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PROPOSAL # Horse Skills Lab-17

APPROVAL DATE November 10, 2017

EXPIRATION DATE November 10, 2020

A. ADMINISTRATIVE DATA:

Principal Investigator Mary S. Aller, DVM

Mailing Address Northern Virginia Community College, Veterinary Technology Program, 21200 Campus Drive, Sterling, VA 20164

Telephone 703-450-2623 Fax 703-404-7322 Email maller@nvcc.edu

Project Title Horse Skills lab – Vet 221 Advanced Clinical Practices and Vet 290 Coordinated Internship

Initial Submission **Renewal** ☒ or Modification ☐ of Proposal Number Horse Skills Lab-14

List the names of all individuals authorized to conduct procedures involving animals under this proposal and identify key personnel (i.e., Co-investigator(s)). Signature confirms that personnel have read and understand the protocol.

Linda Schnaible, LVT; Diane Schrenzel, LVT; Dawn Witter, LVT

B. ANIMAL REQUIREMENTS:

Species Horse Age/Weight/Size Adult Sex geldings or mares

Stock or Strain various domestic

Source Privately owned horses donated to the Marion DuPont Scott Equine Medical Center for use in student instruction, Holding Location Marion DuPont Scott Equine Medical Center in Leesburg, VA

Source schooling horses owned by South Run Riding School, Holding Location South Run Riding School in Nokesville, VA

Animal Procedure Location(s) Marion DuPont Scott Equine Medical Center in Leesburg, VA and South Run Riding School in Nokesville, VA

Number of Animals:

Year 1	Year 2	Year 3	=	TOTAL
18	18	18		54

C. STUDY OBJECTIVES:

Briefly explain in non-technical terms the aim of the study and how the study may benefit human or animal health or advance scientific understanding of biological processes.

The purpose of this laboratory is to allow veterinary technician students to practice restraint, handling, husbandry, and clinical skills in horses by performing haltering, leading, restraint, physical examination, grooming, hoof cleaning, and bandaging techniques. Students also receive instruction on sanitation, injection sites, blood collection, nasogastric intubation and gastric reflux, administration of oral medications, and equine dentistry. This lab reinforces instruction the student has received in courses VET 105 Introduction to Veterinary Technology, VET 121 Clinical Practices I, Vet 212 Animal Diseases II, and VET 221 Advanced Clinical Practices. Students develop competence in handling and nursing skills of horses through this study and will deliver better veterinary services to the equine patient.

D. RATIONALE FOR ANIMAL USE:

1) Explain your rationale for animal use. 2) Justify the appropriateness of the species selected. 3) Justify the number of animals to be used. (Use additional sheets if necessary.)

The students have received instruction on topics about horse handling and care in previous coursework, as mentioned above. The students also have access to instructional videos at the Animal Care Technologies (ACT) website lms.4act.com through an account provided by the program. Course instruction and video prepare students for hands on activities and clinical practice with patients, but they are not a substitute for actually acquiring the skill with a live animal. Acquisition of horse skills requires practice with real horses.

Approximately 18 horses per year are used. The students are divided into groups of 2-5, 1 horse per group. The horses participate in one to two lab sessions per semester at each source location.

E. DESCRIPTION OF EXPERIMENTAL DESIGN AND ANIMAL PROCEDURES:

Briefly explain the experimental design and specify all animal procedures. This description should allow the ACUC to understand the experimental course of an animal from its entry into the experiment to the endpoint of the study. Specifically address the following:

(Use additional sheets if necessary.)

- **Injections or Inoculations** (substances, dose, sites, volume, route, and schedules)
- **Blood Withdrawals** (volume, frequency, withdrawal sites, and methodology)
- **Non-Survival Surgical Procedures** (Provide details of survival surgical procedures in Section G.)
- **Methods of Restraint** (e.g., restraint chairs, collars, vests, harnesses, slings, etc.)
- **Animal Identification Methods** (e.g., ear tags, tattoos, collar, cage card, etc.)
- **Other Procedures** (e.g., survival studies)
- **Resultant Effects**, if any, the animals are expected to experience (e.g., pain, distress, etc.)
- **Experimental Endpoint Criteria** (i.e., percentage body weight gain or loss, inability to eat or drink, behavioral abnormalities, clinical symptomatology. List the criteria to be used to determine when euthanasia is to be performed.

A memorandum of understanding (MOU) is established between the veterinary technology program and the source location as to the specific tasks to be practiced or demonstrated at a lab session. The source locations have been previously observed by the PI to be suitable and to follow the standards of practice in horse care.¹

All procedures on this protocol are under the immediate supervision of at least one of the Veterinary Technology faculty or staff listed on page one. In addition, authorized personnel of the source locations are in attendance to supervise. Horses are generally restrained using a halter and lead line. If tranquilization or sedation is required, a large animal clinician is available to determine and authorize the administration of the appropriate medication, and to administer the medication by either intramuscular or intravenous route. This assures the safety of both the students and the horses.

There are 2 types of lab sessions. One lab session is devoted to horse handling, husbandry, physical examination, and nursing skills. The other lab session is devoted to equine dentistry demonstrations.

For the lab session on handling, husbandry, physical examination, and nursing skills, students are divided into groups of 2-5 and assigned to horses on which they are instructed and practice the skills predetermined by the MOU. This lab session may occur at either source location.

For the lab session on equine dentistry demonstration, the students observe the scheduled routine dental treatments (dental "floating") of the resident horses at the Marion duPont Scott Equine Medical Center (EMC). The dental service at the EMC is provided by a registered Equine Dental Technician, working under the supervision of a large animal veterinarian on staff at EMC, or provided by an equine veterinarian on staff at EMC, as specified by regulations of the Virginia Board of Veterinary Medicine.

Here following is a complete list of procedures about which the students may receive instruction with live horses. The specific list for each lab session will be less, and the specific tasks are predetermined by the MOU. Note that "Demonstrate/discuss" indicates a student does not perform the task individually, but it may be demonstrated once to the group as a whole or simply discussed with a mock demonstration.

Patient Handling

- Guidelines for safely moving around a horse
- halter and lead horse
- Tie lead with quick release knot
- remove halter
- enter and exit stall safely
- demonstrate twitch application
- demonstrate alternate restraint (lip chain, neck twitch, leg lifted)

Patient assessment

- temperature

- pulse (mandibular area)
- respiration
- auscultation of thorax
- assess hydration status
- mucous membrane color and CRT
- auscultation of abdomen
- digital pulses

Patient Care/Husbandry

- hoof maintenance and care – pick up and clean feet with hoof pick
- basic grooming (brushes and uses)
- bandaging- stable wrap and standing leg wrap
- tail wrap
- discuss/demonstrate dental care

Therapeutics

- Jugular venipuncture for blood collection, may be discussed or demonstrated. If there is a need for blood collection, then the students may be allowed by the facility to collect blood using a 3-6 cc syringe with 18-20 g. needles or the Vacutainer system under veterinary supervision. The volume of blood collected is that of a standard 3 to 5 cc lavender or red top tube. Jugular venipuncture attempts are limited to 3 times, once a successful attempt has been made, the vein is not accessed again.
- Demonstrate/discuss jugular venipuncture-IV injection
- Transverse facial venous sinus- blood collection may be discussed or demonstrated. If there is a need for blood collection, then the students may be allowed by the facility to collect blood using a 1cc tuberculin syringe with a 25 g. needle under veterinary supervision. Attempts are limited to 3 times. Once an attempt has been successful, the area is not accessed again.
- SQ, IM injections maybe discussed or demonstrated. If there is a need for medication administration or vaccination, then the students may be allowed by the facility to perform the administration under veterinary supervision. 18-20 g needles with 3 cc syringes are used to administer 1-2 cc of vaccine at a site. Only one injection per site is given and the volume and route is determined by the manufacturer's recommendation, either SQ or IM.
- dose syringe (catheter tipped syringe)- paste administration may be discussed or demonstrated. If there is a need for medication administration, typically for deworming programs, then the facility may allow students to administer oral medication under veterinary supervision.
- demonstrate/discuss nasogastric intubation and gastric reflux- this is mock demonstration showing the equipment and discussion of the technique only

Sanitation

- Clean up procedures of work area
- Waste management of stall, paddocks, and fields
- Clean up of footwear

F. SURVIVAL SURGERY — If proposed, complete the following:

1. Identify and describe the surgical procedure(s) to be performed. Include the aseptic methods to be utilized.

(Use additional sheets if necessary.):

There are no surgical procedures to be performed.

2. Who will perform surgery and what are their qualifications and/or experience?

N/A

3. Where will surgery be performed (Building and Room)?

N/A

4. Describe post-operative care required, including consideration of the use of post-operative analgesics, and identify the responsible individual:

N/A

5. Has major survival surgery been performed on any animal prior to being placed on this study?

☐ Yes **X** No

If yes, please explain:

6. Will more than one major survival surgery be performed on an animal while on this study?

☐ Yes **X** No

If yes, please justify:

H. PAIN OR DISTRESS CATEGORY — The ACUC is responsible for applying U.S. Government Principle IV. Contained in Appendix 3: "Proper use of animals, including the avoidance or minimization of discomfort, distress, and pain when consistent with sound scientific practices, is imperative. Unless the contrary is established, investigators should consider that procedures that cause pain or distress in human beings may cause pain or distress in other animals." Check the appropriate category (ies) and indicate the approximate number of animals in each. Sum(s) should equal total from Section B.

IF ANIMALS ARE INDICATED IN COLUMN E, A SCIENTIFIC JUSTIFICATION IS REQUIRED TO EXPLAIN WHY THE USE OF ANESTHETICS, ANALGESICS, SEDATIVES OR TRANQUILIZERS DURING AND/OR FOLLOWING PAINFUL OR DISTRESSFUL PROCEDURES IS CONTRAINDICATED. PLEASE COMPLETE THE EXPLANATION FOR COLUMN E LISTINGS FORM AVAILABLE FROM OLAM. THIS FORM WILL ACCOMPANY THE NIH ANNUAL REPORT TO THE USDA. NOTE: THIS COLUMN E FORM, AND ANY ATTACHMENTS, e.g., THE ASP, ARE SUBJECT TO THE FREEDOM OF INFORMATION ACT.

Number of Animals Used Each Year:

	Year 1	Year 2	Year 3
<input checked="" type="checkbox"/> USDA Column C Minimal, Transient, or No Pain or Distress	18	18	18
USDA Column D Pain or Distress Relieved By Appropriate Measures			
<input type="checkbox"/> USDA Column E Unrelieved Pain or Distress			

Describe your consideration of alternatives to procedures in this protocol, and your determination that

alternatives were not available. [Note: Principal Investigators must certify in paragraph N.5 that no valid alternative was identified to any described procedures which may cause more than momentary pain or distress whether it is relieved or not.] Delineate the methods and sources used in the search below. Database references must include databases (2 or more) searched, the date of the search, period covered and keywords used. Reduction, replacement, and refinement must be addressed. *For more information see USDA Policy #12 (<http://www.aphis.usda.gov/ac/policy/policy12.pdf>)*

On October 30, 2017 Dr. Mary S. Aller performed a literature search for consideration of alternatives using the following strategies.

1. Pubmed Search terms and citations (2000-2017)

Teaching AND horse care- 172 citations, 4 relevant
Standard of care articles and practice- based education

Teaching AND horse husbandry and care- 9 citations, 0 relevant

Education and horse care- 94 citations, 2 relevant
Standard of care article and practice-based education

Equine procedures AND education- 273 citations, 18 relevant
Anatomy models and simulators, virtual models, comparison to live animal training

Equine blood collection and education and training- 2 citations, 0 relevant

Equine blood collection and training- 22 citations, 0 relevant

Equine injection AND training students- 3 citations, 3 relevant
Training models and simulators

Equine injection and training- 50 citations, 3 relevant
Training models and simulators

Veterinary education and horses- 264 citations, 21 relevant
Veterinary education in general for large animal, computer aided/virtual reality, training models, experiential studies

Veterinary education and handling horses- 11 citations, 6 relevant
Experiential studies

2. Agricola (National Agricultural Library database) Search terms and citations (2000-2017)

Horses AND physical AND examination and education- 0 citations
Horses AND physical AND examination- 1 citation, 0 relevant

Horses and handling and education - 0 citations

Horses and handling- 41 citations, 1 relevant
Study on handling technique and horse behavior

Horses AND blood AND (sampling OR collection)- 19 citations, 0 relevant

Horses AND husbandry and training- 0 citations

Horses and husbandry and education - 0 citations

Horses and injection and education - 5 citations, 0 relevant

3. Pubag - additional search engine for National Agricultural Library, allows search phrases, (2000-2017)

"training on horse handling"- 11 citations, 2 relevant
Experiential training

"training on horse blood collection" - 3 citations, 0 relevant

"training on injections in horses"- 3 citations, 2 relevant
Training models, simulators

For additional information regarding products that could serve as alternatives to live horses, the following websites and databases were also searched.

4. NORINA (2000-2017 Search term and citation

Horse*- 87 products, 9 relevant

Sources for anatomy models, simulators, educational videos

5. Rescue Critters <http://www.rescuecritters.com>
1 relevant product "Lucky" horse mannequin

6. International Network for Humane Education <http://www.interniche.org>

1 relevant book reference³ provides comprehensive information on sources for teaching aids and animal alternatives

56 listed for alternative training products, 18 equine simulators, anatomy models, virtual reality- 6 relevant

7. American Anti-Vivisection Society <http://www.aavs.org>
Gives general information and link to <http://www.animalearn.org>
A site dedicated to education items that substitute for animal use, such as videos and models

8. Veterinary Simulator Industries <http://www.vetsimulators.com>

5 Horse mannequins for GI, colic, and theriogenology- most are relevant for veterinary students, 1 relevant for veterinary technician students in basic training "Equine Neck Venipuncture/intramuscular Injection:

9. Humane Society Veterinary Medical Association <http://hsvma.org>
Emphasizes advocacy for horses

Educational CDs, simulations on CD ROM

10. Equine Vascular Access Simulator Product by SurgiReal-

<http://shop.surgireal.com/collections/vascular-access-simulator-products>

This item is directly relevant for training veterinary technician students

Most of these citations from Pubmed and Agricola/Pubag describe using the live horse for skills training in a laboratory setting using institutionally owned horses, privately owned horses at an approved farm site, or clinical training in a preceptorship with approved private ambulatory practices. Some citations describe using teaching aids and resources such as illustrative posters, commercial videos, DVD's, YouTube videos², interactive CD's or DVD's, computer aided virtual simulations, anatomy specimens, simulators (animal training models, mannequins) and Powerpoint slide shows. The citations that addressed skills training indicated that student preparedness was enhanced when the aforementioned teaching aids and resources were used before hands on training. Some equine mannequins were found in the search that could be useful in training students before working with live horses. The program has acquired an equine mannequin "Lucky" from Rescue Critters that is currently in use for initial training.

<http://www.rescuecritters.com/component/aprilmart/detail/3-search-rescue/30-lucky>

A request has been made to acquire the Equine Vascular Access Simulator by SurgiReal. <https://www.surgireal.com/our-products/equine-clinical-skills-training/>

Currently the program prepares students before training with live horses through work in several courses. Products that were recommended for preparedness training, such as videos, are already in use in our program through the ACT account. Mannequins are a welcome addition to enhancing student preparedness and the equine mannequin 'Lucky' is an asset for our program. However, ultimately, the use of live horses in obtaining the required hands on horse skills is essential for learning. Studies show that training without live animals limits the level of competency that students can achieve. Therefore, eventually, experience and training with live animals is needed for students to acquire expertise in clinical skills.

I. ANESTHESIA, ANALGESIA, TRANQUILIZATION — For animals indicated in Section H, Column D, specify the anesthetics, analgesics, sedatives or tranquilizers that are to be used. Include the name of the agent(s), the dosage, route and schedule of administration.

The following drugs/agents may be used:

Acepromazine, ketamine, lidocaine, xylazine, diazepam, butorphanol, detomidine, phenylbutazone, carbocaine
These medications will be prescribed and caused to be administered by licensed veterinarians. The dosages used will be based upon standard veterinary care. Specific dosages are recorded on the animal's medical record.

J. METHOD OF EUTHANASIA OR DISPOSITION OF ANIMALS AT END OF STUDY

Indicate the proposed method, and if a chemical agent is used, specify the dosage and route of administration. If the method(s) of euthanasia include those not recommended by the AVMA Panel Report on Euthanasia (<http://www.avma.org/resources/euthanasia.pdf>), provide justification why such methods

must be used. Indicate the method of carcass disposal if not as MPW. Important references to consider:
Euthanasia is not indicated for this protocol

K. HAZARDOUS AGENTS

Use of volatile anesthetics or formalin requires a description of scavenging methods used.

	YES	NO
Hazardous Chemicals or Drugs (List below)	X	<input type="checkbox"/>

Acepromazine, ketamine, lidocaine, xylazine, diazepam, butorphanol, detomidine, phenylbutazone, carbocaine are handled and stored in accordance with Federal and State regulations.

Additional safety considerations:

Working with horses has an inherent risk of injury. Students have received instruction regarding safe practices and equine behavior in previous courses (VET 105, VET 116, VET 212). Part of the orientation for the training activities described in this proposal involves a review of following guidelines for safety around horses.

L. SPECIAL CONCERNS OR REQUIREMENTS OF THE STUDY — List any special housing, equipment, animal care (i.e., special caging, water, feed, or waste disposal, etc.). Include justification for exemption from participation in the environmental enrichment plan for nonhuman primates or exercise for dogs.

NONE

REFERENCES :

1. Federation of Animal Science Societies: Guide for the Care and Use of Agricultural Animals in Research and Teaching. Third edition, January 2010. https://www.aaalac.org/about/Ag_Guide_3rd_ed.pdf

2. Youtube videos- a website containing a video repository. The videos are made and donated by the public on a wide variety of topics. The videos vary in quality, appropriateness, accuracy, and availability.

<http://www.youtube.com>

3. Jukes, N and Chiuia M: "From Guinea Pig to computer mouse alternative methods for a progressive, humane education" 2nd edition, InterNICHE, Leicester, England, 2003. Updated downloadable version available online at <http://www.interniche.org/en/resources/book>

M. PRINCIPAL INVESTIGATOR CERTIFICATIONS:

1. I certify that the individuals listed in Section A are authorized to conduct procedures involving animals

under this proposal have received training in the biology, handling, and care of this species; aseptic surgical methods and techniques (if necessary); the concept, availability, and use of research or testing methods that limit the use of animals or minimize distress; the proper use of anesthetics, analgesics, and tranquilizers (if necessary); procedures for reporting animal welfare concerns.

2. *FOR ALL COLUMN D AND COLUMN E PROPOSALS (see section H):* I certify that I have reviewed the pertinent scientific literature and the sources and/or databases (2 or more) as noted in paragraph H. and have found no valid alternative to any procedures described herein which may cause more than momentary pain or distress, whether it is relieved or not.
3. I will obtain approval from the ACUC before initiating any significant changes in this study.

Principal Investigator:

Signature _____ Date _____

N. CONCURRENCES: PROPOSAL NUMBER Horse Skills Lab-17

Amy Laubinger, DVM, Institutional Official & Chair

Signature _____ Date _____

Regina Wilson, DVM, Attending Veterinarian

Signature _____ Date _____

James Hilleary, Public Member

Signature _____ Date _____

Nancy Aiello, PhD, Scientist

Signature _____ Date _____

Diane Schrenzel, AAS, LVT, Non-Scientist

Signature _____ Date _____

P. FINAL APPROVAL:

Certification of review and approval by the NVCC Veterinary Technology Animal Care and Use Committee Chairperson.

Chairperson Amy Laubinger, DVM

Signature _____ Date _____



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PROPOSAL # Mouse-17

APPROVAL DATE November 10, 2017

EXPIRATION DATE November 10, 2020

PLEASE TYPE:

A. ADMINISTRATIVE DATA:

Principal Investigator Gina Wilson, DVM

Mailing Address Northern Virginia Community College, Veterinary Technology Program, 21200 Campus Drive, Sterling, VA 20164

Telephone 703-948-7596 Fax 703-404-7322 Email rewilson@nvcc.edu

Project Title Mouse Lab - Vet 217 Exotics & Lab Animals

Initial Submission ☐ Renewal ☒ or Modification ☐ of Proposal Number Mouse-14

List the names of all individuals authorized to conduct procedures involving animals under this proposal and identify key personnel (i.e., Co-investigator(s)). Signature confirms that personnel have read and understand the protocol.

Tregel Cockburn, DVM

Suzy Aller, DVM

Amy Laubinger, DVM

Kiana Adkisson-Selby, DVM

Diane Schrenzel, LVT

Linda Schnaible, LVT

Dawn Witter, LVT

B. ANIMAL REQUIREMENTS:

Species: Mouse (Mus musculus) Age/Weight/Size: Juvenile or Adult Sex: M or F

Stock or Strain: stock-outbred mice

Source(s): Pet Stores/Vendors/Animal Shelters/ Student Owned Animals (volunteered with student approval and informed consent) Holding Location(s) Veterinary Technology Building

Animal Procedure Location(s) Veterinary Technology Building

Number of Animals:

<u>9</u>	<u>9</u>	<u>9</u>		<u>27</u>
Year 1	Year 2	Year 3	=	TOTAL

C. STUDY OBJECTIVES:

Briefly explain in non-technical terms the aim of the study and how the study may benefit human or animal health or advance scientific understanding of biological processes.

The purpose of this laboratory is to allow veterinary technician students to practice clinical and laboratory skills in "pocket pets" and animals commonly found in laboratory animal research facilities.

Essential skills required of students are dictated by our institution's accrediting body, the American Veterinary Medical Association Committee on Veterinary Technician Education and Activities (CVTEA). These skills are listed in CVTEA Accreditation Policies and Procedures - Appendix I, Veterinary Technology Student Essential and Recommended Skills List.

Skills required by students in this lab are: handling, restraint, sexing, subcutaneous injection, intraperitoneal injection, oral dosing, and provision of food, water, and enrichment. Additional skills that may be performed if required for routine veterinary care of the animal(s) include nail trimming, injections (intramuscular, intradermal, and intravenous), venipuncture, cleaning and medicating ears, performing pre-operative work-ups, anesthesia skills by induction, maintenance and recovery from anesthesia and surgical assistance. Participation in necropsy and specimen collection may also be performed should an animal die or be euthanized.

D. RATIONALE FOR ANIMAL USE:

1) Explain your rationale for animal use. 2) Justify the appropriateness of the species selected. 3) Justify the number of animals to be used. (Use additional sheets if necessary.)

1.) We make every effort throughout our program to utilize practice models and multi-media teaching aids to achieve initial clinical competency in restraint, handling, and biostatistics of mice. We feel ultimate competency in our students is achieved only by having them actually take care of live patients. Additionally, the skills listed as required above must be performed on live animals as dictated by the CVTEA. Alternatives to live animals used for training are described in Section H.

2.) Mice are utilized in this lab as they are a required species per the CVTEA's essential skills list for veterinary technicians. Additionally, they represent a readily obtainable, tractable and easily adoptable example of a "pocket pet" or laboratory animal.

3.) Up to 9 mice may be used in each year of the protocol. These numbers are required to make sure we have enough animals for students to demonstrate competency in essential skills, and so that no one animal is overused. The students will be divided into groups of 2-3 students per animal.

E. DESCRIPTION OF EXPERIMENTAL DESIGN AND ANIMAL PROCEDURES:

Briefly explain the experimental design and specify all animal procedures. This description should allow the ACUC to understand the experimental course of an animal from its entry into the experiment to the

endpoint of the study. Specifically address the following:

(Use additional sheets if necessary.)

- **Injections or Inoculations** (substances, dose, sites, volume, route, and schedules)
- **Blood Withdrawals** (volume, frequency, withdrawal sites, and methodology)
- **Non-Survival Surgical Procedures** (Provide details of survival surgical procedures in Section G.)
- **Methods of Restraint** (e.g., restraint chairs, collars, vests, harnesses, slings, etc.)
- **Animal Identification Methods** (e.g., ear tags, tattoos, collar, cage card, etc.)
- **Other Procedures** (e.g., survival studies)
- **Resultant Effects**, if any, the animals are expected to experience (e.g., pain, distress, etc.)
- **Experimental Endpoint Criteria** (i.e., percentage body weight gain or loss, inability to eat or drink, behavioral abnormalities, clinical symptomatology. List the criteria to be used to determine when euthanasia is to be performed.

All procedures on this protocol are under the immediate supervision of at least one of the Veterinary Technology staff listed on page one. This assures the safety of both the students and the mice.

Mice are given a physical examination by the student. Included in this examination are examinations of the pelage for mites and an endoparasite exam using both the flotation and "tape" methods. If endo- or ectoparasites are noted they are treated in accordance with standard veterinary practices.

Mice are handled daily by students and staff to "gentle" them and provide positive social interaction. They are also group housed in compatible groups and provide floor space equal to, or greater than, the recommendation of The Guide.

The students will perform the required skills (see section C) under supervision. Invasive skills are defined as those that involve penetration with a needle (all kinds of injection and venipuncture). The following limits will be placed on mouse use:

- No more than two attempts per invasive skills demonstration per day
- No more than two invasive skills performed on any one animal per day
- Each mouse will be given a period of rest of 24-48 hours between procedures.
- If a hematoma should develop in an area of venipuncture, that location will not be used for venipuncture again until the hematoma has resolved.

