UF UNIVERSITY of FLORIDA

The Graduate School
Office of the Associate Vice President and Dean

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May 19, 2022

MEMORANDUM

TO: Jorge Hernandez
Director of Graduate Education and Professor
Department of Large Animal Clinical Sciences

FROM: Nicole LP Stedman
Dean and Associate Provost
Graduate School

RE: #17130 College of Veterinary Medicine create a new degree Master of Preventive Veterinary Medicine

The proposal from the College of Veterinary Medicine to create a new degree Master of Preventive Veterinary Medicine was approved at the May 19, 2022 Graduate Council meeting, pending further approvals.

The following individuals and offices will be notified by a copy of this memorandum so that they can complete their processes to create the new degree:

cc: Gann Enholm, Patty Van Wert, Stacy Wallace, Francesca Tai, Graduate School
Lee Morrison, University Curriculum Committee and Office of the University Registrar
James Silver, Office of the University Registrar
Ray XU, University Registrar
Cathy Lebo, Office of Institutional Planning and Research
David Pascual, Associate Dean, College of Veterinary Medicine
Laurie Bialosky, Assistant to the Faculty Senate Chair and UF Trustee

NS/ld

STATE UNIVERSITY SYSTEM OF FLORIDA

Board of Governors, State University System of Florida
REQUEST TO OFFER A NEW DEGREE PROGRAM
In Accordance with BOG Regulation 8.011
(Please do not revise this proposal format without prior approval from Board staff)

University of Florida **Institution Submitting Proposal**	Fall 2023 **Proposed Implementation Term**
College of Veterinary Medicine **Name of College(s) or School(s)**	Department of Large Animal Clinical Sciences and Department of Comparative, Diagnostic, and Population Medicine **Name of Department(s)/Division(s)**
Veterinary Preventive Medicine **Academic Specialty or Field**	Master of Preventive Veterinary Medicine **Complete Name of Degree**
01.8110 **Proposed CIP Code (2020 CIP)**	

The submission of this proposal constitutes a commitment by the university that, if the proposal is approved, the necessary financial resources and the criteria for establishing new programs have been met prior to the initiation of the program.

Date Approved by the University Board of Trustees	**President's Signature** **Date**
Board of Trustees Chair's Signature **Date**	**Provost's Signature** **Date**

PROJECTED ENROLLMENTS AND PROGRAM COSTS

Provide headcount (HC) and full-time equivalent (FTE) student estimates of majors for Years 1 through 5. HC and FTE estimates should be identical to those in Table 1 - Appendix A. Indicate the program costs for the first and the fifth years of implementation as shown in the appropriate columns in Table 3 in Appendix A. Calculate an Educational and General (E&G) cost per FTE for Years 1 and 5 (Total E&G divided by FTE).

Implementation Timeframe	HC	FTE	E&G Cost per FTE	E&G Funds	Contract & Grants Funds	Auxiliary/ Philanthropy Funds	Total Cost
Year 1	5	2.5	76,038	190,095			76,038
Year 2	5	2.5					
Year 3	7	3.5					
Year 4	8	4					
Year 5	10	5	43,587	217,937			43,587

*Note: This outline and the questions pertaining to each section **must be reproduced** within the body of the proposal to ensure that all sections have been satisfactorily addressed. Tables 1 through 4 are to be included as Appendix A and not reproduced within the body of the proposals because this often causes errors in the automatic calculations.*

Introduction

I. Program Description and Relationship to System-Level Goals

A. Briefly describe within a few paragraphs the degree program under consideration, including (a) level; (b) emphases, including majors, concentrations, tracks, or specializations; (c) total number of credit hours; and (d) overall purpose, including examples of employment or education opportunities that may be available to program graduates.

Degree Program: Master of Preventive Veterinary Medicine

(a) Level: Master

(b) Emphasis: STEM; Veterinary Preventive Medicine, Epidemiology, and Public Health CIP Code 01-8110 (moved from 51.2510).

Major: Preventive Veterinary Medicine

The Master of Preventive Veterinary Medicine (MPVM) program will prepare veterinarians for leadership roles in management or research of diseases in livestock, poultry, and wildlife populations in Florida, USA, and globally. Areas of emphasis are: (a) health and reproduction in livestock populations (b) food safety; (c) health in wildlife populations. The MPVM is a non-thesis program and is structured to be completed in 1 or 2 years. Only veterinarians (DVM degree or equivalent) will be eligible to enroll in the program.

(c) Total number of credit hours: 30 (including 15 credits in the major)

MPVM students will complete, in residence, 12 credits of required graduate coursework in veterinary epidemiology (3 credits), biostatistics (3 credits), department/college graduate seminars (2 credits), responsible conduct of research (1 credit), and a special project addressing a health problem in livestock, poultry, and wildlife populations in Florida, USA, or globally (3 credits), as well as 18 credits in elective coursework.

(d) Overall purpose, including examples of employment or education opportunities that may be available to program graduates:

Purpose

New MPVM graduates will have epidemiologic and diagnostic tools to solve complex health problems in livestock and wildlife populations at the state, national, or international levels (e.g., mastitis in dairy cattle, abortion in beef cattle, enhanced surveillance and enhanced biosecurity for management of diseases in livestock, and poultry populations, outbreak investigation of foodborne pathogens, contamination of animal products, diseases and mortality in wildlife). In addition, new MPVM graduates will be better prepared to pursue PhD research training opportunities for future success in research-related positions in industry or in research-intensive positions in academia.

Employment opportunities

[1] **Former UF CVM MS or PhD graduates have joined the professional taskforce in the private sector or the research taskforce in academic institutions:**

Private sector	Academia
Juddy Sims, MS, 2017 Private Practitioner, Ownern Okeechobee, Livestock Production Veterinarians, LLC, Florida, USA	Myriam Jimenez, PhD, 2021 Assistant Professor Virginia Tech University USA
Gabriel Gomes, MS, 2014 Merck Animal Health USA	Mohammad Dahl, PhD, 2017 Assistant Professor University of Mosul Iraq
Licas Ibarbia, MS, 2014 Consultant, Progressive Dairy Solutions, USA	Joao Bittar, PhD 2013 Assistant Professor University of Florida USA
Mauricio Benzaquen, MS, 2006 Consultant, Progressive Dairy Solutions Argentina	Fabio Lima, MS 2000, PhD 2013 Assistant Professor University of California at Davis USA
Eduardo Garbarino, MS, 2004 Private Practice, Owner Progressive Dairy Health Service New Mexico	Abel Ekiri, MS 2008, PhD 2012 Lecturer in Infectious Disease Epidemiology University of Surrey United Kingdom
	Pablo Pinedo, PhD 2008 Associate Professor Colorado State University USA
	Pedro Melendez, MS 2000, PhD 2004 Associate Professor Texas Tech University USA
	Nicolas Ernst, MS, 2003 Associate Professor University of Minnesota USA

[2] Army Veterinarians and the MPVM. Through its Long Term Health Education and Training (LTHET) scholarship program, Army veterinarians may elect to join the MPVM program to undergo rigorous training in epidemiology and statistics, undertake a relevant research or applied leadership project, and link this training with a residency, Master's degree in International Agricultural Development, or other programs. Many will then take the ACVPM Boards.

[3] CDC. The CDC offers internships to MPVM students and often hires UC Davis' MPVM graduates.

[4] USDA Centers for Epidemiology and Animal Health (CEAH) internship. As part of the USDA CEAH in Fort Collins, Colorado hosts MPVM students for a month or more, providing a great opportunity to learn more about what CEAH does, what it's like to work there, and about veterinary population health at the national level. The internship involves a project on surveillance, risk assessment, disease monitoring, data management, or antimicrobial resistance.

[5] United Nations' Food and Agriculture Organization (FAO) of the United Nations and MPVM. After five or more years of professional experience, MPVM graduates can apply and compete for consultant positions offered by FAO (e.g., risk assessment and risk management of diseases of economic importance in livestock populations in low- and middle-income countries).

Education opportunities

New MPVM graduates will be better prepared to pursue PhD research training opportunities for future success in research-related positions in industry or in research-intensive positions in academia.

University of California at Davis is the only institution in the USA that awards an MPVM degree. The MPVM program at UC Davis was founded in 1967. The program has produced more than 1,000 graduates from 87 different countries, and hold a variety of positions in government, academia, industry, or non-governmental organizations. MPVM alumni are: (a) faculty at veterinary and medical schools; (b) livestock herd health veterinarians; (c) regulatory/public health veterinarians – at state, national, and international levels; (d) wildlife veterinarians; (e) epidemiologists with non-governmental organizations; (f) agricultural researchers; (g) shelter veterinarians; (h) laboratory animal veterinarians; (i) epidemiology consultants/subject matter experts; (j) military veterinarians (Figure 1 below).

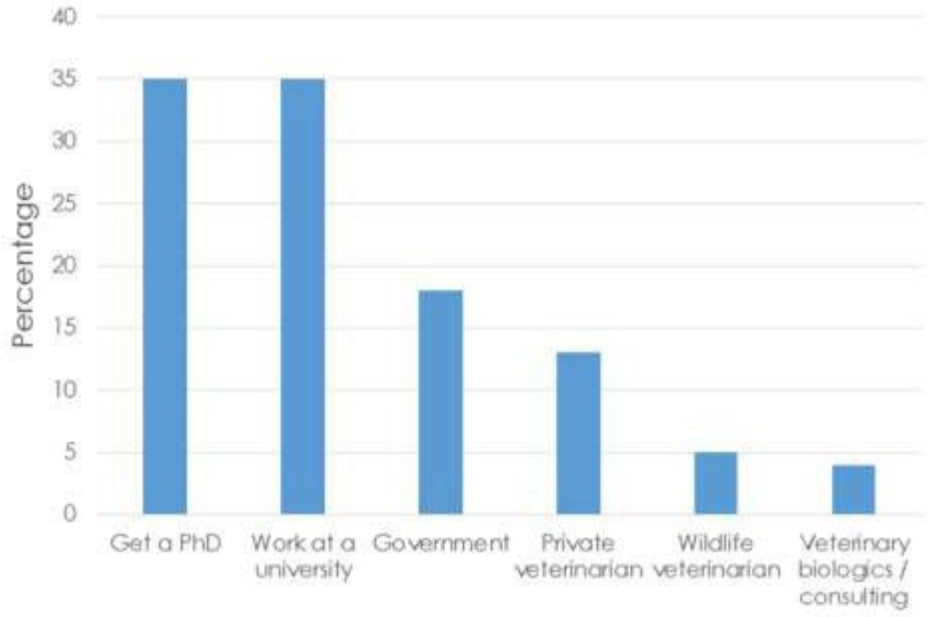

Figure 1. Employment of new MPVM graduates from the University of California at Davis. Source: https://mpvm.vetmed.ucdavis.edu/about

UC Davis' School of Veterinary Medicine offers a DVM/MPVM dual degree, where students can attend two years of DVM training, complete their Year 2 exam, and then spend one year in MPVM coursework and initiating their research project. Once they return to DVM, they then capitalize on MPVM training by incorporating their interests into DVM junior/senior rotations and by completing their MPVM research projects in concert with DVM rotations, culminating in the awarding of a dual DVM and MPVM degree. A similar dual degree can be pursued at UF CVM.

Additional opportunities

American College of Veterinary Preventive Medicine (ACVPM) Board Eligibility. MPVM graduates are eligible for board-certification in veterinary preventive medicine and epidemiology (specialty) in the ACVPM: https://www.acvpm.org/.

B. Please provide the date when the pre-proposal was presented to CAVP (Council of Academic Vice Presidents) Academic Program Coordination review group. Identify any concerns that the CAVP review group raised with the pre-proposed program and provide a brief narrative explaining how each of these concerns has been or is being addressed.

The SUS Council of Academic Vice Presidents academic program coordination group approved the Masters in Preventive Veterinary Medicine pre-proposal on **September 2, 2021**.

We are not aware of any questions, comments or concerns expressed by the CAVP.

C. If this is a doctoral level program please include the external consultant's report at the end of the proposal as Appendix D. Please provide a few highlights from the report and describe ways in which the report affected the approval process at the university.

Not applicable.

D. Describe how the proposed program is consistent with the current State University System (SUS) Strategic Planning Goals. Identify which specific goals the program will directly support and which goals the program will indirectly support (see link to the SUS Strategic Plan on the resource page for new program proposal).

The SUS goals focus on three critical points to realize its mission and its 2020 vision: Excellence, Productivity, and Strategic Priorities for a Knowledge Economy.

Excellence

GOAL 1: Strengthen Quality and Reputation of the Universities

Improve the quality and relevance of the System's institutions with regard to state, national, and international preeminence.

Productivity

GOAL 2: Increase Degree Productivity and Program Efficiency

Increase access and efficient degree completion for students.

Strategic Priorities for a Knowledge Economy

GOAL 3: Increase the Number of Degrees Awarded in STEM/Health and Other Programs of Strategic Emphasis

Increase student access and success in degree programs in the STEM/health fields and other Programs of Strategic Emphasis that respond to existing, evolving, and emerging critical needs and opportunities

The MPVM will fulfill all three goals by providing graduate education and training of the highest quality with an emphasis in health in livestock, poultry, and wildlife populations, as well as in food safety in Florida, USA, or globally; therefore, it will support goals 1 and 2. New graduates will acquire knowledge and skills required to compete and collaborate in today's global society and market place. This will be a new STEM degree; therefore it will support goal 3.

MPVM faculty are accomplished epidemiologists, microbiologists, parasitologists, pathologists, veterinarians, and virologists with 10-30 years of experience in education, research and human/institutional capacity development programs nationally and internationally. The MPVM program will attract highly qualified national, international and URM graduate students with veterinary degrees. UF CVM MPVM faculty publish in high quality peer-review journals, offer training workshops to practicing veterinarians and graduate students in the US and abroad, and serve as consultants to national and/or international organizations in health issues that affect animal populations (e.g., United Nations FAO, US Department of State's Defense Threat Reduction Agency).

The MPVM program will maximize existing resources to address challenges and opportunities in Florida, such as prevention or early detection and risk management of disease outbreak investigations in beef cattle, dairy cattle, white-tailed deer, or unusual mortality events in manatees. The MPVM program will establish a Graduate Group that will include core faculty members from all five CVM academic departments (Comparative, Diagnostic, and Population Medicine, Large Animal Clinical Sciences, Small Animal Clinical Sciences, Physiological Sciences, and Infectious Diseases and Immunology) and other academic units on campus. The Graduate Group will share education, research, and admin resources, and will support the MPVM curriculum and transdisciplinary research relevant to Florida's citizens.

Disease risk identification, risk assessment, risk management, and risk communication are key MPVM competencies that are valued by animal health officials from the Florida Department of Agriculture and the Florida Fish & Wildlife Conservation Commission.

In addition, improving food safety is a key driver to enhance value chains (farm-to-fork) of selected commodities (milk, meat, eggs).

The new MPVM program will enhance existing ties between the University of Florida College of Veterinary Medicine and Florida's Department of Agriculture and Florida's Fish and Wildlife Conservation Commission—two key partners for the formulation, implementation, and evaluation of Special Projects relevant to Florida's economy. Targeted special projects will present an opportunity to enhance Florida's surveillance systems for early detection and risk management of diseases of economic importance in livestock/wildlife populations, and to support science-based animal health policies. In addition, because MPVM faculty have research experience in veterinary epidemiology and biostatistics, they are well positioned to support UF's Artificial Intelligence university initiative in selected projects related to health in livestock/wildlife populations.

The MPVM Graduate Group will include UF CVM/IFAS extension veterinarians (Dr. Catalina Cabrera: sheep and goats + Dr. Juan Campos: wildlife + Dr. Ricardo Chebel: dairy + Dr. Joao Bittar: beef + Dr. Gary Butcher: poultry; and Dr. Sally De Nota: horses) in the delivery of knowledge to advance the health, welfare, cultural enrichment, and economy through community and business engagement and service. Dr. Cabrera and Dr. Chebel are extension veterinarians who completed their MPVM degree at the University of California at Davis.

E. If the program is to be included in a category within the Programs of Strategic Emphasis as described in the SUS Strategic Plan, please indicate the category and the justification for inclusion. The Programs of Strategic Emphasis Categories are:

- **Critical Workforce:**
  - ☐ Education
  - ☐ Health
  - ☐ Gap Analysis
- **Economic Development:**
  - ☐ Global Competitiveness
  - ☒ Science, Technology, Engineering, and Math (STEM)

Please see the Programs of Strategic Emphasis (PSE) methodology for additional explanations on program inclusion criteria at the resource page for new program proposal.

The MPVM program qualifies under the current Programs of Strategic Emphasis: Veterinary Preventive Medicine, Epidemiology, and Public Health with a CIP Code 01-8110 (moved from 51.2510).

