

Ph.D. Comparative Biomedical Sciences
CIP 26.0102
University of Florida

Board of Governors
Staff Analysis

September 2024



**STATE UNIVERSITY
SYSTEM OF FLORIDA**

Program Description and Overview

The University of Florida (UF) is proposing a Ph.D. in Comparative Biomedical Sciences through its College of Veterinary Medicine. The proposed program is on the new Program of Strategic Emphasis list, which was approved at the November 2023 Board meeting. The program will focus on advanced research training in the biomedical sciences, including discoveries and solutions for diseases in animal and human populations. Areas of emphasis include but are not limited to infectious diseases, physiological and forensic sciences, aquatic animals and ecosystem health, and livestock and wildlife population health. To be eligible for the proposed program, prospective students must have a bachelor's, a master's degree, or a Doctor of Veterinary Medicine.

The proposed Ph.D. in Comparative Biomedical Science will require students to complete a total of 90 credit hours. Fourteen credit hours will consist of required coursework, including responsible conduct in research, grant writing, statistics, and biochemistry or molecular biology. The remaining credit hours will consist of courses that align with the student's area of emphasis. Program requirements also include supervised research and teaching, advanced research, and successfully passing the qualifying and final examinations. The dissertation will align with the student's area of emphasis and the student must defend to a faculty committee. The proposed program has been developed to extend the Master of Science in Comparative Biomedical Sciences, which requires students to complete 30 credit hours, including eight credits in required courses aligned with the requirements of the Ph.D.

Program graduates will have the knowledge and skills necessary for biomedical research roles in research-intensive positions in academia, government, non-profit organizations, and the private sector. Graduates will be prepared to work as epidemiologists, medical scientists, and postsecondary teachers in biomedical-related fields.

The University of Florida's Board of Trustees approved the proposed program on June 13, 2024. If approved by the Board of Governors, the proposed Ph.D. in Comparative Biomedical Sciences will be the fourth program in the State University System in CIP 26.0102. Table 1 provides a summary overview of the Ph.D. in Comparative Biomedical Sciences.

Table 1: Proposed Program Summary

Ph.D. in Comparative Biomedical Sciences	
Tuition per Credit Hour	\$530.69 Florida Resident \$1,255.41 Non-Resident
Delivery Mode	Traditional
Location	Main Campus
Graduation Requirements	90 Graduate Credit Hours
Effective Date	Fall 2025

Source: University of Florida Ph.D. in Comparative Biomedical Sciences Proposal

Need for Graduates in the Labor Market

Programs of Strategic Emphasis are one of several tools for aligning the degree production goals of the State University System with the economic and workforce needs of Florida. During 2023, the Board of Governors did a comprehensive review and revision of the Programs of Strategic Emphasis. The Board approved a new list in November 2023 focusing on Florida's most critical workforce shortages. To be included on the new list, academic programs had to meet certain labor market demand thresholds for projected growth and unfilled job openings. The minimum calculated gap threshold for a doctoral degree is 25 job openings. The proposed program meets this threshold and is included on the new Programs of Strategic Emphasis list.

The proposed program's focus is on biomedical research, which differs from the existing Ph.D. in Veterinary Medical Sciences offered by UF. The existing program's focus is on veterinary clinical research. Graduates from the current program have found employment in academia, the private sector, and the government. Between 2013 and 2023, six out of every ten new program graduates have been employed in research positions in academia, two of every ten have joined the private sector, and two of every ten have accepted research-related positions in government. The proposed program demonstrates the commitment to producing successful graduates from a top veterinary program in the nation.

Doctoral Degrees in Biomedical Sciences Awarded By Institution

The University of Florida's program would be the fourth program in the System under CIP 26.0102. Florida International University (FIU), Florida State University (FSU), and the University of Central Florida (UCF) offer a Ph.D. program in this CIP. The University of Florida provided sufficient evidence indicating that the proposed program would differ from the existing FIU, FSU, and UCF programs. As shown in Table 2, a total of 24 doctoral degrees were awarded in the 2022-23 Academic Year across the System. The University of Florida anticipates awarding five degrees in Year 1, which, if other programs do not increase, would be 29 graduates for the System.