Details of skills as required above are as follows:

- **Injections or Inoculations:** Recommendations included in this section are taken from the AALAS Learning Library, Introduction to Mice, Lesson 11: Procedures for Injections and Blood Collection.
 - o Recommended needle sizes are 25 to 27 gauge, unless a larger

- size is needed for injecting large volumes or viscous material.
 - o Volume recommendations for the acute administration of fluids for various sites is listed below:
 - **Subcutaneous (SQ or SC):** 1 ml
 - **Intraperitoneal (IP):** 1.5 mL
 - **Intramuscular (IM):** 0.05 mL per site; **not recommended in mice due to lack of muscle mass and risk of muscle injury
 - **Intradermal (ID):** 0.05 mL/site
 - **Oral (PO):** 0.2 ml
 - o Skills assessment will be performed with smaller volumes of fluid than the amounts listed above (0.02-0.5 cc) unless medically necessary for routine veterinary care. No injection will exceed the maximum recommended volumes listed above.
 - o Injections for skills assessment will be performed with sterile saline unless other drugs or anesthetic agents are required for routine veterinary care.
- **Blood Withdrawals:** Recommendations included in this section are taken from the AALAS Learning Library, Introduction to Mice, Lesson 11: Procedures for Injections and Blood Collection.
 - o The estimated total blood volume of a 20 gram mouse is 1.2-1.5 ml.
 - o The estimated safe bleed volume of a 20 gram mouse is 0.1-0.2 ml per 14 days
 - o No more than 10% of total blood volume should be collected without volume replacement using warmed physiologic fluids.
 - o If more than 10% of blood volume is removed, in addition to volume replacement, hematocrit should be monitored for anemia.
 - o Recommended needle sizes are 25 to 29 gauge, unless a larger size is needed for injecting large volumes viscous material.
 - o Common sites for venipuncture in mice include the following:
 - Facial vein
 - Tail vein
 - Lateral saphenous vein
 - Jugular vein
 - Orbital sinus puncture
 - Cardiac puncture (reserved for euthanasia)
 - o Students are not required to collect blood for skills assessment. The recommendations are included here should the need for venipuncture arise for routine veterinary care of the animal(s). In such cases, venipuncture will be performed by program staff.
 - o **Non-Survival Surgical Procedures** (Provide details of survival surgical procedures in Section G.): Not expected to be done unless euthanasia during surgery is determined to be medically necessary due to terminal illness.
- **Methods of Restraint:** Recommendations included in this section are taken from the AALAS Learning Library, Working with the Laboratory Mouse, Lesson 5: Animal Handling and Restraint.

Restraint will be manual and may be aided with the use of mouse restraint devices (plastic cylinders or flexible film tubes) or wash cloths. Mice may be removed from caging by scooping up into both hands, or by grasping the base of the tail near the body. If the tail

is held, it will be done swiftly and the body will be supported, to prevent tail injury. The scruff will be grasped between the thumb and first finger, while the tail is restrained between the fourth and fifth fingers or the other hand. Alternatively, the entire dorsal scruff may be grasped from the occipital to lumbar area. Chemical restraint may be performed on a case by case basis as needed if determined necessary to prevent undue stress or injury to the animal(s). (see section I)

- o **Animal Identification Methods:** Mice will be identified with cage cards.
- o **Other Procedures:** Survival surgery, if performed, is described in section F. Anesthesia is described in section I.
- o **Resultant Effects: The animal(s) may experience minimal or transient pain or distress from student skill assessment.** If survival surgery is performed, pain or distress will be relieved by appropriate measures (see section H).
- o **Experimental Endpoint Criteria: There is no true experimental endpoint as there is no experiment.** It is not anticipated that any mouse on this protocol would require euthanasia. However, if an illness or injury occurred that did not respond to medical management the mouse would be immediately euthanized (see section J).

F. SURVIVAL SURGERY — If proposed, complete the following:

1. Identify and describe the surgical procedure(s) to be performed. Include the aseptic methods to be utilized.
(Use additional sheets if necessary.):

NONE proposed as part of this protocol. Information provided below is for cases where emergency surgery may be determined necessary for routine veterinary care of the animal(s).

2. Who will perform the procedures and what are their qualifications and/or experience?

Gina Wilson, DVM; 11 years veterinary surgical experience

OR Any other DVM faculty employed by the Veterinary Technology Program at NOVA.

3. Where will surgery be performed (Building and Room)?

Veterinary Technology Building surgical suite

4. Describe post-operative care required, including consideration of the use of post-operative analgesics, and identify the responsible individual:

Mice will be kept warm pre-, intra-, and post-operatively using a circulating hot water blanket or instant heat devices. They will be monitored by the students and staff until in sternal recumbence then returned to the animal holding cage.

Has major survival surgery been performed on any animal prior to being placed on this study?

☐ Yes **X No**

If yes, please explain:

5. Will more than one major survival surgery be performed on an animal while on this study?

☐ Yes **X No**

If yes, please justify:

H. PAIN OR DISTRESS CATEGORY — The ACUC is responsible for applying U.S. Government Principle IV. Contained in Appendix 3: "Proper use of animals, including the avoidance or minimization of discomfort, distress, and pain when consistent with sound scientific practices, is imperative. Unless the contrary is established, investigators should consider that procedures that cause pain or distress in human beings may cause pain or distress in other animals." Check the appropriate category (ies) and indicate the approximate number of animals in each. Sum(s) should equal total from Section B.

IF ANIMALS ARE INDICATED IN COLUMN E, A SCIENTIFIC JUSTIFICATION IS REQUIRED TO EXPLAIN WHY THE USE OF ANESTHETICS, ANALGESICS, SEDATIVES OR TRANQUILIZERS DURING AND/OR FOLLOWING PAINFUL OR DISTRESSFUL PROCEDURES IS CONTRAINDICATED. PLEASE COMPLETE THE EXPLANATION FOR COLUMN E LISTINGS FORM AVAILABLE FROM OLAM. THIS FORM WILL ACCOMPANY THE NIH ANNUAL REPORT TO THE USDA. NOTE: THIS COLUMN E FORM, AND ANY ATTACHMENTS, e.g., THE ASP, ARE SUBJECT TO THE FREEDOM OF INFORMATION ACT.

Number of Animals Used Each Year:

	Year 1	Year 2	Year 3
<input type="checkbox"/> USDA Column C Minimal, Transient, or No Pain or Distress			
X USDA Column D Pain or Distress Relieved By Appropriate Measures	9	9	9
<input type="checkbox"/> USDA Column E Unrelieved Pain or Distress			

Describe your consideration of alternatives to procedures in this protocol, and your determination that alternatives were not available. [Note: Principal Investigators must certify in paragraph N.5 that no valid alternative was identified to any described procedures which may cause more than momentary pain or distress whether it is relieved or not.] Delineate the methods and sources used in the search below. Database references must include databases (2 or more) searched, the date of the search, period covered and keywords used. Reduction, replacement, and refinement must be addressed. *For more information see USDA Policy #12:*

http://www.aphis.usda.gov/animal_welfare/downloads/policy/Policy%2012%20Final.pdf

On 4/14/2017 Dr. Gina Wilson searched Agricola, Norecopa (NORINA), and the InterNICHE Alternatives Database

Mice, alternative, teaching - 82 citations
Mice, alternative, training - 89 citations
Alternative, teaching, mice - 82 citations
Replacement, mouse - 328 citations

Most of these citations were irrelevant as a source to define alternatives to the use of live animals, with the exception of references (20) that described using a rat model (6), or multi-media (14) such as computer programs, videos, and websites for teaching and training.

This Program already utilizes several alternatives to the use of live animals: The KOKEN and Squeekums rodent models are used to teach handling, restraint, injections, oral gavage and venipuncture.

Multi-media resources already used by this program include:

- Animal Care Technologies: <http://lms.4act.com/user/library>
- Procedures With Care: <http://www.procedureswithcare.org.uk/>
- Flecknell Laboratory Animal Interactive Resources for Education (FLAIRE Learning): <https://flairelearning.com/>
- AALAS Learning Library:
<https://aalaslearninglibrary.org/index.html#/app/library/course/260>
<https://aalaslearninglibrary.org/index.html#/app/library/course/2451>

Ultimate competency is achieved through the handling of live animals. However, handling of live mice does not occur without prior demonstration of competency on practice models.

I. ANESTHESIA, ANALGESIA, TRANQUILIZATION — For animals indicated in Section H, Column D, specify the anesthetics, analgesics, sedatives or tranquilizers that are to be used. Include the name of the agent(s), the dosage, route and schedule of administration.

It is not anticipated that anesthesia will be required, but in the case that chemical restraint or analgesia is warranted any combination of the following drugs may be used at the discretion of the Attending Veterinarian or other program DVM faculty. All recommendations are taken from the AALAS Learning Library, Working with the Laboratory Mouse, Lesson 14: Anesthetics and Analgesics.

Selected Analgesic Agents

Opioids (good pain relief)

- Buprenorphine: 0.05-0.1 mg/kg SQ every 4-12 hours
- Butorphanol: 1-5 mg/kg SQ every 3-4 hours

NSAIDs (Nonsteroidal anti-inflammatory drugs) (good pain relief, control inflammation)

- Carprofen, 5-10 mg/kg SQ, every 12-24 hours.
- Meloxicam, 5-10 mg/kg PO or SQ every 12-24 hours.

- Ketoprofen, 1-2 mg/kg SQ, every 12-24 hours.

Local anesthetic agent (Injected into tissues to provide localized area of anesthesia in skin and underlying tissues)

- Bupivacaine

Selected Injectable Agents

- Ketamine/xylazine: 70-100 mg/kg ketamine + 10-20 mg/kg xylazine, IP
 - Anesthesia 20-30 min
 - Sleep time 60-120 min
- Pentobarbital: 40-70 mg/kg IP
 - Anesthesia 20-40 min
 - Sleep time 120-180 min

Selected Inhalation Agents

- Isoflurane:
 - Induction concentration 3-4% delivered in 100% oxygen
 - Maintenance concentration 1.5-3%

In the case that these drugs are unavailable or at the discretion of the Attending Veterinarian or other program DVM faculty, other drugs may be used. All dosages will be obtained from reputable veterinary medical formularies that would be used in routine veterinary practice, such as Plumb's Veterinary Drugs or the VIN Formulary for Exotic Animals.

J. METHOD OF EUTHANASIA OR DISPOSITION OF ANIMALS AT END OF STUDY

Indicate the proposed method, and if a chemical agent is used, specify the dosage and route of administration. . If the method(s) of euthanasia include those not recommended by the AVMA Panel Report on Euthanasia (<https://www.avma.org/KB/Policies/Pages/Euthanasia-Guidelines.aspx>), provide justification why such methods must be used. Indicate the method of carcass disposal if not as MPW.

Once skills demonstration has been performed by all students and once recovered from any surgical procedure the animals will be housed at the college in the Veterinary Technology Building kennel area. During the fall and spring semesters, students care for the animals through kennel duty as required to maintain enrollment in the program. The college will hire staff to care for the animals over the summer semester.

Euthanasia is not anticipated on this protocol. However if, in the case of unforeseen illness or injury that could not be medically managed, euthanasia will be performed via an overdose injection (IV or IP) of pentobarbital at 1 ml/10 lbs of body weight. Alternative methods may be performed at the discretion of the Attending Veterinarian, but will

always be an Acceptable Method as outlined by the AVMA Guidelines for the Euthanasia of Animals.

K. HAZARDOUS AGENTS

Use of volatile anesthetics or formalin requires a description of scavenging methods used.

	YES	NO
Hazardous Chemicals or Drugs (List below)	X	<input type="checkbox"/>

Isoflurane, Buprenorphine, Butorphanol, Carprofen, Meloxicam, Ketoprofen, Bupivacaine, Ketamine, Xylazine, Pentobarbital

Additional safety considerations:

Scavenging of waste anesthetic gases by active scavenging system. All drugs are handled and stored in accordance with Federal and state regulations.

L. SPECIAL CONCERNS OR REQUIREMENTS OF THE STUDY — List any special housing, equipment, animal care (i.e., special caging, water, feed, or waste disposal, etc.). Include justification for exemption from participation in the environmental enrichment plan for nonhuman primates or exercise for dogs.

NONE

M. PRINCIPAL INVESTIGATOR CERTIFICATIONS:

1. I certify that the individuals listed in Section A are authorized to conduct procedures involving animals under this proposal have received training in the biology, handling, and care of this species; aseptic surgical methods and techniques (if necessary); the concept, availability, and use of research or testing methods that limit the use of animals or minimize distress; the proper use of anesthetics, analgesics, and tranquilizers (if necessary); procedures for reporting animal welfare concerns.
2. *FOR ALL COLUMN D AND COLUMN E PROPOSALS (see section H):* I certify that I have reviewed the pertinent scientific literature and the sources and/or databases (2 or more) as noted in paragraph H. and have found no valid alternative to any procedures described herein which may cause more than momentary pain or distress, whether it is relieved or not.
3. I will obtain approval from the ACUC before initiating any significant changes in this study.

Principal Investigator:

Signature _____ Date _____

N. CONCURRENCES: PROPOSAL NUMBER Mouse-17

Amy Laubinger, DVM, Institutional Official & Chair

Signature _____ Date _____

Gina Wilson, DVM, Attending Veterinarian

Signature _____ Date _____

James Hilleary, Outside Member

Signature _____ Date _____

Nancy Aiello, PhD, Scientist

Signature _____ Date _____

Diane Schrenzel, AAS, LVT, Non-Scientist

Signature _____ Date _____

P. FINAL APPROVAL:

Certification of review and approval by the NOVA Veterinary Technology Animal Care and Use Committee Chairperson.

Chairperson Amy Laubinger, DVM

Signature _____ Date _____



Leave Blank

PROPOSAL # Rabbit-17

APPROVAL DATE November 10, 2017

EXPIRATION DATE October 17, 2020

PLEASE TYPE:

A. ADMINISTRATIVE DATA:

Principal Investigator Gina Wilson, DVM

Mailing Address Northern Virginia Community College, Veterinary Technology Program, 21200 Campus Drive, Sterling, VA 20164

Telephone 703-948-7596 Fax 703-404-7322 Email rewilson@nvcc.edu

Project Title Rabbit Lab - Vet 217 Exotics & Lab Animals

Initial Submission ☐ Renewal ☒ or Modification ☐ of Proposal Number Rabbit-14

List the names of all individuals authorized to conduct procedures involving animals under this proposal and identify key personnel (i.e., Co-investigator(s)). Signature confirms that personnel have read and understand the protocol.

Tregel Cockburn, DVM

Suzy Aller, DVM

Amy Laubinger, DVM

Kiana Adkisson-Selby, DVM

Diane Schrenzel, LVT

Linda Schnaible, LVT

Dawn Witter, LVT

B. ANIMAL REQUIREMENTS:

Species: Rabbit (Oryctolagus cuniculus) Age/Weight/Size: Adult Sex: M and F

Stock or Strain: stock-outbred rabbits

Source(s): Pet Stores/Vendors/Animal Shelters/Student Owned Animals (volunteered with student approval) Holding Location(s): Veterinary Technology Building

Animal Procedure Location(s): Veterinary Technology Building

Number of Animals:

<u>4</u>	<u>4</u>	<u>4</u>		<u>12</u>
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Year 1	Year 2	Year 3	=	TOTAL
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C. STUDY OBJECTIVES:

Briefly explain in non-technical terms the aim of the study and how the study may benefit human or animal health or advance scientific understanding of biological processes.

The purpose of this laboratory is to allow veterinary technician students to practice clinical and laboratory skills in "pocket pets" and animals commonly found in laboratory animal research facilities.

Essential skills required of students are dictated by our institution's accrediting body, the American Veterinary Medical Association Committee on Veterinary Technician Education and Activities (CVTEA). These skills are listed in CVTEA Accreditation Policies and Procedures - Appendix I, Veterinary Technology Student Essential and Recommended Skills List.

Skills required by students in this lab are: handling, restraint, sexing, subcutaneous injection, venipuncture and provision of food, water, and enrichment. Additional skills that may be performed if required for routine veterinary care of the animal(s) include nail trimming, injections (intramuscular, intradermal, intraperitoneal, and intravenous), oral dosing, cleaning and medicating ears, performing pre-operative work-ups, anesthesia skills by induction, maintenance and recovery from anesthesia, and surgical assistance. Participation in necropsy and specimen collection may also be performed should an animal die or be euthanized.

D. RATIONALE FOR ANIMAL USE:

1) Explain your rationale for animal use. 2) Justify the appropriateness of the species selected. 3) Justify the number of animals to be used. (Use additional sheets if necessary.)

1.) We make every effort throughout our program to utilize practice models and multi-media teaching aids to achieve initial clinical competency in restraint, handling, and biotechnology of rabbits. We feel ultimate competency in our students is achieved only by having them actually take care of live patients. Additionally, the skills listed as required above must be performed on live animals as dictated by the CVTEA. Alternatives to live animals used for training are described in Section H.

2.) Rabbits are utilized in this lab as they are a required species per the CVTEA's essential skills list for veterinary technicians. Additionally, they represent a readily obtainable, tractable and easily adoptable example of a "pocket pet" or laboratory animal.

3.) Up to 4 rabbits will be used in any one year. This number is required to make sure we have enough animals for students to demonstrate competency in essential skills, and so that no one animal is overused. Students will be divided into groups of 2-3 students per rabbit.

E. DESCRIPTION OF EXPERIMENTAL DESIGN AND ANIMAL PROCEDURES:

Briefly explain the experimental design and specify all animal procedures. This description should allow the ACUC to understand the experimental course of an animal from its entry into the experiment to the endpoint of the study. Specifically address the following:

(Use additional sheets if necessary.)

- **Injections or Inoculations** (substances, dose, sites, volume, route, and schedules)
- **Blood Withdrawals** (volume, frequency, withdrawal sites, and methodology)
- **Non-Survival Surgical Procedures** (Provide details of survival surgical procedures in Section G.)
- **Methods of Restraint** (e.g., restraint chairs, collars, vests, harnesses, slings, etc.)
- **Animal Identification Methods** (e.g., ear tags, tattoos, collar, cage card, etc.)
- **Other Procedures** (e.g., survival studies)
- **Resultant Effects**, if any, the animals are expected to experience (e.g., pain, distress, etc.)
- **Experimental Endpoint Criteria** (i.e., percentage body weight gain or loss, inability to eat or drink, behavioral abnormalities, clinical symptomatology. List the criteria to be used to determine when euthanasia is to be performed.

All procedures on this protocol are under the immediate supervision of at least one of the Veterinary Technology staff listed on page one. This assures the safety of both the students and the rabbits.

Rabbits are given a physical examination by the student. Included in this examination are examinations of the pelage for mites and an endoparasite exam using both the flotation and "tape" methods. If endo- or ectoparasites are noted they are treated in accordance with standard veterinary practices.

Rabbits are handled daily by students and staff to "gentle" them and provide positive social interaction. They are also group housed in compatible groups if possible and provide floor space equal to, or greater than, the recommendation of The Guide.

The students will perform the required skills (see section C) under supervision. Invasive skills are defined as those that involve penetration with a needle (all kinds of injection and venipuncture). The following limits will be placed on rabbit use:

- No more than two attempts per invasive skills demonstration per day
- No more than two invasive skills performed on any one animal per day
- Each rabbit will be given a period of rest of 24-48 hours between procedures.
- If a hematoma should develop in an area of venipuncture, that location will not be used for venipuncture again until the hematoma has resolved.

- **Injections or Inoculations:** Recommendations included in this section are taken from the AALAS Learning Library, Introduction to Rabbits, Lesson 10: Procedures for Injections and Blood Collection.
 - Recommended needle sizes are 23 to 25 gauge, unless a larger size is needed for a viscous material.
 - Volume recommendations for the acute administration of fluids for various sites is listed below:
 - **Subcutaneous (SQ or SC):** 30 - 50 mL (scruff, flank); limit 20 mL per injection site
 - **Intraperitoneal (IP):** 50 - 100 mL
 - **Intramuscular (IM):** 0.5 - 1.0 mL per site
 - **Intradermal (ID):** 0.1 mL/site
 - **Oral (PO):** 5 ml
 - Skills assessment will be performed with much smaller volumes of fluid than the amounts listed above (0.05-0.5 cc) unless medically necessary for routine veterinary care. No injection will exceed the maximum recommended volumes listed above.
 - Injections for skills assessment will be performed with sterile saline unless other drugs or anesthetic agents are required for routine veterinary care.
- **Blood Withdrawals:** Recommendations included in this section are taken from the AALAS Learning Library, Introduction to Rabbits, Lesson 10: Procedures for Injections and Blood Collection.
 - The estimated total blood volume of an adult rabbit is 57-65 ml/kg.
 - The estimated safe bleed volume of an adult rabbit is 7.7 ml/kg
 - No more than 10% of total blood volume should be collected without volume replacement using warmed physiologic fluids.
 - If more than 10% of blood volume is removed, in addition to volume replacement, hematocrit should be monitored for anemia.
 - Recommended needle sizes are 23 to 25 gauge, unless a larger size is needed for a viscous material.
 - Common sites for venipuncture in rabbits include the following:
 - Ear vein and ear artery
 - Jugular vein
 - Lateral and medial saphenous veins
 - Cardiac puncture (reserved for euthanasia)
 - For skills assessment, students will only be required to demonstrate blood in the hub of the needle, or minimal volumes collected (0.05-0.2 cc) to prevent the deleterious effects of larger blood collection (e.g. anemia, hypovolemic shock)
 - Larger blood volume collections will only be done if required for routine veterinary care of the animal(s). No blood collection will exceed the maximum recommended volumes listed above.
- **Non-Survival Surgical Procedures** (Provide details of survival surgical procedures in Section G.): Not expected to be done unless euthanasia during surgery is determined to be medically necessary due

to terminal illness.

- **Methods of Restraint:** Restraint will be manual and may be aided with the use of towels. The hindquarters and spine and of the animal will be supported at all times. When possible the eyes will be covered by placing the animal's head in the crook of the restrainer's arm, or by covering with a towel or hand. Chemical restraint may be performed on a case by case basis as needed if determined necessary to prevent undue stress or injury to the animal(s). (see section I)
- **Animal Identification Methods:** Rabbits will be identified with cage cards.
- **Other Procedures:** Survival surgery, if performed, is described in section F. Anesthesia is described in section I.
- **Resultant Effects:** The animal(s) may experience minimal or transient pain or distress from student skill assessment. If survival surgery is performed, pain or distress will be relieved by appropriate measures (see section H).
- **Experimental Endpoint Criteria:** There is no true experimental endpoint as there is no experiment. It is not anticipated that any rabbit on this protocol would require euthanasia. However, if an illness or injury occurred that did not respond to medical management the rabbit would be immediately euthanized (see section J).

F. SURVIVAL SURGERY — If proposed, complete the following:

1. Identify and describe the surgical procedure(s) to be performed. Include the aseptic methods to be utilized. *(Use additional sheets if necessary.):*

Rabbits are prepared for surgery in accordance with standard practices for aseptic surgery. This includes, but is not limited to, removal of the hair from the surgical site and preparation of the site with an iodophor or chlorhexidine and 70% alcohol.

Ovariohysterectomy (OVH):

OVH is performed for sterilization, to correct or eliminate obnoxious behavior(s), to eliminate the risk of uterine and ovarian cancers, and to decrease the risk of other reproductive diseases.

General anesthesia is required (see Section I). The rabbit is placed in dorsal recumbency with the rear limbs gently abducted. The ventral abdomen should be gently clipped with particular care taken to avoid any clipper burns or abrasions. The area should be surgically prepped in a routine manner.

The area is four corner draped utilizing standard cloth drapes. A routine ventral midline incision is made through the skin, subcutaneous

tissues, and the linea alba with a number 10 blade and number 3 Bard Parker handle. The uterus is exteriorized. The ovarian pedicles and uterine body are ligated using a 2 or 3 clamp method with 3-0 absorbable suture. The uterus is removed by incising proximal to all ligations with a number 10 blade. The pedicles and uterine remnant are grasped with thumb forceps and examined for hemorrhage. The abdomen is checked for hemorrhage prior to closure. The linea alba is closed with 3-0 absorbable suture in a simple continuous pattern. The subcutaneous tissues may or may not be closed, depending on the amount of dead space present. The skin is closed with 3-0 or 4-0 absorbable suture in a subcuticular pattern.

Post-operative analgesia is provided as described in Section I.

The rabbit should have moderate restriction of exercise. The incision should be checked daily for swelling or discharge. The most common problem after surgery is dermatitis initiated by rough clipping or harsh scrubbing and aggravated by the rabbits' licking and chewing. In the above situation an appropriately sized E-collar may be indicated to allow the area to air dry without further intervention. It is not anticipated that an E-collar will be needed for more than 3-5 days so that normal cecotrophy should not be a concern for this limited time period.

Castration:

Castration is done for sterilization, to correct or eliminate obnoxious behavior(s) and decrease the desire to fight.

General anesthesia is required (see Section I). The rabbit is placed in dorsal recumbency with the rear limbs gently abducted. The inner thighs and the base of the scrotum should be gently clipped with particular care taken to avoid any clipper burns or abrasions to the scrotum. The long hair on the scrotum itself should be "butched". The area should be surgically prepped in a routine manner. Betadine solution should NOT be sprayed on the scrotum itself.

The area is four corner draped utilizing standard cloth drapes. One of the testicles is displaced cranially by finger manipulation through the caudal drape. It is positioned ventral to the penis immediately cranial to the scrotum and held with sufficient pressure to cause the testicle to bulge under the skin. A midline incision is made over the testicle with a number 10 blade and number 3 Bard Parker handle. The common tunic is similarly incised. The castration is performed using an open technique. The incision is made long enough to allow the testicle to pop free of the subcutaneous tissues and common vaginal tunic. The spermatic cord and testicular artery and vein are ligated using a 2 or 3-clamp method and 3-0 absorbable suture. The pedicle is grasped with thumb forceps and examined for hemorrhage. The other testicle is similarly incised and the cord, vein and artery ligated. The inguinal rings are closed with 3-0 absorbable suture. The fascia is closed with 3-0 absorbable suture and the skin is closed with 3-0 absorbable suture in a subcuticular pattern.

Post-operative analgesia is provided as described in Section I.

The rabbit should have moderate restriction of exercise. The incision should be checked daily for swelling or discharge. If the vessel in the scrotal ligament bleeds or subcutaneous hemorrhage is excessive, the scrotum may fill with blood that forms a palpable clot. This problem is usually self-limiting. The most common problem after surgery is scrotal dermatitis initiated by rough clipping or harsh scrubbing and aggravated by the rabbits' licking and chewing. In the above situation an appropriately sized E-collar may be indicated to allow the area to air dry without further intervention. It is not anticipated that an E-collar will be needed for more than 3-5 days so that normal cecotrophy should not be a concern for this limited time period.