The MPVM program will prepare veterinarians for leadership roles in management or research of diseases in animal populations in Florida, USA, and globally. Areas of emphasis are: (a) health in dairy cattle, beef cattle, and poultry populations; (b) food safety; (c) health in wildlife populations.

F. Identify any established or planned educational sites at which the program is expected to be offered and indicate whether it will be offered only at sites other than the main campus.

The MPVM program will be offered within established sites at the UF College of Veterinary Medicine, and it will not require any additional office, teaching or research space.

Institutional and State Level Accountability

II. Need and Demand

A. Need: Describe national, state, and/or local data that support the need for more people to be prepared in this program at this level. Reference national, state, and/or local plans or reports that support the need for this program and requests for the proposed program which have emanated from a perceived need by agencies or industries in your service area. Cite any specific need for research and service that the program would fulfill.

The demand for epidemiologists (trained in population-based health) is expected to increase in the next 10 years. According to the US Bureau of Labor Statistics and an article published in the New York Times on February 22, 2021, the number of epidemiologists in 2029 will be 25% higher than the original baseline projection for 2029; the largest increase among nearly 800 detailed occupations. https://www.nytimes.com/2021/02/22/upshot/jobs-future-pandemic-.html.

Although Doctors of Veterinary Medicine (DVM) graduates are well trained in clinical veterinary medicine, their knowledge and skills in population-based veterinary medicine is limited. In livestock systems and wildlife systems, the unit of observation or analysis is the herd, farm, household, or a defined geographic region with livestock and/or wildlife (not individual animals). Risk management of diseases of economic importance to the animal industry are formulated, implemented, and evaluated at the herd, farm, household, or regional levels. In addition, improving food safety is a key driver to enhance value chains (farm-to-fork) of selected commodities (milk, meat, eggs). Disease risk identification, risk assessment, risk management, and risk communication are key MPVM competencies valued by animal health officials from the Florida Department of Agriculture and the Florida Fish & Wildlife Conservation Commission.

B. Demand: Describe data that support the assumption that students will enroll in the proposed program. Include descriptions of surveys or other communications with prospective students.

The table below shows a list of current and former Master's students in Veterinary Medical Sciences (VMS) who would have preferred the proposed MPVM degree because it would better align with their line of research, specialization and professional interests.

Student	Country	Graduation Year	Current Position
Ameer Megahed	Egypt	2023	MS student
Tomas Gonzalez	Costa Rica/USA	2022	MS:Resident at UF CVM
Brittany Diehl	USA	2021	MS:Resident at UF CVM
Ana B. Montevecchio	Brazil	2021	MS student at UF CVM
Segundo Casaro	Argentina	2021	PhD student at UF CVM
Sebastian Umana Sedo	Costa Rica	2020	PhD student at U of Guelph, Canada
Caio Figueiredo	Brazil	2019	PhD student at UF CVM
Odinei Marques	Brazil	2019	Private veterinary practitioner
Eduardo Oliveira	Brazil	2019	Resident at UC Davis, School of Vet Med
Myriam Jimenez	Mexico	2017	PhD student at UF CVM
Lincoln Sims	USA	2017	Owner of Okeechobee Livestock Veterinarians, LLC
Federico Cunha	Uruguay	2016	PhD student at UF IFAS Anim Sci
Rodolfo Daetz Medina	Chile	2015	Consultant at BEST-fed Animal Nutrition
Johanny Perez Baez	Dominican Republic	2015	Faculty at U of Santo Domingo, DR
Lucas Ibarbia	Argentina	2014	Consultant at Progressive Dairy Solutions

Joao Jabur Bittar	Brazil	2013	Faculty at UF CVM
Mark Cunningham	USA	2005	Veterinarian at Wildlife Research Laboratory, Florida Fish and Wildlife Conservation Commission

C. If substantially similar programs (generally at the four-digit CIP Code or 60 percent similar in core courses), either private or public exist in the state, identify the institution(s) and geographic location(s). Summarize the outcome(s) of communication with such programs with regard to the potential impact on their enrollment and opportunities for possible collaboration (instruction and research). In Appendix C, provide data that support the need for an additional program.

The SUS does not currently offer a similar program in preventive veterinary medicine.

UF CVM is Florida's only College of Veterinary Medicine.

D. Use Table 1 - Appendix A (1-A for undergraduate and 1-B for graduate) to categorize projected student headcount (HC) and Full Time Equivalents (FTE) according to primary sources. Generally undergraduate FTE will be calculated as 30 credit hours per year and graduate FTE will be calculated as 24 credit hours per year. Describe the rationale underlying enrollment projections. If students within the institution are expected to change majors to enroll in the proposed program at its inception, describe the shifts from disciplines that will likely occur.

Enrollment projections are based on annual number of students enrolled in MS program in Veterinary Medical Sciences with interest in preventive veterinary medicine in the last five years.

We expect the annual number of new students will increase from five in Fall 2023 to 10 in Fall 2028.

We don't expect students within UF will change majors to enroll in the proposed MPVM program at its inception.

E. Indicate what steps will be taken to achieve a diverse student body in this program. If the proposed program substantially duplicates a program at FAMU or FIU, provide, (in consultation with the affected university), an analysis of how the program might have an impact upon that university's ability to attract students of races different from that which is predominant on their campus in the subject program. The university's Equal Opportunity Officer shall review this section of the proposal and then sign and date Appendix B to indicate that the analysis required by this subsection has been completed.

During the academic year of 2020-2021, the UF CVM graduate student population in-residence was 54 (including 22 MS students and 32 PhD students). In that year, our graduate student population was diverse; 36/54 (67%) were female and 18 (33%) were male; 36 (67%) were US nationals and 18 (33%) were international students from 11 countries (Brazil, China, Egypt, India, Japan, Mexico, Nigeria, Paraguay, Taiwan, Thailand, Uruguay). Among 36 US national students, 24/36 (67%) were White, three were African American, two Hispanic, three Asian, and five students did not report their race.

In Summer 2021, Dr. Michael Bowie was appointed to the new position of Assistant Dean of Diversity, Equity and Inclusion at the UF College of Veterinary Medicine. The

new position was justified to enhance the profile of the College with a focus in diversity, equity and inclusion. In consultation with Dr. Bowie, Dr. Jorge Hernandez (CVM Director of Graduate Education) will formulate, implement, and evaluate a written plan designed to recruit, select, and retain high quality Underrepresented Minority Students; specifically, African Americans, Hispanics, Asians, and native Americans in line with the state of Florida's demographics.

The UF CVM is committed to recruitment and retention activities and to the success of individual programs in the CVM. The CVM Office for Community Engagement & Diversity Outreach (CEDO) will enhance and strengthen already successful individual efforts by providing activities for potential URM students in the MPVM program. Because the program is for students holding a DVM degree or its equivalent, Dr. Bowie will work with affinity organizations, like the Multicultural Veterinary Medical Association, National Association for Black Veterinarians, Black DVM Network, Latinx Veterinary Medical Association, and Association of Asian Veterinary Medical Professionals, to recruit underrepresented veterinarians into the MPVM program.

By gathering the research success stories of our outstanding URM students across the individual graduate programs, the UF CVM Office of Research and Graduate Studies in conjunction with CEDO will be in a position to develop materials that highlight the strength and breadth of URM scholars at UF. The MPVM program will work with ORGS, CEDO, and the CVM marketing team to develop display and advertising materials that highlight the scientific success of our URM trainees and use recruiting funds to cost-effectively target diverse populations at national meetings of affinity organizations. Ads will be placed on the websites of these affinity organizations. Prospective URM scholars will be introduced to the program via a UF webpage, which is continually being improved, to outline our program, our faculty and research, and potential career opportunities that arise from being a successful graduate of the program. We hope that incoming participants consider these unique opportunities when making their decisions about post-DVM programs.

III. Budget

A. Use Table 3 - Appendix A to display projected costs and associated funding sources for Year 1 and Year 5 of program operation. Use Table 4 - Appendix A to show how existing Education & General funds will be shifted to support the new program in Year 1. In narrative form, summarize the contents of both tables, identifying the source of both current and new resources to be devoted to the proposed program. (Data for Year 1 and Year 5 reflect snapshots in time rather than cumulative costs.)

Table 3. In Year 1, total costs are $190,095 in faculty salaries and benefits (nine existing UF CVM faculty members). The calculated E&G Cost per FTE is $76,038 ($190,095 / 2.5).

In Year 5, total costs are $217,937 in faculty salaries and benefits (nine existing UF CVM faculty members). The calculated E&G Cost per FTE is $43,587 ($217,937 / 5.0).

Table 4. The MPVM program does not require funds to be shifted from existing education and general funds.

B. Please explain whether the university intends to operate the program through continuing education, seek approval for market tuition rate, or establish a differentiated graduate-level tuition. Provide a rationale for doing so and a timeline for seeking Board of Governors' approval, if appropriate. *Please include the expected rate of tuition that the university plans to charge for this program and*

use this amount when calculating cost entries in Table 3.

The university will not operate the MPVM program through continuing education, seek approval for market tuition rate, or establish a differentiated graduate-level tuition.

C. If other programs will be impacted by a reallocation of resources for the proposed program, identify the impacted programs and provide a justification for reallocating resources. Specifically address the potential negative impacts that implementation of the proposed program will have on related undergraduate programs (i.e., shift in faculty effort, reallocation of instructional resources, reduced enrollment rates, greater use of adjunct faculty and teaching assistants). Explain what steps will be taken to mitigate any such impacts. Also, discuss the potential positive impacts that the proposed program might have on related undergraduate programs (i.e., increased undergraduate research opportunities, improved quality of instruction associated with cutting-edge research, improved labs and library resources).

No other CVM graduate education programs will impacted by the implementation of the MPVM program.

D. Describe other potential impacts on related programs or departments (e.g., increased need for general education or common prerequisite courses, or increased need for required or elective courses outside of the proposed major).

We do not foresee potential impacts on other UF or CVM graduate education programs or departments by implementing the MPVM program.

E. Describe what steps have been taken to obtain information regarding resources (financial and in-kind) available outside the institution (businesses, industrial organizations, governmental entities, etc.). Describe the external resources that appear to be available to support the proposed program.

External resources. The UF CVM will partner with the Florida's Department of Agriculture and the Florida's Fish and Wildlife Conservation Commission for the formulation, implementation, and evaluation of Special/Capstone Projects relevant to Florida's economy. Letters of collaboration are included in **Appendix D**.

IV. Projected Benefit of the Program to the University, Local Community, and State

Use information from Tables 1 and 3 - Appendix A, and the supporting narrative for "Need and Demand" to prepare a concise statement that describes the projected benefit to the university, local community, and the state if the program is implemented. The projected benefits can be both quantitative and qualitative in nature, but there needs to be a clear distinction made between the two in the narrative.

Quantitative benefits. The Educational and General (E&G) cost per FTE of the proposed new UF CVM's masters in preventive veterinary medicine (MPVM) program is similar to that of existing UF CVM's master's degree in veterinary medical sciences (VMS) ($76,038 in Year 1 and $43,587 in Year 2).

The budget does not require new UF CVM funding allocation for implementation of the new MPVM degree,

Qualitative benefits. [1] The proposed MPVM program is new and fills a gap in Florida's SUS: advanced graduate education and training in population health—specific

for livestock systems and wildlife systems; [2] It is a STEM degree; and [3] It has the support of two key partners: [a] The Florida's Department of Agriculture and [b] the Florida's Fish and Wildlife Conservation Commission for the formulation, implementation, and evaluation of Special/Capstone Projects relevant to Florida's economy.

V. Access and Articulation – Bachelor's Degrees Only

A. If the total number of credit hours to earn a degree exceeds 120, provide a justification for an exception to the policy of a 120 maximum and submit a separate request to the Board of Governors for an exception along with notification of the program's approval. (See criteria in Board of Governors Regulation 6C-8.014)

B. List program prerequisites and provide assurance that they are the same as the approved common prerequisites for other such degree programs within the SUS (see link to the Common Prerequisite Manual on the resource page for new program proposal). The courses in the Common Prerequisite Counseling Manual are intended to be those that are required of both native and transfer students prior to entrance to the major program, not simply lower-level courses that are required prior to graduation. The common prerequisites and substitute courses are mandatory for all institution programs listed, and must be approved by the Articulation Coordinating Committee (ACC). This requirement includes those programs designated as "limited access.

If the proposed prerequisites are not listed in the Manual, provide a rationale for a request for exception to the policy of common prerequisites. NOTE: Typically, all lower-division courses required for admission into the major will be considered prerequisites. The curriculum can require lower-division courses that are not prerequisites for admission into the major, as long as those courses are built into the curriculum for the upper-level 60 credit hours. If there are already common prerequisites for other degree programs with the same proposed CIP, every effort must be made to utilize the previously approved prerequisites instead of recommending an additional "track" of prerequisites for that CIP. Additional tracks may not be approved by the ACC, thereby holding up the full approval of the degree program. Programs will not be entered into the State University System Inventory until any exceptions to the approved common prerequisites are approved by the ACC.

C. If the university intends to seek formal Limited Access status for the proposed program, provide a rationale that includes an analysis of diversity issues with respect to such a designation. Explain how the university will ensure that Florida College System transfer students are not disadvantaged by the Limited Access status. NOTE: The policy and criteria for Limited Access are identified in Board of Governors Regulation 6C-8.013. Submit the Limited Access Program Request form along with this document.

D. If the proposed program is an AS-to-BS capstone, ensure that it adheres to the guidelines approved by the Articulation Coordinating Committee for such programs, as set forth in Rule 6A-10.024 (see link to the Statewide Articulation Manual on the resource page for new program proposal). List the prerequisites, if any, including the specific AS degrees which may transfer into the program.

Institutional Readiness

VI. Related Institutional Mission and Strength

A. Describe how the goals of the proposed program relate to the institutional mission statement as contained in the SUS Strategic Plan and the University Strategic Plan (see link to the SUS Strategic Plan on the resource page for new program proposal).

The proposed MPVM program is in line with **UF's Mission Statement**: *To enable our students to lead and influence the next generation and beyond for economic, cultural and societal benefit*.

The MPVM program will prepare veterinarians for leadership roles in research or management of diseases in livestock and wildlife populations, as well as in food safety in Florida, USA, and globally.

SUS Mission No. 1: *Support students' development of the knowledge, skills, and aptitudes needed for success in the global society and marketplace.*

Although Doctors of Veterinary Medicine (DVM) graduates are well trained in clinical veterinary medicine, their knowledge and skills in population-based veterinary medicine is limited. In livestock systems and wildlife systems, the unit of observation or analysis is the herd, farm, household, or a defined geographic region with livestock and/or wildlife (not individual animals). Risk management of diseases of economic importance to the animal industry are formulated, implemented, and evaluated at the herd, farm, household, or regional levels. In addition, improving food safety is a key driver to enhance value chains (farm-to-fork) of selected commodities (milk, meat, eggs). Disease risk identification, risk assessment, risk management, and risk communication are key MPVM competencies valued by animal health officials from the Florida Department of Agriculture and the Florida Fish & Wildlife Conservation Commission.

SUS Mission No. 2: *Transform and revitalize Florida's economy and society through research, creativity, discovery, and innovation.*

The new MPVM program will enhance existing ties between UF CVM and Florida's Department of Agriculture and Florida's Fish and Wildlife Conservation Commission—two key partners for the formulation, implementation, and evaluation of Special Projects relevant to Florida's economy. Targeted special projects will present an opportunity to enhance Florida's surveillance systems for early detection and risk management of diseases of economic importance in livestock/wildlife populations, and to support science-based animal health policies. In addition, because MPVM faculty have research experience in veterinary epidemiology and biostatistics, they are well positioned to support UF's Artificial Intelligence university initiative in selected project related to health in livestock systems and wildlife systems.

SUS Mission No. 3: *Mobilize resources to address the significant challenges and opportunities facing Florida's citizens, communities, regions, the state, and beyond*.

The MPVM program will maximize existing resources to address challenges and opportunities in Florida, such as prevention or early detection and risk management of disease outbreak investigations in beef cattle, dairy cattle, white-tailed deer, or unusual mortality events in manatees. The MPVM program will establish a Graduate Group that will include core faculty members from all five CVM academic departments (Comparative, Diagnostic, and Population Medicine, Large Animal Clinical Sciences, Small Animal Clinical Sciences, Physiological Sciences, and Infectious Diseases and Immunology) and other academic units on campus. The Graduate Group will share education, research, and admin resources, and will support the MPVM curriculum and transdisciplinary research relevant to Florida's citizens.

SUS Mission No. 4. *Deliver knowledge to advance the health, welfare, cultural enrichment, and economy through community and business engagement and service*.