Table 2: Degrees Awarded, Ph.D. in Biomedical Sciences, CIP 26.0102

Institution	2017–18	2018–19	2019–20	2020–21	2021–22	2022-23
FIU	3	5	1	2	1	3
FSU	3	3	5	5	7	7
UCF	12	5	10	8	14	14
Total	18	13	16	15	22	24

Source: Board Office of Data Analytics, Degrees Awarded by CIP, retrieved 8/26/2024.

Workforce Demand

The proposed Ph.D. program in Comparative Biomedical Sciences, focusing on biomedical research, will strategically position graduates for employment opportunities, including roles as epidemiologists, medical scientists, and postsecondary faculty and researchers.

The workforce demand for epidemiologists is projected to grow significantly in Florida and nationally. Though the minimum education required for the occupation is a master's degree, graduates will meet the demand for advanced research positions. As shown in Table 3, the number of jobs for epidemiologists is expected to increase by more than 18 percent in Florida over the next eight years, with an average of 28 job openings each year. The current median salary for epidemiologists in Florida is \$84,198.

The workforce demand for medical scientists is also projected to grow significantly in Florida and nationally. As shown in Table 3, the number of jobs for medical scientists is expected to increase by more than 16 percent in Florida from 2022 to 2030, with an average of 476 job openings each year. The education level needed for entry into these positions is a doctoral or professional degree. The current median salary for medical scientists in Florida is \$66,102.

The workforce demand for postsecondary faculty is projected to grow in Florida and nationally. As shown in Table 3, the demand for postsecondary faculty is projected to grow more than 11 percent in Florida over the next eight years. This growth amounts to an average of 120 job openings each year. The current median salary for postsecondary faculty in Florida is \$78,765.

Board staff conducted an independent search on Indeed.com and LinkedIn.com for job openings in the biomedical sciences requiring a Ph.D., using keywords such as medical scientist, immunology, and infectious disease. The search identified over 80 current openings in Florida within both the private sector and the government. The job titles include infectious disease director, director of neuropathology, senior scientist, molecular virologist, and pathologist. Common employers include HCA Healthcare, Labcorp, UF Health, and the state of Florida.

Given these potential paths for employment and the current employment postings, adding the proposed UF program would help address a workforce need in Florida in biomedical science related fields.

Table 3: Labor Market Demand, CIP Code 26.0102

Occupations	Percent Change in Job Openings		Annual Average Job Openings		Total # of New Jobs		Education Level Needed for Entry
	FL 2023-31	U.S. 2022-32	FL 2023-31	U.S. 2022-32	FL 2023-31	U.S. 2022-32	
Epidemiologists ¹	18.3%	26.7%	28	800	57	2,700	Master's Degree
Medical Scientists, Except Epidemiologists	16.2% ²	9.80%	476 ²	7,500	795 ²	11,600	Doctoral or Professional Degree
Biological Science Teachers, Postsecondary	11.5%	8.60%	120	5,600	134	5,300	Doctoral or Professional Degree

¹This occupation is not included in the CIP to SOC Crosswalk, but the proposed program's learning outcomes may prepare graduates to pursue jobs in these areas.

²Projections for medical scientists in Florida were not available for the 2023-31 timeframe. The numbers included here are for the 2022-30 timeframe.

Sources: U.S. Bureau of Labor Statistics, <https://data.bls.gov/projections/occupationProj>; Florida Department of Commerce, <https://www.floridajobs.org/workforce-statistics/data-center/statistical-programs/employment-projections>

Date Retrieved: 7/15/24.

