

FVSP Faculty Application Checklist-DUE 1/19/2024 5PM EST

X Completed cover page with prior mentorship history

X Training/Registration requirements needed

X Abstract of proposed work

X NIH-format biosketch

Submission Instructions

Convert the application to *one .pdf document*. Name the file using your last name, followed by an underscore, and your first initial. For example: Martyniuk_C.pdf

Submit the following pages, via email attachment, to Dr. Chris Martyniuk (cmartyn@ufl.edu). The subject line should read “FVSP Faculty Application”.

The FVSP Research Program runs 5/27/2024 to 8/07/2024 with final research presentations prior to the national symposium.

2024 Linda F. Hayward Florida Veterinary Scholars Program Faculty Application

Name	Adam Stern
Email address	adamstern@ufl.edu
Proposed project title	Veterinary Forensic Entomotoxicology: Detection of Pentobarbital in
Will you provide matching student stipend funding (\$3250)?	Yes
Source of project/research funding	UF Foundation Funds

Prior student research mentees (last 5 years, if applicable):

CLASS	STUDENT	PROJECT TITLE	STATUS
2022	Joseph Fragale	Estimation of time of death of dogs by immunohistochemical detection of insulin and synaptophysin in the pancreas	Completed/Poster
2023	Seryna Mamane	Comparison of Moisture Analysis Methods Using Canned Dog Food	Completed/Poster/FVMA Presentation

If project qualifies for Morris Animal Foundation Student Scholarship Funding and you have identified a specific interested student, please provide their name and email address

LAST NAME	FIRST NAME	EMAIL ADDRESS

I agree to obtaining all necessary approvals (e.g. IACUC/IRB/EH&S/VHRRRC – see below for specifics) to conduct the project with the student PRIOR to the commencement of the summer program, as well as submitting documentation of these approvals to the FVSP board by 5/11/2024

YES/NO

I agree to assisting my student prepare for the summer program during the Spring semester, which will include preparation of a study outline, and training in relevant laboratory techniques

YES/NO

I agree to plan for commencing the experiment/data collection by the beginning of the summer program (5/22/24)

YES/NO

I agree to be available to the student throughout the summer to assist with the experiment/data collection, preparation of the manuscript and poster.

YES/NO

	Needed (Yes/No)	Approval by 5/11/24 (Yes/No)?
IACUC Approval and Training	No	No
IRB Registration and Training	No	No
Biological Agent Registration	No	No
Biopath Registration	No	No
Veterinary Hospital Research	No	No
FERPA Training	No	No
Biohazardous Waste Training	Yes	Yes
Laboratory Safety Training	Yes	Yes

Abstract of proposed student project

Title: Veterinary Forensic Entomotoxicology: Detection of Pentobarbital in Decomposed Remains

Rationale: Poisonings, whether accidental or malicious are a common occurrence in animals. In some instances, animals are not discovered until days or even weeks after death has occurred. In these instances, much of the body tissues are no longer available for analysis as insects, bones, and remnant pieces of flesh are all that will remain. When there are minimal samples left to analyze for toxins, veterinary forensic pathologists must consider the analysis of alternate matrices. Obtainability, degradation (autolysis and putrefaction), sample size, and postmortem redistribution all dictate the applicability of a particular sample for a particular test. In some instances, routine tissues may not be available (e.g., dismemberment and disposal of a victim's body, scavenging, and burning) and alternative matrices must be utilized to screen for or confirm the presence of a toxin.

Insect analysis during a forensic investigation is most commonly requested for postmortem interval estimation; however, another potential use of insects, especially maggots, is the analysis for toxins and poisons. This is referred to as forensic entomotoxicology. Forensic entomotoxicology has been described for use in human death investigations but has not been described to have been used for animal cruelty investigations. Forensic entomotoxicology is defined "as the use of insect specimens as an indirect source of toxicological evidence in the absence of direct matrices, such as blood, urine, soil or water, in determining the presence of a xenobiotic in the environment (which may be a dead body, a river or even an entire landscape)".