The MPVM Graduate Group will include UF CVM/IFAS extension veterinarians (Dr. Catalina Cabrera: sheep and goats + Dr. Juan Campos: wildlife + Dr. Ricardo Chebel: dairy + Dr. Joao Bittar: beef + Dr. Gary Butcher: poultry) in the delivery of knowledge to advance the health, welfare, cultural enrichment, and economy through community and business engagement and service. Dr. Cabrera and Dr. Chebel are extension veterinarians who completed their MPVM degree at the University of California at Davis.

B. Describe how the proposed program specifically relates to existing institutional strengths, such as programs of emphasis, other academic programs, and/or institutes and centers.

The new UF CVM's MPVM program will offer advanced training to veterinarians to investigate and manage diseases in livestock and wildlife populations, as well as food safety issues in local, state, or national food systems.

Because disease risk management and food safety mitigating measures target livestock systems and food systems, respectively, at the farm, county, state, national, or international levels, the MPVM program can create a synergy with UF IFAS Feed the Future Innovation Lab for Livestock systems https://livestocklab.ifas.ufl.edu/ and UF IFAS Food Systems Institute https://foodsystems.ifas.ufl.edu/.

C. Provide a narrative of the planning process leading up to submission of this proposal. Include a chronology in table format of the activities, listing both university personnel directly involved and external individuals who participated in planning. Provide a timetable of events necessary for the implementation of the proposed program.

Planning Process. The MPVM proposal was formulated in coordination between junior and senior CVM faculty members and CVM's Director of Graduate Education. The pre-proposal was reviewed/approved at the Department and College levels (October-December 2019). After some delays (due to the pandemic), the pre-proposal was submitted for review/approval to the UF Provost Office in January 2021; the proposal was returned with comments the same month. The pre-proposal was presented to Florida Fish & Wildlife Conservation Commission, Wildlife Health Program Leader (Mark Cunningham) in April 2021, the Florida State Veterinarian/Director, Division of Animal Industry (Michael Short) in May 2021 for review and feedback. A revised pre-preproposal was submitted to UF Provost Office for review/approval in June 2021, and it was approved by SUS Council of Academic Vice Presidents Academic Program Coordination Group on September 2, 2021.

Date	Participants	Planning Activity
10/21/2019	UF CVM MPVM Lead Faculty (Juan Campos, Thomas Denagamage, Klibs Galvao) + UF CVM Director of Graduate Education (Jorge Hernandez) + UF CVM Graduate Studies Committee members (David Allred, Risk Johnson, Iske Larkin, Dan Lewis, Maureen Long).	Pre-proposal was reviewed/approved by CVM Graduate Studies Committee (following approval at the Department(s) level).
11/07/2019	UF CVM MPVM Lead Faculty (Andrew Allison, Juan Campos, Thomas Denagamage, Klibs Galvao) + UF CVM Director of Graduate Education (Jorge Hernandez).	Pre-proposal was presented at CVM Faculty Assembly for review/approval.
12/19/2019	UF CVM Faculty	Pre-proposal was approved by CVM faculty vote: 79/89 or 89% for.
01/12/2021	UF CVM Associate Dean for Research & Graduate Studies (David Pascual) + CVM Dean (Dana Zimmel).	Pre-proposal was submitted from CVM Dean's Office to UF Provost Office for review/approval. The proposal was ready for submission in April 2020, but it was delayed because of the pandemic.
01/26/2021	UF Provost Office (Chery Gater and Chris Hass).	Pre-proposal was returned to CVM with comments.
04/02/2021	UF CVM MPVM Lead Faculty (Andrew Allioson) + CVM Director of Graduate Education (Jorge Hernandez) + Florida Fish & Wildlife Conservation Commission, Wildlife Health Program Leader (Mark Cunningham).	Pre-proposal was presented to Florida Fish & Wildlife Conservation Commission, Wildlife Health Program Leader (Mark Cunningham) for review and feedback.
05/08/2021	Florida Fish & Wildlife Conservation Commission, Wildlife Health Program Leader (Mark Cunningham).	Florida Fish & Wildlife Conservation Commission, Wildlife Health Program Leader (Mark Cunningham) offered letter of support.
05/27/2021	Florida State Veterinarian/Director, Division of Animal Industry (Michael Short).	Pre-proposal was presented to Florida State Veterinarian/Director, Division of Animal Industry (Michael Short) for review and feedback.
06/01/2021	Florida State Veterinarian/Director, Division of Animal Industry (Michael Short).	Florida State Veterinarian/Director, Division of Animal Industry (Michael Short) offered letter of support.
06/08/2021	UF CVM Director of Graduate Education (Jorge Hernandez) + CVM Associate Dean for Research & Graduate Studies (David Pascual) + CVM Dean (Dana Zimmel).	Revised pre-proposal was submitted to CVM Dean's Office to UF Provost Office for further processing.
09/02/2021	UF CVM Dean (Dana Zimmel) + UF Provost Office (Chery Gater and Chris Hass).	Pre-proposal was approved by SUS Council of Academic Vice Presidents Academic Program Coordination Group

Events Leading to Implementation

Date	Implementation Activity
January 2022	1. Department. Approval at the Department level: UF CVM Large Animal Clinical Sciences + UF CVM Comparative, Diagnostic and Population Medicine.
February 2022	2. College. Approval at the College level (following approval by UF CVM Graduate Studies Committee and UF CVM Faculty Assembly).
March 2022	3. OIPR. Approval of CIP code by UF Office of Institutional Planning and Research.
April 2022	4. APAF. Approval from the UF Associate Provost for Academic and Faculty Affairs.
May 2022	5. GC. Approval from the UF Graduate Council.
May 2022	6. UCC. UF University Curriculum Committee is notified of the request.
August 2022	7. FSSC. Approval from UF Faculty Senate Steering Committee.
September 2022	8. Senate. Approval from UF Faculty Senate.
October 2022	9. AA. Approval from UF Academic Affairs.
November 2022	10. BOT. Approval from the Board of Trustees.
December 2022	11. BOG. Approval from the Board of Governors.
December 2022	12. AA. UF Academic Affairs is notified of the request.
December 2022	13. GS. UF Graduate School is notified of the request.
January 2023	14. OUR. Approval from UF Office of the University Registrar.
January 2023	15 OIPR. UF Office of Institutional Planning and Research is notified of the request.
January 2023	16. College. UF CVM is notified on the request approval.

VII. Program Quality Indicators - Reviews and Accreditation

Identify program reviews, accreditation visits, or internal reviews for any university degree programs related to the proposed program, especially any within the same academic unit. List all recommendations and summarize the institution's progress in implementing the recommendations. Please include evidence that teacher preparation programs meet the requirements outlined in Section. 1004.04, Florida Statutes, if applicable.

Program reviews related to the proposed MPVM program. UF CVM offers a non-STEM master of science (MS) program in veterinary medical sciences (VMS). The MS in VMS is accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC). Annual reports with requested data and information (e.g., program goals, student learning outcomes) are prepared and submitted to SACSCOC for evaluation/approval.

Internal reviews. In Fall 2019, the curriculum of the MS in VMS was reviewed/revised by the UF CVM curriculum committee, where all MS students In Residence are required to take at least one credit in graduate seminars. The justification was that this requirement was not uniform across all five CVM academic departments. The new requirement was successfully implemented in all five departments in Fall 2020.

The MS in VMS does not require teacher preparation programs as outlined in Section 100.04 Florida Statutes.

VIII. Curriculum

A. Describe the specific expected student learning outcomes associated with the proposed program. If a bachelor's degree program, include a web link to the Academic Learning Compact or include the document itself as an appendix.

Student Learning Outcomes (SLO)

SLO 1 Knowledge | Special/Capstone Project
SLO 2 Skills | Science communication
SLO 3 Skills | Veterinary epidemiology
SLO 4 Skills | Statistics
SLO 5 Professional and ethical behavior

Appendix C includes student learning outcomes and assessment methods, as well as examples of Special/Capstone Projects.

B. Describe the admission standards and graduation requirements for the program.

Admission standards
[i] Veterinary degree (DVM) or equivalent
[ii] An upper division undergraduate GPA of 3.2 or the equivalent
[iii] Three appropriate letters of recommendation
[iv] Non-U.S. citizens whose native language is not English must submit a score of at 80 on the internet TOEFL (Test of English as a Foreign Language). If the applicant has been a registered student at a U.S. school for over a year, the TOEFL is not required.
[v] In UF CVM, GRE score is not required

Graduation requirements
[i] Thirty credits in graduate level courses, including 12 credits in required coursework (see curricular framework below).
[ii[Completion of a Special/Capstone Project.
[iii] fifteen credits in the major (VME courses)
[iv] The supervisory committee should consist of at least one Graduate Faculty member form UF CVM serving as the chair.

C. Describe the curricular framework for the proposed program, including number of credit hours and composition of required core courses, restricted electives, unrestricted electives, thesis requirements, and dissertation requirements. Identify the total numbers of semester credit hours for the degree.

Total number of semester credit hours: 30 (including 15 credits in the major)

Required Courses: 12 credits (5000-6000 level courses)

VME 6930s Department/College Graduate Seminars | 2 credits
VME 6771 Veterinary Epidemiologic Research | 3 credits
PHC 6050 Statistical Methods for Health Sciences Research I (or equivalent) | 3 credits
VME 6767 Issues in the Responsible Conduct of Research | 1 credit
VME 6905 Problems Vet Med Sci | Special/Capstone Project | 3 credits

Other courses: up to 18 credits (5000-6000 level courses)

Area of emphasis: All
VME 6070 System Review & Meta-Analysis for Biomedical Research | 2 credits
VME 6464: Molecular Pathogenesis | 3 credits
PHC 6053 Regression Methods for Health and Life Sciences | 3 credits
AGR 6932 Experimental Design and Data Analysis | 3 credits
ANS 6905: Applied Statistics for Animal Sciences | 4 credits (other graduate level courses with a focus in statistics can apply).

Area of emphasis: Health and Reproduction in Livestock Populations

VME 6934 Dairy Production Medicine | 1 credit
VME 6934 Advanced Bovine Reproduction | 1 credit
ANS 6751 Physiology of Reproduction | 3 credits
ANS 6775 Livestock Immunology | 1 credit

ANS 6751: Physiology of Reproduction | 3 credits
Other graduate level courses with a focus in livestock health, reproduction, or systems can apply.

Area of emphasis: Food Safety
VME 6934 Molecular Epidemiology of Foodborne Pathogen | 3 credits
FOS 5225C Principles in Food Microbiology | 4 credits
FOS 6315C Advanced Food Chemistry | 4 credits
FOS 6936 Food Safety Systems | 2 credits
FOS 5205: Current Issues in Food Safety and Sanitation | 2 credits
Other graduate courses with a focus in food safety or systems can apply.

Area of emphasis: Health in Wildlife Populations
VME 6011 Introduction to Aquatic Wildlife Health Issues | 3 credits
VME 6195 Wildlife Virology: Emerg Wildlife Viruses of Vet & Zoonotic Importance | 3 credits
VME 6508: Veterinary Virology: Molecular & Evolutionary Biol of Animal Viruses | 3 credits
WIS 6934: Disease and Wildlife | 3 credits
WIS 6466: Wildlife Population Modeling | 3 credits
Other graduate level courses with a focus in wildlife diseases or systems can apply.

D. Provide a sequenced course of study for all majors, concentrations, or areas of emphasis within the proposed program.

Students will take required courses in veterinary epidemiology, statistics, and responsible conduct of research in the first semester and before they complete the required Special Project.

E. Provide a one- or two-sentence description of each required or elective course.

Required courses

VME 6930s Department/College Graduate Seminars | 2 credits | A forum for CVM graduate students and faculty to exchange information that can advance animal health, human health, and environmental health.

VME 6771 Veterinary Epidemiologic Research | 3 credits | Research methods used in observational and experimental studies in animal and human populations. Includes study design, data analysis and interpretation in cross-sectional studies, case-control studies, cohort studies, and clinical trials.

PHC 6050 Statistical Methods for Health Sciences Research I | 3 credits | Appropriate use of data summarization and presentation of basic statistical methods, including ANOVA, nonparametric methods, inference on discrete data, inference on survival data, and regression methods for continuous, binary, and survival data.

VME 6767 Issues in the Responsible Conduct of Research | 1 credit | Presentation and discussion of issues in the responsible conduct of research; guiding principles and potential pitfalls.

VME 6905 Problems in Veterinary Medical Sciences | Special/Capstone Project | 3 credits | Formulation, implementation, evaluation, and presentation a Special/Capstone Project addressing a disease problem in livestock, poultry, or wildlife populations.

F. For degree programs in the science and technology disciplines, discuss how industry-driven competencies were identified and incorporated into the curriculum and indicate whether any industry advisory council exists to provide input for

curriculum development and student assessment.

Disease risk identification, risk assessment, risk management, and risk communication in animal populations are key MPVM competencies that are valued by animal health officials from the Florida Department of Agriculture and the Florida Fish & Wildlife Conservation Commission.

The MPVM curriculum takes into consideration input from the Florida's Department of Agriculture, Director of Animal Industry, the Florida's Fish and Wildlife Conservation Commission, as well as from the Bronson Animal Disease Diagnostic Laboratory: Chief Bureau of Diagnostic Lab in Kissimmee, Florida.

UF CVM MPVM Lead Faculty reached out to Dr. Michael Short (Florida's Department of Agriculture, Director of Animal Industry), Dr. Michael Cunningham (Florida's Fish and Wildlife Conservation Commission, Wildlife Health Program Leader), and Dr. Reddy Bommineni (Bronson Animal Disease Diagnostic Laboratory: Chief Bureau of Diagnostic Lab) to identify and incorporate industry driven competencies in the curriculum (**Appendix D**).

G. For all programs, list the specialized accreditation agencies and learned societies that would be concerned with the proposed program. Will the university seek accreditation for the program if it is available? If not, why? Provide a brief timeline for seeking accreditation, if appropriate. For degree programs in medicine, nursing, and/or allied health, please identify the courses that meet the requirements in Section 1004.08, Florida Statutes for required patient safety instruction.

UF CVM will seek accreditation of the new MPVM program through the Southern Association of Colleges and Schools Commission on Colleges as soon as the proposed program is approved.

H. For doctoral programs, list the accreditation agencies and learned societies that would be concerned with corresponding bachelor's or master's programs associated with the proposed program. Are the programs accredited? If not, why?

Not Applicable.

I. Briefly describe the anticipated delivery system for the proposed program (e.g., traditional delivery on main campus; traditional delivery at branch campuses or centers; or nontraditional delivery such as distance or distributed learning, self-paced instruction, or external degree programs). If the proposed delivery system will require specialized services or greater than normal financial support, include projected costs in Table 3 in Appendix A. Provide a narrative describing the feasibility of delivering the proposed program through collaboration with other universities, both public and private. Cite specific queries made of other institutions with respect to shared courses, distance/distributed learning technologies, and joint-use facilities for research or internships.

The MPVM program's delivery system will be traditional, in-residence, on main campus (UF College of Veterinary Medicine). The program will not require specialized services or greater than normal support. All required and additional courses are available at the UF College of Veterinary Medicine or other academic units on main campus in Gainesville, Florida. When necessary, UF CVM MPVM faculty will reach out to faculty in other universities for collaboration.

IX. Faculty Participation

A. Use Table 2 in Appendix A to identify existing and anticipated full-time (not visiting or adjunct) faculty who will participate in the proposed program through Year 5. Include (a) faculty code associated with the source of funding for the position; (b) name; (c) highest degree held; (d) academic discipline or specialization; (e) contract status (tenure, tenure-earning, or multi-year annual [MYA]); (f) contract length in months; and (g) percent of annual effort that will be directed toward the proposed program (instruction, advising, supervising internships and practice, and supervising thesis or dissertation hours).

Table 2 in Appendix A includes requested information.

B. **Use Table 3-Appendix A to display the costs and associated funding resources for existing and anticipated full-time faculty (as identified in Table 2-Appendix A). Costs for visiting and adjunct faculty should be included in the category of Other Personnel Services (OPS). Provide a narrative summarizing projected costs and funding sources.**

In Year 1, total costs are $190,095 in faculty salaries and benefits (nine existing UF CVM faculty members). The calculated E&G Cost per FTE is $76,038 ($190,095 / 2.5).

In Year 5, total costs are $217,937 in faculty salaries and benefits (nine existing UF CVM faculty members). The calculated E&G Cost per FTE is $43,587 ($217,937 / 5.0).

C. Provide in the appendices the abbreviated curriculum vitae (CV) for each existing faculty member (do not include information for visiting or adjunct faculty).

Abbreviated CVs of MPVM Lead Faculty are included in **Appendix E**.

D. **Provide evidence that the academic unit(s) associated with this new degree have been productive in teaching, research, and service. Such evidence may include trends over time for average course load, FTE productivity, student HC in major or service courses, degrees granted, external funding attracted, as well as qualitative indicators of excellence.**

Teaching workload. During 2016-2020, the number of CVM MPVM Lead Faculty has increased from two to nine, with an annual FTE averages in teaching/instruction of 44% in 2016 to 46% in 2020.