2. Who will perform surgery and what are their qualifications and/or experience?

Gina Wilson, DVM; 11 years veterinary surgical experience

OR Any other DVM faculty employed by the Veterinary Technology Program at NOVA.

3. Where will surgery be performed (Building and Room)?

Veterinary Technology Building surgical suite

4. Describe post-operative care required, including consideration of the use of post-operative analgesics, and identify the responsible individual:

Rabbits will be kept warm pre-, intra-, and post-operatively using a circulating hot water blanket or instant heat devices. They will be monitored by the students and staff until in sternal recumbency then returned to the animal holding cage. Wound closures are subcuticular and should not require any further intervention.

5. Has major survival surgery been performed on any animal prior to being placed on this study?

☐ Yes **X** No

If yes, please explain:

6. Will more than one major survival surgery be performed on an animal while on this study?

☐ Yes **X** No

If yes, please justify:

H. PAIN OR DISTRESS CATEGORY — The ACUC is responsible for applying U.S. Government Principle IV. Contained in Appendix 3: "Proper use of animals, including the avoidance or minimization of discomfort, distress, and pain when consistent with sound scientific practices, is imperative. Unless the contrary is established, investigators should consider that procedures that cause pain or distress in human beings may cause pain or distress in other animals." Check the appropriate category (ies) and indicate the approximate number of animals in each. Sum(s) should equal total from Section B.

IF ANIMALS ARE INDICATED IN COLUMN E, A SCIENTIFIC JUSTIFICATION IS REQUIRED TO EXPLAIN WHY THE USE OF ANESTHETICS, ANALGESICS, SEDATIVES OR TRANQUILIZERS

DURING AND/OR FOLLOWING PAINFUL OR DISTRESSFUL PROCEDURES IS CONTRAINDICATED. PLEASE COMPLETE THE EXPLANATION FOR COLUMN E LISTINGS FORM AVAILABLE FROM OLAM. THIS FORM WILL ACCOMPANY THE NIH ANNUAL REPORT TO THE USDA. NOTE: THIS COLUMN E FORM, AND ANY ATTACHMENTS, e.g., THE ASP, ARE SUBJECT TO THE FREEDOM OF INFORMATION ACT.

Number of Animals Used Each Year:

	Year 1	Year 2	Year 3
<input type="checkbox"/> USDA Column C Minimal, Transient, or No Pain or Distress			
<input checked="" type="checkbox"/> USDA Column D Pain or Distress Relieved By Appropriate Measures	3	3	3
<input type="checkbox"/> USDA Column E Unrelieved Pain or Distress			

Describe your consideration of alternatives to procedures in this protocol, and your determination that alternatives were not available. [Note: Principal Investigators must certify in paragraph N.5 that no valid alternative was identified to any described procedures which may cause more than momentary pain or distress whether it is relieved or not.] Delineate the methods and sources used in the search below. Database references must include databases (2 or more) searched, the date of the search, period covered and keywords used. Reduction, replacement, and refinement must be addressed. *For more information see USDA Policy #12:*

http://www.aphis.usda.gov/animal_welfare/downloads/policy/Policy%2012%20Final.pdf

On 4/14/2017 Dr. Gina Wilson searched Agricola, Norecopa (NORINA), and the InterNICHE Alternatives Database using the following search terms:

Rabbit, alternative, teaching - 19 citations
 Rabbit, alternative, training - 19 citations
 Alternative, teaching, rabbit - 19 citations
 Replacement, rabbit - 105 citations

Most of these citations were irrelevant as a source to define alternatives to the use of live animals, with the exception of references (18) that described using a rat model (4), or multi-media (14) such as computer programs, videos, and websites for teaching and training.

This Program already utilizes several alternatives to the use of live animals: The KOKEN rabbit model is used to teach handling, restraint, injections, oral gavage and venipuncture.

Multi-media resources already used by this program include:

- Animal Care Technologies: <http://lms.4act.com/user/library>
- AALAS Learning Library:
<https://aalaslearninglibrary.org/index.html#/app/library/course/260>
<https://aalaslearninglibrary.org/index.html#/app/library/course/2451>
- Procedures With Care: <http://www.procedureswithcare.org.uk/>

- Flecknell Laboratory Animal Interactive Resources for Education (FLAIRE Learning): <https://flairelearning.com/>

Ultimate competency is achieved through the handling of live animals. However, handling of live rabbits does not occur without prior demonstration of competency on practice models.

I. ANESTHESIA, ANALGESIA, TRANQUILIZATION — For animals indicated in Section H, Column D, specify the anesthetics, analgesics, sedatives or tranquilizers that are to be used. Include the name of the agent(s), the dosage, route and schedule of administration.

Pre-anesthetic restraint and/or analgesia will be achieved with one or some combination of the following medications: Midazolam 0.25-2.0 mg/kg SC, IM or IV (Hawkins MG, Pascoe PJ, 2012); Buprenorphine 0.01-0.05 mg/kg SC, IM or IV q 4-12 h (KuKanich B, Papich MG, 2009) or Butorphanol 0.02-0.05 mg/kg IM, IV, SC (Khan CM 2010).

Anesthesia is induced with 2.5-4% ISO with 100% O₂ and maintained at 1-1.5% with 100% O₂ by face mask with appropriate active scavenging.

Post-operative analgesia is provided via an injection of meloxicam 0.3-0.5 mg/kg SC q 12-24 h (Oglesbee BL, Jenkins, JR, 2012) prior to the beginning of the actual surgery.

In the case that these drugs are unavailable or at the discretion of the Attending Veterinarian or other program DVM faculty, other drugs may be used. All dosages will be obtained from reputable veterinary medical formularies that would be used in routine veterinary practice, such as Plumb's Veterinary Drugs or the VIN Formulary for Exotic Animals.

J. METHOD OF EUTHANASIA OR DISPOSITION OF ANIMALS AT END OF STUDY

Indicate the proposed method, and if a chemical agent is used, specify the dosage and route of administration. If the method(s) of euthanasia include those not recommended by the AVMA Panel Report on Euthanasia (<https://www.avma.org/KB/Policies/Pages/Euthanasia-Guidelines.aspx>), provide justification why such methods must be used. Indicate the method of carcass disposal if not as MPW.

Once skills demonstration has been performed by all students and once recovered from any surgical procedure the animals will be housed at the college in the Veterinary Technology Building kennel area. During the fall and spring semesters, students care for the animals through kennel duty as required to maintain enrollment in the program. The college will hire staff to care for the animals over the summer semester.

Euthanasia is not anticipated on this protocol. However if, in the case of unforeseen illness or injury that could not be medically managed, euthanasia will be performed via an overdose injection (IV or IP) of pentobarbital at 1 ml/10 lbs of body weight. Alternative methods may be performed at the discretion of the Attending Veterinarian, but will always be an Acceptable Method as outlined by the AVMA Guidelines for

K. HAZARDOUS AGENTS

Use of volatile anesthetics or formalin requires a description of scavenging methods used.

	YES	NO
Hazardous Chemicals or Drugs (List below)	X	<input type="checkbox"/>

Isoflurane, meloxicam, midazolam, buprenorphine, butorphanol, pentobarbital

Additional safety considerations:

Scavenging of waste anesthetic gases by active scavenging system. All drugs are handled and stored in accordance with Federal and state regulations.

L. SPECIAL CONCERNS OR REQUIREMENTS OF THE STUDY — List any special housing, equipment, animal care (i.e., special caging, water, feed, or waste disposal, etc.). Include justification for exemption from participation in the environmental enrichment plan for nonhuman primates or exercise for dogs.

NONE

M. PRINCIPAL INVESTIGATOR CERTIFICATIONS:

1. I certify that the individuals listed in Section A are authorized to conduct procedures involving animals under this proposal have received training in the biology, handling, and care of this species; aseptic surgical methods and techniques (if necessary); the concept, availability, and use of research or testing methods that limit the use of animals or minimize distress; the proper use of anesthetics, analgesics, and tranquilizers (if necessary); procedures for reporting animal welfare concerns.
2. *FOR ALL COLUMN D AND COLUMN E PROPOSALS (see section H):* I certify that I have reviewed the pertinent scientific literature and the sources and/or databases (2 or more) as noted in paragraph H. and have found no valid alternative to any procedures described herein which may cause more than momentary pain or distress, whether it is relieved or not.
3. I will obtain approval from the ACUC before initiating any significant changes in this study.

Principal Investigator:

Signature _____ Date _____

N. CONCURRENCES: PROPOSAL NUMBER Rabbit-17

Amy Laubinger, DVM, Institutional Official & Chair

Signature _____ Date _____

Gina Wilson, DVM, Attending Veterinarian

Signature _____ Date _____

James Hilleary, Outside Member

Signature _____ Date _____

Nancy Aiello, PhD, Scientist

Signature _____ Date _____

Diane Schrenzel, AAS, LVT, Non-Scientist

Signature _____ Date _____

P. FINAL APPROVAL:

Certification of review and approval by the NOVA Veterinary Technology Animal Care and Use Committee Chairperson.

Chairperson Amy Laubinger, DVM

Signature _____ Date _____



Leave Blank

PROPOSAL # Rat-17

APPROVAL DATE November 10, 2017

EXPIRATION DATE November 10, 2020

PLEASE TYPE:

A. ADMINISTRATIVE DATA:

Principal Investigator Gina Wilson, DVM

Mailing Address Northern Virginia Community College, Veterinary Technology Program, 21200 Campus Drive, Sterling, VA 20164

Telephone 703-948-7596 Fax 703-404-7322 Email rewilson@nvcc.edu

Project Title Rat Lab - Vet 217 Exotics & Lab Animals

Initial Submission ☐ Renewal ☒ or Modification ☐ of Proposal Number Mouse-14

List the names of all individuals authorized to conduct procedures involving animals under this proposal and identify key personnel (i.e., Co-investigator(s)). Signature confirms that personnel have read and understand the protocol.

Tregel Cockburn, DVM

Suzy Aller, DVM

Amy Laubinger, DVM

Kiana Adkisson-Selby, DVM

Diane Schrenzel, LVT

Linda Schnaible, LVT

Dawn Witter, LVT

B. ANIMAL REQUIREMENTS:

Species: Rat (Rattus norvegicus) Age/Weight/Size: Juvenile or Adult Sex: M or F

Stock or Strain: Sprague Dawley, Long-Evans, outbred

Source(s): Pet Stores/Vendors/Animal Shelters/ Student Owned Animals (volunteered with student approval and informed consent) Holding

Location(s): Veterinary Technology Building

Animal Procedure Location(s): Veterinary Technology Building

Number of Animals:

<u>9</u>	<u>9</u>	<u>9</u>		<u>27</u>
Year 1	Year 2	Year 3	=	TOTAL

C. STUDY OBJECTIVES:

Briefly explain in non-technical terms the aim of the study and how the study may benefit human or animal health or advance scientific understanding of biological processes.

The purpose of this laboratory is to allow veterinary technician students to practice clinical and laboratory skills in "pocket pets" and animals commonly found in laboratory animal research facilities.

Essential skills required of students are dictated by our institution's accrediting body, the American Veterinary Medical Association Committee on Veterinary Technician Education and Activities (CVTEA). These skills are listed in CVTEA Accreditation Policies and Procedures - Appendix I, Veterinary Technology Student Essential and Recommended Skills List.

Skills required by students in this lab are: handling, restraint, sexing, subcutaneous injection, venipuncture, oral dosing, and provision of food, water, and enrichment. Additional skills that may be performed if required for routine veterinary care of the animal(s) include nail trimming, injections (intramuscular, intradermal, intraperitoneal and intravenous), cleaning and medicating ears, performing pre-operative work-ups, anesthesia skills by induction, maintenance and recovery from anesthesia and surgical assistance. Participation in necropsy and specimen collection may also be performed should an animal die or be euthanized.

D. RATIONALE FOR ANIMAL USE:

1) Explain your rationale for animal use. 2) Justify the appropriateness of the species selected. 3) Justify the number of animals to be used. (Use additional sheets if necessary.)

1.) We make every effort throughout our program to utilize practice models and multi-media teaching aids to achieve initial clinical competency in restraint, handling, and biotechnology of rats. We feel ultimate competency in our students is achieved only by having them actually take care of live patients. Additionally, the skills listed as required above must be performed on live animals as dictated by the CVTEA. Alternatives to live animals used for training are described in Section H.

2.) Rats are utilized in this lab as they are a required species per the CVTEA's essential skills list for veterinary technicians. Additionally, they represent a readily obtainable, tractable and easily adoptable example of a "pocket pet" or laboratory animal.

3.) Up to 9 rats may be used in each year of the protocol. These numbers are required to make sure we have enough animals for students to demonstrate competency in essential skills, and so that no one animal is overused. The students will be divided into groups of 2-3 students

E. DESCRIPTION OF EXPERIMENTAL DESIGN AND ANIMAL PROCEDURES:

Briefly explain the experimental design and specify all animal procedures. This description should allow the ACUC to understand the experimental course of an animal from its entry into the experiment to the endpoint of the study. Specifically address the following:

(Use additional sheets if necessary.)

- **Injections or Inoculations** (substances, dose, sites, volume, route, and schedules)
- **Blood Withdrawals** (volume, frequency, withdrawal sites, and methodology)
- **Non-Survival Surgical Procedures** (Provide details of survival surgical procedures in Section G.)
- **Methods of Restraint** (e.g., restraint chairs, collars, vests, harnesses, slings, etc.)
- **Animal Identification Methods** (e.g., ear tags, tattoos, collar, cage card, etc.)
- **Other Procedures** (e.g., survival studies)
- **Resultant Effects**, if any, the animals are expected to experience (e.g., pain, distress, etc.)
- **Experimental Endpoint Criteria** (i.e., percentage body weight gain or loss, inability to eat or drink, behavioral abnormalities, clinical symptomatology. List the criteria to be used to determine when euthanasia is to be performed.

All procedures on this protocol are under the immediate supervision of at least one of the Veterinary Technology staff listed on page one. This assures the safety of both the students and the rat.

Rats are given a physical examination by the student. Included in this examination are examinations of the pelage for mites and an endoparasite exam using both the flotation and "tape" methods. If endo- or ectoparasites are noted they are treated in accordance with standard veterinary practices before being subjected to surgery.

Rats are handled daily by students and staff to "gentle" them and provide positive social interaction. They are also group housed in compatible groups and provide floor space equal to, or greater than, the recommendation of The Guide.

The students will perform the required skills (see section C) under supervision. Invasive skills are defined as those that involve penetration with a needle (all kinds of injection and venipuncture). The following limits will be placed on rat use:

- No more than two attempts per invasive skills demonstration per day
- No more than two invasive skills performed on any one animal per day
- Each rat will be given a period of rest of 24-48 hours between procedures.
- If a hematoma should develop in an area of venipuncture, that location will not be used for venipuncture again until the

hematoma has resolved.

Details of skills as required above are as follows:

- **Injections or Inoculations:** Recommendations included in this section are taken from the AALAS Learning Library, Introduction to Rats, Lesson 11: Procedures for Injections and Blood Collection.
 - Recommended needle sizes are 23 to 27 gauge, unless a larger size is needed for injecting large volumes or viscous material.
 - Volume recommendations for the acute administration of fluids for various sites is listed below:
 - **Subcutaneous (SQ or SC):** 25 ml/kg
 - **Intraperitoneal (IP):** 25 ml/kg
 - **Intramuscular (IM):** 0.1 mL per site
 - **Intradermal (ID):** 0.05 mL/site
 - **Oral (PO):** 10 ml
 - Skills assessment will be performed with smaller volumes of fluid than the amounts listed above (0.05-0.5 cc) unless medically necessary for routine veterinary care. No injection will exceed the maximum recommended volumes listed above.
 - Injections for skills assessment will be performed with sterile saline unless other drugs or anesthetic agents are required for routine veterinary care.
- **Blood Withdrawals:** Recommendations included in this section are taken from the AALAS Learning Library, Introduction to Mice, Lesson 11: Procedures for Injections and Blood Collection.
 - The estimated total blood volume of a 250-500 gram adult rat is 64 ml/kg.
 - The estimated safe bleed volume of a 250-500 gram adult rat is 5.5 ml/kg.
 - No more than 10% of total blood volume should be collected without volume replacement using warmed physiologic fluids.
 - If more than 10% of blood volume is removed, in addition to volume replacement, hematocrit should be monitored for anemia.
 - Recommended needle sizes are 23 to 27 gauge, unless a larger size is needed for injecting large volumes viscous material.
 - Common sites for venipuncture in rats include the following:
 - Tail vein
 - Lateral saphenous vein
 - Jugular vein
 - Orbital sinus puncture
 - Cardiac puncture (reserved for euthanasia)
 - For skills assessment, students will only be required to demonstrate blood in the hub of the needle, or minimal volumes collected (0.05-0.2 cc) to prevent the deleterious effects of larger blood collection (e.g. anemia, hypovolemic shock)
 - Larger blood volume collections will only be done if required for routine veterinary care of the animal(s). No blood collection will exceed the maximum recommended volumes listed

- **Non-Survival Surgical Procedures** (Provide details of survival surgical procedures in Section G.): Not expected to be done unless euthanasia during surgery is determined to be medically necessary due to terminal illness.
- **Methods of Restraint:** Restraint will be manual and may be aided with the use of rat restraint devices (plastic cylinders or flexible film tubes) or wash cloths. Rats may be removed from caging by scooping up into both hands, or grasping the base of the tail near the body. If the tail is held, it will be done swiftly and the body will be supported, to prevent tail injury. The rat can be grasped with the thumb and forefinger under the front legs, body supported by the palm, and tail held at the base by the other hand. Alternatively, the rat may be held in the non-dominant hand with the head between the second and third fingers, the thumb under the left front leg, and the fourth and fifth fingers under the right front leg with the body supported by the palm. This technique will leave the dominant hand free for examination or procedures. Chemical restraint may be performed on a case by case basis as needed if determined necessary to prevent undue stress or injury to the animal(s). (see section I)
- **Animal Identification Methods:** Rats will be identified with cage cards.
- **Other Procedures:** Survival surgery, if performed, is described in section F. Anesthesia is described in section I.
- **Resultant Effects: The animal(s) may experience minimal or transient pain or distress from student skill assessment.** If survival surgery is performed, pain or distress will be relieved by appropriate measures (see section H).
- **Experimental Endpoint Criteria: There is no true experimental endpoint as there is no experiment.** It is not anticipated that any rat on this protocol would require euthanasia. However, if an illness or injury occurred that did not respond to medical management the rat would be immediately euthanized (see section J).

F. SURVIVAL SURGERY — If proposed, complete the following:

1. Identify and describe the surgical procedure(s) to be performed. Include the aseptic methods to be utilized.
(Use additional sheets if necessary.):

Rats are prepared for surgery in accordance with standard practices for aseptic surgery. This includes, but is not limited to, removal of the hair from the surgical site and preparation of the site with an iodophor or chlorhexidine and 70% alcohol.

Castration is done for sterilization, to correct or eliminate obnoxious behavior and decrease the desire to fight.

General anesthesia is required (see Section I). The rat is placed in dorsal recumbence with the rear limbs gently abducted. The inner thighs and the base of the scrotum should be gently clipped with particular care taken to avoid any clipper burns or abrasions to the scrotum. The long hair on the scrotum itself should be "butched". The area should be surgically prepped in a routine manner. Betadine solution should NOT be sprayed on the scrotum itself.

The area is four corner draped with sterile gauze. One of the testicles is displaced cranially by finger manipulation through the caudal drape. It is positioned ventral to the penis immediately cranial to the scrotum and held with sufficient pressure to cause the testicle to bulge under the skin. A midline incision is made over the testicle with a number 10 blade and number 3 Bard Parker handle. The common tunic is similarly incised. The castration is performed using an open technique. The incision is made long enough to allow the testicle to pop free of the subcutaneous tissues and common vaginal tunic. The spermatic cord and testicular artery and vein are ligated using a 3-clamp method and 3-0 absorbable suture. The pedicle is grasped with thumb forceps and examined for hemorrhage. The other testicle is similarly incised and the cord, vein and artery ligated. The inguinal rings are closed with a suture of 3-0 absorbable suture. The wound is closed with a subcutaneous stitch and a continuous subcuticular stitch using 3-0 absorbable suture.

The rat should have moderate restriction of exercise. The incision should be checked daily for swelling or discharge. If the vessel in the scrotal ligament bleeds or subcutaneous hemorrhage is excessive, the scrotum may fill with blood that forms a palpable clot. This problem is usually self-limiting. The most common problem after surgery is scrotal dermatitis initiated by rough clipping or harsh scrubbing and aggravated by the rat's licking and chewing. In the above situation an appropriately sized E-collar may be indicated to allow the area to air dry without further intervention.

2. Who will perform surgery and what are their qualifications and/or experience?

Gina Wilson, DVM; 11 years veterinary surgical experience

OR Any other DVM faculty employed by the Veterinary Technology Program at NOVA.

3. Where will surgery be performed (Building and Room)?

Veterinary Technology Building surgical suite

4. Describe post-operative care required, including consideration of the use of post-operative analgesics, and identify the responsible individual:

Rats will be kept warm pre-, intra-, and post-operatively using a circulating hot water blanket or instant heat devices. They will be monitored by the student and staff until in sternal recumbence then

returned to the animal holding cage. Wound closures are subcuticular and should not require any further intervention.

5. Has major survival surgery been performed on any animal prior to being placed on this study?

☐ Yes **X No**

If yes, please explain:

6. Will more than one major survival surgery be performed on an animal while on this study?

☐ Yes **X No**

If yes, please justify:

H. PAIN OR DISTRESS CATEGORY — The ACUC is responsible for applying U.S. Government Principle IV. Contained in Appendix 3: "Proper use of animals, including the avoidance or minimization of discomfort, distress, and pain when consistent with sound scientific practices, is imperative. Unless the contrary is established, investigators should consider that procedures that cause pain or distress in human beings may cause pain or distress in other animals." Check the appropriate category (ies) and indicate the approximate number of animals in each. Sum(s) should equal total from Section B.

IF ANIMALS ARE INDICATED IN COLUMN E, A SCIENTIFIC JUSTIFICATION IS REQUIRED TO EXPLAIN WHY THE USE OF ANESTHETICS, ANALGESICS, SEDATIVES OR TRANQUILIZERS DURING AND/OR FOLLOWING PAINFUL OR DISTRESSFUL PROCEDURES IS CONTRAINDICATED. PLEASE COMPLETE THE EXPLANATION FOR COLUMN E LISTINGS FORM AVAILABLE FROM OLAM. THIS FORM WILL ACCOMPANY THE NIH ANNUAL REPORT TO THE USDA. NOTE: THIS COLUMN E FORM, AND ANY ATTACHMENTS, e.g., THE ASP, ARE SUBJECT TO THE FREEDOM OF INFORMATION ACT.

Number of Animals Used Each Year:

	Year 1	Year 2	Year 3
<input type="checkbox"/> USDA Column C Minimal, Transient, or No Pain or Distress			
X USDA Column D Pain or Distress Relieved By Appropriate Measures	9	9	9
<input type="checkbox"/> USDA Column E Unrelieved Pain or Distress			

Describe your consideration of alternatives to procedures in this protocol, and your determination that alternatives were not available. [Note: Principal Investigators must certify in paragraph N.5 that no valid alternative was identified to any described procedures which may cause more than momentary pain or distress whether it is relieved or not.] Delineate the methods and sources used in the search below. Database references must include databases (2 or more) searched, the date of the search, period covered and keywords used. Reduction, replacement, and refinement must be addressed. *For more information see USDA Policy #12*

http://www.aphis.usda.gov/animal_welfare/downloads/policy/Policy%2012%20Final.pdf

On 4/14/2017 Dr. Gina Wilson searched Agricola, Norecopa (NORINA), and the InterNICHE Alternatives Database

Rat, alternative, teaching - 86 citations

Rat, alternative, training - 90 citations

Alternative, teaching, rat - 86 citations

Replacement, rat - 330 citations

Most of these citations were irrelevant as a source to define alternatives to the use of live animals, with the exception of references (20) that described using a rat model (6), or multi-media (14) such as computer programs, videos, and websites for teaching and training.

This Program already utilizes several alternatives to the use of live animals: The KOKEN and Squeekums rodent models are used to teach handling, restraint, injections, oral gavage and venipuncture.

Multi-media resources already used by this program include:

- Animal Care Technologies: <http://lms.4act.com/user/library>
- AALAS Learning Library:
<https://aalaslearninglibrary.org/index.html#/app/library/course/260>
<https://aalaslearninglibrary.org/index.html#/app/library/course/2451>
- Procedures With Care: <http://www.procedureswithcare.org.uk/>
- Flecknell Laboratory Animal Interactive Resources for Education (FLAIRE Learning): <https://flairelearning.com/>

Ultimate competency is achieved through the handling of live animals. However, handling of live rats does not occur without prior demonstration of competency on practice models.

I. ANESTHESIA, ANALGESIA, TRANQUILIZATION — For animals indicated in Section H, Column D, specify the anesthetics, analgesics, sedatives or tranquilizers that are to be used. Include the name of the agent(s), the dosage, route and schedule of administration.

Pre-anesthetic restraint and/or analgesia will be achieved with one or some combination of the following medications: Midazolam 1.0-2.5 mg/kg SC, IM or IV (Hawkins MG, Pascoe PJ, 2012); Buprenorphine 0.05 mg/kg SC, or IM q 8-12 h (Flecknell PA, 1997) or Butorphanol 2.0 mg/kg SC q 4 h (Flecknell, PA 1997).

Anesthesia is induced with 2.5-4% ISO with 100% O₂ and maintained at 1-1.5% with 100% O₂ by face mask with appropriate active scavenging.

Post-operative analgesia is provided via an injection of meloxicam 1-2 mg/kg SC q 12 h (Flecknell, PA 2001) prior to the beginning of the actual surgery.