Hypothesis/Objectives: The use of forensic entomotoxicology is underutilized during animal cruelty investigations and the validation of a collection and processing method of insect specimens (such as maggots) will improve the objective assessment of insects for the analysis of toxins and poisons suspected to have been used to kill an animal. We hypothesize that toxic substances (for example pentobarbital) in a dead body will accumulate in the decomposing tissues and maggots that are feeding on the body. We hypothesize that pentobarbital drug concentrations will be detectable in the decomposing tissues and maggots. In AIM 1, we plan to develop an analytical method for the extraction and quantitation of pentobarbital in decomposed tissues and maggots in cats. In AIM 2, we will assess the ability of an immunochromatographic assay designed for urine to detect barbiturates in maggots used as an alternative matrix for drug analysis.

Study Design and Methods:

To achieve our goal, we will process 8 different animals/animal parts that were euthanized. Each sample will be placed on the ground surface and covered by a cage in order to prevent wildlife from interacting with the samples. Tissues/maggots are to be collected and analyzed on specific days. The tissues and maggots will be analyzed for pentobarbital using a barbiturate screening test and GC-MS. Agreement between screening and GC-MS confirmation will be assessed. Concentrations of pentobarbital over time will be analyzed.

Expected Results: We expect to determine whether or not pentobarbital is in the samples (tissue and maggots) using the screening tests. We expect to detect pentobarbital in all samples (tissue and maggots) with decreasing levels over time.

Potential Impact for Animal Health: This work will significantly improve the ability of veterinary forensic pathologists and forensic toxicologists to use an underutilized technique, forensic entomotoxicology, as it will lay the foundation for the study of other toxins and poisons of interest to cats and other animal species.

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME:

Stern,
Adam

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

POSITION TITLE: Professor of Forensic Pathology, University of Florida, College of Veterinary Medicine,
Department of Comparative, Diagnostic, and Population Medicine

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
The George Washington University, Washington, DC	BS	05/2003	Biology
University of Prince Edward Island, Charlottetown, PE	DVM	05/2007	Veterinary Medicine
Oklahoma State University, Stillwater, OK	Resident	08/2010	Anatomic Pathology

A. Personal Statement I am a board certified anatomic pathologist with 13 years of experience in education, research, diagnostics, and consulting in veterinary forensic pathology. My work in veterinary forensic pathology is known both nationally and internationally and I am highly motivated to pursue research in this diagnostic pathology and forensic science. Current research projects include 1) validation of various methods to estimate the time of death in dogs and cats 2) cause of death of stray dogs and cats and 3) use of minimally invasive autopsy procedures.

B. Positions and Honors**Positions and Employment**

2010 - 2018 Clinical Associate Professor of Veterinary Pathology, University of Illinois, Urbana, IL
2014 - Consultant, Stern Veterinary Forensic Consulting, LLC, Mahomet, IL
2018 - Associate Professor of Forensic Pathology, University of Florida, Gainesville, FL

Other Experience and Professional Memberships

2007 - Member, American Veterinary Medical Association
2011 - Member, American College of Veterinary Pathologists
2013 - Member and President, International Veterinary Forensic Sciences Association

Honors

2009 Student Scholarship Award in Veterinary Pathology, Charles Louis Davis Foundation
2009 Young Investigator Award (2nd place), Diagnostic Pathology, American College of Veterinary Pathology

C. Contributions to Science

Stern AW. 2020. Frozen sections compared with paraffin-embedded sections: a retrospective veterinary autopsy study. *Brazilian Journal of Veterinary Pathology.* 13(1): 12-16.

Hamel PES, **Stern AW**, and Grosso FV. 2020. Gastric perforation in a dog: postmortem computed tomography and forensic autopsy findings. *Forensic Imaging*. 20.

Garbin M, Romano M, **Stern AW**, and Iredale M. 2020. Pheochromocytoma in a horse undergoing exploratory laparotomy. *Journal of the American Veterinary Medical Association*.

Stern AW, Brooks J, and Muralidhar M. 2020. Role of the veterinary pathologist in forensic veterinary investigations. *Today's Veterinary Practice*. May/June: 69-75.

Stern AW, and Martin LA. 2020. Microscopic examination of dog chews: correlation of histological findings to product labeling. *Journal of Histotechnology*.

Watson MK, Mitchell MA, **Stern AW**, Labelle AL, Joslyn S, Fan TM, Cavaretta M, Kohles M, and Marshall K. 2019. Evaluating the clinical and physiological effects of long-term ultraviolet B radiation on rabbits (*Oryctolagus cuniculus*). *Journal of Exotic Pet Medicine*. 28: 43-55.