Student enrollment. During 2016-2020, the average number of new students enrolled in the MS in VMS program (in-residence) was seven (minimum, four in 2017; maximum, 13 in 2020). On average, MS students take 24 credits in graduate-level courses per year (9 credits in Fall, 9 in Spring, and 6 in Summer) in addition to their research workload and professional development activities.

Research extramural support. During 2016-2020, UF CVM has attracted an annual average of $18.2 million research extramural support (minimum, $12.6 million in 2019; maximum, $22.8 million in 2020).

Indicator of excellence. During 2015-2018, UF CVM was ranked No. 14 among veterinary medical colleges nationwide by the US News & World Report. In 2019, UF CVM national ranking improved to No. 9. UF CVM is Florida's only College of Veterinary Medicine. New national rankings will be reported in 2022.

X. Non-Faculty Resources

A. Describe library resources currently available to implement and/or sustain the proposed program through Year 5. Provide the total number of volumes and serials available in this discipline and related fields. List major journals that are available to the university's students. Include a signed statement from the Library Director that this subsection and subsection B have been reviewed and approved.

The UF Health Science Center Library provides free access to physical and/or electronic information resources that include approximately 16,500 journal subscriptions, 147,700 books, and 96 databases. A free interlibrary loan service allows faculty, students, and staff to access external resources that are not included in the library's on-site and electronic collections. The UF College of Veterinary Medicine has an Education Center which includes 24-seat quiet room, UF-secure wireless internet access in all areas, standalone computer stations, collaborative work computer stations with large display monitors, printer/copier stations, group study rooms with computers and large screen displays, a limited selection of frequently-used texts and journals, and high-speed connectivity with HSC Library information systems.

Ms. Hannah Norton, MS in Information Studies, Chair, HSC Library Campus Gainesville, is the HSC Liaison Librarian for the UF College of Veterinary Medicine. While Ms. Norton's principal location is at the HSC Library, she can meet in person at the CVM Education Center for consultations with college faculty, students, and staff, as well as providing assistance via e-mail, phone, or zoom. Ms. Norton presents guest lectures on finding and selecting appropriate information for research and clinical care in other curricular programs of the CVM, and is available to do so for this program as well.

Major journals available to UF CVM graduate students include: Science, Nature, Lancet, Preventive Veterinary Medicine, Journal of Dairy Science, Theriogenology, Journal of Zoo and Wildlife Medicine, Journal of the American Veterinary Medical Association, American Journal of Veterinary Medicine, PLOS One, One Health, American Journal of Tropical Medicine & Hygiene, among others.

A signed statement from UF HSC Library Dean is presented in **Appendix B**.

B. Describe additional library resources that are needed to implement and/or sustain the program through Year 5. Include projected costs of additional library resources in Table 3-Appendix A. Please include the signature of the Library Director in Appendix B.

No additional resources are needed to implement and/or sustain the MPVM program through Year 5.

C. Describe classroom, teaching laboratory, research laboratory, office, and other types of space that are necessary and currently available to implement the proposed program through Year 5.

Classroom. MPVM's courses will be delivered in selected UF CVM classroom facilities: (i) Lecture Hall A (capacity 133 students; pre-COVID), (ii) Lecture Hall B (capacity 103 students; pre-COVID), (iii) Deriso Hall conference/teaching room (capacity 20 students; pre-COVID), or (iv) the Education Center's computer lab (capacity 132 students; pre-COVID).

Research laboratory. MPVM faculty have access to research laboratory space to support the implementation of research studies associated with MPVM's Special/Capstone Projects. Laboratory space includes **[a]** two labs with 650 sq ft each

for a total 1,300 square feet in Deriso Hall (UF CVM Department of Large Animal Clinical Sciences) and **[b]** five labs (V2-243; V3-208; V3-210/210A; V2-209; and V2-240) with a combined 2,116 sq ft in UF CVM Veterinary Academic Building. In addition, **[c]** MPVM faculty members have access to the UFCVM Clinical Sciences Research Support Laboratory with 2,522 sq ft; includes eight workstations.

Faculty office space. MPVM faculty members have own office space at the UF's CVM. Faculty offices are equipped with modern computer hardware/software systems, phone/email/zoom/WIFI internet connection (all appropriate to support the MPVM program).

Student office space. All UF CVM graduate students in-residence have access to office space in one of five assigned academic departments (Comparative Diagnostic and Population Medicine; Large Animal Clinical Sciences; Small Animal Clinical Sciences; Infectious Diseases and Immunology; Physiological Sciences).

D. Describe additional classroom, teaching laboratory, research laboratory, office, and other space needed to implement and/or maintain the proposed program through Year 5. Include any projected Instruction and Research (I&R) costs of additional space in Table 3-Appendix A. Do not include costs for new construction because that information should be provided in response to X (E) below.

The MPVM program will not require additional classroom, teaching laboratory, research laboratory, office, and other space needed to implement and/or maintain the proposed program through Year 5.

E. If a new capital expenditure for instructional or research space is required, indicate where this item appears on the university's fixed capital outlay priority list. Table 3-Appendix A includes only Instruction and Research (I&R) costs. If non-I&R costs, such as indirect costs affecting libraries and student services, are expected to increase as a result of the program, describe and estimate those expenses in narrative form below. It is expected that high enrollment programs in particular would necessitate increased costs in non-I&R activities.

The MPVM program will not require new capital expenditure for instructional or research space.

F. Describe specialized equipment that is currently available to implement the proposed program through Year 5. Focus primarily on instructional and research requirements.

Specialized **equipment for instruction** includes: UF CVM's Lecture Halls A and B and Deriso Hall conference/teaching room are equipped with PC + monitor with wired and wireless internet capability + projector (high definition) + speakers and white electric wall/ceiling mounted projector screen. In addition, the UF CVM's Education Center's computer lab is equipped with 44 PCs and 88 monitors with wired and wireless internet capability.

Specialized **equipment for research** includes: Illumina MiSeq next generation sequencer, qPCR thermocyclers, standard PCR thermocyclers, PCR workstations, DNA and protein electrophoresis equipment, Flow cytometry, and High Performance Liquid Chromatography (Agilent 1220 Infinity II).CO2 incubators, Class II A2 biosafety cabinets, electrophoretic gel system, Gel Electrophoresis Power Pack, Microplate readers chemiluminescence imaging system, fluorometer, cell counter, binocular microscope, stereo microscope, fluorescence microscope with digital camera, NanoDrop

spectrophotometer, Spot Idea Camera, and numerous refrigerated centrifuges (including an ultracentrifuge), heat blocks, shakers, cytospins, water baths, refrigerators, freezers (-20C and -80C), flammable/acid cabinets, precision scales, pH meters, vortexes, and liquid nitrogen storage tank.

Describe additional specialized equipment that will be needed to implement and/or sustain the proposed program through Year 5. Include projected costs of additional equipment in Table 3-Appendix A.

We don't expect the MPVM program will require additional specialized equipment to implement and/or sustain the proposed program through year 5.

Main specialized equipment for research is new, covered with standard and/or extended guarantee, or covered with maintenance service plans.

If new research equipment is needed, MPVM faculty will use research funds to cover the cost.

G. Describe any additional special categories of resources needed to implement the program through Year 5 (access to proprietary research facilities, specialized services, extended travel, etc.). Include projected costs of special resources in Table 3-Appendix A.

The MPVM program will not require additional special categories of resources to implement the program through Year 5.

H. Describe fellowships, scholarships, and graduate assistantships to be allocated to the proposed program through Year 5. Include the projected costs in Table 3-Appendix A.

MPVM students will be self-funded. In addition, every year, UF CVM will offer at least one graduate assistantship to new MS students with interest in preventive veterinary medicine—as part of the MS:Residency program in food animal health and reproduction.

I. Describe currently available sites for internship and practicum experiences, if appropriate to the program. Describe plans to seek additional sites in Years 1 through 5.

The UF CVM MPVM program will partner with public institutions and private organizations for formulation, implementation, and evaluation of Special/Capstone Projects at selected sites. In Florida, key **public partner institutions include**:

[a] Florida Department of Agriculture & Consumer Services' Division of Animal Industry

[b] Florida Fish & Wildlife Conservation Commission

[c] Bronson Animal Disease Diagnostic Laboratory in Kissimmee, Florida

In the **private sector**, selected livestock operations include:

Beef
Quincey's Cattle Company. Chiefland, FL https://quinceycattle.com

Sacramento Farms. Okeechobee, FL https://www.sacramentofarms.com/en/index.php

Victoria Farm, Alachua, FL http://redamericancattle.com

Dairy
North Florida Holsteins. Gainesville, Florida https://www.southeastmilk.org/member-profiles/north-florida-holsteins

Larson Barns 5 and 8. Okeechobee, Florida

Full Circle Dairy. Lee, Florida

Wildlife
Deer farms associated with Florida Southeast Trophy Deer Association
https://www.southeasttrophydeerassociation.com/

White Oak Conservation https://www.whiteoakwildlife.org/about/

Sea World Orlando, https://seaworld.org/animals/all-about/zoo-careers/veterinary-care/

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APPENDIX B

APPENDIX B

Please include the signature of the Equal Opportunity Officer and the Library Director.

Signature of Equal Opportunity Officer

t/,o/zz

Date

Signature of Library Director

Date

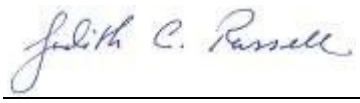
This appendix was created to facilitate the collection of signatures in support of the proposal. Signatures in this section illustrate that the Equal Opportunity Officer has reviewed section 11.E of the proposal and the Library Director has reviewed sections X.A and X.B.

APPENDIX B

Please include the signature of the Equal Opportunity Officer and the Library Director.

Signature of Equal Opportunity Officer

Date



December 7, 2021

Signature of Library Director

Date

This appendix was created to facilitate the collection of signatures in support of the proposal. Signatures in this section illustrate that the Equal Opportunity Officer has reviewed section II.E of the proposal and the Library Director has reviewed sections X.A and X.B.

APPENDIX C

UF CVM MASTER'S IN PREVENTIVE VETERINARY MEDICINE

STUDENT LEARNING OUTCOMES

SLO 1 Knowledge | Special Project

The **Special Project** can be an observational study or an experimental study designed to investigate priority health issues that affect livestock/wildlife populations.

For example:

Dairy
Florida has 125,000 adult dairy cows on 130 commercial dairy farms. In 2017, Florida's combined dairy cattle, beef cattle, and allied industries generated revenues totaling $16.8 billion, and supported 118,191 full-time and part-time jobs. **An example of a special project is "Economic comparison between ceftiofur-treated and nontreated dairy cows with metritis"**. The study produced new data and information on the cost of metritis (a common infectious disease that affects the uterus and affect reproductive performance in dairy cows). Project results can justify the revision of herd health and breeding programs in dairy herds with a high prevalence of metritis (e.g., by selecting most cost-effective treatment options to cure metritis).

Beef
Florida has about 15,000 beef producers and is home to seven of the 20 largest cow-calf operations in the US, including the number one largest cow-calf operation. Florida has an inventory of over 1.6 million beef cattle. Annual cash receipts from beef cattle and beef calf sales is about $546 million. **A proposed special project is "Burden of most common diseases in beef cattle in Florida"**. The identification and elimination of risk factors associated with selected diseases will reduce the incidence (new cases) and their economic impact in beef cattle populations, particularly among beef cattle shipped out west for finishing and harvesting.

Wildlife Health (Game)
Florida has about 600,000 wild deer, including 32,000 captive deer on 400 farms and private preserves. The white-tailed deer is the most economically important big game mammal in North America and Florida. In 2011, over $50 billion was spent on deer hunting in the US. In Florida, deer hunting generated $95 million dollars in state and local taxes and generated 14,673 jobs. https://edis.ifas.ufl.edu/publication/uw121. **A proposed special project is "Prevalence and economic impact of infectious diseases such as epizootic hemorrhagic disease virus, bluetongue virus, and intestinal parasitic infections in farmed and wild white-tailed in Florida"**. The study will produce new information to enhance surveillance systems for early detection and risk management of priority diseases in deer populations in Florida.

Wildlife Health (Non-game)
The total annual economic impact of viewing non-game (non-hunted) wildlife species (e.g., dolphins, manatees, waterbirds) in Florida was estimated at $4.9 billion in 2011, with wildlife viewing supporting over 44,000 full- and part-time jobs in Florida. Because of Florida's unique non-game wildlife, it was ranked the #1 state based on days of wildlife viewing by non-resident visitors – more than double the 2nd ranked state (Arizona) – with each non-resident spending ~$1,220/yr for wildlife viewing. A proposed special project is "**Health assessments to monitor viral infections in Atlantic bottlenose dolphins**". As dolphin encounters are a major tourist attraction in Florida, assessing the health of captive and wild dolphins is an important step in protecting their populations, marine ecosystems, and the tourism industry.

Food Safety
The Florida poultry industry includes 78.5 million broilers and 11.3 million layers. In 2020, the industry contributed $8.1 billion in total economic activity. https://cpb-us-e1.wpmucdn.com/wordpressua.uark.edu/dist/9/350/files/2017/05/FL2021-FactSheet-US-Poultry-Assn.-Reports_2020.pdf. The poultry and egg industry employs as many as 4,655 people across the state and generates an additional 29,580 jobs in supplier and ancillary industries. **A proposed special project is "Burden of *Salmonella*, *Campylobacter*, and *E. coli* and antimicrobial resistance genes along the broiler production chain"**. This project will support science-based decisions in the broiler industry to mitigate or eliminate food-safety concerns for the consumers.

Outcome**:** Students demonstrate competence in the use of research methods and techniques to advance the health status of livestock/wildlife populations in Florida, the United States, or globally.

Assessment Method**:** [1] Students will successfully complete a Special Project, which can be an observational study or an experimental study designed to investigate priority health problems in livestock/wildlife populations in Florida, the United States, or globally; [2] nine of 10 students will successfully complete a Special Project.

SLO 2 Skills | Science communication

Outcome: Students present and/or critique new scientific information.

Assessment Method: [1] Students successfully complete two Department/College graduate seminar courses that require presentation of and/or attendance to seminar presentations; includes preparation of a reaction-paper after selected seminars (5 of 15 seminars); [2] eight of 10 students will successfully complete two graduate seminars.

SLO 3 Skills | Epidemiology

Outcome: Students examine and apply epidemiologic methods and techniques used in observational studies and experimental studies in livestock/wildlife populations for disease risk management.

Assessment Method: [1] Students successfully complete a graduate level course in veterinary epidemiology (e.g., VME 6771 Veterinary Epidemiologic Research); [2] eight of 10 students will successfully complete the graduate course in veterinary epidemiology.

SLO 4 Skills | Statistics

Outcome: Students apply statistical methods and techniques commonly used in observational studies and experimental studies in livestock/wildlife populations.

Assessment Method: [1] Students successfully complete one graduate level course in statistics (e.g., PHC 6052 Introduction Biostatistical Methods or equivalent); [2] eight of 10 students will successfully complete a graduate course in statistics.

SLO 5 Professional and ethical behavior

Outcome: Students exhibit and professional and ethical behavior throughout their MPVM education and training.

Assessment Method: [1] Students successfully complete a graduate level course in responsible conduct in research (e.g., VME 6767); [2] 10 of 10 students will successfully complete a graduate course in responsible conduct in research.

***

APPENDIX D

Division of Animal Industry
(850) 410-0900

The Mayo Building
407 South Calhoun Street
Tallahassee, Florida 32399-0800

Florida Department of Agriculture and Consumer Services
Commissioner Nicole "Nikki" Fried

June 1, 2021

TO Dr. Chris J. Hass
UF Associate Provost for Academic and Faculty Affairs
Campus

FROM Dr. Michael Short
Animal Industry Director
Florida Department of Agriculture and Consumer Services
Phone:(850) 410-0900
Email: Michael.Short@FDACS.gov

CC Dr. David Pascual
UF CVM Associate Dean for Research & Graduate Studies
Campus

RE CVM Master's in Preventive Veterinary Medicine (MPVM) program

Dear Dr. Chris J. Hass:

We are excited about the opportunity to collaborate with the University of Florida's College of Veterinary Medicine (UF CVM) to advance livestock health systems in Florida. I met with UF CVM faculty members Dr. Subhashinie Kariyawasam and Dr. Jorge Hernandez to examine the merit of creating the proposed new MPVM degree. The MPVM's curriculum is well aligned with competencies (e.g., disease risk identification, risk assessment, risk management, risk communication) required by government and private veterinary practitioners engaged in animal health in livestock populations (beef cattle, dairy cattle, swine), as well as horses and poultry.

