) 5359: Musculoskeletal Diseases -2 hours**  
**VETM 5300:** Veterinary Practice Management -1.6 hours  
Total: 8.4 hours of required core veterinary electives

Year 5 – Spring to Year 6 – Spring - Clinical rotations  
Begin 16 months of clinical rotations – each rotation (“block”) is about 1/6 of a semester  
Depending upon species emphasis, the required courses constitute 18.2 (public practice and research) to 41.6 (mixed practice) of the required minimum 70.2 hours

**Required Rotations:**  
**VARB 5480** Clinical Radiology – 3.9 hours  
**VPAT 5400** Diagnostic Pathology -2.6 hours  
**SAMS 5475** Small Animal Community Practice -3.9 hours  
**SAMS 5405** Small Animal Clinical Anesthesia – 3.9 hours  
Total required rotations: 14.3 hours

Therefore, the student could be working on research and dissertation during some blocks if they so chose  
**Graduate at end of Year 6 Spring with D.V.M. degree**  
**Years 7-8** – as needed to complete PhD research and dissertation if not already completed at end of Year 5, Fall semester culminating in the Ph.D. defense.
Examples of Similar Programs at Other Universities – based upon published guidelines provided to candidates

1. University of Pennsylvania Veterinary Medical Scientist Training Program

Years 1 and 2

- June-Aug year 1: Some students matriculate in June for an early lab rotation.
- Fall and spring year 1: Veterinary school courses and also one graduate school course per term in the fall and another course or directed reading in the spring.
- Summer between year 1 and 2: Lab rotation.
- Fall year 2: Veterinary school course work and another graduate seminar or independent study.
- Spring of year 2: Veterinary coursework and elective courses including graduate courses possible.

Year 3

- Fall and spring: Students take full time graduate school course work (usually 3 classes per term), and two more lab rotations. (VMD-PhD students receive substantial transfer credit from the graduate groups which allows them to complete course requirements in one year). Thesis mentor is selected.
- Summer: Preliminary exam and progression to full time thesis work.

Years 4 through 6

- Throughout years 4 through 5 or 6: Students are working on their thesis research, and participating in seminar series for VMD/PhD and MD/PhD dual degree candidates.

Years 6-8

- Year 6-7: Students defend their Ph.D. dissertation, typically sometime in the fall semester. After that they resume veterinary courses and rotations.
- Year 7-8: More clinical course work, complete VMD degree, take national and state board exams and sometimes conducting additional research.

Disciplines encompassed by Biomedical Graduate Studies Ph.D program:

- Biochemistry and Molecular Biophysics
- Cell and Molecular Biology
- Epidemiology and Biostatistics
- Genomics and Computational Biology
- Immunology
- Neuroscience
- Pharmacological Sciences
- Biology (Affiliated Group)

- Bioengineering (Affiliated Group)
2. University of California-Davis Veterinary Scientist Training Program

**AMOUNT OF FELLOWSHIP FUNDING**
The annual amount for each fellowship is capped at $17,000 plus registration fees. Funding will begin September 1 of the initial award year and continue for a maximum of six (6) years.

**PROGRAM REQUIREMENTS**
1. Fellow will participate in a joint program with MD/PhD fellows in the School of Medicine.
2. Fellow will spend four weeks of training in another laboratory following consultation with the Faculty Mentor and the DVM/PhD program coordinator.
3. Continuing support for the fellowship is dependent upon satisfactory progress toward The DVM/PhD.
4. Fellow must participate in meetings with the VSTP Advisory Committee and provide them an annual progress report.
5. Following the first or second year in the DVM program, the Fellow is expected to take a minimum one year leave to complete graduate course requirements and perform laboratory research.
6. Should a fellow decide to withdraw from the program, repayment must be made according to NIH guidelines.

**FACULTY MENTOR**
Fellows will submit the name of their faculty mentor, who will be reviewed by the VSTP Advisory Committee. The mentor must provide $12,000 annual support when the Fellow is enrolled in graduate study.

**Copy of requirements for each major: N/A**

**Administration**
The Dual Degree D.V.M./Ph.D. program will be administered by a Director, a faculty member in the College of Veterinary Medicine with administrative support by the offices of the Associate Dean for Academic Affairs and the Associate Dean for Research at the College of Veterinary Medicine.