In the case that these drugs are unavailable or at the discretion of the Attending Veterinarian or other program DVM faculty, other drugs may be used. All dosages will be obtained from reputable veterinary medical formularies that would be used in routine veterinary practice,

such as Plumb's Veterinary Drugs or the VIN Formulary for Exotic Animals.

J. METHOD OF EUTHANASIA OR DISPOSITION OF ANIMALS AT END OF STUDY

Indicate the proposed method, and if a chemical agent is used, specify the dosage and route of administration. . If the method(s) of euthanasia include those not recommended by the AVMA Panel Report on Euthanasia (<https://www.avma.org/KB/Policies/Pages/Euthanasia-Guidelines.aspx>), provide justification why such methods must be used. Indicate the method of carcass disposal if not as MPW.

Once skills demonstration has been performed by all students and once recovered from any surgical procedure the animals will be housed at the college in the Veterinary Technology Building kennel area. During the fall and spring semesters, students care for the animals through kennel duty as required to maintain enrollment in the program. The college will hire staff to care for the animals over the summer semester.

Euthanasia is not anticipated on this protocol. However if, in the case of unforeseen illness or injury that could not be medically managed, euthanasia will be performed via an overdose injection (IV or IP) of pentobarbital at 1 ml/10 lbs of body weight. Alternative methods may be performed at the discretion of the Attending Veterinarian, but will always be an Acceptable Method as outlined by the AVMA Guidelines for the Euthanasia of Animals.

K. HAZARDOUS AGENTS

Use of volatile anesthetics or formalin requires a description of scavenging methods used.

	YES	NO
Hazardous Chemicals or Drugs (List below)	X	<input type="checkbox"/>

Isoflurane, meloxicam, midazolam, buprenorphine, butorphanol, pentobarbital

Additional safety considerations:

Scavenging of waste anesthetic gases by active scavenging system. All drugs are handled and stored in accordance with Federal and state regulations.

L. SPECIAL CONCERNS OR REQUIREMENTS OF THE STUDY — List any special housing, equipment, animal care (i.e., special caging, water, feed, or waste disposal, etc.). Include justification for exemption from participation in the environmental enrichment plan for nonhuman primates or exercise for dogs.

NONE

M. PRINCIPAL INVESTIGATOR CERTIFICATIONS:

1. I certify that the individuals listed in Section A are authorized to conduct procedures involving animals under this proposal have received training in the biology, handling, and care of this species; aseptic surgical methods and techniques (if necessary); the concept, availability, and use of research or testing methods that limit the use of animals or minimize distress; the proper use of anesthetics, analgesics, and tranquilizers (if necessary); procedures for reporting animal welfare concerns.
2. *FOR ALL COLUMN D AND COLUMN E PROPOSALS (see section H):* I certify that I have reviewed the pertinent scientific literature and the sources and/or databases (2 or more) as noted in paragraph H. and have found no valid alternative to any procedures described herein which may cause more than momentary pain or distress, whether it is relieved or not.
3. I will obtain approval from the ACUC before initiating any significant changes in this study.

Principal Investigator:

Signature _____ Date _____

N. CONCURRENCES: PROPOSAL NUMBER Significant Changes to Animal Activities for Previously Approved Protocol Rat-14

Amy Laubinger, DVM, Institutional Official & Chair

Signature _____ Date _____

Gina Wilson, DVM, Attending Veterinarian

Signature _____ Date _____

James Hilleary, Outside Member

Signature _____ Date _____

Nancy Aiello, PhD, Scientist

Signature _____ Date _____

Diane Schrenzel, AAS, LVT, Non-Scientist

Signature _____ Date _____

P. FINAL APPROVAL:

Certification of review and approval by the NOVA Veterinary Technology Animal Care and Use Committee Chairperson.

Chairperson Amy Laubinger, DVM

Signature _____ Date _____



Leave Blank

PROPOSAL # VT-Vet Tech Intro Protocol-15

APPROVAL DATE April 28, 2015

EXPIRATION DATE April 30, 2018

PLEASE TYPE:

A. ADMINISTRATIVE DATA:

Principal Investigator: Tregel Cockburn, DVM

Mailing Address: Northern Virginia Community College, Veterinary Technology Program,
21200 Campus Drive, Sterling, Virginia 20164

Telephone: 703-948-7741 Fax: 703-404-7318 Email: tcockburn@nvcc.edu

Project Title: Animal Restraint and Procedures Labs in VET 105 – Introduction to Vet Technology

Initial Submission ☐ Renewal or Modification ☒ of Proposal Number: VT-VetTechProtocol-12

List the names of all individuals authorized to conduct procedures involving animals under this proposal and identify key personnel (i.e., Co-investigator(s)). Signature confirms that personnel have read and understand the protocol.

Diane Schrenzel, LVT

Dawn Witter, LVT

Linda Schnaible, LVT

B. ANIMAL REQUIREMENTS:

Species: Canine, Feline, Equine Age/Weight/Size: Adult Sex: M/F, unaltered and altered

Stock or Strain: Domestic - various

Source(s): Animal Shelters for SA Only - Frederick County and Loudoun County*

Source: Privately owned horses donated to the Loudoun Therapeutic Riding Foundation for riding use

Holding Location For Canines and Felines: Veterinary Technology – LA and LK Buildings

Holding Location For Equines: Morven Park Equestrian Center, Leesburg, VA

Animal Procedure Location For Canines and Felines: Veterinary Technology – LA Building

Animal Procedure Location For Equines: Morven Park Equestrian Center, Leesburg, VA

Number of Animals:

<u>48 dogs</u> <u>24 cats</u> <u>8 horses</u>	<u>48 dogs</u> <u>24 cats</u> <u>8 horses</u>	<u>48 dogs</u> <u>24 cats</u> <u>8 horses</u>		<u>144 dogs</u> <u>72 cats</u> <u>24 horses</u>
Year 1	Year 2	Year 3	=	TOTAL

***All animals received from the shelters have completed the minimum holding period required by Federal regulations.**

C. STUDY OBJECTIVES:

Briefly explain in non-technical terms the aim of the study and how the study may benefit human or animal health or advance scientific understanding of biological processes.

The purpose of this study is to allow veterinary technician students to practice restraint, handling, husbandry, and common clinical skills in dogs, cats and horses. For dogs and cats, students perform various manual and assisted restraint techniques, weighing on appropriate scale, obtaining vital signs, nail trimming, anal gland expression and microchipping. For horses, students perform haltering, leading, restraint, obtain vital signs, use weigh tape, hoof cleaning, and application of stable leg wraps. Students also receive instruction on animal sanitation, body condition scoring, injection and blood collection sites, administration of oral and ocular medications, and basic nutritional evaluation.

D. RATIONALE FOR ANIMAL USE:

1) Explain your rationale for animal use. 2) Justify the appropriateness of the species selected. 3) Justify the number of animals to be used. (Use additional sheets if necessary.)

Initially the all of the canine/feline and most of the equine skills are practiced on training models. Once the skills are perfected, the techniques are practiced by the students on live animals under the direct supervision of the personnel listed on this protocol.

Dogs, cats and horses are utilized in this course because these are the animals most likely to be encountered in small animal and large animal veterinary clinics respectively, where the majority of our program students will be employed. Small animal shelter animals are utilized because they are already housed by program for surgical sterilization prior to being returned to the Frederick or Loudoun County Shelter for public adoption. Although we make every effort to utilize practice models, we feel ultimate competency in our students is achieved only by having them actually handling and assessing live patients.

There are eight to nine lab sessions that utilize live animals. These lab

sessions utilize 5 to 6 dogs and 3 to 4 cats with small groups of 3 to 4 students per animal species. Initial procedure demonstrations are performed by the veterinarian or licensed veterinary technician. The students practice their techniques on models then attempt the technique on a live animal. The students have received instruction on topics about species-specific handling and care. The students are also assigned relevant Internet instructional videos in the Animal Care Technologies (ACT) website <http://www.4act.com/training> through a private account subscription provided by the program. Course instruction and video prepare students for hands-on activities and clinical practice with patients, but they are not a substitute for actually acquiring the skill with a live animal. Acquisition of technical skills with appropriate judgement requires practice with real animals.

8 horses per year are used. The students are divided into groups of 2 to 3 per horse. The horses participate in 3 lab sessions per semester.

E. DESCRIPTION OF EXPERIMENTAL DESIGN AND ANIMAL PROCEDURES:

Briefly explain the experimental design and specify all animal procedures. This description should allow the ACUC to understand the experimental course of an animal from its entry into the experiment to the endpoint of the study. Specifically address the following:

(Use additional sheets if necessary.)

- **Injections or Inoculations** (substances, dose, sites, volume, route, and schedules)
- **Blood Withdrawals** (volume, frequency, withdrawal sites, and methodology)
- **Non-Survival Surgical Procedures** (Provide details of survival surgical procedures in Section G.)
- **Methods of Restraint** (e.g., restraint chairs, collars, vests, harnesses, slings, etc.)
- **Animal Identification Methods** (e.g., ear tags, tattoos, collar, cage card, etc.)
- **Other Procedures** (e.g., survival studies)
- **Resultant Effects**, if any, the animals are expected to experience (e.g., pain, distress, etc.)
- **Experimental Endpoint Criteria** (i.e., percentage body weight gain or loss, inability to eat or drink, behavioral abnormalities, clinical symptomatology. List the criteria to be used to determine when euthanasia is to be performed.

All procedures described below are performed by the personnel listed on the protocol, or by students under the direct supervision of the personnel listed on this protocol.

Small Animal Restraint and Handling. Manual restraint techniques, common to conventional small animal veterinary practice, will be practiced. Examples include restraint in sternal recumbency, lateral recumbency, or standing. Each animal is used maximum of 6 times per manual restraint method. Restraint devices will be demonstrated and practiced such as slip lead (live animal), application of gauze and commercial muzzles (live animal - maximum 4 times), towel restraint

(live animal), cat bag (models only), snares (models only), Rabies control pole (models only) and cat tongs (models only).

Ear Cleaning. General cleansing technique involves use of otic cleaner, cottonballs and gauze sponges performed only once per animal. Hair in ear canals is gently removed in small amounts with curved hemostats or manual plucking if present. Otoscopic exam is performed prior to determine patency of ear drum maximum of 4 times. Ear bulb flushing with appropriate chlorhexidine solution is discussed but not performed.

Nail Trimming. Technique includes use of various types of nail trimmers such as cat nail scissors, guillotine-style clippers and plier-style clippers with nail guard. Cautery is provided with immediate application of direct pressure with gauze and Quik-Stop power or silver nitrate sticks. Emphasis is on visualizing or estimating nail vein (quick) to prevent unnecessary trauma. The technique is performed with one paw per student. Dremmel tool and files are discussed but not performed.

Anal Gland Expression. Technique involves insertion of gloved and lubricated pointer finger half-way into anus and entrapping each anal sac (at approximately 4 and 8 o'clock position) between finger and thumb then squeezing firmly but gently contents into a paper towel; base of tail is held with other hand. The character and consistently and odor of the expressed material is assessed and recorded. Perianal region is cleaned with a dry shampoo or disposable baby wipe. One student attempt per anal gland in dogs only.

Eye Medication. Sterile ophthalmic ointment is applied unto each cornea as a 1/8-inch strip with other hand holding eyelids steady and open. Once ointment is applied, the eyelids are squeezed closed then rubbed to distribute ointment. One student per eye.

Oral Dosing. Empty pill pockets serve as a common oral medication tool which molds into various sizes for repeat attempts. Once the mouth is opened by squeezing behind the upper canines, the pill pocket is swiftly pushed to back of tongue. The mouth is closed and held until animal swallows which is encouraged by rubbing throat or blowing into nostrils. 4 maximum pill pockets per dog and 2 maximum per cat.

Microchipping. The intrascapular skin is prepared by swabbing with 70% alcohol then tented for subcutaneous injection with a pre-loaded ISO microchip syringe. The pre-packaged 16 or 18g-needle is inserted bevel-side up and to the hub to create a pocket. The syringe is withdrawn partially to allow for microchip seating when plunger is completely depressed. The needle is completely withdrawn and inspected to ensure microchip has been released before discarding into Sharps container. The skin opening is held immediately post-implantation between fingers to promote self-closure. The site is scanned to verified microchip detection and unique ID number. One microchip per live animal.

Subcutaneous, Intradermal and Intramuscular Injection. Students practice these three injection techniques a minimum of 4 times on raw

non-frozen, intact skin chicken leg-quarters using 22g with 3cc syringe and 25g needles with 1cc syringe. Dark-colored dye added to saline is the fluid for injection and to visualize proper technique. Students also practice subcutaneous and intramuscular injection techniques unlimited times with plain tap water on synthetic injection pads. The injection skills are not performed on live animals.

Each dog and cat will have a physical examination with vital signs and body score assessment. Any existing health problems (e.g., dental disease, abscess, skin wounds, etc.) will be treated using currently accepted standards of veterinary practice in VET 221, Advanced Clinics.

After being utilized a maximum of two to three times in lab sessions, the animal is rotated into VET 221 Advanced Clinics (Advanced Clinics-14) for surgical neutering or dental prophylaxis by faculty veterinarians.

Dogs and cats will be group-housed when compatible and provided an opportunity for exercise in accordance with the Animal Welfare Regulations. The veterinary technology students and staff also provide these animals positive socialization. The dogs are walked twice a day by staff or veterinary technology students. The dogs are also placed in outside runs as weather permits for additional exercise.

For the horse lab session, a memorandum of understanding (MOU) is established between the veterinary technology program and the source location as to the specific tasks to be practiced or demonstrated. The source location has been previously observed by the PI to be suitable and to follow the standards of practice in horse care.

All horse procedures on this protocol are under the immediate supervision of at least the PI or a LVT/RVT staff member listed on page one. In addition, authorized personnel of the source locations are in attendance to assist with proper horse restraint. Horses are generally restrained using a halter with rope lead line or halter with cross-ties.

Equine Handling/Restraint, Patient Assessment and Husbandry. Students are divided into small groups of 3 to 4 per horse on which they observe demonstrations then practice the skills predetermined by the MOU. Below is the list of procedures:

Equine Feeds

- Observe common hays, grains and supplements used
- Demonstrate a pad or flake of hay
- Proper feed storage, feeding protocols and schedules

Patient Assessment

- Discuss equine identification - breeds, colors, markings
- Equine handling - apply and remove halter, lead to and from stall, tie lead using Quick release knot

- Pick up front and back feet
- Demonstrate other restraint techniques - using lead rope, lip chain, skin twitch, leg-lift
- Demonstrate twitch technique (as group)
- Obtain weight and height using weigh tapes
- Assess hydration status and palpate digital pulses
- Obtain vital signs - temperature/pulse/respiration (TPR), capillary refill time (CRT)
- Auscultate heart and lungs, +/-abdomen

Therapeutics

- Discuss sites for SQ, IM and IV
- Demonstrate oral medication administration with
- Demonstrate and perform proper method for giving a food treat

Patient Husbandry

- Discuss hoof maintenance and care
- Demonstrate and perform hoof picking
- Discuss basic grooming (brushes and curry combs)
- Demonstrate and apply leg wraps (stable, transport)

It is not anticipated that any of these animals will require euthanasia, but if an illness or injury should occur that does not respond to medical treatment, euthanasia would be performed for facility housed canines and felines only (see section J).

F. SURVIVAL SURGERY — If proposed, complete the following:

1. Identify and describe the surgical procedure(s) to be performed. Include the aseptic methods to be utilized. *(Use additional sheets if necessary.):*
N/A
2. Who will perform surgery and what are their qualifications and/or experience?
N/A
3. Where will surgery be performed (Building and Room)?
N/A
4. Describe post-operative care required, including consideration of the use of post-operative analgesics, and identify the responsible individual:
N/A
5. Has major survival surgery been performed on any animal prior to being placed on this study?
☐ Yes X No
If yes, please explain:

6. Will more than one major survival surgery be performed on an animal while on this study?

☐ Yes ☒ No

If yes, please justify:

H. PAIN OR DISTRESS CATEGORY — The ACUC is responsible for applying U.S. Government Principle IV. Contained in Appendix 3: "Proper use of animals, including the avoidance or minimization of discomfort, distress, and pain when consistent with sound scientific practices, is imperative. Unless the contrary is established, investigators should consider that procedures that cause pain or distress in human beings may cause pain or distress in other animals." Check the appropriate category(ies) and indicate the approximate number of animals in each. Sum(s) should equal total from Section B.

IF ANIMALS ARE INDICATED IN COLUMN E, A SCIENTIFIC JUSTIFICATION IS REQUIRED TO EXPLAIN WHY THE USE OF ANESTHETICS, ANALGESICS, SEDATIVES OR TRANQUILIZERS DURING AND/OR FOLLOWING PAINFUL OR DISTRESSFUL PROCEDURES IS CONTRAINDICATED. PLEASE COMPLETE THE EXPLANATION FOR COLUMN E LISTINGS FORM AVAILABLE FROM OLAM. THIS FORM WILL ACCOMPANY THE NIH ANNUAL REPORT TO THE USDA. NOTE: THIS COLUMN E FORM, AND ANY ATTACHMENTS, e.g., THE ASP, ARE SUBJECT TO THE FREEDOM OF INFORMATION ACT.

Number of Animals Used Each Year:

	Year 1	Year 2	Year 3
X - USDA Column C Minimal, Transient, or No Pain or Distress	48 dogs 24 cats 8 horses	48 dogs 24 cats 8 horses	48 dogs 24 cats 8 horses
<input type="checkbox"/> USDA Column D Pain or Distress Relieved By Appropriate Measures			
<input type="checkbox"/> USDA Column E Unrelieved Pain or Distress			

Describe your consideration of alternatives to procedures in this protocol, and your determination that alternatives were not available. [Note: Principal Investigators must certify in paragraph N.5 that no valid alternative was identified to any described procedures which may cause more than momentary pain or distress whether it is relieved or not.] Delineate the methods and sources used in the search below. Database references must include databases (2 or more) searched, the date of the search, period covered and keywords used. Reduction, replacement, and refinement must be addressed. *For more information see USDA Policy #12 (<http://www.aphis.usda.gov/ac/policy/policy12.pdf>)*

On April 13, 2015 Dr. Tregel Cockburn performed a literature search for consideration of alternatives using the following strategies:

1. Pubmed and Agricola search terms and citations (1992-2015):

Dogs and teaching and husbandry - 675 citations, 5 relevant
 Cats and teaching and husbandry - 581 citations, 4 relevant
 Dogs and training and restraint- 2,019 citations, 0 relevant
 Cats and training and restraint - 2,028 citations, 0 relevant
 Veterinary and teaching and canine- 274 citations, 23 relevant

Revised 4/13/15

Teaching AND feline AND restraint - 209 citations, 14 relevant
Teaching AND microchipping - 19 citations, 5 relevant
Dog AND examination and teaching - 39 citations, 3 relevant
Cat AND examination and teaching - 59 citations, 2 relevant
Inject* AND veterinary medicine AND dog - 9,231 citations
Inject* AND veterinary medicine AND cat - 8,465 citations
Animal models for injection* - including
(Horse or equine) AND (handling OR (physical AND examination)
Or (blood AND (collection OR sampling) OR husbandry) AND (teaching OR
alternatives) - 12,876 citations
Teaching AND horse husbandry - 598 citations, 16 relevant
Veterinary medicine AND horse AND (handling OR physical examination)-
4,070 citations
Education AND veterinary AND horses - 403 citations, 27 relevant

2. ScienceDirect search terms and citations (1995-2015)

Training, examination, Dog or Cat - 92 citations, 11 relevant
Training, microchipping, Dog or Cat - 17 citations, 3 relevant
Veterinary, examination, teaching - 514 citations, 58 relevant
Horses AND physical AND examination - 6,918 citations
Horses AND husbandry - 2,240 citations

*For additional information regarding products that could serve as alternatives to live dogs, cats and horses the following websites and databases were also searched.

3. NORINA (1995-2015) search terms and products

Dog examination - 16 products, 4 relevant
Cat examination - 7 products, 2 relevant
Horse examination - 89 products, 7 relevant

4. Rescue Critters <http://www.rescuecritters.com>

3 relevant products found for this study including horse manikin, "Lucky"

5. International Network for Humane Education <http://www.interniche.org>

1 relevant book reference¹ provides comprehensive information on sources for teaching aids and animal alternatives

18 equine simulators, anatomy models, virtual reality - 3 relevant

6. American Anti-Vivisection Society <http://www.aavs.org> and <http://www.animalearn.org> Resource site for educational products - videos, models, CD, online video links

7. Humane Society Veterinary Medical Association <http://alted.hsvma.org> Educational DVD/video, animal models

8. Veterinary Simulator Industries <http://vetsimulators.net/products/>
3 equine manikins for GI, colic and theriogenology which are relevant for veterinary medical students but not veterinary technician students in basic training

Suggestions for alternatives to using live animals in learning include models/simulators, film/video, and computer simulations. Most products that offered learning alternatives to live animals were animal manikins, videos, or CD's. A variety of links to online video demonstrations were readily available at <http://animalearn.org>.

The use of alternatives to live animals aid in preparing the student for clinical skills with the live animal patient. For training our students, we use didactic coursework, videos, and demonstrations. We also use variety of stuffed animals and animal CPR manikins. However, the model does not permit vital signs assessment in the way a live animal would. And restraint, which is an integral part of these techniques, is not included with the model training. Full small animal cadavers likewise are unsuitable for the same reasons.

Therefore, to obtain competence in the clinical skill of restraint, handling, and common veterinary procedures ultimately requires the use of a live animal.

-
- I. ANESTHESIA, ANALGESIA, TRANQUILIZATION** — For animals indicated in Section H, Column D, specify the anesthetics, analgesics, sedatives or tranquilizers that are to be used. Include the name of the agent(s), the dosage, route and schedule of administration.

None required for this protocol.

J. METHOD OF EUTHANASIA OR DISPOSITION OF ANIMALS AT END OF STUDY

Indicate the proposed method, and if a chemical agent is used, specify the dosage and route of administration. If the method(s) of euthanasia include those not recommended by the AVMA Panel Report on Euthanasia (<http://www.avma.org/resources/euthanasia.pdf>), provide justification why such methods must be used. Indicate the method of carcass disposal if not as MPW. Important references to consider:

It is not anticipated that any animal would require euthanasia on this protocol. However, in the case of an unanticipated severe illness or injury to the canines or felines that did not respond to medical management, the shelter would be notified and euthanasia would be induced via lethal intravenous injection of a barbiturate overdose
[Beuthanasia (CIII) IV, 1 ml/4.5 kg BW].

K. HAZARDOUS AGENTS

Use of volatile anesthetics or formalin requires a description of scavenging methods used.

	YES	NO
Hazardous Chemicals or Drugs (List below)	<input type="checkbox"/>	X

Additional safety considerations:

Students, faculty and animal care staff are required to be vaccinated for pre-exposure Rabies and to maintain documentation of a protective titer every 2years per CDC guidelines on file at the Veterinary Technology Program.

All animals undergo appropriate holding periods in accordance to state and Federal regulations prior to being brought to the Program for sterilization. Although this does not guarantee that the animals are free of zoonotic diseases, it does minimize the risk.

All students, faculty and staff undergo annual OSHA and lab safety training. Documentation of the training is kept on file at the facility.

There is an injury protocol in place for the College which includes bite wounds. All injuries are to be reported to campus police and the injury documented after appropriate care has been rendered. The injured person is encouraged to seek immediate care from their regular physician.

L. SPECIAL CONCERNS OR REQUIREMENTS OF THE STUDY — List any special housing, equipment, animal care (i.e., special caging, water, feed, or waste disposal, etc.). Include justification for exemption from participation in the environmental enrichment plan for nonhuman primates or exercise for dogs.

NONE

REFERENCES :

1. Federation of Animal Science Societies: Guide for the Care and Use of Agricultural Animals in Research and Teaching. Third edition, January 2010. <http://www.fass.org/page.asp?pageID=216>
2. YouTube videos- a website containing a video repository. The videos are made and donated by the public on a wide variety of topics. The videos vary in quality, appropriateness, accuracy, and availability. <http://www.youtube.com>
3. Jukes, N and Chiuiua M: "From Guinea Pig to computer mouse alternative methods for a progressive, humane education" 2nd edition, InterNICHE, Leicester, England, 2003. Updated downloadable version available online at <http://www.interniche.org>

M. PRINCIPAL INVESTIGATOR CERTIFICATIONS:

1. I certify that the individuals listed in Section A are authorized to conduct procedures involving animals under this proposal have received training in the biology, handling, and care of this species; aseptic surgical methods and techniques (if necessary); the concept, availability, and use of research or testing methods that limit the use of animals or minimize distress; the proper use of anesthetics, analgesics, and tranquilizers (if necessary); procedures for reporting animal welfare concerns.
2. *FOR ALL COLUMN D AND COLUMN E PROPOSALS (see section H):* I certify that I have reviewed the pertinent scientific literature and the sources and/or databases (2 or more) as noted in paragraph H. and have found no valid alternative to any procedures described herein which may cause more than momentary pain or distress, whether it is relieved or not.
3. I will obtain approval from the ACUC before initiating any significant changes in this study.

Principal Investigator:

Signature _____

Date _____

N. CONCURRENCES: PROPOSAL NUMBER VT-Vet Tech Intro Protocol-15

Tregel Cockburn, **DVM, Institutional Official & Chair**

Signature _____ Date _____

Mary Aller, **DVM, Attending Veterinarian**

Signature _____ Date _____

Corey Childs, **Outside Member**

Signature _____ Date _____

Nancy Aiello, **PhD, Scientist**

Signature _____ Date _____

Diane Schrenzel, **AAS, LVT, Non-Scientist**

Signature _____ Date _____

P. FINAL APPROVAL:

Certification of review and approval by the NOVA Veterinary Technology Animal Care and Use Committee Chairperson.