Student Demand and Projected Enrollment

The University of Florida projects student interest in the proposed program based on the annual enrollments in its existing Veterinary Medical Sciences Ph.D. program and the employment of the program graduates. Over 90 percent of graduates from the existing program are working in research positions.

The University of Florida anticipates enrolling 30 students in Year 1, with an expected enrollment of 15 students in Year 5, as shown in Table 4. The University of Florida anticipates 20 of the 30 students in Year 1 to transfer from the existing Ph.D. program in Veterinary Medical Sciences (VMS). According to the University of Florida, transferring students to the proposed program will not impact faculty participation or funding resources in the College of Veterinary Medicine.

Table 4: Projected Student Enrollment

	Student Headcount	Student FTE
Year 1	30	22.5
Year 2	26	19.5
Year 3	22	16.5
Year 4	18	13.5
Year 5	15	11.25

Source: University of Florida Ph.D. in Comparative Biomedical Sciences Proposal

Alignment with Institutional and System Strategic Priorities

The College of Veterinary Medicine's mission is to advance animal, human, and environmental health through education, research, and patient care. The proposed program will prepare graduates to conduct biomedical research involving discoveries and solutions for diseases in animal and human populations. Several of the challenges and opportunities in Florida include pathogen discovery, rapid diagnostic tests, early detection, and risk management of diseases, and cure chronic diseases and cancer in animals. In association with the University of Florida Institute of Food and Agricultural Sciences, the college provides veterinary services to farmers and ranchers of commercial livestock or wildlife operations and aquaculture farms throughout the state.

The proposed Ph.D. in Comparative Biomedical Sciences supports the 2025 System Strategic Plan's goals in teaching and learning, scholarship, research and innovation, and community and business engagement. The program aligns with the System's goals to increase science, technology, engineering, and mathematics (STEM) degrees and Programs of Strategic Emphasis. The program's focus on providing high-quality graduate education and training in biomedical research will directly increase the scientific knowledge of its graduates and will prepare graduates to meet the workforce demands.

Faculty

Existing faculty at the University of Florida will support the program. The university does not plan to hire new faculty to support the program. The proposal identified 41 existing faculty members who will contribute to the proposed program in the next five years. The proposal included multiple examples showing that the faculty associated with the proposed program has the necessary experience and research to sustain the program.



Resources

The University of Florida provided evidence in the proposal that sufficient resources are available to initiate the program. The university documented that sufficient library, physical, and online resources would be available to sustain the program through Year 5. The university also included examples of available equipment to support and sustain the program's instruction and research.

The College of Veterinary Medicine plans to support more graduate students by increasing the number of the Four-Year Block Grants from four in 2020 to ten in 2025. When combined with the extramural faculty grants, the number of Ph.D. students appointed as graduate assistants with teaching assistant responsibilities is expected to increase from 15 in 2022 to 25 in the next five years.

Estimate of Investment

The proposed program will be funded through Education and General funds. As shown in Table 5, the institution intends to expend \$368,843 in Year 1 and \$415,137 in Year 5. The program will charge students the standard approved graduate tuition rates, which are currently \$530.69 per credit hour for resident students and \$1,255.41 for non-resident students.

Table 5: Projected Program Costs

Total Costs		Source	Cost per FTE
		E&G	
Year 1	\$368,843	\$368,843	\$16,393
Year 5	\$415,137	\$415,137	\$36,901

Source: University of Florida Ph.D. in Comparative Biomedical Sciences Proposal

Conclusion and Board Staff Comments

If approved, the proposed Ph.D. in Comparative Biomedical Sciences will be the fourth program in the System. The institution provided sufficient evidence to demonstrate the workforce needs for individuals trained at the doctoral level and to support headcount projections. The proposed Ph.D. program will support the Board of Governors 2025 Strategic Plan by producing more graduates in Programs of Strategic Emphasis while increasing the supply of biomedical researchers, medical scientists, and postsecondary faculty. Board staff has no concerns regarding the proposed program.



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