The director is:
Duncan C. Ferguson, VMD, PhD
Professor of Physiology and Pharmacology
And of Small Animal Medicine
Director, Veterinary Medical Scientist Training Program
College of Veterinary Medicine
Athens, GA 30602
Phone: 706-542-5864
FAX: 706-542-3015
Email: duncanf@vet.uga.edu

Outside of the Director, The Veterinary Medical Scientist (D.V.M./Ph.D.) Training Program advisory committee will consist of 5 faculty members representing the 4 departments within the College of Veterinary Medicine offering the Ph.D. degree (Physiology and Pharmacology, Infectious Diseases, Veterinary Pathology, and Population Health) and one member nominated from the Biomedical Health Sciences Institutes faculty, but not appointed within the College of Veterinary Medicine.
Admissions

Three separate applications are required to be eligible for participation in the dual degree program, and also for the VMSTP financial support:

1. **Veterinary School: Deadline October 1 (VMCAS and supplemental UGA form).** Please see details at:
   [http://www.vet.uga.edu/admissions/applications.php](http://www.vet.uga.edu/admissions/applications.php)
   As for all other veterinary student applications, application for the veterinary program are only available from the Veterinary Medical College Application Service (VMCAS) web site: [http://www.aavmc.org/vmcas/vmcas.htm](http://www.aavmc.org/vmcas/vmcas.htm)
   The deadline for submitting the VMCAS application is **October 1**.
   Applications must be submitted online or mailed to VMCAS and postmarked by this date. Evaluation forms also must be sent to VMCAS postmarked by this date. Official transcripts from all institutions of higher education the applicant attended must also be sent to the College and to the University of Georgia Graduate School postmarked by **October 1**.

2. **Veterinary Medical Scientist Training Program Supplemental Application – Deadline: October 1 – form is shown below.** VMSTP administrative support is open to any student concurrently pursuing the DVM and PhD degrees. However, DVM year financial support and ranking for available research training grants is determined on a competitive basis **once annually.** The supplemental form for the VMSTP should be directly mailed or emailed to the Director by **October 1** (see below).

3. **Graduate School – deadline for full consideration for VMSTP or graduate assistantships – November 1.** Application to the Graduate School also should be completed by **November 1 and must meet general Graduate School requirements for the Ph.D. program.** The graduate degree objective must be the Ph.D. and, unless the student has finalized his or her decision about a graduate program department, he or she should indicate “Physiology and Pharmacology (Vet. Med.)” (Degree objective codes: 619A or 643A).
   In this case, an opportunity to move to other programs within the university will exist until 12 months after initiating the VMSTP. Trainees will be required to register for matriculation and courses in the Graduate School in a semester no later than 12 months after the semester when admission was first offered. For example, if offered admission into the Ph.D. program in the Spring semester prior to veterinary school matriculation, the trainee would be required to register for 9 credits of graduate courses no later than during the Summer semester following the first year of veterinary school. There is no guarantee to the student at that point that they will be admitted to a given specific department, and students are encouraged to explore opportunities with other departmental graduate coordinators as soon as possible after admission.
   Forms and updated information is available at:
   [http://www.gradsch.uga.edu/Admissions/Admissions_forms.html](http://www.gradsch.uga.edu/Admissions/Admissions_forms.html)
Transcript and Score Reporting (note that separate reports are needed):

a. VMCAS and CVM deadline for transcripts: **October 1.**

b. VMCAS deadline for general GRE scores: **October 1.**

c. Graduate school deadline for transcripts and General GRE score receipt: **November 1.**

d. General GRE and GRE Biology scores received by CVM (institution code 5752): **December 31.**

For students already admitted to the CVM or a Graduate School Ph.D. program, the same deadlines will apply for relevant program applications. Official transcripts of grades obtained in the Fall term after the application deadline must be received by the College of Veterinary Medicine and the Graduate School by **February 1.**

Students already admitted to the College as veterinary students may apply for admission during the Fall of their first or second years in the DVM curriculum for entry into the VMSTP and Graduate School. Students already admitted to a Ph.D. program may apply to the DVM program during their second year of graduate work. **Note that the same deadlines will apply.**

Evaluation of Applications

In the period of December to February each year, the VMSTP Advisory Committee will evaluate candidates for the program if they are interested in being considered for financial support. If the student is not interested in this competition and has been accepted by a Ph.D. program as well as the D.V.M. program, the supplemental DVM/PhD application is designed to notify the Director of a potential dual degree student’s intent to apply to both programs, and this information will be used primarily to coordinate the student’s advisement.
Supplemental Application Form for
Veterinary Medical Scientist Training Program
(D.V.M.-Ph.D. Dual Degree program)

Cover Page

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<thead>
<tr>
<th>Name (Last, First, Middle Initial)</th>
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<tbody>
<tr>
<td>Social Security Number</td>
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<tr>
<td>State of Residence Address</td>
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<tr>
<td>Preferred Contact Mailing Address</td>
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<tr>
<td>Race/Ethnic Information (optional)</td>
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<tr>
<td>Undergraduate Degree and Institution, City, State)</td>
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<td>Undergraduate Major(s)</td>
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<td>*Undergraduate GPA (include scale)</td>
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<td>*GRE Scores: Q: V: W:</td>
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<td>Area of Research Interest (Graduate Department(s) at UGA) – list up to 3</td>
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*Please note: all grade and test transcripts must be submitted formally by the institution or testing agency to both VMCAS and the UGA graduate school.