Chairperson _____

Signature _____ Date _____

Leave Blank

PROPOSAL # VT-Vet Tech Intro Protocol-15

APPROVAL DATE October 16, 2018

EXPIRATION DATE October 16, 2021



**Northern Virginia
Community College**

Loudoun Campus

PLEASE TYPE:

A. ADMINISTRATIVE DATA:

Principal Investigator: Kiana Adkisson-Selby, DVM

Mailing Address: Northern Virginia Community College, Veterinary Technology Program,
21200 Campus Drive, Sterling, Virginia 20164

Telephone: 703-450-2634 Fax: 703-404-7318 Email: kadkissonselby@nvcc.edu

Project Title: Animal Restraint and Procedures Labs in VET 105 – Introduction to Vet Technology and
VET 121 – Clinical Practices I

Initial Submission ☐ Renewal or Modification ☒ of Proposal Number: VT-VetTechProtocol-12

List the names of all individuals authorized to conduct procedures involving animals under this proposal and identify key personnel (i.e., Co-investigator(s)). Signature confirms that personnel have read and understand the protocol.


Kiana Selby, DVM

Linda Schnaible, LVT

Tregel Cockburn, DVM

Diane Schrenzel, LVT

Dawn Witter, LVT


Amy Daubinger, DVM
Lisa Scott, LVT

ANIMAL REQUIREMENTS:

Species: Canine, Feline, Equine Age/Weight/Size: Adult Sex: M/F, unaltered and altered

Stock or Strain: Domestic - various

Source(s): Animal Shelters for SA Only - Frederick County and Loudoun County*

Source: Privately owned horses donated to the Loudoun Therapeutic Riding Foundation for riding use; privately owned miniature horses and donkeys owned by Linda Schnaible, LVT for personal use

Holding Location For Canines and Felines: Veterinary Technology – LA and LK Buildings

Holding Location For Equines: Morven Park Equestrian Center, Leesburg, VA; Golden Oaks Farm, Waterford, VA

Animal Procedure Location For Canines and Felines: Veterinary Technology – LA Building

Animal Procedure Location For Equines: Morven Park Equestrian Center, Leesburg, VA; Golden Oaks Farm, Waterford, VA

Number of Animals:

<u>48 dogs</u> <u>24 cats</u> <u>8 horses</u>	<u>48 dogs</u> <u>24 cats</u> <u>8 horses</u>	<u>48 dogs</u> <u>24 cats</u> <u>8 horses</u>		<u>144 dogs</u> <u>72 cats</u> <u>24 horses</u>
Year 1	Year 2	Year 3	=	TOTAL

***All animals received from the shelters have completed the minimum holding period required by Federal regulations.**

C. STUDY OBJECTIVES:

Briefly explain in non-technical terms the aim of the study and how the study may benefit human or animal health or advance scientific understanding of biological processes.

The purpose of this study is to allow veterinary technician students to practice restraint, handling, husbandry, and common clinical skills in dogs, cats and horses. For dogs and cats, students perform various manual and assisted restraint techniques, weighing on appropriate scale, obtaining vital signs, nail trimming, anal gland expression and microchipping. For horses, students perform haltering, leading, restraint, obtain vital signs, use weigh tape, hoof cleaning, and application of stable leg wraps. Students also receive instruction on animal sanitation, body condition scoring, injection and blood collection sites, administration of oral and ocular medications, and basic nutritional evaluation.

D. RATIONALE FOR ANIMAL USE:

1) Explain your rationale for animal use. 2) Justify the appropriateness of the species selected. 3) Justify the number of animals to be used. (Use additional sheets if necessary.)

Initially the all of the canine/feline and most of the equine skills are practiced on training models. Once the skills are perfected, the techniques are practiced by the students on live animals under the direct supervision of the personnel listed on this protocol.

Dogs, cats and horses are utilized in this course because these are the animals most likely to be encountered in small animal and large animal veterinary clinics respectively, where the majority of our program students will be employed. Small animal shelter animals are utilized because they are already housed by program for surgical sterilization prior to being returned to the Frederick or Loudoun County Shelter for

because they are already housed by program for surgical sterilization prior to being returned to the Frederick or Loudoun County Shelter for public adoption. Although we make every effort to utilize practice models, we feel ultimate competency in our students is achieved only by having them actually handling and assessing live patients.

There are eight to nine lab sessions that utilize live animals. These lab sessions utilize 5 to 6 dogs and 3 to 4 cats with small groups of 3 to 4 students per animal species. Initial procedure demonstrations are performed by the veterinarian or licensed veterinary technician. The students practice their techniques on models then attempt the technique on a live animal. The students have received instruction on topics about species-specific handling and care. The students are also assigned relevant Internet instructional videos in the Animal Care Technologies (ACT) website <http://www.4act.com/training> through a private account subscription provided by the program. Course instruction and video prepare students for hands-on activities and clinical practice with patients, but they are not a substitute for actually acquiring the skill with a live animal. Acquisition of technical skills with appropriate judgement requires practice with real animals.

8 horses from Loudoun Therapeutic Riding Foundation per year are used. The students are divided into groups of 2 to 3 per horse. The horses from Loudoun Therapeutic Riding Foundation participate in 3 lab sessions per semester. 4 Equids from Golden Oaks Farm are utilized by students divided into groups of 3-4 per equid and participate in 3 lab sessions per semester.

E. DESCRIPTION OF EXPERIMENTAL DESIGN AND ANIMAL PROCEDURES:

Briefly explain the experimental design and specify all animal procedures. This description should allow the ACUC to understand the experimental course of an animal from its entry into the experiment to the endpoint of the study. Specifically address the following:

(Use additional sheets if necessary.)

- **Injections or Inoculations** (substances, dose, sites, volume, route, and schedules)
- **Blood Withdrawals** (volume, frequency, withdrawal sites, and methodology)
- **Non-Survival Surgical Procedures** (Provide details of survival surgical procedures in Section G.)
- **Methods of Restraint** (e.g., restraint chairs, collars, vests, harnesses, slings, etc.)
- **Animal Identification Methods** (e.g., ear tags, tattoos, collar, cage card, etc.)
- **Other Procedures** (e.g., survival studies)
- **Resultant Effects**, if any, the animals are expected to experience (e.g., pain, distress, etc.)
- **Experimental Endpoint Criteria** (i.e., percentage body weight gain or loss, inability to eat or drink, behavioral abnormalities, clinical symptomatology. List the criteria to be used to determine when euthanasia is to be performed.

All procedures described below are performed by the personnel listed on the protocol, or by students under the direct supervision of the personnel listed on this protocol.

Small Animal Restraint and Handling. Manual restraint techniques, common to conventional small animal veterinary practice, will be practiced. Examples include restraint in sternal recumbency, lateral recumbency, or standing. Each animal is used maximum of 6 times per manual restraint method. Restraint devices will be demonstrated and practiced such as slip lead (live animal), application of gauze and commercial muzzles (live animal - maximum 4 times), towel restraint (live animal), cat bag (models only), snares (models only), Rabies control pole (models only) and cat tongs (models only).

Ear Cleaning. General cleansing technique involves use of otic cleaner, cottonballs and gauze sponges performed only once per animal. Hair in ear canals is gently removed in small amounts with curved hemostats or manual plucking if present. Otoscopic exam is performed prior to determine patency of ear drum maximum of 4 times. Ear bulb flushing with appropriate chlorhexidine solution is discussed but not performed.

Nail Trimming. Technique includes use of various types of nail trimmers such as cat nail scissors, guillotine-style clippers and plier-style clippers with nail guard. Cautery is provided with immediate application of direct pressure with gauze and Quik-Stop power or silver nitrate sticks. Emphasis is on visualizing or estimating nail vein (quick) to prevent unnecessary trauma. The technique is performed with one paw per student. Dremmel tool and files are discussed but not performed.

Anal Gland Expression. Technique involves insertion of gloved and lubricated pointer finger half-way into anus and entrapping each anal sac (at approximately 4 and 8 o'clock position) between finger and thumb then squeezing firmly but gently contents into a paper towel; base of tail is held with other hand. The character and consistency and odor of the expressed material is assessed and recorded. Perianal region is cleaned with a dry shampoo or disposable baby wipe. One student attempt per anal gland in dogs only.

Eye Medication. Sterile ophthalmic ointment is applied unto each cornea as a 1/8-inch strip with other hand holding eyelids steady and open. Once ointment is applied, the eyelids are squeezed closed then rubbed to distribute ointment. One student per eye.

Oral Dosing. Empty pill pockets serve as a common oral medication tool which molds into various sizes for repeat attempts. Once the mouth is opened by squeezing behind the upper canines, the pill pocket is swiftly pushed to back of tongue. The mouth is closed and held until animal swallows which is encouraged by rubbing throat or blowing into nostrils. 4 maximum pill pockets per dog and 2 maximum per cat.

Microchipping. The intrascapular skin is prepared by swabbing with 70% alcohol then tented for subcutaneous injection with a pre-loaded ISO

microchip syringe. The pre-packaged 16 or 18g-needle is inserted bevel-side up and to the hub to create a pocket. The syringe is withdrawn partially to allow for microchip seating when plunger is completely depressed. The needle is completely withdrawn and inspected to ensure microchip has been released before discarding into Sharps container. The skin opening is held immediately post-implantation between fingers to promote self-closure. The site is scanned to verify microchip detection and unique ID number. One microchip per live animal.

Subcutaneous, Intradermal and Intramuscular Injection. Students practice these three injection techniques a minimum of 4 times on raw non-frozen, intact skin chicken leg-quarters using 22g with 3cc syringe and 25g needles with 1cc syringe. Dark-colored dye added to saline is the fluid for injection and to visualize proper technique. Students also practice subcutaneous and intramuscular injection techniques unlimited times with plain tap water on synthetic injection pads. The injection skills are not performed on live animals.

Each dog and cat will have a physical examination with vital signs and body score assessment. Any existing health problems (e.g., dental disease, abscess, skin wounds, etc.) will be treated using currently accepted standards of veterinary practice in VET 221, Advanced Clinics.

After being utilized a maximum of two to three times in lab sessions, the animal is rotated into VET 221 Advanced Clinics (Advanced Clinics-14) for surgical neutering or dental prophylaxis by faculty veterinarians.

Dogs and cats will be group-housed when compatible and provided an opportunity for exercise in accordance with the Animal Welfare Regulations. The veterinary technology students and staff also provide these animals positive socialization. The dogs are walked twice a day by staff or veterinary technology students. The dogs are also placed in outside runs as weather permits for additional exercise.

For the horse lab session, a memorandum of understanding (MOU) is established between the veterinary technology program and the source location as to the specific tasks to be practiced or demonstrated. The source location has been previously observed by the PI to be suitable and to follow the standards of practice in horse care.

All horse procedures on this protocol are under the immediate supervision of at least the PI or a LVT/RVT staff member listed on page one. In addition, authorized personnel of the source locations are in attendance to assist with proper horse restraint. Horses are generally restrained using a halter with rope lead line or halter with cross-ties.

Equine Handling/Restraint, Patient Assessment and Husbandry. Students are divided into small groups of 3 to 4 per horse on which they observe demonstrations then practice the skills predetermined by the MOU. Below is the list of procedures:

Equine Feeds

- Observe common hays, grains and supplements used
- Demonstrate a pad or flake of hay
- Proper feed storage, feeding protocols and schedules

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- Discuss equine identification - breeds, colors, markings
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- Pick up front and back feet
- Demonstrate other restraint techniques - using lead rope, lip chain, skin twitch, leg-lift
- Demonstrate twitch technique (as group)
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- Auscultate heart and lungs, +/-abdomen

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- Discuss sites for SQ, IM and IV
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- Demonstrate and perform proper method for giving a food treat

Patient Husbandry

- Discuss hoof maintenance and care
- Demonstrate and perform hoof picking
- Discuss basic grooming (brushes and curry combs)
- Demonstrate and apply leg wraps (stable, transport)

It is not anticipated that any of these animals will require euthanasia, but if an illness or injury should occur that does not respond to medical treatment, euthanasia would be performed for facility housed canines and felines only (see section J).

F. SURVIVAL SURGERY — If proposed, complete the following:

1. Identify and describe the surgical procedure(s) to be performed. Include the aseptic methods to be utilized. *(Use additional sheets if necessary.):*

N/A

2. Who will perform surgery and what are their qualifications and/or experience?

N/A

3. Where will surgery be performed (Building and Room)?

N/A

4. Describe post-operative care required, including consideration of the use of post-operative analgesics, and identify the responsible individual:

N/A

5. Has major survival surgery been performed on any animal prior to being placed on this study?☐ Yes ☒ No

If yes, please explain:

6. Will more than one major survival surgery be performed on an animal while on this study?☐ Yes ☒ No

If yes, please justify:

H. PAIN OR DISTRESS CATEGORY — The ACUC is responsible for applying U.S. Government Principle IV. Contained in Appendix 3: "Proper use of animals, including the avoidance or minimization of discomfort, distress, and pain when consistent with sound scientific practices, is imperative. Unless the contrary is established, investigators should consider that procedures that cause pain or distress in human beings may cause pain or distress in other animals." Check the appropriate category(ies) and indicate the approximate number of animals in each. Sum(s) should equal total from Section B.

IF ANIMALS ARE INDICATED IN COLUMN E, A SCIENTIFIC JUSTIFICATION IS REQUIRED TO EXPLAIN WHY THE USE OF ANESTHETICS, ANALGESICS, SEDATIVES OR TRANQUILIZERS DURING AND/OR FOLLOWING PAINFUL OR DISTRESSFUL PROCEDURES IS CONTRAINDICATED. PLEASE COMPLETE THE EXPLANATION FOR COLUMN E LISTINGS FORM AVAILABLE FROM OLAM. THIS FORM WILL ACCOMPANY THE NIH ANNUAL REPORT TO THE USDA. NOTE: THIS COLUMN E FORM, AND ANY ATTACHMENTS, e.g., THE ASP, ARE SUBJECT TO THE FREEDOM OF INFORMATION ACT.

Number of Animals Used Each Year:

	Year 1	Year 2	Year 3
X - USDA Column C Minimal, Transient, or No Pain or Distress	48 dogs 24 cats 8 horses	48 dogs 24 cats 8 horses	48 dogs 24 cats 8 horses
<input type="checkbox"/> USDA Column D Pain or Distress Relieved By Appropriate Measures			
<input type="checkbox"/> USDA Column E Unrelieved Pain or Distress			

Describe your consideration of alternatives to procedures in this protocol, and your determination that alternatives were not available. [Note: Principal Investigators must certify in paragraph N.5 that no valid alternative was identified to any described procedures which may cause more than momentary pain or distress whether it is relieved or not.] Delineate the methods and sources used in the search below. Database references must include databases (2 or more) searched, the date of the search, period covered and keywords used. Reduction, replacement, and refinement must be addressed. *For more information see USDA Policy #12 (<http://www.aphis.usda.gov/ac/policy/policy12.pdf>)*

On April 30, 2018 Dr. Kiana Selby performed a literature search for consideration of alternatives using the following strategies:

1. Pubmed search terms and citations:

Dogs and teaching and husbandry - 78 citations, 13 relevant
Cats and teaching and husbandry - 44 citations, 9 relevant
Dogs and training and restraint- 10 citations, 0 relevant
Cats and training and restraint - 6 citations, 0 relevant
Veterinary and teaching and canine- 2,939 citations, 0 relevant
Teaching AND feline AND restraint - 4 citations, 0 relevant
Teaching AND microchipping - 2 citations, 0 relevant
Dog AND examination and teaching - 636 citations, 1 relevant
Cat AND examination and teaching - 304 citations, 0 relevant
Inject* AND veterinary medicine AND dog - 5 citations, 0 relevant
Inject* AND veterinary medicine AND cat - 344 citations, 0 relevant
Animal models for injection* - including
(Horse or equine) AND (handling OR (physical AND examination)
Or (blood AND (collection OR sampling) OR husbandry) AND (teaching OR
alternatives) - 65,030 citations
Teaching AND horse husbandry - 76 citations, 4 relevant
Veterinary medicine AND horse AND (handling OR physical examination)-
1,648 citations
Education AND veterinary AND horses - 366 citations

*For additional information regarding products that could serve as alternatives to live dogs, cats and horses the following websites and databases were also searched.

2. NORINA search terms and products

Dog examination - 44 products, 5 relevant
Cat examination - 28 products, 3 relevant
Horse examination - 22 products, 1 relevant

3. International Network for Humane Education <http://www.interniche.org>

4. American Anti-Vivisection Society <http://www.aavs.org> and
<http://www.animalearn.org> Resource site for educational products -
videos, models, CD, online video links

5. Humane Society Veterinary Medical Association <http://alted.hsvma.org>
Educational DVD/video, animal models

6. Veterinary Simulator Industries <http://vetsimulators.net/products/>

Suggestions for alternatives to using live animals in learning include models/simulators, film/video, and computer simulations. Most products that offered learning alternatives to live animals were animal manikins,

videos, or CD's. A variety of links to online video demonstrations were readily available at <http://animalearn.org>.

The use of alternatives to live animals aid in preparing the student for clinical skills with the live animal patient. For training our students, we use didactic coursework, videos, and demonstrations. We also use variety of stuffed animals and animal CPR manikins. However, the model does not permit vital signs assessment in the way a live animal would, and restraint, which is an integral part of these techniques, is not included with the model training. Full small animal cadavers likewise are unsuitable for the same reasons.

Therefore, to obtain competence in the clinical skill of restraint, handling, and common veterinary procedures ultimately requires the use of a live animal.

I. ANESTHESIA, ANALGESIA, TRANQUILIZATION — For animals indicated in Section H, Column D, specify the anesthetics, analgesics, sedatives or tranquilizers that are to be used. Include the name of the agent(s), the dosage, route and schedule of administration.

None required for this protocol.

J. METHOD OF EUTHANASIA OR DISPOSITION OF ANIMALS AT END OF STUDY

Indicate the proposed method, and if a chemical agent is used, specify the dosage and route of administration. If the method(s) of euthanasia include those not recommended by the AVMA Panel Report on Euthanasia (<http://www.avma.org/resources/euthanasia.pdf>), provide justification why such methods must be used. Indicate the method of carcass disposal if not as MPW. Important references to consider:

It is not anticipated that any animal would require euthanasia on this protocol. However, in the case of an unanticipated severe illness or injury to the canines or felines that did not respond to medical management, the shelter would be notified and euthanasia would be induced via lethal intravenous injection of a barbiturate overdose [Euthanasia (CIII) IV, 1 ml/4.5 kg BW].

K. HAZARDOUS AGENTS

Use of volatile anesthetics or formalin requires a description of scavenging methods used.

	YES	NO
Hazardous Chemicals or Drugs (List below)	<input type="checkbox"/>	X

Additional safety considerations:

Students, faculty and animal care staff are required to be vaccinated for pre-exposure Rabies and to maintain documentation of a protective

titer every 2years per CDC guidelines on file at the Veterinary Technology Program.

All animals undergo appropriate holding periods in accordance to state and Federal regulations prior to being brought to the Program for sterilization. Although this does not guarantee that the animals are free of zoonotic diseases, it does minimize the risk.

All students, faculty and staff undergo annual OSHA and lab safety training. Documentation of the training is kept on file at the facility.

There is an injury protocol in place for the College which includes bite wounds. All injuries are to be reported to campus police and the injury documented after appropriate care has been rendered. The injured person is encouraged to seek immediate care from their regular physician.

L. SPECIAL CONCERNS OR REQUIREMENTS OF THE STUDY — List any special housing, equipment, animal care (i.e., special caging, water, feed, or waste disposal, etc.). Include justification for exemption from participation in the environmental enrichment plan for nonhuman primates or exercise for dogs.

NONE

REFERENCES:

1. Federation of Animal Science Societies: Guide for the Care and Use of Agricultural Animals in Research and Teaching. Third edition, January 2010. <http://www.fass.org/page.asp?pageID=216>
2. YouTube videos- a website containing a video repository. The videos are made and donated by the public on a wide variety of topics. The videos vary in quality, appropriateness, accuracy, and availability. <http://www.youtube.com>
3. Jukes, N and Chiulia M: "From Guinea Pig to computer mouse alternative methods for a progressive, humane education" 2nd edition, InterNICHE, Leicester, England, 2003. Updated downloadable version available online at <http://www.interniche.org>

M. PRINCIPAL INVESTIGATOR CERTIFICATIONS:

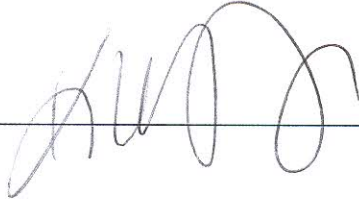
1. I certify that the individuals listed in Section A are authorized to conduct procedures involving animals under this proposal have received training in the biology, handling, and care of this species; aseptic surgical methods and techniques (if necessary); the concept, availability, and use of research or testing methods that limit the use of animals or minimize distress; the proper use of anesthetics, analgesics, and tranquilizers (if necessary); procedures for reporting animal welfare concerns.
2. *FOR ALL COLUMN D AND COLUMN E PROPOSALS (see section H):* I certify that I have reviewed the pertinent scientific literature and the sources and/or databases (2 or more) as noted in paragraph H.

and have found no valid alternative to any procedures described herein which may cause more than momentary pain or distress, whether it is relieved or not.

3. I will obtain approval from the ACUC before initiating any significant changes in this study.

Principal Investigator:

Signature _____



Date 11/13/18

N. CONCURRENCES: PROPOSAL NUMBER VT-Vet Tech Intro Protocol-15

Amy Laubinger, DVM, Institutional Official & Chair

Signature Amy Laubinger, DVM Date 10-16-18

Regina Wilson, DVM, Attending Veterinarian

Signature Regina E. Wilson, DVM Date 10/16/18

Jim Hilleary, ~~Outside Member~~

Signature [Signature] Date 16 Oct '18

Diane Mucci, PhD, Scientist

Signature Diane Mucci Date 10/16/18

Dawn Witter, AAS, LVT, Non-Scientist

Signature [Signature], LVT Date 10/16/18

P. FINAL APPROVAL:

Certification of review and approval by the NOVA Veterinary Technology Animal Care and Use Committee Chairperson.

Chairperson Amy Laubinger, DVM

Signature Amy Laubinger, DVM Date 10-16-18



**Northern Virginia
Community College**

Loudoun Campus

Leave Blank

PROPOSAL # Anesthesia-17

APPROVAL DATE November 10, 2017

EXPIRATION DATE November 10, 2020

PLEASE TYPE:

A. ADMINISTRATIVE DATA:

Principal Investigator: Tregel Cockburn, DVM

Mailing Address: Northern Virginia Community College, Veterinary Technology Program, 21200 Campus Drive, LA Bldg, Sterling, VA 20164

Telephone: 703-948-7741 Main: 703-450-2525 Email tcockburn@nvcc.edu

Project Title: Anesthesia of Domestic Animals

Initial Submission ☐ Renewal **XX** or Modification of Proposal Number Anesthesia-14

List the names of all individuals authorized to conduct procedures involving animals under this proposal and identify key personnel (i.e., Co-investigator(s)). Signature confirms that personnel have read and understand the protocol.

Amy Laubinger, DVM Amy Laubinger, DVM

Diane Schrenzel, LVT Diane Schrenzel, LVT

Linda Schnaible, LVT Linda Schnaible, LVT

Dawn Witter, LVT Dawn Witter, LVT

B. ANIMAL REQUIREMENTS:

Species Dogs and Cats Age/Weight/Size Adults Sex M

Stock or Strain Domestic

Source(s) Animal Shelter: Frederick County*

Holding Location(s) Veterinary Technology - LA and LK Buildings

Animal Procedure Location(s) Veterinary Technology - LA Building

Number of Animals:

<u>20 cats</u> <u>20 dogs</u>	<u>20 cats</u> <u>20 dogs</u>	<u>20 cats</u> <u>20 dogs</u>		<u>60 cats</u> <u>60 dogs</u>
Year 1	Year 2	Year 3	=	TOTAL

***All animals received from the shelters have completed the minimum holding period required by Federal regulations.**

C. STUDY OBJECTIVES:

Briefly explain in non-technical terms the aim of the study and how the study may benefit human or animal health or advance scientific understanding of biological processes.

The purpose of this course is to allow veterinary technician students to practice and become adept at induction, maintenance, and recovery of common domestic species from general anesthesia.

D. RATIONALE FOR ANIMAL USE:

1) Explain your rationale for animal use. 2) Justify the appropriateness of the species selected. 3) Justify the number of animals to be used. (Use additional sheets if necessary.)

The Program utilizes models extensively in training prior to allowing students to handle live animals. Students practice with intubation models (anatomically correct dog head models) and artificial limbs that permit them to practice intravenous catheterization as many times as necessary to establish the correct technique.

Cats and dogs are utilized in this course because these are the animals most likely to be encountered in small animal veterinary clinics, hospitals and referral centers where majority of our students will be employed. Basic clinical competency in our students is achieved only by having them practice anesthetic techniques on live animal patients.

The students are divided into groups of 3 to 5 students maximum. Each student group is assigned an individual animal. Each animal is anesthetized once before being surgically altered and rotated out of the protocol then returned to the shelter for adoption. There are 8 to 10 sessions with approximately 2 to 3 animals per lab.

E. DESCRIPTION OF EXPERIMENTAL DESIGN AND ANIMAL PROCEDURES:

Briefly explain the experimental design and specify all animal procedures. This description should allow the ACUC to understand the experimental course of an animal from its entry into the experiment to the endpoint of the study. Specifically address the following:

(Use additional sheets if necessary.)

- **Injections or Inoculations** (substances, dose, sites, volume, route, and schedules)
- **Blood Withdrawals** (volume, frequency, withdrawal sites, and methodology)
- **Non-Survival Surgical Procedures** (Provide details of survival surgical procedures in Section G.)
- **Methods of Restraint** (e.g., restraint chairs, collars, vests, harnesses, slings, etc.)
- **Animal Identification Methods** (e.g., ear tags, tattoos, collar, cage card, etc.)
- **Other Procedures** (e.g., survival studies)
- **Resultant Effects**, if any, the animals are expected to experience (e.g., pain, distress, etc.)
- **Experimental Endpoint Criteria** (i.e., percentage body weight gain or loss, inability to eat or drink, behavioral abnormalities, clinical symptomatology). List the criteria to be used to determine when euthanasia is to be performed.