The proposed advanced training in veterinary epidemiology and biostatistics, graduate seminars, and special projects relevant to Florida's agriculture animal industry is unique. All UF DVM graduates are well-trained in clinical veterinary medicine, but their knowledge and skills in population medicine in livestock systems is limited. The new MPVM degree provides an opportunity to enhance our existing ties with the University of Florida's College of Veterinary Medicine. Targeted special projects present an opportunity to assess and enhance Florida's surveillance systems for early detection and risk management of diseases of economic importance in livestock populations, and to support science-based animal health policies.

If the proposed MPVM program is approved, we are interested in becoming a UF CVM MPVM partner. We would welcome MPVM students to participate in Special Projects that can advance livestock animal health systems in Florida. In addition, we propose there be scheduled annual meetings to nourish our partnership, assess progress made, and assess new opportunities for collaboration.

If you have any questions, feel free to contact me.

Sincerely,

Michael A. Short, D.V.M.
State Veterinarian/Director
Division of Animal Industry

Florida Fish and Wildlife Conservation Commission

Commissioners
Bo Rivard
Chairman
Panama City

Robert A. Spottswood
Vice Chairman
Key West

Gary Lester
Oxford

Gary Nicklaus
Jupiter

Sonya Rood
St. Augustine

Michael W. Sole
Tequesta

Office of the
Executive Director
Eric Sutton
Executive Director

Thomas H. Eason, Ph.D.
Assistant Executive Director

Jennifer Fitzwater
Chief of Staff

Fish and Wildlife
Research Institute
Gil McRae
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32601-9044
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Fax: (352) 955-2183
Hearing/speech-impaired:
(800) 955-8771 (T)
(800) 955-8770 (V)
MyFWC.com/Research

Mark Cunningham, DVM, MS, Dipl. ACVPM
Wildlife Health Program Leader

May 8, 2021

Dr. Chris J. Hass
UF Associate Provost for Academic and Faculty Affairs
Campus

CC: Dr. David Pascual
UF CVM Associate Dean for Research & Graduate Studies
Campus

RE: CVM Master's in Preventive Veterinary Medicine (MPVM) program

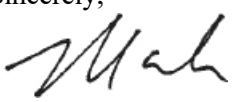
Dear Dr. Hass,

We are excited about the opportunity to collaborate with the University of Florida's College of Veterinary Medicine to advance wildlife health education in Florida. I reviewed the pre-proposal for the creation of the MPVM degree in coordination with UF CVM faculty members Dr. Andrew Allison and Dr. Jorge Hernandez. The proposed MPVM's curriculum is well aligned with competencies required by government wildlife veterinarians. The proposed advanced training, in my opinion, is different from that offered in UF CVM Zoo Medicine or UF IFAS Wildlife Ecology and Conservation. Advanced training in Zoo Medicine is focused on veterinary clinical sciences, and Wildlife Ecology and Conservation is focused on conservation biology, spatial ecology, wildlife conservation and management, wetland ecology and management, and human dimensions in wildlife conservation. The main academic gap is veterinary epidemiology, disease surveillance and risk management. These areas of study are critical for guiding decisions by government and tribal wildlife health professionals regarding wildlife disease surveillance and management.

Twenty years ago, I considered enrolling in the MPVM program offered at UC Davis because UF did not (and still does not) offer advanced training in preventive veterinary medicine. The distance and subsequent cost in relocating prevented my pursuing this program further. Additionally, in our Wildlife Health program at FWC we mentor numerous veterinary and pre-veterinary students regarding pathways to a career in Wildlife Conservation Medicine. I generally recommend a graduate degree in wildlife ecology and conservation or public health as a preventive medicine program is not available here. Further, as the leader of the Wildlife Health program at FWC, I have hired several wildlife conservation veterinarians over the years – and one of the most important characteristics I look for in an application is training in wildlife ecology and/or population medicine. The proposed MPVM program covers both and is a perfect example for the type of program I would recommend to veterinary and wildlife students preparing for a career in conservation medicine.

If the proposed MPVM program is approved, we are interested in becoming a UF CVM MPVM partner. We would welcome MPVM students to participate in Special Projects at FWC that can advance wildlife health systems in Florida. If you have any questions, feel free to contact me by cell (352-494-4229 or email at mark.cunnigham@myfwc.com.

Sincerely,



Mark Cunningham

DIVISION OF ANIMAL INDUSTRY
(850) 410-0900

THE MAYO BUILDING
407 SOUTH CALHOUN STREET
TALLAHASSEE, FLORIDA 32399-0800

FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

COMMISSIONER NICOLE "NIKKI" FRIED

DATE December 1st, 2021

TO Dr. Dana Zimmel, Dean
UF's College of Veterinary Medicine
Gainesville, Florida 32610-0136
zimmeld@ufl.edu

FROM Dr. Y. Reddy Bommineni
Chief, Bureau of Diagnostic Laboratory
The Bronson Animal Disease Laboratory
Florida Department of Agriculture and Consumer Services
Phone:(321) 697-1400
Kissimmee, Florida 34741-1266

CC Dr. David Pascual, Associate Dean
UF CVM's Office of Research & Graduate Studies
Gainesville, FL 32610-0136
pascuald@ufl.edu

RE UF CVM Master's in Preventive Veterinary Medicine (MPVM) program

Dear Dr. Zimmel,

I met with UF CVM CDPM Department Chair and Professor Dr. Subhashinie Kariyawasam to examine the merit of creating the proposed new MPVM degree. The MPVM's curriculum is well aligned with competencies (e.g., diagnosis and identification of priority pathogens of economic and public health importance) required by government and private veterinary practitioners engaged in animal health in livestock/aquaculture/wildlife populations, as well as horses and poultry.

The new MPVM degree provides an opportunity to enhance our existing ties with the University of Florida's College of Veterinary Medicine. Targeted Special/Capstone projects present an opportunity to assess and enhance Florida's surveillance systems for early detection and risk management of diseases of economic importance in livestock/aquaculture/wildlife populations, and to support science-based animal health policies.

If the proposed MPVM program is approved, we are interested in becoming a UF CVM MPVM partner. We would welcome MPVM students to participate in Special/Capstone Projects that can advance livestock/aquaculture/wildlife animal health systems, as well as food chain systems in Florida. In

addition, we propose we schedule annual meetings to nourish our partnership, assess progress made, and assess new opportunities for collaboration.

If you have any questions, feel free to contact me.

Sincerely,

Y. Reddy Bommineni DVM, PhD, DACVM, DACPV
Chief, Bureau of Diagnostic Laboratory
Division of Animal Industry
Florida Department of Agriculture and Consumer Services

(321) 697-1405 Office
(321) 697-1467 Fax
Reddy.Bommineni@FDACS.gov

Bronson Animal Disease Diagnostic Laboratory
2700 North John Young Parkway
Kissimmee, Florida 34741

APPENDIX E

Andrew Brownell Allison

Work Experience

Assistant Professor of Veterinary Virology
- Department of Comparative, Diagnostic, and Population Medicine, College of Veterinary Medicine, University of Florida, Gainesville, Florida
- Dates: 08/2018 – present

Teaching

New courses developed since arriving at UF

Veterinary Virology: Molecular and Evolutionary Biology of Animal Viruses (VME 6508)
- Sole course instructor
- Overview: A 3-credit graduate-level course focused on understanding the common, fundamental molecular and evolutionary mechanisms used by viruses; also includes contemporary molecular, proteomic, structural, microscopy, and computational research techniques used to study viruses.
- Lecture hours: 45

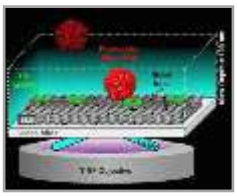
Wildlife Virology: Emerging Wildlife Viruses of Veterinary and Zoonotic Importance (VME 6195)
- Sole course instructor
- Overview: A 3-credit graduate-level course focused on pathogenic viruses that are naturally maintained in wildlife species which are transmissible to humans, domestic animals, and other wildlife/zoological species.
- Lecture hours: 45

Publications

A list of my publications can found at the following NCBI My Bibliography link:
https://www.ncbi.nlm.nih.gov/myncbi/andrew.allison.1/bibliography/public/

Select highlighted publications are listed below (▪corresponding author):

Hackenbrack, N., Rogers, M. B., Ashley, R. E., Keel, M. K., Kubiski, S. K., Bryan, J. A., Ghedin, E., Holmes, E. C., Hafenstein, S. L., **Allison, A. B.**▪ 2017. Evolution and cryo-EM capsid structure of a North American bat adenovirus and its relationship to other mastadenoviruses. J. Virol. 91: e01504-16. PMCID: PMC5215340.



Lee, D. W.*, **Allison, A. B.***, Bacon, K. B., Parrish C. R., Daniel, S▪. 2016. Single particle tracking shows that a point mutation in the carnivore parvovirus capsid switches binding between host-specific transferrin receptors. J. Virol. 90: 4849-4853. PMCID: PMC4836364.
★ **Featured in the *Journal of Virology Spotlight* section as an "article of significant interest selected from this issue by the editors" (**http://jvi.asm.org/content/90/9/4257**)**
[*co-first authors].

Allison, A. B.▪, Ballard, J. R., Tesh, R. B., Brown, J. D., Ruder, M. G., Keel, M. K., Munk, B. A., Mickley, R. M., Gibbs, S. E., Travassos da Rosa, A. P., Ellis, J. C., Ip, H. S., Shearn-Bochsler, V. I., Rogers, M. B., Ghedin, E., Holmes, E. C., Parrish, C. R., Dwyer, C. 2015. Cyclic avian mass mortality in the northeastern United States is associated with a novel orthomyxovirus. J. Virol. 89: 1389-1403. PMID: 25392223. ★ **Selected for a press release (**http://www.eurekalert.org/pub_releases/2014-12/cu-vcm121614.php#**) and high-lighted by a number of media outlets, including the Boston Globe.**

Allison, A. B., Stallknecht, D. E., Holmes, E. C. 2015. Evolutionary genetics and vector adaptation of recombinant viruses of the western equine encephalitis antigenic complex provides new insights into alphavirus diversity and host switching. Virology 474: 154-162. PMID: 25463613. ★ **Selected by the editors of *Virology* as a spotlighted manuscript in the January 2015 issue as seen in the *Virology Highlights Blog*:** https://www.sciencedirect.com/journal/virology.

Allison, A. B., Kohler, D. J., Ortega, A., Hoover, E. A., Grove, D. M., Holmes, E. C., Parrish, C. R. 2014. Host-specific parvovirus evolution in nature is recapitulated by *in vitro* adaptation to different carnivore species. PLoS Pathog. 10: e1004475. PMID: 25375184. ★ **One of 42 research articles chosen by 60 *PLoS Pathogens* section editors to be included in the 10th Anniversary *PLoS Pathogens* Collection:** https://journals.plos.org/plospathogens/s/collections.

Current Funding

University of Florida Lisa Conti One Health Fund
- Title: “Jeremy Point virus: Reverse genetics and virokine antibody generation”
- Dates: 08/01/2021 – 07/31/2022
- Role: PI
- Overview: The objectives of this proposal are to (i) develop deletion constructs of a recently developed reverse genetics system for Jeremy Point virus, and (ii) generate polyclonal antibodies against the Jeremy Point virus virokine.

University of Florida Spring 2021 CVM Research Competition
- Title: “Investigating the prevalence, diversity, and zoonotic potential of viruses present in North American bats”
- Dates: 04/26/2021 – 04/25/2022
- Role: PI
- Overview: The objectives of this proposal are to (i) perform RNA-Seq on bats from Florida to examine viral diversity within various bat populations, and (ii) biologically characterize viruses identified through RNA-Seq.

Morris Animal Foundation
- Title: “Optimizing protection of elephants and other zoo animals from encephalomyocarditis virus through vaccination and reverse genetics”
- Dates: 08/01/2020 – 07/31/2022
- Role: PI
- Overview: The objectives of this proposal are to (i) determine the evolutionary relationships between EMCVs from zoo animals and rodents, (ii) create an infectious clone of EMCV by reverse genetics, (iii) perform site-directed mutagenesis on the infectious clone to create antigenic mutants, and (iv) test sera from vaccinated elephants and other mammals to determine if they neutralize the virus mutants and various wild-type viruses we have collected from outbreaks.

Current Service and Outreach

Institutional Biosafety Committee (IBC), Member, University-level, 06/2021 – present
Research Committee, Member, College-level, 06/2020 – present
Fiscal Management Task Force Committee, Member, College-level, 08/2021 – present
NIH-sponsored SF2UF Bridge to the Baccalaureate Program, Undergraduate Research Mentor, 08/2020 – present

João H. Jabur Bittar, DVM, M.S., Ph.D.

Assistant Professor of Beef Cattle Extension

Department of Large Animal Clinical Sciences, College of Veterinary Medicine, UF
2015 SW 16th Ave., Building # 165, Room 114 - jbittar@ufl.edu

Research Gate: Joao Henrique Jabur Bittar (researchgate.net)
My citations: Joao H. Jabur Bittar - Google Scholar

Education: DVM, Federal University of Goiás, Brazil (1999-2004);
M.S., Veterinary Sciences; University of Florida, Gainesville, FL (2012-2013);
Residency in Food Animal Reproduction and Medicine; University of Florida, Gainesville, FL (2011-2014)
Ph.D., Comparative Biomedical Sciences, University of Georgia, Athens, GA (2014-2019).

Positions: Assistant Professor, College of Veterinary Medicine, University of Florida (2019-Present); Assistant Professor, Ross University School of Veterinary Medicine, St. Kitts, West Indies (2018-2019); Research Assistant, University of Georgia, Athens, GA (2014-2018).

Professional Activities: Member of: Society for Theriogenology, American Association of Bovine Practitioners, Society of Animal Science, American Association of Extension Veterinarians, Florida Cattlemen's Association, National Cattlemen's Beef Association, ADS Association. Reviewer for Journals: Translational Animal Science; Veterinary Sciences, Insights in Veterinary Science, Journal of Repro. in Domestic Animals, Tropical Animal Health and Production, OJS-EDIS/UF-IFAS.

Research Grants (Awards for an approximate total of U$100,000):
U$85,000, **UF/OR-DRPD-ROSF2021** – Research grant: Applying artificial intelligence to reduce antimicrobial use in livestock (PI: Ricardo Chebel and CoPI: João Bittar); 10/1/2021 - 10/1/2022.
U$8,940, **2020-21 CVM Faculty Spring Grant Competition/UF** – Research grant: Characterization of the Reproductive Seasonality of FL Native Sheep (PI: C. Cabrera and CoPI: J. Bittar); 7/31/2021 - 7/31/2022.
U$4,000, **Fall College of Veterinary Medicine (UF) Resident Research Award Competition (2012-2013 & 2011-2012)**– Research grant: Effect of induction of ovulation, early in lactation, on uterine health and fertility in lactating dairy cows (PI: Klibs Galvão and PI Resident Vet.: João Bittar); 01/1/2011 - 8/30/2013.

Research and Extension Presentations (2019-2021, selected from a total of 23)**:**

1. **Bittar, J.H.J.** 2021. How Vaccination Programs Keep Beef Cattle Healthy. UF Health PODCASTS - Animal Airwaves Live. Radio interview at WUFT-FM (47 minutes) with host Mr. Dana Hill. *https://podcasts.ufhealth.org/how-vaccination-programs-keep-beef-cattle-healthy/*
2. **Bittar, J.H.J.** 2021. CFLAG/UF Spring Ranchers Forum. Virtual. March 21 2021. Talk (30 minutes). *"Understanding Common Reproductive Vaccines".*
3. **Bittar, J.H.J.** 2021. ***Florida Cattlemen's Association Quarterly meeting***. Virtual. March 4 2021. Talk (20 minutes). *"Ongoing Investigation Poisonous Plants Suspected Cause of Deaths the Panhandle".*
4. **Bittar, J.H.J.** 2021. ***Florida Cattlemen's Association Quarterly meeting***. Lake Placid & Sebring, FL. December 3 2020. Talk (40 minutes). *"Understanding Common Reproductive Vaccines".*
5. **Bittar, J.H.J.** SFBFP/UF – 2020 Alvin C. Warnick Reproductive Management School. Virtual. November 2020. Talk (45 minutes). *"Understanding Common Reproductive Vaccines".*
5. **Bittar, J.H.J.**, SFBFP/UF – Herd Health Seminar. Virtual. August 11 2020. Talk (30 minutes). *"Bovine Anaplasmosis".*

Publication of Papers in Peer-reviewed Scientific Journals (2016-2021, selected from a total of 18):
1. R.A. Palomares, **Bittar, J.H.J**., A.R. Woolums, A. Hoyos-Jaramillo, D. Hurley, J.T. Saliki, M.S. Ferrer, A.C. Bullington, A. Rodriguez, T. Murray, M. Thoresen, K. Jones, A. Stoskute. 2021. Comparison of the immune response following subcutaneous versus intranasal modified-live virus booster vaccination against bovine respiratory disease in pre-weaning beef calves that had received primary vaccination by the intranasal route. Vet. Immunol. Immunopat. 237 (2021) 110254.