VMSTP Supplemental Application Requirements – to be received by October 1, 2005 at the contact address below (mail or email (except for letters of recommendation).

1. Provide a typed resume including all research publications – Report any relevant employment or volunteer activities, research activities, research abstracts, manuscripts and presentations. Provide copies of any published articles you have authored or co-authored.

2. Personal Statement (restricted to 500 words or less) describing your reasons to obtain both the D.V.M. and Ph.D. degrees, and why you have chosen the particular fields of interest. State your long-term career goals.

Submit the cover page and items # 1 and 2 of the supplemental application directly to the VMSTP Director at the provided address. Emailed forms are encouraged if they will be
followed by versions signed by the applicant sent via regular post. If you do not receive confirmation of email receipt, phone the VMSTP office to confirm its receipt.

3. Three letters of recommendation using the Graduate School format should be submitted directly to the Coordinator of the VMSTP program using the Graduate School form by **November 1**. Candidates are encouraged to solicit letters from individuals who have experience with the candidate and can comment on your potential as a researcher. These will also serve as the Graduate School letters, but are **in addition** to the letters provided through the VMCAS or CVM application process.

**Advisement**

Upon acceptance into the program, the Director of the VMSTP will be responsible for initial advisement of the D.V.M./Ph.D. degree student in the final choice of a graduate program (if necessary) and a research mentor. The VMSTP director will also assign the student a VMSTP advisor from the VMSTP advisory committee, and a peer advisor from previously admitted classes of students, as the cadre of program students develops. The VMSTP advisor will be responsible for facilitating the student’s communication with a chosen graduate department, and advisement regarding the appropriate procedures for communicating with the Registrar about changes in the registration status in one program or the other. Students will only be registered in one program at a time on a semester by semester basis. The VMSTP director will also be responsible for developing appropriate programmatic experiences (seminars, training opportunities and events) to encourage the culture of intermingling aspects of their clinical and also basic science training within the two degrees.

**Contact person:**

Duncan C. Ferguson, VMD, PhD  
Professor of Physiology and Pharmacology  
And of Small Animal Medicine  
Director, Veterinary Medical Scientist Training Program  
College of Veterinary Medicine  
Athens, GA 30602  
Phone: 706-542-5864  
FAX: 706-542-3015  
Email: duncanf@vet.uga.edu

**Planned Assessment of Effectiveness of Program and Learning Outcomes**

As the program is not focused upon a specific disciplinary Ph.D., the proposed short-term assessment will involve annual surveys of the enrolled students regarding the advisement and administrative support of the program. Given that the total duration of a potential program is as long as 7-8 years, the success of the program will be judged by tracking graduates of the program, and documenting their career pathway after completion of the program.
Fiscal and enrollment impact and estimated budget:

The primary fiscal and enrollment impact for the D.V.M. program will be the fact that students will be beginning the D.V.M. degree and not completing it until 6-8 years later. The primary fiscal impact for the Graduate School will be associated with the possible interrupted nature of a research or teaching assistantship. As a recruitment tool and so as not to discriminate against DVM/PhD trainees, the Graduate School has agreed to allow DVM/PhD dual degree program trainees, if nominated by their graduate department, to compete as candidates for university-wide Graduate School assistantships even when their matriculation and registration in the D.V.M. program on campus may have preceded registration and matriculation into the Ph.D. program. The College of Veterinary Medicine will provide the recurring funds to the VMSTP in the form of the VMSTP financial awards (see below), and an administrative supplement to the director of the VMSTP. Faculty time for participation in the VMSTP advisory committee and individual student mentorship will be absorbed within the responsibilities of the participating veterinary school faculty.

The Veterinary College, through the Morris Trust, is supporting two DVM/PhD students per year with a VMSTP financial award of $5,000 of reduced tuition per semester registered as a veterinary student. The College of Veterinary Medicine is also committed to financially supporting the D.V.M./Ph.D. trainees not only during their D.V.M. training, but also in the form of pre-doctoral graduate research assistantships for two years if necessary. Students selected for these financial awards will also be eligible for Veterinary College funds designed to support graduate research assistantships to support the VMSTP program, and for any extramurally funded training grants awarded for explicit support of this program. For example, a T32 training grant to the National Center of Research Resources (NCRR) of the National Institutes of Health is designed (and limited by the guidelines) to support 1 year of graduate research assistantship funding. The VMSTP director will work closely with the students to identify independent funding such as university-wide graduate research assistantships, and department program or center training grant positions. Dr. Ferguson has negotiated with the Graduate School to allow D.V.M./Ph.D. dual degree candidates to apply for competitive university-wide assistantships despite already being on campus as veterinary students. Furthermore, the Graduate School would allow deferral of utilization of these funds for up to 12 months.