The course is divided into 14 laboratories. The first two to three labs are utilized for orientation and for the establishment of basic skills and techniques. In the third to fifth labs the students practice IV catheter placement on sedated live animals (3 students per animal with only 1 limb/student, maximum of 3 attempts/student). Once these basic skills are documented, the remaining labs are utilized to induce, maintain and recover animal patients from general anesthesia. Only one student is allowed to intubate/animal and maximum three students are allowed to IV catheterize each animal. The students rotate positions so that over the course of the semester each student gets to practice all of their skills. Two lab sessions are used for practical examinations on teaching models only.

Prior to being anesthetized, the animals will be given a complete physical examination by the students and verified by the veterinarian, a canine heartworm 4DX or feline leukemia/FIV test (drawn by the students from the jugular vein using a 22-gauge needle and a 3cc syringe), PCV/TS, CBC with possible pre-op chemistry panel and a fecal parasite check. An intravenous catheter is placed in the right/left cephalic or lateral saphenous vein (by the student who is allowed three attempts before the veterinarian or licensed veterinary technician will place), intravenous fluids administered (0.9% saline or LRS 10 ml/kg/hr), premedications administered which consist of acepromazine and butorphanol general anesthesia is induced (see section I), the animal is intubated (the assigned student is allowed three attempts before the instructing veterinarian or licensed veterinary technician will take over the procedure or if the animal experiences any distress) and surgical sterilization performed by the attending veterinarian (see section F).

The animals are kept warm throughout the entire procedure to address anesthetic hypothermia and during the recovery period by various combinations of warm blankets, circulating water blankets, warm air blankets, heated surgical tabletop and heated cage floors. IV fluid warmers are also used as needed. Any pre-existing health problems will be treated and corrected using current standards of veterinary care prior to subjecting the animal to surgery. Following 2 to 7 days of post-operative recovery, they will then be returned to the animal shelters where they will be adopted into private homes.

Students are directly supervised at all times by at least one of the Veterinary Technology personnel listed in Section A of this protocol. This direct supervision assures the safety of both the animal patient and the student.

The animals utilized for this protocol are in-patients of the NOVA Veterinary Technology Program. However, ownership of these animals remains, at all times, with the county animal shelter from which they were received. Any pre-existing health problems will be addressed by a treatment plan using currently acceptable standards of veterinary care prior to subjecting the animal to sterilization surgery.

It is not anticipated that any of these animals will require euthanasia. However, if an illness, injury or infectious disease should occur that does not respond to medical treatment, humane euthanasia would be performed (see section J).

Dogs and cats will be group-housed when compatible and provided an opportunity for exercise in accordance with the Animal Welfare Regulations. The veterinary technology students and staff also provide these animals with positive socialization. The dogs are walked twice a day by animal care assistants, veterinary technology students or program teaching staff members. The dogs are also placed in outside covered runs and fenced pens as weather permits for additional exercise.

F. SURVIVAL SURGERY — If proposed, complete the following:

1. Identify and describe the surgical procedure(s) to be performed. Include the aseptic methods to be utilized. *(Use additional sheets if necessary.):*

All animals are prepared for surgery in accordance with standard aseptic surgical techniques. This includes, but is not limited to, shaving, skin preparation (alternating scrubs with sterile saline and 2% chlorhexidine), sterile surgical instruments and preparation of the surgeon (mask, cap, surgical scrub, sterile gown and gloves).

CASTRATION

CAT:

Castration is indicated as an elective procedure to prevent impregnation and to reduce the characteristic odor of tomcat and for behavior modification:

General anesthesia is indicated. Fluid therapy is provided. The patient is placed in lateral or dorsal recumbency. The hair is plucked from the scrotal skin and the area is surgically prepped.

The scrotal skin is incised using a #15 blade in a vertical direction over each testicle. A closed castration is performed without penetrating the common vaginal tunic. A self-tie is made in each spermatic cord using curved mosquito hemostats. Each cord is incised caudal to the knot and the testicle is removed. Excessive fatty tissue is excised. Open castration may also be performed with excision into vaginal tunic, separation of ductus deferens from spermatic cord of testicle then tied unto itself 3 to 4 times. The tunic and scrotal incision are allowed to heal by second intention.

The scrotal area should be examined daily for evidence of excessive swelling, discharge, pain and heat.

DOG:

Castration is done for sterilization, to correct or eliminate obnoxious behavior, prevent roaming and decrease the desire to fight. Older dogs may require castration in conjunction with other therapy for related problems such as benign prostatic hyperplasia.

General anesthesia is required. Fluid therapy is provided. The dog is placed in dorsal recumbence with the rear limbs gently abducted.

The caudal two thirds of the prepuce and the base of the scrotum should be gently clipped with particular care taken to avoid any clipper burns or abrasions to the scrotum. The long hair on the scrotum itself should be "butched". The area will be surgically prepped in a routine manner. Betadine or chlorhexidine solution should NOT be sprayed on the scrotum itself.

The area is four corner draped. One of the testicles is displaced cranially by finger manipulation through the caudal drape. It is positioned ventral to the penis immediately cranial to the scrotum and held with sufficient pressure to cause the testicle to bulge under the skin. A midline incision is made over the testicle with a #10 blade and #3 Bard-Parker handle. The common tunic is similarly incised. The castration is performed using an open or closed technique. The incision is made long enough to allow the testicle to pop free of the subcutaneous tissues and common vaginal tunic. The spermatic cord and testicular artery and vein are ligated using a 3-clamp method and 2-0 or 3-0 monofilament absorbable suture. The pedicle is grasped with thumb forceps and examined for hemorrhage. The other testicle is similarly incised and the cord, vein and artery ligated. The wound is closed with a subcutaneous stitch and a continuous subcuticular stitch using 2-0 or 3-0 monofilament absorbable suture. Skin closed with tissue glue.

The dog should have moderate restriction of exercise. The incision should be checked daily for swelling or discharge. If the vessel in the scrotal ligament bleeds or subcutaneous hemorrhage is excessive, the scrotum may fill with blood that forms a palpable clot. This problem is usually self-limiting. The most common problem after surgery is scrotal dermatitis initiated by rough clipping or harsh scrubbing and aggravated by the dog's licking. In the above situation, an E-collar may be indicated to prevent self-trauma.

2. Who will perform surgery and what are their qualifications and/or experience?
Tregel Cockburn, DVM with 23 years of experience
3. Where will surgery be performed (Building and Room)?
Veterinary Technology Surgical Suite, Room 150
4. Describe post-operative care required, including consideration of the use of post-operative analgesics, and identify the responsible individual:

Analgesics will be given as described in Section I. Animals will be closely monitored by the Veterinary Technology students and staff until they are in sternal recumbency then ambulatory. Any wounds and the surgical incision will be examined for the first several days after the surgery for redness, swelling and/or discharge and treated appropriately if necessary.

5. Has major survival surgery been performed on any animal prior to being placed on this study?

☐ Yes X No

If yes, please explain:

6. Will more than one major survival surgery be performed on an animal while on this study?

☐ Yes X No

If yes, please justify:

H. PAIN OR DISTRESS CATEGORY — The ACUC is responsible for applying U.S. Government Principle IV. Contained in Appendix 3: "Proper use of animals, including the avoidance or minimization of discomfort, distress, and pain when consistent with sound scientific practices, is imperative. Unless the contrary is established, investigators should consider that procedures that cause pain or distress in human beings may cause pain or distress in other animals." Check the appropriate category(ies) and indicate the approximate number of animals in each. Sum(s) should equal total from Section B.

IF ANIMALS ARE INDICATED IN COLUMN E, A SCIENTIFIC JUSTIFICATION IS REQUIRED TO EXPLAIN WHY THE USE OF ANESTHETICS, ANALGESICS, SEDATIVES OR TRANQUILIZERS DURING AND/OR FOLLOWING PAINFUL OR DISTRESSFUL PROCEDURES IS CONTRAINDICATED. PLEASE COMPLETE THE EXPLANATION FOR COLUMN E LISTINGS FORM AVAILABLE FROM OLAM. THIS FORM WILL ACCOMPANY THE NIH ANNUAL REPORT TO THE USDA. NOTE: THIS COLUMN E FORM, AND ANY ATTACHMENTS, e.g., THE ASP, ARE SUBJECT TO THE FREEDOM OF INFORMATION ACT.

Number of Animals Used Each Year:

	Year 1	Year 2	Year 3
<input type="checkbox"/> USDA Column C Minimal, Transient, or No Pain or Distress			
X USDA Column D Pain or Distress Relieved By Appropriate Measures	20 cats 20 dogs	20 cats 20 dogs	20 cats 20 dogs
<input type="checkbox"/> USDA Column E Unrelieved Pain or Distress			

Describe your consideration of alternatives to procedures in this protocol, and your determination that alternatives were not available. [Note: Principal Investigators must certify in paragraph N.5 that no valid alternative was identified to any described procedures which may cause more than momentary pain or distress whether it is relieved or not.] Delineate the methods and sources used in the search below. Database references must include databases (2 or more) searched, the date of the search, period covered and keywords used. Reduction, replacement, and refinement must be addressed. *For more information see USDA Policy #12 (http://www.aphis.usda.gov/animal_welfare/downloads/policy/policy12.pdf)*

On October 31, 2017 Dr. Cockburn searched ScienceDirect and Wiley Online using the following key words:

Anesthesia and veterinary training - 3,668 and 7,803 references, respectively

Anesthesiology and veterinary education - 326 and 1,167 references, respectively

Anesthesia and training and simulation - 5,178 and 6,282 references, respectively

Anesthesia and veterinary training, models - 2,111 and 5,238 references respectively

Most of the references above did not describe alternatives to using animals for anesthesia training. Numerous references did describe anesthesia simulations but stated that it is presently unknown whether or not the use of simulation in anesthesia training improves the quality of training. The NOVA Veterinary Technology program does have access to some simulation programs - "The Virtual Anesthesia Machine" (<http://vam.anest.ufl.edu/>). These programs allows user to become familiar with the anesthesia machine functions and to troubleshoot different problems that may arise.

Students are able to log onto the Animal Care Technologies (ACT) Online Training website where they can access procedural videos on anesthesia techniques and administration. These are now required viewing prior to lab participation and tracked via individual student accounts via the Internet.

CPCR labs are taught using NASCO LifeForm Advanced Sanitary CPR dog manikins and practical exams where the students are required to demonstrate competency on the use of the anesthesia machine are mandatory prior to allowing students access to live animals.

Venipuncture and intubation models are also utilized to assure basic student competency before techniques are attempted on live animals.

I. ANESTHESIA, ANALGESIA, TRANQUILIZATION — For animals indicated in Section H, Column D, specify the anesthetics, analgesics, sedatives or tranquilizers that are to be used. Include the name of the agent(s), the dosage, route and schedule of administration.

Acepromazine (10 mg/ml):

0.02 to 0.05mg/kg SQ or IM, maximum of 3 mg **total in dogs**

Alfaxalone (Alfaxan - 10 mg/ml) - **IV:**

1-4 mg/kg IV or IM

Atropine (0.54 mg/ml):

0.01 mg/kg - 0.02mg/kg IM or SQ with pre-meds

Revised Nov 1, 2017

Atipamezole (5mg/ml):

0.1 mg/kg IM or equal volume of administered Dexmedetomidine. Given for reversal.

Bupivacaine 0.5% (5 mg/ml):

1 mg/kg for testicular or incisional line blocks. May be combined with Lidocaine.

Buprenorphine (0.3 mg/ml) - **CIII**:

0.01-0.02 mg/kg IM or IV

Butorphanol (10 mg/ml) - **CIV**:

0.2-0.5 mg/kg SQ, IM or IV

Butorphanol (10 mg/ml) + Midazolam (5 mg/ml) - **CIV**, **CIV** combination IM for dogs only:

0.2mg/kg butorphanol + 0.2mg/kg midazolam IM

Carprofen (50mg/ml):

2-4 mg/kg SQ, IM, IV (in dogs), 2 mg/kg SQ only (in cats)

Dexmedetomidine (0.5 mg/ml) + Butorphanol - **CIV** (10 mg/ml) combination IM (for dogs):

0.01 mg/kg dexmedetomidine + 0.2-0.4 mg/kg butorphanol

Dexmedetomidine + Ketamine - **CIII**+ Butorphanol - **CIV** combination IM (for cats):

0.1 mls of all three (DKBut) for 6 to 10# B.Wt - adjust dose based on size of cat

Flumazenil (0.1 mg/ml) for reversal of benzodiazepines:

0.01 mg/kg IV

Isoflurane:

Induction 3-4%, Maintenance 1-2%

Ketamine (100 mg/ml) - **CIII**:

1-2 mg/lb IV **or** 10 mg/lb IM

Ketamine/Diazepam Cocktail IV - **CIII**, **CIV**:

1 cc/20 lb of a ½ & ½ mix of ketamine/diazepam

Ketamine/Midazolam Cocktail IV - **CIII**, **CIV**:

1 cc/20 lb of a ½ & ½ mix of ketamine/midazolam

Ketoprofen (100 mg/ml):

2 mg/kg SQ, IM, IV (in dogs), 2 mg/kg SQ (only once in cats)

Lidocaine 2% (20 mg/ml):

1 mg/kg locally for testicular or line blocks. May be combined with Bupivacaine.

Maropitant (Cerenia - 10 mg/ml):
1 mg/kg SQ

Meloxicam (5 mg/ml injectable; 1.5 mg/ml or 0.5 mg/ml oral):
0.2 mg/kg SQ then 0.1 mg/kg PO once daily for 3-4 days in dogs
0.1-0.2 mg/kg SQ injection prior to surgery (one-time injection in cats)

Midazolam (5 mg/ml) - **CIV**:
0.1-0.2 mg/kg IV

Naloxone (0.02 mg/ml neonatal concentration or 0.4 mg/ml for adults - check vial 1st) for reversal of opioids:
0.01-0.02 mg/kg IM or by slow IV

Propofol (10 mg/ml):
2-4 mg/lb IV slow and to effect

Robenacoxib (Onsior - 6 mg tablets):
1 mg/kg for cats

Sevoflurane:
Induction 3-5%, Maintenance 2-4%

Telazol (100 mg/ml) - **CIII**:
1-2 mg/lb IV **or** 3-5 mg/lb IM

***Controlled drugs** (bold type above) are tracked in accordance with Federal Regulations.

J. METHOD OF EUTHANASIA OR DISPOSITION OF ANIMALS AT END OF STUDY

Indicate the proposed method, and if a chemical agent is used, specify the dosage and route of administration. If the method(s) of euthanasia include those not recommended by the AVMA Panel Report on Euthanasia (<http://www.avma.org/resources/euthanasia.pdf>), provide justification why such methods must be used. Indicate the method of carcass disposal if not as MPW. Important references to consider:

It is not anticipated that any animal would require euthanasia on this protocol. However, in the case of an unanticipated severe illness or injury that did not respond to medical management the shelter would be notified and euthanasia would be induced via lethal intravenous injection of a barbiturate overdose [Beuthanasia (CIII) or equivalent, 1 ml/4.5 kg BW, intravenously].

K. HAZARDOUS AGENTS

Use of volatile anesthetics or formalin requires a description of scavenging methods used.

	YES	NO
Hazardous Chemicals or Drugs (List below)	X	<input type="checkbox"/>

acepromazine, Antisedan, butorphanol, dexmedetomidine, Buprenex, Metacam, lidocaine, bupivacaine, ketamine, diazepam, midazolam, propofol, tiletamine + zolazepam (Telazol), Isoflurane, Sevoflurane

Additional safety considerations:

Inhalant anesthetics will be used with appropriate active scavenging. All controlled substances will be secured and tracked in accordance with Federal Regulations.

Students, faculty and staff are required to be vaccinated for Rabies virus and to maintain documentation of a protective titer in their files at the Veterinary Program.

All animals undergo appropriate holding periods in accordance to state and Federal regulations prior to being brought to the Program for sterilization. Although this does not guarantee that the animals are free of zoonotic diseases, it does minimize the risk.

All students, faculty and staff undergo annual OSHA and lab safety training. Documentation of the training is kept on file at the facility.

There is an injury protocol in place for the college. This includes bite wounds. All injuries are to be reported to campus police and the injury documented after appropriate care has been rendered. The injured person is encouraged to seek immediate care from their regular healthcare provider.

L. SPECIAL CONCERNS OR REQUIREMENTS OF THE STUDY — List any special housing, equipment, animal care (i.e., special caging, water, feed, or waste disposal, etc.). Include justification for exemption from participation in the environmental enrichment plan for nonhuman primates or exercise for dogs.

None

M. PRINCIPAL INVESTIGATOR CERTIFICATIONS:

1. I certify that the individuals listed in Section A are authorized to conduct procedures involving animals under this proposal have received training in the biology, handling, and care of this species; aseptic surgical methods and techniques (if necessary); the concept, availability, and use of research or testing methods that limit the use of animals or minimize distress; the proper use of anesthetics, analgesics, and tranquilizers (if necessary); procedures for reporting animal welfare concerns.
2. *FOR ALL COLUMN D AND COLUMN E PROPOSALS (see section H):* I certify that I have reviewed the pertinent scientific literature and the sources and/or databases (2 or more) as noted in paragraph H. and have found no valid alternative to any procedures described herein which may cause more than momentary pain or distress, whether it is relieved or not.
3. I will obtain approval from the ACUC before initiating any significant changes in this study.

Principal Investigator:

Signature

Dr. Ingrid Coelmann

Date

10/10/17

N. CONCURRENCES: PROPOSAL NUMBER Anesthesia-17

Amy Laubinger, DVM, Institutional Official & Chair

Signature Amy Laubinger, DVM Date 11/10/2017

Regina Wilson, DVM, Attending Veterinarian

Signature Regina E. Wilson, DVM Date 11/10/17

James Hilleary, Outside Member

Signature [Signature] Date 10 Nov 17

Nancy Aiello, PhD, Scientist

Signature Nancy Aiello Date 11/10/17

Diane Schrenzel, AAS, LVT, Non-Scientist

Signature [Signature] Date 11/10/17

P. FINAL APPROVAL:

Certification of review and approval by the Northern Virginia Community College Veterinary Technology Animal Care and Use Committee Chairperson.

Chairperson Amy Laubinger, DVM

Signature Amy Laubinger, DVM Date 11/10/2017

Leave Blank

PROPOSAL #

APPROVAL DATE

EXPIRATION DATE

PLEASE TYPE:

A. ADMINISTRATIVE DATA:

Principal Investigator Nora M. Glaser, DVM

Mailing Address Northern Virginia Community College, Veterinary Technology Program, 21200 Campus Drive, Sterling, VA 20164

Telephone 703-450-2623 Fax 703-404-7322 Email nglaser@nvcc.edu

Project Title CVTEA Essential Skills Lab

Initial Submission ☐ **Renewal X** or **Modification** of Proposal Number Ocular Diagnostics Lab-2011

List the names of all individuals authorized to conduct procedures involving animals under this proposal and identify key personnel (i.e., Co-investigator(s)). Signature confirms that personnel have read and understand the protocol.

Linda Schnaible, LVT

Nora M. Glaser, DVM

Dawn Witter, LVT

Tregel Cockburn, DVM

Diane Schrenzel, LVT

Kiana Adkisson-Selby, DVM

Amy Laubinger, DVM

B. ANIMAL REQUIREMENTS:

Species Dogs and cats Age/Weight/Size juvenile to adult Sex M/F

Stock or Strain Domestic

Source(s) Animal Shelter: Frederick County, Virginia and privately owned pets * Holding Location(s) Veterinary Technology Building

Animal Procedure Location(s) Veterinary Technology Building

Number of Animals:

		<u>12 dogs</u>		<u>36 dogs</u>
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<u>12 dogs</u> <u>4 cats</u>	<u>12 dogs</u> <u>4 cats</u>	<u>4 cats</u>		<u>12 cats</u>
Year 1	Year 2	Year 3	=	TOTAL

***All animals received from the shelters have completed the minimum holding period required by Federal regulations.**

C. STUDY OBJECTIVES:

Briefly explain in non-technical terms the aim of the study and how the study may benefit human or animal health or advance scientific understanding of biological processes.

The purpose of this study is to allow veterinary technician students to integrate certain clinical skills with knowledge of small animal diseases. The clinical skills emphasized in this course are: restraint and handling, physical examination, nursing care, and to assist in diagnostic corneal staining, Schirmer tear test, and measurement of intraocular pressure. The individual skills to be practiced with animals are restraint and handling, physical examination, diagnostic corneal staining, Schirmer tear test, and measurement of intraocular pressure.

In addition there are several skills that are to be performed as a small group of 3-4 students: Oro-Gastric intubation, Cystocentesis and the Urinary Catheterization of a male dog. These skills are to be performed while the patients are under General Anesthesia as described in the protocols for VET 135 and VET 221. In addition, the dogs that will be used for urinary catheterization may have additional pain management in the form of an epidural of Bupivacaine +/- an opioid medication if deemed necessary.

D. RATIONALE FOR ANIMAL USE:

1) Explain your rationale for animal use. 2) Justify the appropriateness of the species selected. 3) Justify the number of animals to be used. (Use additional sheets if necessary.)

Initially the skills are practiced on training models. Once the skills are perfected, the techniques are practiced by the students on live animals under the direct supervision of the personnel listed on this protocol.

Dogs and cats are utilized because these are the animals most likely to be encountered in small animal veterinary clinics where the majority of our students will be employed. Complete clinical competency of our students is achieved only by having them practice the listed techniques on live animals.

The Ocular Diagnostic Lab involves 2 to 3 training lab sessions that utilize animals. The demonstrations are performed by the veterinarian or licensed veterinary technician. The students then practice their techniques on models before attempting the technique on a live animal.

The Skills which will be performed with the patient under General Anesthesia will occur in 5 training sessions per semester. Male dogs will be used for Urinary Catheterization, dogs or cats will be used for Cystocentesis, and the same patients will be used for Orogastric Intubation as this is a minimally invasive procedure. The patients that undergo cystocentesis will not undergo urinary catheterization and vice versa. The students will each practice these skills as a group on models prior to working with live animals. Despite this being performed in a group setting- each procedure will only be performed once on each patient and each student will participate in a portion of the procedure.

E. DESCRIPTION OF EXPERIMENTAL DESIGN AND ANIMAL PROCEDURES:

Briefly explain the experimental design and specify all animal procedures. This description should allow the ACUC to understand the experimental course of an animal from its entry into the experiment to the endpoint of the study. Specifically address the following:

(Use additional sheets if necessary.)

- **Injections or Inoculations** (substances, dose, sites, volume, route, and schedules)
- **Blood Withdrawals** (volume, frequency, withdrawal sites, and methodology)
- **Non-Survival Surgical Procedures** (Provide details of non- survival surgical procedures in Section G.)
- **Methods of Restraint** (e.g., restraint chairs, collars, vests, harnesses, slings, etc.)
- **Animal Identification Methods** (e.g., ear tags, tattoos, collar, cage card, etc.)
- **Other Procedures** (e.g., survival studies)
- **Resultant Effects**, if any, the animals are expected to experience (e.g., pain, distress, etc.)
- **Experimental Endpoint Criteria** (i.e., percentage body weight gain or loss, inability to eat or drink, behavioral abnormalities, clinical symptomatology. List the criteria to be used to determine when euthanasia is to be performed.

All procedures described below are performed by the personnel listed on the protocol, or by students under the direct supervision of the personnel listed on this protocol.

Restraint and handling. Manual restraint techniques, common to conventional small animal veterinary practice, will be practiced. Examples include; restraint in sternal recumbency, lateral recumbency, sitting, or standing.

Each dog and cat will be submitted to a physical examination.

The ocular techniques may be performed in an awake cooperative animal or under tranquilization or sedation. Animals will have a Schirmer tear test, corneal stain evaluation using fluorescein dye, and measurement of intraocular pressure performed using a Tonovet® or Tonopen® device.

The Schirmer tear test is performed using Schirmer Tear Test standardized sterile paper strips. One end of the paper is gently placed between the lower lid and conjunctiva at the level midway

between the lateral canthus and middle of the palpebral opening. The paper is allowed to rest in this position for 60 seconds before removal. The amount of wetting on the paper is measured in millimeters and gives an estimate of tear production, confirming or ruling out dry eye conditions.

Corneal staining is performed using fluorescein ophthalmic strips. The strip is moistened with isotonic eye irrigating solution and the resultant liquid is dripped onto the upper conjunctival surface. The animal distributes the dye by blinking, and excess dye is removed by gentle irrigation with the isotonic solution. An intact cornea does not stain. Corneal epithelium that has been damaged by injury or disease will exhibit stain uptake, and would indicate injury or disease of the cornea.

Topical anesthetic (0.5 % topical proparacaine) delivered to the eye as ophthalmic drops will be used when intraocular pressure measurements are made. Measurement of intraocular pressure is a screening test for intraocular hypertension or glaucoma.

These procedures are performed once on each eye during the session. After the session, the animals will be monitored closely for any ocular irritation, and treated accordingly if needed.

After being utilized a maximum of two times for ocular diagnostic technique practice, the animal may be rotated into the protocol Advanced Clinics (AdvClinics-17) for surgical neutering or dental prophylaxis.

Any existing health problems (e.g., dental disease, abscess, skin wounds, dermatitis, etc.) will be treated using currently accepted standards of veterinary practice.

For the Cystocentesis procedure, the animal will be placed under General Anesthesia prior to the procedure as described in the protocol for Advanced Clinics (AdvClinics-17). The animal will be placed in dorsal recumbency. The ventral abdomen will be shaved in anticipation of ovariohysterectomy or orchiectomy. An Ultrasound probe will be placed midline until the urinary bladder can be visualized. A one and a half inch needle either 20g or 22g attached to a 3ml syringe will be introduced through the skin and bladder wall. 3ml of urine will be extracted and then analyzed using. The animal will be monitored closely afterwards for signs of bleeding or urinary leakage. The urine collected will be analyzed for chemistry and sediment and the results will be entered into the patient's medical record.