2. Ferrer, M.S.*, R. Palomares, D. Hurley, A-C. Bullington, A. Hoyos-Jaramillo, **J.H. Bittar**. 2020. Antisperm antibodies and sperm function in bulls undergoing scrotal insulation. Reprod., 160: 783-792.
3. **Bittar, J.H.J**, R.A. Palomares, D. Hurley, A. Hoyos-Jaramillo, A. Rodriguez, A. Stoskute, B. Hamrick, N. Norton, M. Adkins, J. Saliki, S. Sanchez, K. Lauber. 2020. Immune response and onset of protection from BVDV-2 infection induced by MLV virus vaccination concurrent with injectable trace minerals administration in newly received beef calves. Vet. Immunol. Immunopat. 225, 110055.
4. Lourenco, J.M., F.J. Maia, **J.H.J. Bittar**, J.R. Segers, J.J. Tucker, B.T. Campbell, R.L. Stewart. 2020. Utilization of exogenous enzymes in beef cattle creep feeds. Journal of Applied Animal Research. 48:1. 70-77. DOI: 10.1080/09712119.2020.1732985
5. Fishman-Holland, H., A. Stoskute, M.S. Ferrer, V. Veal, **J.H.J. Bittar**, E. Rollin, J. Lourenço, R.A. Palomares. 2019. Comparison of follicular development, timing of ovulation and serum progesterone, estradiol and luteinizing hormone concentrations in dairy heifers treated with 4- or 5-day CoSynch + CIDR protocols. Veterinary Medicine and Science, 5, 379–389.
6. **Bittar, J.H.J.**, A. Hoyos-Jaramillo, D.J. Hurley, A.R. Woolums, L.J. Havenga, J.M. Lourenço, G. Barnett, V. Gomes, J.T. Saliki, D.D. Harmon, R.A. Palomares. 2018. Effect of injectable trace minerals administered concurrently with a modified live virus vaccine on long-term protection against bovine viral diarrhea virus acute infection in dairy calves. Research in Veterinary Science. 119:250-258.
7. Ferrer, M.S., R.A. Palomares, A-C. Bullington, **J.H.J. Bittar**. 2018. Effect of liposome-containing diluent and centrifugation on motion parameters and membrane integrity of electroejaculated cooled bovine spermatozoa. Clinical Theriogenology. 10(1): 25-31.
8. **Bittar, J.H.J.**, D.J. Hurley, A.R. Woolums, N.A. Norton, C.E. Barber, F. Moliere, L.J. Havenga, R.A. Palomares. 2018. Effects of injectable trace minerals on the immune response to Mannheimia haemolytica and Pasteurella multocida following vaccination of dairy calves with a commercial attenuated-live bacterin vaccine. The Prof. Anim. Scie. 34: 59-66.
9. Palomares, R.A., D.J. Hurley, **J.H.J. Bittar**, J.T. Saliki, A.R. Woolums, F. Moliere, L.J. Havenga, N.A. Norton, S.J. Sigmund, C.E. Barber, M.L. Berger, M.J. Clark, M.A. Fratto. 2016. Effects of injectable trace minerals on humoral and cell-mediated immune responses to Bovine viral diarrhea virus, Bovine herpesvirus 1 and Bovine respiratory syncytial virus following administration of a modified-live virus vaccine in dairy calves. Vet. Immunol. Immunopat. 178: 88-98.

Publication of Extension and Popular Press Papers (2012-2021, selected from a total of 23):

1. **Bittar, J.H.J**., M. Binelli, A.M. Gonella-Diaza. 2021. Analysis of the USDA's 2017 cow-calf management practices results. Part 3: Natural service and bull management. Submitted to JOS-EDIS/UF on June 2021
2. Gonella-Diaza, A.M., **J.H.J. Bittar**, M. Binelli. 2021. Analysis of the NAHMS Beef 2017 cow-calf management practices results. Part 2: Breeding Practices/Reproductive Technologies. Submitted to JOS-EDIS/UF on February 2021
3. Gonella-Diaza, A.M., O.A. Ojeda-Rojas, **J.H.J. Bittar**, M. Binelli. 2021. Analysis of the USDA's 2017 cow-calf management practices results. Part 1: Calf crop and Calving distribution. Submitted to JOS-EDIS/UF on February 2021
4. Gonella-Diaza, A., M. Binelli, **J.H.J. Bittar** and A. Ojeda (2021). "Reproductive technologies are here for you: Don't let the opportunity go to waste!". The Florida Cattleman and Livestock Journal **85** (4): 73
5. **Bittar, J.H.J**., R.A. Palomares. 2021. A research-based summary on trace minerals for cattle. Accepted in JOS-EDIS/UF, 2021.
6. Bosques, J., F. Rivera, and **J. Bittar**. 2020. Produciendo con Ciencia –"UF IFAS Café Latino YouTube Channel". Produced and Recorded about 10 videos in English and Spanish in topics related to Beef Cattle Production Medicine for Ranchers and Ranchs' Workers of the state of Florida.
https://www.youtube.com/channel/UCJq9f5jclfDD_rMlXMkjL2Q
7. Palomares, R.A., **J.H.J. Bittar**, J. Graham. 2018. A Review of the Current Methods for Pregnancy Diagnosis in Cattle. Georgia DairyFax Newsletters, January/February/March 2018. Animal and Dairy Science Department, University of Georgia.
8. **Bittar, J.H.J**., A.N.L. da Costa. 2013. Body Condition Scoring (BCS) in Dairy Cow. A tutorial video published on YouTube to help master this important task. YouTube video published at Joao Bittar's channel. https://www.youtube.com/watch?v=YHqe4HUr7nQ

BIOGRAPHICAL SKETCH

NAME: **Juan Manuel Campos Krauer**

POSITION TITLE : **Assistant Professor**

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
Universidad Nacional de Asunción, School of Veterinary Science, San Lorenzo, Paraguay.	DVM	12/1998	Veterinary Medicine
Kansas State University., USA.	PhD	05/2009	Veterinary Preventive Medicine

A. Personal Statement

Juan M. Campos Krauer is currently an Assistant Professor at the Department of Large Animal Clinical Sciences, College of Veterinary Medicine and the Department of Wildlife Ecology and Conservation, University of Florida. USA. Juan researches infectious and vector-borne diseases in deer. He also works on peccaries and tapir ecology, health, and conservation. In addition, he has worked with rodent ecology and health, studying how anthropogenic land transformation affects rodent communities and the occurrence of diseases such as Hantavirus. His most recent publication is: A Mortality-Based Description of EHDV and BTV Prevalence in Farmed White-Tailed Deer (*Odocoileus virginianus*) in Florida, USA. Viruses.

B. Positions, Scientific Appointments, and Honors

2017 - Present: Assistant Professor. Department of Large Animal Clinical Sciences & Department of Wildlife Ecology and Conservation. University of Florida.
2015 - Present: Member (Level II), National Science and Technology Council (CONACYT), Paraguay.
2009 - Present: Adjunct professor. Division of Biology at Kansas State University, Manhattan, KS. USA.

C. Contributions to Science. Selected publications.

1. Cottingham S.L., White Z.S., Wisely S.M., **Campos-Krauer J.M.** 2021. A Mortality-Based Description of EHDV and BTV Prevalence in Farmed White-Tailed Deer (*Odocoileus virginianus*) in Florida, USA. *Viruses*, 13, 1443: 1-12. https://doi.org/10.3390/v13081443

2. Palacios D, **Campos J.M**., Fernández R, Vetter R, Quintana A, Cuevas D, Pedrozo R. 2020. Determination of hematological values in collared peccary (*Peccary tajacu*) in captivity from the Chacoan Center for Conservation and Research. Compend. Cienc. Vet, 10 (02): 31 -41. https://doi.org/10.18004/compend.cienc.vet.2020.10.02.31

3. **Campos Krauer J.M.,** Wisely S.M. 2020. Diarrhea in Farmed White-tailed Deer Fawns. WEC418. Gainesville: University of Florida Institute of Food and Agricultural Sciences. https://edis.ifas.ufl.edu/uw463

4. **Campos Krauer J.M.,** Wisely S.M., Barber H.M. 2020. Lumpy Jaw in White-tailed Deer. WEC427. Gainesville: University of Florida Institute of Food and Agricultural Sciences. DOI: doi.org/10.32473/edis-uw472-2020

5. Wisely S.M., Dow, C., Cottingham S.L., Barber H.M., **Campos Krauer J.M.** 2019. Facts about Wildlife Diseases: Hemorrhagic Fever in White-Tailed Deer. WEC366. Gainesville: University of Florida Institute of Food and Agricultural Sciences. http://edis.ifas.ufl.edu/uw411

6. Ahasan M.S., Subramaniam K., **Campos Krauer J.M.,** Sayler K.A., Loeb J.C., Goodfriend O.F., Barber H.M., Stephenson C.J., Popov V.L., Charrel R.N., Wisely S.M., Waltzek T.B., Lednicky J.A. 2019. Three New Orbivirus Species Isolated from Farmed White-Tailed Deer (*Odocoileus virginianus)* in the United States. Accepted: 17 December 2019. Viruses 2020, 12(1), 13; https://doi.org/10.3390/v12010013

7. Ahasan M.S., Subramaniam K., Sayler K.A., Loeb J.C., Popov V.L., Lednicky J.A., Wisely S.M., **Campos Krauer J.M.**, Waltzek T.B. 2019. Molecular characterization of a novel reassortment Mammalian orthoreovirus type 2 isolated from a Florida white-tailed deer fawn. Virus research 270:197642. https://doi.org/10.1016/j.virusres.2019.197642

8. Mcgregor B.L., Sloyer K.E., Sayler K.A., Goodfriend O., **Campos Krauer J.M**., Acevedo C., Zhang X., Mathias D., Wisely S.M., Burkett-Cadena N. D. 2019. Field data implicating *Culicoides stellifer* and *Culicoides venustus* (Diptera: Ceratopogonidae) as vectors of epizootic hemorrhagic disease virus. Parasites & Vectors 12:258. https://doi.org/10.1186/s13071-019-3514-8

9. Ahasan M.S., **Campos Krauer J.M**., Subramaniam K., Lednicky J.A., Loeb J.C., Sayler K.A., Wisely S M., Waltzek T.B. 2019. Genome Sequences of a Novel Strain of Big Cypress Orbivirus Isolated from a Dead Florida White-Tailed Deer (*Odocoileus virginianus*). Microbiology Resource Announcements 8:1717. https://doi.org/10.1128/MRA.01717-18

10. Ahasan M.S., **Campos Krauer J.M**., Subramaniam K., Ledrucky J.A., Loeb J.C., Sayler K.A., Wisely S.M., Waltzek T.B. 2019. Complete Genome Sequence of Mobuck Virus Isolated from a Florida White-Tailed Deer (*Odocoileus virginianus*). Microbiology Resource Announcements 8:1324. https://doi.org/10.1128/MRA.01324-18

11. Wisely, S.M., Dow, C., Cottingham, S.L., Barber, H.M., Campos Krauer, J.M. 2019. Facts about Wildlife Diseases: Hemorrhagic Fever in White-Tailed Deer. WEC366. Gainesville: University of Florida Institute of Food and Agricultural Sciences. http://edis.ifas.ufl.edu/uw411

D. Research Support

Ongoing Research Support:

1. Cervidae Health Research Initiative (CHeRI). Florida State Legislature. Academic Appropriation. University of Florida. $160,000, 2020-2021
   Role: P.I.

2. Sheep and Goat Production Assessment and Production Chain Development. Emerging Enterprise. Development Integration Teams (SEEDIT), IFAS. $73,454, 2020-2021
   Role: Co-PI

BIOGRAPHICAL SKETCH

NAME: **Thomas Denagamage**

POSITION TITLE: **Clinical Assistant Professor**

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
University of Peradeniya, Sri Lanka.	BVSc	05/1992	Veterinary Medicine
Iowa State University, USA.	MSc	05/2008	Veterinary Preventive Medicine
The Pennsylvania State University, USA.	PhD	05/2016	Pathobiology

A. Personal Statement

I am a veterinary epidemiologist with strong background in epidemiologic research methods, data analysis with specific training and expertise in systematic review and meta-analysis. I have successfully collaborated with colleagues at nationally (Iowa State University and Pennsylvania State University) and internationally (Canada, UAE, Kuwait, Qatar). I have authored or co-authored ~15 scientific publications in peer-reviewed journals.

B. Positions, Scientific Appointments, and Honors

2019 - to date: Clinical Assistant Professor
Department of Large Animal Clinical Sciences
University of Florida - College of Veterinary Medicine.

C. Contributions to Science

1. Arukha A, **Denagamage T**, Butcher G, Kariyawasam S. Complete genome sequence of *Campylobacter hepaticus* strain UF2019SK1, isolated from a commercial layer flock in the United States. *Microbiol Resour Announc. 2021 Mar 25;10(12): e01446-20*

2. Al-Rifai RH, Chaabna K, **Denagamage T**, Alali WQ: Prevalence of non-typhoidal *Salmonella enterica* in food products in the Middle East and North Africa: a systematic review and meta-analysis. *Food Control 2020, 109: 1-21.* https://doi.org/10.1016/j.foodcont.2019.106908

3. **Denagamage TN**, Wallner-Pendleton E, Jayarao BM, Xiaoli L, Dudley EG, Wolfgang D, Kariyawasam S: Detection of CTX-M-1 extended-spectrum beta-lactamase among ceftiofur-resistant *Salmonella enterica* clinical isolates of poultry. *J Vet Diagn Invest 2019, 31(5):681-687*. https://doi.org/10.1177/1040638719864384

4. Al-Rifai RH, Chaabna K, **Denagamage T**, Alali WQ: Prevalence of enteric non-typhoidal *Salmonella* in humans in the Middle East and North Africa: a systematic review and meta-analysis. *Zoonoses Public Health 2019*. https://doi.org/10.1111/zph.12631

5. Springer HR, **Denagamage TN**, Fenton GD, Haley BJ, Van Kessel JAS, Hovingh EP: antimicrobial resistance in fecal *Escherichia coli* and *Salmonella enterica* from dairy calves: A systematic review. *Foodborne Pathog Dis 2019, 16(1):23-34.* https://doi.org/10.1089/fpd.2018.2529

6. **Denagamage TN**, Jayarao BM, Wallner-Pendleton E, Patterson PH, Kariyawasam S: A retrospective study of *Salmonella* Enteritidis isolated from commercial layer flocks. *Avian Dis 2017, 61(3):330-334*. https://doi.org/10.1637/11590-011817-RegR

7. **Denagamage TN**, Patterson P, Wallner-Pendleton E, Trampel D, Shariat N, Dudley EG, Jayarao BM, Kariyawasam S: Longitudinal monitoring of successive commercial layer flocks for *Salmonella enterica* serovar Enteritidis. *Foodborne Pathog Dis 2016, 13(11):618-625*. https://doi.org/10.1089/fpd.2016.2146

8. **Denagamage T**, Jayarao B, Patterson P, Wallner-Pendleton E, Kariyawasam S: Risk factors associated with *Salmonella* in laying hen farms: systematic review of observational studies. *Avian Dis 2015, 59(2):291-302*. https://doi.org/10.1637/10997-120214-Reg

9. O'Connor AM, Wang B, **Denagamage T**, McKean J: Process mapping the prevalence of *Salmonella* contamination on pork carcass from slaughter to chilling: a systematic review approach. *Foodborne Pathog Dis 2012, 9(5):386-395*. https://doi.org/10.1089/fpd.2011.1040

10. Irwin CK, Yoon KJ, Wang C, Hoff SJ, Zimmerman JJ, **Denagamage T**, O'Connor AM: Using the systematic review methodology to evaluate factors that influence the persistence of influenza virus in environmental matrices. *Appl Environ Microbiol 2011, 77(3):1049-1060*. https://doi.org/10.1128/AEM.02733-09

11. **Denagamage T**, O'Connor A, Sargeant J, McKean J: The association between sub-therapeutic antibiotics and *Salmonella* Typhimurium in market-weight swine: a systematic review and summation of evidence from 1950 to 2007. *Zoonoses Public Health 2010, 57(7-8):e14-22*. https://doi.org/10.1111/j.1863-2378.2010.01331.x

12. O'Connor AM, **Denagamage T**, Sargeant JM, Rajic A, McKean J: Feeding management practices and feed characteristics associated with *Salmonella* prevalence in live and slaughtered market-weight finisher swine: a systematic review and summation of evidence from 1950 to 2005. *Prev Vet Med 2008, 87(3-4):213-228*. https://doi.org/10.1016/j.prevetmed.2008.06.017

13. O'Connor AM, Reed MC, **Denagamage TN**, Yoon KJ, Sorden SD, Cooper VL: Prevalence of calves persistently infected with bovine viral diarrhea virus in beef cow-calf herds enrolled in a voluntary screening project. *J Am Vet Med Assoc 2007, 230(11):1691-1696*. https://doi.org/10.2460/javma.230.11.1691

14. **Denagamage TN**, O'Connor AM, Sargeant JM, Rajic A, McKean JD: Efficacy of vaccination to reduce *Salmonella* prevalence in live and slaughtered swine: a systematic review of literature from 1979 to 2007. *Foodborne Pathog Dis 2007, 4(4):539-549*. https://doi.org/10.1089/fpd.2007.0013

D. Research Support

Ongoing Research Support: (Start-up fund 2019 – 2022)

Transferability of ESBL-encoding IncN and IncI plasmids among field strains of different *Salmonella* serovars and *Escherichia coli.*

BIOGRAPHICAL SKETCH

NAME: Galvão, Klibs N.

eRA COMMONS USER NAME (credential, e.g., agency login): galvaok

POSITION TITLE: Professor

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Fed. University of Goiás, Brazil	DVM	2002	Veterinary Medicine
University of California, Davis	MPVM	2005	Epidemiology
University of California, Davis	Residency	2006	Dairy Prod. Med.
Cornell University, Ithaca	PhD	2009	Comp. Biomed. Sci.