Animals for Male Urinary catheterization will be placed under General Anesthesia as described in the protocol of Advanced Clinics. In addition, the patient may then be placed in ventral recumbency and have an area of skin surrounding the site of the epidural placement clipped and scrubbed with surgical scrub. The operator will then don sterile gloves. A 22g spinal needle will be introduced just caudal to the L7 spinal process and will be driven through the ligamentum flavum to the epidural space. The negative pressure of this space will be verified by injecting air in a

3ml syringe. Once this has been verified, the operator will slowly inject an appropriate dose of Bupivacaine possibly mixed with a dose of an opioid. The total volume of injection will not exceed 6 ml.

The animal will then have the surgical procedure of Orchiectomy. Once this procedure is completed, and assuming the dog has not had any anesthetic complications, the dog will be placed in lateral recumbency. The students will decontaminate the prepuce by flushing with mild soapy water. An appropriately sized red rubber catheter will be selected—generally 3.5–8 F in size. The catheter will be lubricated with sterile OB lubricant. The prepuce will be retracted and the urinary catheter will be introduced by an operator wearing sterile gloves. Once the bladder has been reached, the student will extract a small amount of urine with a syringe. The catheter will then be removed in an atraumatic fashion. The patient will then be allowed to recover from General Anesthesia and will be monitored closely for any irritation or discomfort and treated appropriately if so. As above with cystocentesis, the urine will be analyzed for chemistry and sediment and the results will become part of the animal's medical record.

For dogs that will undergo Oro-Gastric Intubation, this will occur after a scheduled Orchiectomy or Ovariohysterectomy as described in the protocol for Advanced Clinics, and will only take place if the animal has not had any anesthetic complications. A small, soft mouth gag will be placed in the patient's mouth behind the canine teeth. An appropriately sized and narrow diameter stomach tube will be lubricated with sterile OB lubricant introduced into the oral cavity, esophagus and into the stomach. Correct placement of the tube will be verified by injection of 50mls of air into the tube while the stomach is auscultated and a "gurgling" sound will be appreciated. Three ccs of water will be introduced, then the gas and water will be extracted with gentle negative pressure. The tube will then be removed in an atraumatic fashion. The animal will be monitored for any signs of discomfort during and after recovery from surgery.

It is not anticipated that any of these animals will require euthanasia, but if an illness or injury should occur that does not respond to medical treatment, euthanasia would be performed (see section J).

Dogs and cats (cats housed separately from dogs) will be group-housed when compatible and provided an opportunity for exercise in accordance with the Animal Welfare Regulations. The Veterinary Technology students and staff also provide these animals positive socialization. The dogs are walked twice a day at minimum by staff or veterinary technology students. The dogs are also placed in outside runs as weather permits for additional exercise.

F. SURVIVAL SURGERY — If proposed, complete the following:

1. Identify and describe the surgical procedure(s) to be performed. Include the aseptic methods to be utilized. (Use additional sheets if necessary.):

NONE

2. Who will perform surgery and what are their qualifications and/or experience?

N/A

3. Where will surgery be performed (Building and Room)?

N/A

4. Describe post-operative care required, including consideration of the use of post-operative analgesics, and identify the responsible individual:

N/A

5. Has major survival surgery been performed on any animal prior to being placed on this study?

☐ Yes X No

If yes, please explain:

6. Will more than one major survival surgery be performed on an animal while on this study?

☐ Yes X No

If yes, please justify:

G. NON-SURVIVAL SURGERY- none performed

H. PAIN OR DISTRESS CATEGORY — The ACUC is responsible for applying U.S. Government Principle IV. Contained in Appendix 3: "Proper use of animals, including the avoidance or minimization of discomfort, distress, and pain when consistent with sound scientific practices, is imperative. Unless the contrary is established, investigators should consider that procedures that cause pain or distress in human beings may cause pain or distress in other animals." Check the appropriate category(ies) and indicate the approximate number of animals in each. Sum(s) should equal total from Section B.

IF ANIMALS ARE INDICATED IN COLUMN E, A SCIENTIFIC JUSTIFICATION IS REQUIRED TO EXPLAIN WHY THE USE OF ANESTHETICS, ANALGESICS, SEDATIVES OR TRANQUILIZERS DURING AND/OR FOLLOWING PAINFUL OR DISTRESSFUL PROCEDURES IS CONTRAINDICATED. PLEASE COMPLETE THE EXPLANATION FOR COLUMN E LISTINGS FORM AVAILABLE FROM OLAM. THIS FORM WILL ACCOMPANY THE NIH ANNUAL REPORT TO THE USDA. NOTE: THIS COLUMN E FORM, AND ANY ATTACHMENTS, e.g., THE ASP, ARE SUBJECT TO THE FREEDOM OF INFORMATION ACT.

Number of Animals Used Each Year:

	Year 1	Year 2	Year 3
X USDA Column C Minimal, Transient, or No Pain or Distress	12 dogs 4 cats	12 dogs 4 cats	12 dogs 4 cats
<input type="checkbox"/> USDA Column D Pain or Distress Relieved By Appropriate Measures			
<input type="checkbox"/> USDA Column E Unrelieved Pain or Distress			

Describe your consideration of alternatives to procedures in this protocol, and your determination that

alternatives were not available. [Note: Principal Investigators must certify in paragraph N.5 that no valid alternative was identified to any described procedures which may cause more than momentary pain or distress whether it is relieved or not.] Delineate the methods and sources used in the search below. Database references must include databases (2 or more) searched, the date of the search, period covered and keywords used. Reduction, replacement, and refinement must be addressed. *For more information see USDA Policy #12 (<http://www.aphis.usda.gov/ac/policy/policy12.pdf>)*

On October 14 , 2019 Dr. Nora M. Glaser performed a literature search for consideration of alternatives using the following strategies.

1. PubMed (<https://www.ncbi.nlm.nih.gov/pubmed/>)

search terms and citations (2000-2019):

Dogs and teaching and eye- 77 citations, 2 relevant
Dogs and training and eye- 57 citations, 2 relevant
Veterinary teaching and ophthalmology- 69 citations, 0 relevant
Teaching corneal staining- 90 citations, 1 relevant
Teaching Schirmer tear test- 60 citations, 0 relevant
Simulation model and dog and urinary - 40 citations, 1 relevant
Cystocentesis and teaching- 11 results, 1 relevant
Teaching Model and dog and urinary catheter- 2 citations, 1 relevant
Teaching Model and dog and Schirmer tear test- 0 citations
Teaching and intraocular pressure testing- 29 citations, 0 relevant
Teach and dog and urinary catheter- 6 citations, 1 relevant
Teach and gastric- 60 citations, 1 relevant
Training and cystocentesis- 1 citation, 0 relevant
Training and dog and urinary- 71 citations, 1 relevant
Training and dog and gastric- 60 citations, 3 relevant
Simulator and dog and gastric- 5 citations, 1 relevant
Simulator and dog and urinary- 0 citations
Simulator and dog and cystocentesis- 0 citations

2. Agricola/PubAg <https://pubag.nal.usda.gov/>

search terms and citations via Pubag (2000-2019)

Dog or canine eye examination- 223 citations, 2 relevant
Cat eye examination- 111 citations, 21 relevant
Training, examination, eye- 3 citations, 1 relevant
Eye, examination, teaching- 22 citations, 0 relevant
Training model Veterinary - 5 citations, 2 relevant

The above citations generally involved using virtual simulations or anatomy specimens from animal cadavers for training medical or veterinary students in surgical techniques.

For additional information regarding products that could serve as alternatives to live dogs, the following websites and databases were also searched.

3. Norina/Norecopa <https://norecopa.no/norina>
search terms and products
Eye examination- 39 products, 0 relevant
Urinary Catheter- 5 products, 1 relevant
Cystocentesis- 4 products, 2 relevant
Stomach tube- 8 results, 0 relevant

4. American Anti-Vivisection Society <http://www.aavs.org> and
<http://www.animalearn.org>
Products- videos, models, CD, online video links. Borrowing library for
many items

5. On the YouTube site <http://www.youtube.com/>, one can find many videos
posted by credentialed individuals demonstrating the corneal fluorescein
dye stain, Schirmer tear test, urinary catheterization, cystocentesis,
orogastric intubation and measurement of intraocular pressures in the dog.

Summary--Suggestions for alternatives to using live animals in learning
include models/simulators, film/video, computer simulations, anatomy
specimens, and in vitro labs. The majority of relevant citations in this
literature search discussed the use of cadavers for training techniques.
Some references described synthetic models or computer simulations for
training but these were much less common.

Most products that offered learning alternatives to anatomy specimens or
live animals were anatomy models, videos, or CD's. A variety of links to
online video demonstrations were readily available at
<http://animalearn.org>. There were numerous plastic eye anatomy models
available but these were modeled after the human eye. Anatomy models were
all made of hard plastic that would not make a realistic simulation for
ocular diagnostics.

The use of alternatives to live animals aids in preparing the student for
clinical skills with the live animal patient. For training our students,
we use didactic coursework, videos, and demonstrations. We also use our
homemade eye models fashioned out of small balloons filled with water or
air to mimic the consistency and surface of an eye. This works well enough
for training students with the equipment and materials used in corneal
staining, Schirmer tear test, and intraocular pressure measurements. We
also utilize a balloon filled with water and suspended in gelatin to mimic
the bladder anatomy and this allows the students to practice
cystocentesis. The department owns manikins of a male dog on which they
can practice urinary catheterization.

However, these models do not respond to the diagnostic tests in the way a
real eye does. And restraint, which is an integral part of these

techniques, is not included with the model training. Anatomy specimens from cadavers likewise are unsuitable for the same reasons.

Therefore, to obtain competence in the clinical skills listed above ultimately requires the use of a live animal.

I. ANESTHESIA, ANALGESIA, TRANQUILIZATION — For animals indicated in Section H, Column D, specify the anesthetics, analgesics, sedatives or tranquilizers that are to be used. Include the name of the agent(s), the dosage, route and schedule of administration.

*All controlled substances will be secured and tracked in accordance with Federal Regulations

- 0.5 % proparacaine topical ophthalmic drops
- Acepromazine (10mg/ml, #50 ml)
0.02-0.05 mg/kg SQ or IM
- Alfaxan (alfaxalone 10 mg/ml)
1-4 mg/kg IV or IM
- Atipamezole (5mg/ml #10 ml)
equal to volume of medetomidine or dexmedetomidine for reversal IM
- Atropine (0.54 mg/ml #60ml)
0.01-0.02 mg/kg SQ, IM, or IV
- Bupivacaine 0.5%
1.0 mg/kg locally for dogs; 0.5 mg/kg locally for cats
- Buprenorphine (0.3 mg/ml)
0.01 – 0.02 mg/kg SQ, IM, or sublingual
- Butorphanol (10 mg/ml #10 ml or 2 mg/ml #10 ml)
0.2 – 0.5 mg/kg IM
- Carprofen (50 mg/ml)
2 – 4 mg/kg SQ
- Dexmedetomidine (0.5 mg/ml#10ml)
10-20 micrograms/kg IV or IM
- Dexmedetomidine (0.5 mg/ml, #10 ml)/Butorphanol (10 mg/ml, #10 ml)/Ketamine (100mg/ml, #10)
“Kitty Magic” drug protocol – 0.1 mls of each drug/10 lbs. body weight IM (cats)
- Diazepam (5 mg/ml #10 ml)
0.1-0.3 mg/kg IV

- Isoflurane
Induction 3-4%
Maintenance 1-2%
- Ketamine (100mg/ml #10 ml)
1-2 mg/kg IV
10 mg/kg IM
- Ketamine/Diazepam Combination or Ketamine/Midazolam Combination
1 ml/40 lb of each drug IV
- Lidocaine 2%
1.0 mg/kg locally for dogs; 0.5 mg/kg locally for cats
- Meloxicam (5mg/ml injectable; 1.5 or 0.5 mg/ml oral)
0.2 mg/kg SQ injection, then 0.1 mg/kg PO SID X 3-4 days (dogs); 0.2 mg/kg SQ injection prior to surgery (injection for cats-once only)
- Midazolam (5 mg/ml)
0.1-0.2 mg/kg IV
- Propofol (10 mg/ml, #20 ml)
2-4 mg/ lb IV
- Robenacoxib (Onsior- 6 mg tablets)
1mg/kg for cats
- Sevoflurane
Induction 3-5%
Maintenance 2-4%
- Telazol (100 mg/ml #5 ml)
1-2 mg/lb IV
3-5 mg/lb IM
- Epidural Medication Doses: Morphine 0.1-0.2 mg/kg
Hydromorphone 0.03-0.04mg/kg
Bupivacaine 0.5-1 mg/kg
Ketamine 0.5-2 mg/kg
Medetomidine 0.005mg/kg

J. METHOD OF EUTHANASIA OR DISPOSITION OF ANIMALS AT END OF STUDY

Indicate the proposed method, and if a chemical agent is used, specify the dosage and route of administration. If the method(s) of euthanasia include those not recommended by the AVMA Panel Report

on Euthanasia (<http://www.avma.org/resources/euthanasia.pdf>), provide justification why such methods must be used. Indicate the method of carcass disposal if not as MPW. Important references to consider:

It is not anticipated that any animal would require euthanasia on this protocol. However, in the case of an unanticipated severe illness or injury that did not respond to medical management, the shelter would be notified and euthanasia would be induced via lethal intravenous injection of a barbiturate overdose [Beuthanasia (CIII) IV 1 ml/4.5 kg BW].

K. HAZARDOUS AGENTS

Use of volatile anesthetics or formalin requires a description of scavenging methods used.

	YES	NO
Hazardous Chemicals or Drugs (List below)	X	<input type="checkbox"/>

Acepromazine, alfaxalone, butorphanol, dexmedetomidine, buprenex, Metacam, lidocaine, bupivacaine, ketamine, diazepam, midazolam, tiletamine + zolazepam (Telazol), Isoflurane, Sevoflurane

Additional safety considerations:

If general anesthesia is in use, inhalant anesthetics will be used with appropriate active scavenging. All controlled substances will be secured and tracked in accordance with Federal Regulations.

L. SPECIAL CONCERNS OR REQUIREMENTS OF THE STUDY — List any special housing, equipment, animal care (i.e., special caging, water, feed, or waste disposal, etc.). Include justification for exemption from participation in the environmental enrichment plan for nonhuman primates or exercise for dogs.

NONE

M. PRINCIPAL INVESTIGATOR CERTIFICATIONS:

1. I certify that the individuals listed in Section A are authorized to conduct procedures involving animals under this proposal have received training in the biology, handling, and care of this species; aseptic surgical methods and techniques (if necessary); the concept, availability, and use of research or testing methods that limit the use of animals or minimize distress; the proper use of anesthetics, analgesics, and tranquilizers (if necessary); procedures for reporting animal welfare concerns.
2. *FOR ALL COLUMN D AND COLUMN E PROPOSALS (see section H):* I certify that I have reviewed the pertinent scientific literature and the sources and/or databases (2 or more) as noted in paragraph H. and have found no valid alternative to any procedures described herein which may cause more than momentary pain or distress, whether it is relieved or not.
3. I will obtain approval from the ACUC before initiating any significant changes in this study.

Principal Investigator:

Signature _____

Date _____

N. CONCURRENCES: PROPOSAL NUMBER

Amy Laubinger, DVM, Institutional Official & Chair

Signature _____ Date _____

Nora M. Glaser, DVM, Attending Veterinarian

Signature _____ Date _____

James Hilleary, Public Member

Signature _____ Date _____

Diane Mucci, PhD, Scientist

Signature _____ Date _____

Dawn Witter, AAS, LVT, Non-Scientist

Signature _____ Date _____

P. FINAL APPROVAL:

Certification of review and approval by the NVCC Veterinary Technology Animal Care and Use Committee Chairperson.

Chairperson _____

Signature _____ Date _____

Leave Blank

PROPOSAL # _

APPROVAL DATE October 16, 2018

EXPIRATION DATE October 16, 2021



**Northern Virginia
Community College**

Loudoun Campus

PLEASE TYPE:

A. ADMINISTRATIVE DATA:

Principal Investigator Amy Laubinger, DVM

Mailing Address Northern Virginia Community College, Veterinary Technology
Program, 21200 Campus Drive, Sterling, VA 20164

Telephone 703-948-7794 - Fax 703-404-7318 Email alaubinger@nvcc.edu

Project Title Microbiology & Clinical Pathology lab – provided in VET 132 Clinical Pathology II

Initial Submission ☒ Renewal ☐ or Modification ☐ of Proposal Number Microbiology &
Clinical Pathology Lab 2018

List the names of all individuals authorized to conduct procedures involving animals under this proposal and identify key personnel (i.e., Co-investigator(s)). Signature confirms that personnel have read and understand the protocol.

Diane Schrenzel, LVT

Dawn Witter, LVT

Linda Schnaible, LVT

Amy Laubinger, DVM

A handwritten signature in black ink that reads "Amy Laubinger, DVM".

Tregel Cockburn, DVM

Regina Wilson, DVM

Lisa Scott, LVT

Kiana Adkisson-Selby, DVM

B. ANIMAL REQUIREMENTS:

Species Dogs and cats Age/Weight/Size adult Sex M/F

Stock or Strain Domestic

Source(s) Animal Shelter: Frederick County* , Loudoun County Holding

Location(s) Veterinary Technology Building

Animal Procedure Location(s) Veterinary Technology Building

Number of Animals:

<u>4 dogs</u> <u>2 cats</u>	<u>4 dogs</u> <u>2 cats</u>	<u>4 dogs</u> <u>2 cats</u>		<u>12 dogs</u> <u>6 cats</u>
Year 1	Year 2	Year 3	=	TOTAL

***All animals received from the shelters have completed the minimum holding period required by Federal regulations.**

C. STUDY OBJECTIVES:

Briefly explain in non-technical terms the aim of the study and how the study may benefit human or animal health or advance scientific understanding of biological processes.

The purpose of this study is to allow veterinary technician students to integrate certain clinical skills with knowledge of lab procedures. The clinical skills emphasized in this course are performing clinical chemistry analysis and observing bacterial and fungal organisms. The skills to be practiced with animals are: venipuncture, pluck fur for KOH test, and collect ear or fecal swab samples for smears, in order to obtain specimens for lab analysis

D. RATIONALE FOR ANIMAL USE:

1) Explain your rationale for animal use. 2) Justify the appropriateness of the species selected. 3) Justify the number of animals to be used. (Use additional sheets if necessary.)

Initially the skills are practiced on training models. Once the skills are perfected, the techniques are practiced by the students on live animals under the direct supervision of the personnel listed on this protocol.

Dogs and cats are utilized because these are the animals most likely to

be encountered in small animal veterinary clinics where the majority of our students will be employed. Complete clinical competency of our students is achieved only by having them practice the listed techniques on live animals.

There are 6 lab sessions that utilize animals. One lab session utilizes one animal for venipuncture and two lab sessions use two animals equaling 3 animals/semester. Two lab sessions use hair plucked from one animal for KOH testing and collection of ear and fecal samples. The students have practiced their venipuncture techniques on models before attempting the technique on a live animal.

E. DESCRIPTION OF EXPERIMENTAL DESIGN AND ANIMAL PROCEDURES:

Briefly explain the experimental design and specify all animal procedures. This description should allow the ACUC to understand the experimental course of an animal from its entry into the experiment to the endpoint of the study. Specifically address the following:

(Use additional sheets if necessary.)

- **Injections or Inoculations** (substances, dose, sites, volume, route, and schedules)
- **Blood Withdrawals** (volume, frequency, withdrawal sites, and methodology)
- **Non-Survival Surgical Procedures** (Provide details of survival surgical procedures in Section G.)
- **Methods of Restraint** (e.g., restraint chairs, collars, vests, harnesses, slings, etc.)
- **Animal Identification Methods** (e.g., ear tags, tattoos, collar, cage card, etc.)
- **Other Procedures** (e.g., survival studies)
- **Resultant Effects**, if any, the animals are expected to experience (e.g., pain, distress, etc.)
- **Experimental Endpoint Criteria** (i.e., percentage body weight gain or loss, inability to eat or drink, behavioral abnormalities, clinical symptomatology. List the criteria to be used to determine when euthanasia is to be performed.

All procedures described below are performed by the personnel listed on the protocol, or by students under the direct supervision of the personnel listed on this protocol.

Restraint and handling. Manual restraint techniques, common to conventional small animal veterinary practice, will be practiced as it is inherent to the sampling technique. Examples include; restraint in sternal recumbency, lateral recumbency, or standing.

Each dog and cat will be submitted to a physical examination.

Once restrained, animal will have venipuncture performed. Venipuncture

sites may include jugular vein, lateral saphenous vein, femoral vein or cephalic vein. A volume not to exceed 0.5% of body weight will be withdrawn. Hypodermic needle size will be species appropriate: dogs 20g or smaller and cats 22g or smaller. These procedures are performed a maximum of 3 times on each animal during the session. After the session, the animals will be monitored closely for any hematoma formation or hemostatic defect, and treated accordingly if needed.

Hair-plucking technique will be performed by using a sterile instrument to pluck several hairs from the periphery of a suspicious lesion. Ear swab samples will be collected by gently rolling a moistened cotton swab in the external ear canal.

Any existing health problems (e.g., dental disease, abscess, skin wounds, etc.) will be treated using currently accepted standards of veterinary practice.

It is not anticipated that any of these animals will require euthanasia, but if an illness or injury should occur that does not respond to medical treatment, euthanasia would be performed (see section J).

Dogs and cats will be group-housed when compatible and provided an opportunity for exercise in accordance with the Animal Welfare Regulations. The veterinary technology students and staff also provide these animals positive socialization. The dogs are walked twice a day by staff or veterinary technology students. The dogs are also placed in outside runs as weather permits for additional exercise.

F. SURVIVAL SURGERY — If proposed, complete the following:

1. Identify and describe the surgical procedure(s) to be performed. Include the aseptic methods to be utilized.
(Use additional sheets if necessary.):

NONE

2. Who will perform surgery and what are their qualifications and/or experience?

N/A

3. Where will surgery be performed (Building and Room)?

N/A

4. Describe post-operative care required, including consideration of the use of post-operative analgesics, and identify the responsible individual:

N/A

5. Has major survival surgery been performed on any animal prior to being placed on this study?

☐ Yes ☒ No

If yes, please explain:

6. Will more than one major survival surgery be performed on an animal while on this study?

☐ Yes X No

If yes, please justify:

H. PAIN OR DISTRESS CATEGORY — The ACUC is responsible for applying U.S. Government Principle IV. Contained in Appendix 3: "Proper use of animals, including the avoidance or minimization of discomfort, distress, and pain when consistent with sound scientific practices, is imperative. Unless the contrary is established, investigators should consider that procedures that cause pain or distress in human beings may cause pain or distress in other animals." Check the appropriate category(ies) and indicate the approximate number of animals in each. Sum(s) should equal total from Section B.

IF ANIMALS ARE INDICATED IN COLUMN E, A SCIENTIFIC JUSTIFICATION IS REQUIRED TO EXPLAIN WHY THE USE OF ANESTHETICS, ANALGESICS, SEDATIVES OR TRANQUILIZERS DURING AND/OR FOLLOWING PAINFUL OR DISTRESSFUL PROCEDURES IS CONTRAINDICATED. PLEASE COMPLETE THE EXPLANATION FOR COLUMN E LISTINGS FORM AVAILABLE FROM OLAM. THIS FORM WILL ACCOMPANY THE NIH ANNUAL REPORT TO THE USDA. NOTE: THIS COLUMN E FORM, AND ANY ATTACHMENTS, e.g., THE ASP, ARE SUBJECT TO THE FREEDOM OF INFORMATION ACT.

Number of Animals Used Each Year:

	Year 1	Year 2	Year 3
X USDA Column C Minimal, Transient, or No Pain or Distress	4 dogs 2 cats	4 dogs 2 cats	4 dogs 2 cats
<input type="checkbox"/> USDA Column D Pain or Distress Relieved By Appropriate Measures			
<input type="checkbox"/> USDA Column E Unrelieved Pain or Distress			

Describe your consideration of alternatives to procedures in this protocol, and your determination that alternatives were not available. [Note: Principal Investigators must certify in paragraph N.5 that no valid alternative was identified to any described procedures which may cause more than momentary pain or distress whether it is relieved or not.] Delineate the methods and sources used in the search below. Database references must include databases (2 or more) searched, the date of the search, period covered and keywords used. Reduction, replacement, and refinement must be addressed. *For more information see USDA Policy #12 (<http://www.aphis.usda.gov/ac/policy/policy12.pdf>)*

On April 29, 2018, Dr. Amy Laubinger performed a literature search for consideration of alternatives using the following strategies.

1. Pubmed search terms and citations (1998-2018):

Dog, phlebotomy and teach- 3 citations, 0 relevant
 Dog and education and vein - 3 citations, 2 relevant
 Feline, venipuncture and teaching - 7 citations, 0 relevant
 Cat and blood and collection - 162 citations, 1 relevant
 Hair and examination and dog - 157 citations, 0 relevant
 Hair and teaching and dog - 26 citations, 0 relevant

Cat and blood and collection - 162 citations, 1 relevant
Hair and examination and dog - 157 citations, 0 relevant
Hair and teaching and dog - 26 citations, 0 relevant
Microbiology and teaching and cat - 150 citations, 0 relevant
Blood transfusion, dog, and teaching - 34 citations, 0 relevant

2. Wiley search terms and citations (1998-2018)

Dog, vein, and education- 49 citations, 1 relevant
Training, canine, venipuncture - 0 citations
Training, hematology, veterinary- 32 citations, 1 relevant
Simulation, veterinary, and teaching - 0 citations
Dermatophyte and teaching and model - 323 citations, 0 relevant

For additional information regarding products that could serve as alternatives to live dogs, the following websites and databases were also searched.

3. Norina search terms and products

Medicine Simulators- 132 products, 4 relevant

Four items work as alternatives for venipuncture practice. No items are alternatives for real blood or genuine hair to perform KOH test and ear or fecal samples for smears.