A. Personal Statement

I am a reproductive health epidemiologist with 20 years of experience in education, research, extension, and consulting in animal health in the USA, Latin America and the Caribbean. My research area is focused on: 1 - Uterine microbiology and immunology in health and disease; 2 – Epidemiological investigation of the risk factors for uterine disease; 3 – Development and evaluation of effective therapies for prevention and treatment of uterine diseases; 4 – The use of herd simulation models and budget impact analysis to understand how uterine disease and impaired fertility affect the profitability of dairy herds. My long-term research goals are to improve the health of dairy cattle and to improve the sustainability of the dairy enterprise. My research is mostly funded by the USDA, and during my career at UF I received $8,214,605 in extramural funding and $328,923 in intramural funding for a grand total of $8,543,528. My work has led to the publication of 103 peer-reviewed scientific articles, and the work has been well cited; 6,379 citations (by 09/29/21); h index of 41.

B. Contribution to Science

I have generated 103 peer review publications, and an almost complete list of publications can be found at: https://www.ncbi.nlm.nih.gov/pubmed/?term=galvao+k%2C+cows

Selected publications from 2018-2021:

1. Pérez-Báez J, Risco CA, Chebel RC, Gomes GC, Greco LF, Tao S, Toledo IM, do Amaral BC, Zenobi MG, Martinez N, Staples CR, Dahl GE, Hernández JA, Prim JG, Santos JEP, Galvão KN. 2021. Investigating the Use of Dry Matter Intake and Energy Balance Prepartum as Predictors of Digestive Disorders Postpartum. Front. Vet. Sci. 16 doi:10.3389/fvets.2021.645252.
2. de Oliveira EB, Ferreira FC, Galvão KN, Youn J, Tagkopoulos I, Silva-Del-Rio N, Pereira RVV, Machado VS, Lima FS. 2021. Integration of statistical inferences and machine learning algorithms for prediction of metritis cure in dairy cows. J Dairy Sci. doi: 10.3168/jds.2021-20262.
3. Pattamanont P, Galvão KN, Marcondes MI, Clay JS, De Vries A. 2021. Associations between dry period length and time to culling and pregnancy in the subsequent lactation. J. Dairy Sci. 104(8):8885-8900.
4. Silva TV, de Oliveira EB, Pérez-Báez J, Risco CA, Chebel RC, Cunha F, Daetz R, Santos JEP, Lima FS, Jeong KC, and Galvão KN. 2021. Economic comparison between ceftiofur-treated and nontreated dairy cows with metritis. J. Dairy Sci. 104(8):8918-8930.
5. Figueiredo CC, Merenda VR, de Oliveira EB, Lima FS, Chebel RC, Galvão KN, Santos JEP, Bisinotto RS. 2021. Failure of clinical cure in dairy cows treated for metritis is associated with reduced productive and reproductive performance. J. Dairy Sci. 104(6):7056-7070.

6. Yang Y, Yang Y, Chen G, Lin M, Chen Y, He R, Galvão KN, El-Gawad El-Sayed Ahmed MA, Roberts AP, Wu Y, Zhong LL, Liang X, Qin M, Ding X, Deng W, Huang S, Li HY, Dai M, Chen DQ, Zhang L, Liao K, Xia Y, Tian GB. 2021. Molecular characterization of carbapenem-resistant and virulent plasmids in Klebsiella pneumoniae from patients with bloodstream infections in China. Emerg. Microbes Infect. 10(1):700-709.
7. Jeon SJ, Cunha F, Daetz R, Bicalho RC, Lima S, Galvão KN. 2021. Ceftiofur reduced Fusobacterium leading to uterine microbiota alteration in dairy cows with metritis. Anim. Microbiome. 28;3(1):15.
8. Pérez-Báez J, Silva TV, Risco CA, Chebel RC, Cunha F, De Vries A, Santos JEP, Lima FS, Pinedo P, Schuenemann GM, Bicalho RC, Gilbert RO, Rodrigez-Zas S, Seabury CM, Rosa G, Thatcher WW, and Galvão KN. 2021. The economic cost of metritis in dairy herds. J. Dairy Sci. doi: 10.3168/jds.2020-19125.
9. Machado VS, Celestino ML, de Oliveira EB, Lima FS, Ballou MA, Galvão KN. 2020. The association of cow-related factors assessed at metritis diagnosis with metritis cure risk, reproductive performance, milk yield, and culling for untreated and ceftiofur-treated dairy cows. J. Dairy Sci. 103. 9261-9276.
10. Galvão KN, de Oliveira EB, Cunha F, Daetz R, Jones KL, Ma Z, Jeong KC, Bicalho RC, Higgins CH, Rodrigues MX, Gonzalez Moreno C, Jeon SJ. 2020. Effect of chitosan microparticles on the uterine microbiome of dairy cows with metritis Appl. Environ. Microbiol. 86:e01066-20.
11. de Oliveira EB, Cunha F, Daetz R, Figueiredo CC, Chebel RC, Santos JE, Risco CA, Jeong KC, Machado VS, Galvão KN. 2020. Using chitosan microparticles to treat metritis in lactating dairy cows. J. Dairy Sci. 103:7377-7391.
12. Galvão KN, Bicalho RC, Jeon SJ. 2019. Symposium review: The uterine microbiome associated with the development of uterine disease in dairy cows. J. Dairy Sci. 102:11786-11797.
13. Pérez-Báez J, Risco CA, Chebel RC, Gomes GC, Greco LF, Tao S, Thompson IM, do Amaral BC, Zenobi MG, Martinez N, Staples CR, Dahl GE, Hernández JA, Santos JEP, Galvão KN. 2019 Association of dry matter intake and energy balance prepartum and postpartum with health disorders postpartum: Part I. Calving disorders and metritis. J. Dairy Sci. 102:9138-9150.
14. Galvão KN, Higgins CH, Zinicola M, Jeon SJ, Korzec H, Bicalho RC. 2019. Effect of pegbovigrastim administration on the microbiome found in the vagina of cows postpartum. J. Dairy Sci. 102:3439-3451.
15. Jeon SJ, Lima FS, Vieira-Neto A, Machado VS, Lima SF, Bicalho RC, Santos JEP, Galvão KN. 2018. Shift of uterine microbiota associated with antibiotic treatment and cure of metritis in dairy cows. Vet. Microbiol. 214:132-139.
16. Jeon SJ, Cunha F, Vieira-Neto A, Bicalho RC, Lima S, Bicalho ML, Galvão KN. 2017. Blood as a route of transmission of uterine pathogens from the gut to the uterus in cows. Microbiome. 2017 Aug 25;5(1):109.

D. Ongoing Research Support

1. The origin and progression of the uterine microbiome in cattle. USDA-NIFA-AFRI, Accession No: 1026802, $495,049, 2021-2023.
   Role: PI
2. Applying artificial intelligence to reduce antimicrobial use in livestock. University of Florida Research Opportunity Fund, $85,000, 2021-2023.
   Role: Co-PI
3. Control of bovine bacterial metritis through investigation of polymicrobial interactions and the effect of bacterial products on host cells. USDA-NIFA-AFRI, $495,053, 2021-2023.
   Role: Co-PI
4. A metabolomic approach to determining factors that modulate host immunity and uterine microbiota. USDA-NIFA-AFRI, Accession No: 1019435, $485,000, 2019-2022.
   Role: PI
5. Predicting Metritis Cure as a Path to Reduce Antimicrobial Use in Dairy Cows. USDA-NIFA-AFRI, Accession No: 1019051, $464,338, 2019-2022.
   Role: Co-PI
6. Development of nano-antimicrobials with beta-lactamase inhibitor to treat infections caused by multi-drug resistant bacteria. USDA-NIFA-AFRI, Accession No: 1019156, $459,927, 2019-2022.
   Role: Co-PI

BIOGRAPHICAL SKETCH | JORGE A. HERNANDEZ

Dr. Jorge A. Hernandez (PI) is a senior epidemiologist with 30 years of experience in education, research, capacity building, and consulting in animal health and public health in U.S., Latin America and the Caribbean, East and West Africa, China, Saudi Arabia, Switzerland, and Thailand. Since joining the UF's College of Veterinary Medicine (CVM), Dr. Hernandez had led CVM international programs and graduate education programs. Dr. Hernandez is certified as Master Mentor by the UF's Clinical & Translational Science Institute. Nationally, Dr. Hernandez's research benefits dairy, equine, small animal and marine conservation practitioners. Internationally, his expertise in diagnostics, epidemiology, disease surveillance, SPS measures and Technical Barriers to Trade Agreements supports government agencies involved in animal health, public health, food systems, threat reduction from biological weapons of mass destruction, and conservation efforts (e.g., USDA, USAID, DoD DTRA, UN FAO, Galapagos Biosecurity Agency). Currently, Dr. Hernandez leads the Disease Management Area of Inquiry for the Feed the Future Innovation Lab for Livestock Systems. He has conducted numerous training workshops in Niger, Rwanda, and Senegal—with a focus on science-based animal health/trade policies that can enhance the sanitary status of diseases of economic and public health importance in livestock populations. He is author or co-author of 140+ research reports in peer-reviewed scientific journals.

Education and Training

Year Awarded	Degree	Organization	Area
2005	Sabbatical	Swiss Federal Veterinary Office	Disease Surveillance Systems
1990	PhD	Colorado State University & CDC	Epidemiology
1985	MPVM	University of California at Davis	Preventive Veterinary Medicine
1983	DVM	University of Baja California	Veterinary Medicine

Research and Professional Experience

Years	Position	Organization/Unit
2007 to date	Professor	U of Florida, College of Veterinary Medicine
2003-2007	Associate Professor	U of Florida, College of Veterinary Medicine
1998-2003	Assistant Professor	U of Florida, College of Veterinary Medicine
2014 to date	Consultant	US DoD / DTRA / Booz Allen Hamilton
2014	Consultant-Volunteer	USAID Farmer-to-Farmer Program & Nicaragua's Ministry of Agriculture: national cattle brucellosis eradication program
2009-2010	Consultant	UN FAO: surveillance systems for A/H1N1 2009 pandemic influenza virus in Mexico, Central America, and the Caribbean
2006-2007	Consultant	UN FAO: surveillance systems for highly pathogenic avian influenza in poultry farms in the Caribbean
2006	Consultant	Saudi Arabia Kingdom's Ministry of Agriculture
2000-2004	Instructor	USDA APHIS International Services & Foreign Agricultural Services: capacity building in Peru, Senegal, and Thailand
1996-1998	Epidemiologist	Texas Animal Health Commission
1991-1996	Director	Baja California's livestock disease management program: tuberculosis and brucellosis
1991-1996	Professor	University of Baja California, Mexico

SELECTED PUBLICATIONS n = 146. Senior author is identified in **bold** text
COMPLETE LIST OF PUBLISHED WORK IN MyBibliography
https://www.ncbi.nlm.nih.gov/sites/myncbi/1BwCUFHVcKb5f/bibliography/53716650/public/?sort=date&direction=ascending

Walden HDS, Lo M, Maunsell FP, Fall-Traore K, Reuss SM, Young A, Diouf B, Seck M, Adesogan AT, **Hernandez JA**. Anemia and intestinal parasites in farmers and family members and sheep in two agro-ecological zones in Senegal. *One Health* 2021;13:100260. https://doi.org/10.1016/j.onehlt.2021.100260

Ehsanollah S, Pouya R, Risco CA, **Hernandez JA**. Observed and expected combined effects of metritis and other postpartum diseases on time to conception and rate of conception failure in first lactation cows in Iran. *Theriogenology* 2021;164:36-41. https://doi.org/10.1016/j.theriogenology.2021.01.016

Kiiza D, Biryomumaisho S, Robertson ID, Hernandez JA. Seroprevalence of and risk factors associated with exposure to *Brucella* spp. in dairy cattle in three different agro-ecological zones in Rwanda. *American Journal of Tropical Medicine & Hygiene* 2021;104:1241-1246. https://doi.org/10.4269/ajtmh.20-1426

Turner RC, Innis CJ, Stacy BA, Hernandez JA, Hill RC, Scott KC, Frasca S, Garner M, Burns RE, Arendt MD, Brisson J, Norton TM, Williams SR, Kennedy A, 2, Alexander AB, **Stacy NI**. Steatitis in cold-stunned kemp's ridley sea turtles (*Lepidochelys kempii*). *Animals* 2021;11:898. https://doi.org/10.3390/ani11030898

Garner MM, Citino SB, Suedmeyer K, Rainwater KL, Hernandez JA, Duarte GA, Stacy NI. Chronic pancreatic disease in the lesser kudu (*tregalagus imberbis*): a report of 16 cases in the United States. *J Zoo & Wildlife Medicine* 2021;52:580-591. https://doi.org/10.1638/2020-0186

Rhody N, Resley M, Patrick G, Stacy NI, Hernandez JA, Yanong RP. Blood analyte changes of wild caught adult Almaco Jack (Seriola rivoliana) in response to acclimation to recirculating aquaculture systems and hyposalinity treatment. *J Aquatic Animal Health* 2021. https://doi.10.1002/aah.10121.

Dahl MO, De Vries A, Galvao KN, Maunsell FP, Risco CA, **Hernandez JA**. Combined effect of mastitis and parity on pregnancy loss in Holstein cows. *Theriogenology* 2020;143:57-63

Hernandez JA, Yoak AJ, Walden HS, Thompson N, Zuniga D, Criollo R, Duque V, Cruz M. Dog overpopulation on Santa Cruz Island, Galapagos. *Conservation Science and Practice* 2020 | https://doi.org/10.1111/csp2.201

Brown C, Havasb K, Bowen R, Mariner J, Tsegaw Fentiee K, Kebedef E, Berhef N, Anselmeg S, Mwiineh FN, Lakewi M, Kroesnaj K, Hernandez JA. Animal health in a developing context. *Global Food Security* 2020;143:100369 https://doi.org/10.1016/j.gfs.2020.100369.

Parga ML, Crespo-Picazo JL, Monteiro D, García-Párraga D, Hernandez JA, Swimmer Y, Paz S, Stacy NI. On-board study of gas embolism in marine turtles caught in bottom trawl fisheries in the Atlantic Ocean. *Nature Scientific Reports* 2020 10:5561 https://doi.org/10.1038/s41598-020-62355-7

RESEARCH SUPPORT

Adesogan AT (PI), Hernandez JA (CoI) | Feed the Future Innovation Lab for Livestock Systems | USAID | $49 million | 2015-2020; 2020-2025.

Larkin J (PI), Hernandez JA (CoPI) | Mitigation of equine recurrent uveitis through Suppressor of Cytokine Signaling | Grayson-Jockey Club Research Foundation | $150,610 | 2021-2023.

BIOGRAPHICAL SKETCH | SUBHASHINIE KARIYAWSAM

Dr. Subhashinie Kariyawasam is a veterinary microbiologist specialized in clinical microbiology and veterinary preventive medicine. Her research centers on the theme of One Health with a special emphasis on foodborne and other zoonotic pathogens and antimicrobial resistance. She is particularly interested in preharvest interventions to improve food safety and the health of food-producing animals. Over the last 20 years, she has trained undergraduates, professional students, graduate students, researchers and scientists from the US as well as from other countries. Her research has received funding support from many agencies, including USDA, NIH, Defense Threat Reduction Agency, US Poultry and Egg Association, US Egg Industry Council, State Departments of Agriculture, and PA Fish and Boat Commission. She serves on food safety committees on several professional organizations. Dr. Kariyawasam has authored or co-authored 70 refereed publications with an H index of 26; https://scholar.google.com/citations?user=XBFQDeQAAAAJ.

EDUCATION AND PROFESSIONAL PREPARATION

Institution/Professional College	Area of Specialization	Degree or Qualification	Year
American Board of Medical Microbiology (ABMM)	Clinical Microbiology	Diplomate	2020
American College of Veterinary Preventive Medicine (ACVPM)	Veterinary Preventive Medicine	Diplomate	2016
American College of Poultry Veterinarians (ACPV)	Avian Diseases	Diplomate	2010
American College of Veterinary Microbiologists (ACVM)	Veterinary Microbiology	Diplomate	2006
University of Guelph, Canada	Veterinary Infectious Diseases	PhD	2003
University of Peradeniya, Sri Lanka	Veterinary Medicine	BVSc	1992

EMPLOYMENT

Institution	Position	Dates
College of Veterinary Medicine, University of Florida	Chair and Professor	2018-present
The Pennsylvania State University	Clinical Professor Microbiology Section Head	2016-2018
Department of Veterinary and Biomedical Sciences, The Pennsylvania State University	Clinical Associate Professor Microbiology Section Head Mammalian Virology and Serology Section Head	2013-2016
Department of Veterinary and Biomedical Sciences, The Pennsylvania State University	Clinical Assistant Professor Microbiology Section Head Mammalian Virology and Serology Section Head	2008-2013
College of Veterinary Medicine, Iowa State University	Clinician/Molecular Microbiologist	2007-2008
College of Veterinary Medicine, Iowa State University	Post-doctoral Fellow	2004-2007
Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Sri Lanka	Senior Lecturer	2003-2004
Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Sri Lanka	Clinician and Lecturer	1992-2003 (Study leave 1998-2003)

CURRENT FUNDING

Role	Agency	Grant Title	Period	Total Award
PI	USDA-NIFA	Translating a discovery into improving food safety: a novel poultry *Salmonella* vaccine and diagnostic methodology to control foodborne salmonellosis	2021-2023	$464,356
PI	USDA-Animal Health (Capacity Funds)	Identification of immunodominant mimotopes of *Campylobacter hepaticus* from a phage display peptide library	2020-2024	~$20,000/yr

PUBLICATIONS IN REFEREED JOURNALS (selected publications for last 3 years)

1. Arukha A, Freguia CF, Mishra M, Jha JK, **Kariyawasam S**, Fanger NA, Zimmermann EM, Fanger GR, Sahay B: *Lactococcus lactis* delivery of surface layer protein a protects mice from colitis by re-setting host immune repertoire. Biomedicines 2021, 29;9(9):1098.

2. Thomas A, Chothe S, Byukusenge M, Mathews T, Pierre T, **Kariyawasam S**, Luley E, Kuchipudi S, Jayarao B: Prevalence and distribution of multilocus sequence types of *Staphylococcus aureus* isolated from bulk tank milk and cows with mastitis in Pennsylvania. PLoS One 2021, 16(3):e0248528.

3. Arukha A, Denagamage TN, Butcher G, **Kariyawasam S**: Complete genome sequence of *Campylobacter hepaticus* strain UF2019SK1, isolated from a commercial layer flock in the United States. Microbiol Resour Announc 2021, 10(12).

4. Sharma P, Gupta SK, Barrett JB, Hiott LM, Woodley TA, **Kariyawasam S**, Frye JG, Jackson CR: Comparison of antimicrobial resistance and pan-genome of clinical and non-clinical *Enterococcus cecorum* from poultry using whole-genome sequencing. Foods 2020, 9(6).

5. Fedorchuk C, Kudva IT, **Kariyawasam S**: The *Escherichia coli* O157:H7 carbon starvation-inducible lipoprotein Slp contributes to initial adherence in vitro via the human polymeric immunoglobulin receptor. PLoS One 2019, 14(6):e0216791.

6. Denagamage TN, Wallner-Pendleton E, Jayarao BM, Xiaoli L, Dudley EG, Wolfgang D, **Kariyawasam S**: Detection of CTX-M-1 extended-spectrum beta-lactamase among ceftiofur-resistant *Salmonella enterica* clinical isolates of poultry. J Vet Diagn Invest 2019, 31(5):681-687.

7. Byukusenge M, Li L, Uwanyirigira M, Vepachedu VR, **Kariyawasam S**, Nzayirambaho M, Kuchipudi SV, Jayarao BM: Complete genome sequences of 20 nontyphoidal *Salmonella* isolates from Rwanda. Microbiol Resour Announc 2019, 8(12).

8. Thompson CP, Doak AN, Amirani N, Schroeder EA, Wright J, **Kariyawasam S**, Lamendella R, Shariat NW: High-resolution identification of multiple *Salmonella* serovars in a single sample by using CRISPR-SeroSeq. Appl Environ Microbiol 2018, 84(21).

9. Rauch HE, Vosik D, **Kariyawasam S**, M'Ikanatha N, Shariat NW: Prevalence of group I *Salmonella* Kentucky in domestic food animals from Pennsylvania and overlap with human clinical CRISPR sequence types. Zoonoses Public Health 2018, 65(7):831-837.

10. Esolen LM, Thakur L, Layon AJ, Fuller TA, Harrington DJ, Jha K, **Kariyawasam S**: The efficacy of self-disinfecting bedrail covers in an intensive care unit. Am J Infect Control 2018, 46(4):417-419.

11. Cardozo MV, Borges CA, Beraldo LG, Maluta RP, Pollo AS, Borzi MM, Dos Santos LF, **Kariyawasam S**, Ávila FA: Shigatoxigenic and atypical enteropathogenic *Escherichia coli* in fish for human consumption. Braz J Microbiol 2018, 49(4):936-941. (Collaborator and Co-author)

ROBERT JAMES OSSIBOFF, DVM, PhD, DACVP
Clinical Assistant Professor ◊ Aquatic, Amphibian, and Reptile Pathology Program
Department of Comparative, Diagnostic, and Population Medicine
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I am a board certified veterinary anatomic pathologist, virologist, and molecular diagnostician with a primary professional focus on increasing the breadth and depth of knowledge of diseases of wildlife with special emphasis on reptiles and amphibians. Through a combined understanding of the fundamentals of disease pathogenesis, pathogen biology, disease pathology, and molecular/cellular biology, I approach animal disease investigations from multiple angles in an attempt to completely characterize disease conditions. My ultimate goal is to broadly impact the health of both captive and free-ranging wildlife through pathogen research and discovery, the creation and distribution of novel reagents, and the dissemination of knowledge.

I. EDUCATION

Doctor of Veterinary Medicine – 2010
College of Veterinary Medicine, Cornell University, Ithaca, NY
PhD, Comparative Biomedical Sciences, Concentration Infectious Diseases – 2009
Cornell University, Ithaca, NY
BS, Biology – 2003
Loyola University Chicago, Chicago, IL

II. PROFESSIONAL CERTIFICATION

Diplomate, American College of Veterinary Pathologists – 2013

III. PROFESSIONAL EXPERIENCE

Clinical Assistant Professor, Aquatic, Amphibian, and Reptile Pathology Program – September 2017 – *current*
Co-Director, ZooMed Diagnostic Laboratory – December 2018 – *current*
Co-Coordinator, Anatomic Pathology Residency Program – January 2019 - *current*
Department of Comparative Diagnostic and Population Medicine, College of Veterinary Medicine
Affiliate Faculty Member, School of Natural Resources and Environment
University of Florida, Gainesville, FL

Clinical Assistant Professor – July 2016 – August 2017
Zoological Pathology Program, Veterinary Diagnostic Lab, University of Illinois at Urbana-Champaign, Brookfield, IL

IV. POSTDOCTORAL TRAINING

Postdoctoral Research Associate – 2014-2016
Animal Health Diagnostic Center, College of Veterinary Medicine, Cornell University, Ithaca, NY
Molecular Pathology Fellowship – 2013-2014
Wildlife Conservation Society, Bronx, NY
Anatomic Pathology Residency – 2012-2013
Wildlife Conservation Society, Bronx, NY
Anatomic Pathology Residency – 2010-2012
College of Veterinary Medicine, Cornell University, Ithaca, NY

V. SELECT RECENT PEER-REVIEWED PUBLICATIONS

1. Towe, A.E., M.J. Gray, E.D. Carter, **R.J. Ossiboff**, K. Ash, M. Bohanon, B.A. Bajo, D.L. Miller. 2021. *Batrachochytrium salamandrivorans* can devour more than salamanders. *J Wildl Dis.* Oct 1;57(4):942-948. doi: 10.7589/jwd-d-20-00214
2. Flanagan, J.P., P.M. Gibbons, D. Heard, T.M. Norton, **R.J. Ossiboff**, R.S. Funk, D. Mader, T.H. Boyer. 2021. Edema in Giant Tortoises. *J Herp Med Surg*. 31(3):220-238. doi: 10.5818/06-2020
3. Desiderio, T., N.I. Stacy, **R.J. Ossiboff**, M. Iredale, L. Archer, A. Alexander, D. Heard, S. Crevasse, W. Craft, D. Fredholm, K. Donnelly, J. Rosenberg, A. Childress, K. Russell, J.F.X. Wellehan. 2021. Identification of a novel mortality-associated Helicobacter species in gopher tortoises (*Gopherus polyphemus*), qPCR test development and validation, and an epidemiological survey. *Vet Micro*. Aug;259:109136. doi: 10.1016/j.vetmic.2021.109136
4. Woodburn, D., M. Kinsel, C. Poll, J. Langan, K. Haman, K. Gamble, C. Maddox, A. Jeon, J.F.X. Wellehan, **R.J. Ossiboff**, M.C. Allender, and K. Terio. 2021. Shell lesions associated with *Emydomyces testavorans* infection in freshwater aquatic turtles. *Vet Pathol.* 58(3):578-586. doi.org: 10.1177/0300985820985217

5. Weisbrod, T.C., A.B. Jeon, A.L. Childress, D.B. Pouder, J. Castellanos-Gell, N.I. Stacy, H.D.S. Walden, M.M. Garner, R.P.E. Yanong, **R.J. Ossiboff**. 2021. Gastrointestinal entamoebiasis in captive anurans in North America. *Dis Aquat Org.* 143:109-118. doi: 10.3354/dao03560
6. Flanders, A.J., **R.J. Ossiboff**, J.F.X. Wellehan Jr., A.B. Alexander, D.V.E. Fredholm, T.M. Desiderio, N.I. Stacy. 2020. Presumptive heterophil extracellular traps recognized cytologically in nine reptile patients with inflammatory conditions. *Vet Quarterly*. 41L1, 89-96. doi: 10.1080/01652176.2021.1873453
7. Tillis, S.B., M.E. Iredale, A.L. Childress, E.A. Graham, J.F.X. Wellehan, R. Isaza, **R.J. Ossiboff**. 2020. Oral, cloacal, and hemipenal actinomycosis in captive ball pythons (*Python regius*). *Front Vet Sci.* 7:594600. doi: 10.3389/fvets.2020.594600
8. Gilbert, M., N. Sulikhan, O. Uphyrkina, M. Goncharuk, L. Kerley, E.H. Castro, R. Reeve, T.A. Seimon, D. McAloose, I.V. Seryodkin, S.V. Naidenko, C.A. Davis, G.S. Wilkie, S.B. Vattipally, W. Adamson, C. Hinds, E.C. Thomson, B. Willett, M.J. Hosie, N. Logan, M. McDonald, **R.J. Ossiboff**, E. Shevtsova, S. Belyakin, A.A. Yurlova, S. Osofsky, D. Miguelle, L. Matthews, and S. Cleaveland. 2020. Distemper, extinction and vaccination of the Amur tiger. 2020. *PNAS.* Nov 2020, 202000153. doi: 10.1073/pnas.2000153117
9. Walden, H.D.S., M.E. Iredale, A. Childress, J.F.X. Wellehan, **R.J. Ossiboff**. 2020. Invasive pentastomes, *Raillietiella orientalis* (Sambon, 1922), in a free-ranging banded water snake (*Nerodia fasciata*) in north central Florida, USA. *Front Vet Sci.* 7:467. doi: 10.3389/fvets.2020.00467
10. Hoon-Hanks, L.L., **R.J. Ossiboff**, P. Bartolini, S.B. Fogelson, S.M. Perry, A.C. Stohr, S.T. Cross, J.F.X. Wellehan, E.R. Jacobson, E.J. Dubovi, and M.D. Stenglein. 2019. An epidemiologic investigation of serpentovirus (nidovirus) infection in captive snake populations. *Front Vet Sci.* 6:338. doi: 10.3389/fvets.2019.00338

VI. BOOK CHAPTERS/E-BOOKS

1. **Ossiboff, R.J.** *Molecular Diagnostic Techniques.* Schalm's Hematology. 7th edition. D.J. Weiss, K.J. Wardrop, K.E. Harr, D.M. Seelig, and M.B. Brooks, editors. *Expected publication 2021*
2. Health and Disease in Captive and Free Ranging Wildlife. 2021. **Ossiboff, R.J.,** N.I. Stacy, F.C. Origgi, eds. Lausanne: Frontiers Media SA. doi: 10.3389/978-2-88966-498-6
3. Stacy, B.A., A. Pessier, and **R.J. Ossiboff**. *Host Response to Infectious Agents and Identification of Pathogens in Tissue Section.* Book Chapter in Infectious Diseases and Pathology of Reptiles. 2nd edition. 2020. E. Jacobson and M. Garner, eds.
4. Origgi, F.C., **R.J. Ossiboff**, and J.A. Paré. *Isolation of Pathogens.* Book Chapter in Infectious Diseases and Pathology of Reptiles. 2nd edition. E. 2020. Jacobson and M. Garner, eds.
5. Graham, E., R. Burns, and **R.J. Ossiboff**. *Depositional Diseases.* Book Chapter in Infectious Diseases and Pathology of Reptiles. 2nd edition. 2020. E. Jacobson and M. Garner, eds.
6. **Ossiboff, R.J.** *Serpentis*. Book Chapter in Pathology of Wildlife and Zoo Animals. 1st edition. 2018. K. Terio, J. St. Leger, and D. McAloose, eds.

VII. SELECT GRANTS

1. Health assessment of snake species in coastal wetland ecosystems in the southeastern United States through pathogen surveillance and hematologic analysis. 2021. PI: C.A. Cleveland. Co-Investigators: N.M. Nemeth, **R.J. Ossiboff**, T. Farrell, E. Haynes, C. Hazelrig. Morris Animal Foundation. ($75,000). *Submitted.*
2. Detection of invasive parasites in non-native anurans in Florida. 2021. PI: H.D.S. Walden. Co-Investigators: **R.J. Ossiboff**, T. Farrell, S.A. Johnson. Unique Opportunity Grant. University of Florida. ($36,750). **Funded.**
3. Establishing tissue culture cell lines from reptiles, amphibians, and other captive and free-ranging wildlife. 2018. PI: **R.J. Ossiboff**; Mentor: J.F.X. Wellehan. Morris Animal Foundation. First Award. ($89,532) **Funded**.

VIII. DIDACTIC TEACHING EXPERIENCE

1. AQUAVET I (Introduction to Aquatic Veterinary Medicine) and AQUAVET II (Comparative Pathology of Aquatic Animals). Summers 2018-2019, 2021.
2. General Pathology (VEM5161). University of Florida. 10 lectures, 3 laboratories. Fall 2018-2021. *Course Coordinator beginning Fall 2020.*
3. Introduction to Veterinary Histology (VEM5115). University of Florida. 1 lecture, 2 laboratories. Fall 2020-2021
4. Animal Systems (VEM5111/5112). University of Florida. 4 lectures, 4 laboratories. Spring 2021-2022.
5. Wildlife and Disease (WIS 4934). University of Florida. 2 lectures. Fall 2017, 2019 and 2020.
6. Non-Avian Reptile Medicine and Surgery (VEM 5370). University of Florida. 3 lectures. Spring 2018-2020
7. Herpetology (ZOO 4926). University of Florida. 1 lecture. Spring 2019.

IX. ASSOCIATION/MISCELLANEOUS COMMITTEE SERVICE

1. Partners for Amphibian and Reptile Conservation Disease Task Team. 2019-*present*
2. United States Geological Survey. Wetland and Aquatic Research Center. IACUC Veterinary Consultant. 2018-*present*
3. Association of Amphibian and Reptile Veterinarians Infectious Disease Committee. 2018-*present*
4. *Batrachochytrium salamandrivorans* National Disease Research Working Group. 2017-*present*
5. *Batrachochytrium salamandrivorans* National Disease Diagnostics Working Group. 2016-*present*