4. Rescue Critters <http://www.rescuecritters.com>

No relevant product found for this study

5. International Network for Humane Education <http://www.interniche.org>

1 relevant software product provides instruction on veterinary pathology.

6. American Anti-Vivisection Society <http://www.aavs.org> and <http://www.animalearn.org> and <http://thesciencebank.org>

Products- videos, models, CD, online video links. Borrowing library for many items

7. Humane Society Veterinary Medical Association <http://alted.hsvma.org>

Microbiology kits for bacteria sensitivity

Suggestions for alternatives to using live animals in learning include models/simulators, film/video, computer simulations, student self-

experimentation, anatomy specimens, and in vitro labs.

The use of alternatives to live animals aid in preparing the student for clinical skills with the live animal patient. For training our students, we use didactic coursework, videos, and demonstrations. We also use our homemade veins fashioned out of small balloons filled with water to mimic the consistency and surface of a vein. This works well for training students with the equipment and materials used in venipuncture and iv drug administration. However, the model does not produce real blood specimens for examination in the way a real vein does. And restraint, which is an integral part of these techniques, is not included with the model training. Anatomy specimens from cadavers likewise are unsuitable for the same reasons. Alternative would include purchase of outside lab blood products and prepared fungus & bacteria slides. Alternatives for fecal specimens and ear smears for analysis include samples collected from students' personal animals and patients treated at their outside jobs. Alternatives for hair pluck on live patients would include self-examination and hair collected at home and brought to the laboratory. Ultimate competency is achieved through the handling of live animals and performing tests with real blood, hair, ear and fecal specimens.

I. ANESTHESIA, ANALGESIA, TRANQUILIZATION — For animals indicated in Section H, Column D, specify the anesthetics, analgesics, sedatives or tranquilizers that are to be used. Include the name of the agent(s), the dosage, route and schedule of administration.

No anesthetics, analgesics, sedatives or tranquilizers are required for these procedures.

J. METHOD OF EUTHANASIA OR DISPOSITION OF ANIMALS AT END OF STUDY

Indicate the proposed method, and if a chemical agent is used, specify the dosage and route of administration. If the method(s) of euthanasia include those not recommended by the AVMA Panel Report on Euthanasia (<http://www.avma.org/resources/euthanasia.pdf>), provide justification why such methods must be used. Indicate the method of carcass disposal if not as MPW. Important references to consider:

It is not anticipated that any animal would require euthanasia on this protocol. However, in the case of an unanticipated severe illness or injury that did not respond to medical management, the shelter would be notified and euthanasia would be induced via lethal intravenous injection of a barbiturate overdose [Beuthanasia (CIII) IV 1 ml/4.5 kg BW].

K. HAZARDOUS AGENTS

Use of volatile anesthetics or formalin requires a description of scavenging methods used.

	YES	NO
Hazardous Chemicals or Drugs (List below)		X

Additional safety considerations:

Students, faculty and staff are required to be vaccinated for rabies and to maintain documentation of a protective titer in their files at the Veterinary Program.

All animals undergo appropriate holding periods in accordance to state and Federal regulations prior to being brought to the Program for sterilization. Although this does not guarantee that the animals are free of zoonotic diseases, it does minimize the risk.

All students, faculty and staff undergo annual OSHA and lab safety training. Documentation of the training is kept on file at the facility.

There is an injury protocol in place for the college. This includes bite wounds. All injuries are to be reported to campus police and the injury documented after appropriate care has been rendered. The injured person is encouraged to seek immediate care from their regular physician.

L. SPECIAL CONCERNS OR REQUIREMENTS OF THE STUDY — List any special housing, equipment, animal care (i.e., special caging, water, feed, or waste disposal, etc.). Include justification for exemption from participation in the environmental enrichment plan for nonhuman primates or exercise for dogs.

NONE

REFERENCE :

1. Jukes, N and Chiuiia M: "From Guinea Pig to computer mouse alternative methods for a progressive, humane education" 2nd edition, InterNICHE, Leicester, England, 2003. Updated downloadable version available online at <http://www.interniche.org>

M. PRINCIPAL INVESTIGATOR CERTIFICATIONS:

1. I certify that the individuals listed in Section A are authorized to conduct procedures involving animals under this proposal have received training in the biology, handling, and care of this species; aseptic surgical methods and techniques (if necessary); the concept, availability, and use of research or testing methods that limit the use of animals or minimize distress; the proper use of anesthetics, analgesics, and tranquilizers (if necessary); procedures for reporting animal welfare concerns.
2. *FOR ALL COLUMN D AND COLUMN E PROPOSALS (see section H):* I certify that I have reviewed the pertinent scientific literature and the sources and/or databases (2 or more) as noted in paragraph H. and have found no valid alternative to any procedures described herein which may cause more than momentary pain or distress, whether it is relieved or not.
3. I will obtain approval from the ACUC before initiating any significant changes in this study.

Principal Investigator:

Signature Amy Lauterjes, DVM Date 4/4/

N. CONCURRENCES: PROPOSAL NUMBER Clinical Pathology 1-2018

Amy Laubinger, DVM, Institutional Official & Chair

Signature Amy Laubinger Date 10-16-18

Regina Wilson, DVM, Attending Veterinarian

Signature Regina Wilson DVM Date 10/16/18

James Hilleary, Outside Member

Signature [Signature] Date 16 Oct '18

Diane Mucci, PhD, Scientist

Signature Diane Mucci Date 10/16/18

Dawn Witter, AAS, LVT, Non-Scientist

Signature [Signature] Date 10/16/18

P. FINAL APPROVAL:

Certification of review and approval by the NVCC Veterinary Technology Animal Care and Use Committee Chairperson.

Chairperson Amy Laubinger DVM

Signature Amy Laubinger DVM Date 10-16-18



Leave Blank

PROPOSAL # Advanced Clinics-17APPROVAL DATE November 10, 2017EXPIRATION DATE November 10, 2020

PLEASE TYPE:

A. ADMINISTRATIVE DATA:Principal Investigator Mary S.Aller, DVMMailing Address Northern Virginia Community College, Veterinary Technology Program, 21200 Campus Drive, Sterling, VA 20164Telephone 703-450-2623 Fax 703-404-7322 Email maller@nvcc.eduProject Title Advanced Clinical Practices utilizing Dog and Cats - VET 221Initial Submission ☐ Renewal ☒ or Modification of Proposal Number AdvClinics-17

List the names of all individuals authorized to conduct procedures involving animals under this proposal and identify key personnel (i.e., Co-investigator(s)). Signature confirms that personnel have read and understand the protocol.

Linda Schnaible , LVTMary S. Aller, DVMDiane Schrenzel, LVTRegina Wilson, DVMDawn Witter, LVT**B. ANIMAL REQUIREMENTS:**Species Dogs and cats Age/Weight/Size adults Sex M/FStock or Strain domestic

Source(s) Animal Shelter: Frederick County, Virginia and privately owned *
 Holding Location(s) Veterinary Technology Building

Animal Procedure Location(s) Veterinary Technology Building (LA)**Number of Animals:**

<u>20 cats</u>	<u>20 cats</u>	<u>20 cats</u>		<u>60 cats</u>
<u>50 dogs</u>	<u>50 dogs</u>	<u>50 dogs</u>		<u>150 dogs</u>
Year 1	Year 2	Year 3	=	TOTAL

***All animals received from the shelters have completed the minimum holding period required by Federal regulations.**

C. STUDY OBJECTIVES:

Briefly explain in non-technical terms the aim of the study and how the study may benefit human or animal health or advance scientific understanding of biological processes.

The purpose of this course is to allow veterinary technician students to practice laboratory and clinical skills by performing pre-operative work-ups, anesthesia skills by induction, maintenance and recovery from anesthesia, provide dental prophylaxis services, surgical assistance, and general patient care. This is one of the final classes the student takes before beginning their professional careers. This course allows the integration of training from several courses including VET 135 Anesthesia, VET 121 Clinical Practices I, VET 131 Clinical Pathology I (Hematology/Urinalysis), VET 132 Clinical Pathology II (Clinical Chemistry/Microbiology), VET 214 Animal Dentistry, and VET 122 Clinical Practices II (Radiology). Cats and dogs are utilized in this course because these are the animals most likely to be encountered in small animal veterinary clinics where the majority of our students will be employed. Shelter animals are utilized because they need to be surgically sterilized prior to being placed in their adoptive homes by the Frederick County Shelter. Although we make every effort throughout our Program to utilize practice models, we find that ultimate competency in our students is achieved only by having them actually take care of live patients. This course allows the students to perfect their skills while simultaneously providing a valuable public service by providing the Frederick County Animal Shelter with fully adoptable, sterilized dog and cats.

During a Techniques laboratory, or in the course of needed patient care, dogs and cats will also be used to practice ocular diagnostic skills, including intraocular pressure determination using tonometry, fluorescein dye corneal staining, and Schirmer tear testing.

D. RATIONALE FOR ANIMAL USE:

1) Explain your rationale for animal use. 2) Justify the appropriateness of the species selected. 3) Justify the number of animals to be used. (Use additional sheets if necessary.)

While practice models are used in classes that are introductory to this class (e.g., VET 135, VET 214) few models are used in this class as this course represents a culmination of many classes and a point at which the students are now competent, but require further practice, in a wide variety of techniques. However, if at any time during this class, it is determined that a student needs further skill development, practice models (e.g., venipuncture) will be used.

Cats and dogs are utilized in this course because these are the animals most likely to be encountered in small animal veterinary clinics where the majority of our students will be employed. Complete clinical competency in our students is achieved only by having them practice and integrate a variety of previously learned techniques on live animals.

Each task necessary to complete the surgical sterilization of the animal is performed by each student by the end of the semester. The students are divided into groups of 3 to 5 students each, and there are 2 to 4 groups per lab class section. Each student group is assigned an individual animal. Each animal is typically anesthetized a maximum of two times for surgical neutering or dental cleaning before it is

rotated out of the protocol, at which point it will be returned to the shelter for adoption.

Depending on the size of the class each year, there may be up to 3 lab sections that each have a clinical rotation with animals, numbering up to 10 sessions during the semester. With an average of 3 to 4 animals/session, for a weekly estimated average total of 8 to 12 animals, and a clinical rotation lasting up to 10 weeks, the total number of animals could approach or exceed 50 for the entire semester. The total number of animals rotated through the clinical service is also entirely dependent on the request for services from the shelter which can vary from year to year.

DESCRIPTION OF EXPERIMENTAL DESIGN AND ANIMAL PROCEDURES:

Briefly explain the experimental design and specify all animal procedures. This description should allow the ACUC to understand the experimental course of an animal from its entry into the experiment to the endpoint of the study. Specifically address the following:

(Use additional sheets if necessary.)

- **Injections or Inoculations** (substances, dose, sites, volume, route, and schedules)
- **Blood Withdrawals** (volume, frequency, withdrawal sites, and methodology)
- **Non-Survival Surgical Procedures** (Provide details of survival surgical procedures in Section G.)
- **Methods of Restraint** (e.g., restraint chairs, collars, vests, harnesses, slings, etc.)
- **Animal Identification Methods** (e.g., ear tags, tattoos, collar, cage card, etc.)
- **Other Procedures** (e.g., survival studies)
- **Resultant Effects**, if any, the animals are expected to experience (e.g., pain, distress, etc.)
- **Experimental Endpoint Criteria** (i.e., percentage body weight gain or loss, inability to eat or drink, behavioral abnormalities, clinical symptomatology. List the criteria to be used to determine when euthanasia is to be performed.

All procedures are performed by the group of 3-5 students assigned to the case and all procedures are double-checked by the supervising veterinarian or licensed veterinary technician.

Prior to any anesthesia, the animal is given a complete physical examination, 3ml of blood is drawn from the jugular or a peripheral vein into the appropriate collection tube (purple-EDTA, green-heparin, blue-citrate, red-serum separator). Tests may include a CBC, PCV, differential, chemistry, and heartworm or feline leukemia test. Fecal parasite check is completed with feces obtain from the animal's cage or via fecal loop from the rectum and radiographs taken if indicated (e.g., large breed dogs to screen for hip dysplasia).

A balanced anesthetic protocol is prescribed by the clinician. After premedication, an intravenous catheter using a peripheral vein is placed (3 attempts permitted), and Lactated Ringer's solution administered at a rate of 10mls/kg/hr is administered. Premedications administered may consist of a tranquilizer and/or opioid given subcutaneously or

intramuscularly using a 25 g. needle. General anesthesia is induced (see section I), and the animal intubated (3 attempts permitted). General anesthesia is maintained using an anesthetic machine with precision vaporizer that provides anesthetic gas (isoflurane or sevoflurane) and oxygen. The use of a ventilator may be elected. Monitoring is performed using manual methods to evaluate heart rate, pulse, respiration, temperature, and mucous membrane color and refill time. Monitoring is supported using devices that include electrocardiography, blood pressure, pulse oximetry, and capnography. Patient warming devices are used to support body temperature. Patients are monitored throughout the recovery period after extubation, until ambulatory.

The surgical sterilization is performed by the attending veterinarian (see section F). Dental cleaning is performed by students supervised by the attending veterinarian. Dental radiographs are generated by the students under the supervision of the attending veterinarian. If indicated, dental extractions will be performed by or under the supervision of the attending veterinarian.

Any pre-existing health problems including dental disease will be addressed by a treatment plan using currently acceptable standards of veterinary care prior to subjecting the animal to sterilization surgery (see Section E.) Following 2-5 days of post-operative recovery, they will then be returned to the animal shelter where they will be adopted into private homes.

Students are directly supervised, at all times, by at least one of the Veterinary Technology personnel listed in Section A of this protocol. This direct supervision assures the safety of both the animal and the student.

The animals utilized for this protocol are "inpatients" of the NOVA Veterinary Technology Program. However, ownership of these animals remains, at all times, with the animal shelter from which they were received.

It is not anticipated that any of these animals will require euthanasia, but if an illness or injury should occur that does not respond to medical treatment, euthanasia would be performed (see section J).

Dogs and cats (cats are housed separately from dogs) will be group-housed when compatible and provided an opportunity for exercise in accordance with the Animal Welfare Regulations. These animals are also provided socialization by the veterinary technology students. The dogs are walked twice a day by staff or veterinary technology students.

E. SURVIVAL SURGERY — If proposed, complete the following:

- 1. Identify and describe the surgical procedure(s) to be performed. Include the aseptic methods to be utilized. (*Use additional sheets if necessary.*):**

All animals are prepared for surgery in accordance with standard aseptic surgical techniques. This includes, but is not limited to; clipping/shaving, skin preparation (alternating scrubs with sterile saline and an iodophor or chlorhexidine), use of sterile surgical

instruments, use of sterile draping, and preparation of the surgeon (mask, cap, surgical scrub, sterile gown and gloves).

OVARIOHYSTERECTOMY (OVH)

CAT OVH:

Ovariohysterectomy is indicated for sterilization and for the treatment of pyometra, infection, neoplasia of the genital tract or hyperplasia and neoplasia of the mammary glands. It is also indicated for the management of other diseases such as diabetes, dystocia and diseases that are genetic in origin.

General anesthesia is required. Fluid therapy is indicated.

The patient is positioned in dorsal recumbency with the hind legs gently extended and abducted.

The patient is clipped from the xiphoid to the pubis, and also approximately 2 inches on either side of the linea alba. The patient is examined for an existing spay scar. The patient is surgically prepped in a routine manner using chlorhexidine. An incisional line block is performed aseptically with bupivacaine or lidocaine. After aspiration, a 22 to 25 g needle is used to administer the local anesthetic intradermally and subcutaneously adjacent to the anticipated surgical incision site.

The patient is four corner draped. A midventral abdominal incision is started at the edge of or about one-half inch caudal to the umbilicus and continued caudally for approximately one to two inches depending on the size of the animal. The uterine horn is extracted from the abdomen using an ovariohysterectomy hook or a gloved finger. Upon presentation, the uterine horn is grasped with a gauze sponge. Kelly forceps are clamped on the proper ligament. The index finger is placed in the hammock formed by the lateral suspensory ligament and the mesovarium and is slid cranially toward the kidney. The suspensory ligament is torn by applying traction toward the body wall. Care is taken to avoid tearing more than the suspensory ligament. An avascular region of the broad ligament is bluntly fenestrated with the tips of a clamp. The ovarian pedicle is ligated using a 3-clamp method and absorbable suture using Modified Miller's and circumferential ligatures. The pedicle is transected with a blade, while protecting adjacent structures. The pedicle is grasped with thumb forceps. The clamps are removed from the pedicle and the pedicle is observed for bleeding. The other uterine horn and ovary are handled in a similar fashion. Complete removal of the ovary is confirmed via palpation of the ovary, visual inspection, or both. The broad ligament is broken down using the index finger and gently dissecting through avascular areas taking care to avoid the uterine artery and vein. The body of the uterus is clamped with Carmalt forceps between the bifurcation and the cervix. The uterine body and uterine vessels are ligated in the crush of the clamp using absorbable suture with a Modified Miller's ligature. The uterine body is transected with a blade and the uterus is removed. The uterine

body is grasped with thumb forceps. The Carmalt is removed and the uterine body is observed for bleeding. Prior to final closure a final assessment for bleeding is made. If no bleeding is noted, the abdomen is closed with absorbable suture in a routine manner using a continuous closure on the linea alba. The subcutaneous tissues are closed with absorbable suture in a continuous pattern. Sutures placed in the skin are either absorbable or nonabsorbable suture and may be in a subcuticular, simple continuous or interrupted pattern.

The incision is monitored for swelling and discharge. Exercise is restricted for 10-14 days. If the cat begins to lick the incision, an E-collar may be placed.

DOG OVH:

Ovariohysterectomy is indicated for sterilization and for the treatment of pyometra, infection, neoplasia of the genital tract or hyperplasia and neoplasia of the mammary glands. It is also indicated for the management of other diseases such as diabetes, dystocia and diseases that are genetic in origin.

General anesthesia is required. Fluid therapy is indicated.

The patient is positioned in dorsal recumbency with the hindlegs gently extended and abducted.

The patient is clipped from the xiphoid to the pubis approximately four inches on either side of the linea alba. The patient is examined for an existing spay scar. The patient is surgically prepped in a routine manner using chlorhexidine. An incisional line block is performed aseptically with bupivacaine or lidocaine. After aspiration, a 22 to 25 g needle is used to administer the local anesthetic intradermally and subcutaneously adjacent to the anticipated surgical incision site.

The patient is four corner draped. A midventral abdominal incision is started at the edge of the umbilicus and continued caudally for approximately two to five inches depending on the size of the animal. The uterine horn is extracted from the abdomen using an ovariohysterectomy hook or a gloved finger. Upon presentation, the uterine horn is grasped with a gauze sponge. Kelly forceps are clamped on the proper ligament. The index finger is placed in the hammock formed by the lateral suspensory ligament and the mesovarium and is slid cranially toward the kidney. The suspensory ligament is torn by applying traction toward the body wall. Care must be taken to avoid tearing more than the suspensory ligament. An avascular region of the broad ligament is bluntly fenestrated with the tips of a clamp. The ovarian pedicle is ligated using a 3-clamp method and absorbable suture using Modified Miller's and circumferential ligatures. The pedicle is transected with a blade, while protecting adjacent structures. The pedicle is grasped with thumb forceps. The clamps are removed from the pedicle and the pedicle is observed for bleeding. The other uterine horn and ovary are handled in a similar

fashion. Complete removal of the ovary is confirmed via palpation of the ovary, visual inspection, or both. The broad ligament is broken down using the index finger and gently dissecting through avascular areas taking care to avoid the uterine artery and vein. The body of the uterus is clamped with Carmalt forceps between the bifurcation and the cervix. The uterine body and uterine vessels are ligated in the crush of the clamp using absorbable suture with a Modified Miller's ligature. The uterine body is transected with a blade and the uterus is removed. The uterine body is grasped with thumb forceps. The Carmalt is removed and the uterine body is observed for bleeding. Prior to final closure a final assessment for bleeding is made. If no bleeding is noted, the abdomen is closed with absorbable suture in a routine manner using a continuous closure on the linea alba. The subcutaneous tissues are closed with absorbable suture in a continuous pattern. Sutures placed in the skin are either absorbable or nonabsorbable suture and may be in a subcuticular, simple continuous or interrupted pattern.

The incision is monitored for swelling and discharge. Exercise is restricted for 10-14 days. If the dog begins to lick the incision, an Elizabethan collar ("E-collar") may be placed.

CASTRATION:

CAT:

Castration is indicated as an elective procedure to prevent impregnation and to reduce the characteristic odor of tomcat and for behavior modification.

General anesthesia is required. Fluid therapy is recommended.

The patient is placed in lateral or dorsal recumbency.

The hair is plucked or clipped from the scrotal skin and the area is surgically prepped with chlorhexidine. A testicular local block is performed using bupivacaine or lidocaine administered with a 25 g needle. The needle is inserted through the testicle at the caudal pole directed toward the spermatic cord. After aspiration, the local anesthetic is injected while withdrawing the needle until the testicle is slightly turgid or approximately 45% of the drug has been administered per testicle. The remaining drug is used for a dermal incisional block with a new 25 g needle. A final scrub with chlorhexidine is performed over the surgical field.

The scrotal skin is incised using a number 15 blade in a vertical direction over each testicle. A closed castration is performed without penetrating the common vaginal tunic. A self-tie is made in each spermatic cord using curved mosquito hemostatic forceps. Each cord is incised caudal to the knot and the testicle is removed. Excessive fatty tissue is excised. The scrotal incision is allowed to heal by second intention

Litter made of paper pellets is used for the litter box. The scrotal area is examined daily for evidence of swelling, discharge, pain and heat.

DOG:

Castration is done for sterilization, to modify behavior, prevent roaming and decrease the desire to fight. Older dogs may require castration in conjunction with other therapy for related problems such as benign prostatic hyperplasia.

General anesthesia is required. Fluid therapy is recommended.

The dog is placed in dorsal recumbency with the rear limbs gently extended and abducted.

The inner thighs, the caudal two thirds of the prepuce, and the base of the scrotum is gently clipped with particular care taken to avoid any clipper burns or abrasions to the scrotum. The long hair on the scrotum itself is trimmed. The area is surgically prepped in a routine manner. A testicular local block is performed using bupivacaine or lidocaine administered with a 22 g or 25 g needle (1-1.5"). The needle is inserted through the testicle at the caudal pole directed toward the spermatic cord. After aspiration, the local anesthetic is injected while withdrawing the needle until the testicle is slightly turgid or approximately 45% of the drug has been administered per testicle. The remaining drug is used for a dermal incisional block with a new needle. A final scrub with chlorhexidine is performed over the surgical field. Iodine solution is not sprayed on the scrotum itself.

The area is four corner draped. One of the testicles is displaced cranially by finger manipulation through the caudal drape. It is positioned ventral to the penis immediately cranial to the scrotum and held with sufficient pressure to cause the testicle to bulge under the skin. A midline incision is made over the testicle with a number 10 blade and number 4 Bard Parker handle. The common tunic is similarly incised. The castration is performed using an open or closed technique. The incision is made long enough to allow the testicle to be freed of the subcutaneous tissues and common vaginal tunic. The spermatic cord and testicular artery and vein are ligated using a 3-clamp method and absorbable suture using Modified Miller's and circumferential ligatures. The pedicle is grasped with thumb forceps and examined for hemorrhage. The other testicle is similarly incised and the cord, vein and artery ligated. The incision is closed using absorbable suture in a continuous pattern at the subcutaneous or subcuticular layer. The skin is closed using nonabsorbable suture in a simple interrupted pattern.

The dog is given moderate restriction of exercise. The incision is checked daily for swelling or discharge. If the vessel in the scrotal ligament bleeds or subcutaneous hemorrhage is excessive, the scrotum may fill with blood that forms a palpable clot. This problem is usually self-

limiting. The most common problem after surgery is scrotal dermatitis initiated by rough clipping or harsh scrubbing and aggravated by the dog's licking. If the dog licks the incision, then an E-collar may be placed.

DOG and CAT DENTISTRY

Dental cleaning (dental prophylaxis and appropriate periodontal treatment) is done to remove dental plaque/calculus and prevent or control periodontal disease.

General anesthesia is required. Patients are anesthetized using a protocol similar to the sterilization procedures. Intravenous fluid therapy is used while the patient is anesthetized.

The patient's mouth is examined by the clinician prior to cleaning. Students assist in "charting" (i.e., making notes on a dental chart) any abnormalities in the mouth. Dental cleaning is completed using an ultrasonic scaler, hand scalers, and curettes to remove dental plaque/calculus. The ultrasonic scaler is water-cooled. Detailed oral examination is performed using an explorer- probe hand instrument. The mouth may be rinsed with 0.1% chlorhexidine solution.

After completion of dental scaling, the teeth are polished using an air-powered dental delivery system, prophy angle on a low speed handpiece, and prophy paste. Afterwards, the entire mouth is rinsed with water and dried with gauze.

If indicated, dental extractions will be performed by or under the supervision of the clinician. The appropriate dental elevators and dental forceps are used to perform extractions. If needed, multi-rooted teeth may be sectioned by the clinician using a cross-cut fissure or round bur in a air-driven high speed handpiece. At this time, additional analgesics may be added to the anesthetic protocol (see Section I.) Local anesthetic (e.g., lidocaine and bupivacaine) blocks may also be utilized. Generally, most dental extraction sites are sutured with absorbable suture.

Dental radiography may be elected if the animal exhibits a dental or oral condition that requires further diagnostic study. Dental xrays are generated by a dental xray machine, Image-Vet 70 ACP from AFP Imaging (now at Imageworks <http://www.imageworkscorporation.com/>). Images are captured either by traditional dental film, direct digital sensors, or phosphor storage plates. Traditional dental film is provided in E/F speed, size 2 or size 4 occlusal, and is processed using rapid process chemicals in a chairside developer. The direct digital system generates images using the EVA® system digital sensor size 2 and the ProImage dental image management software in association with AFP Imaging. The phosphor storage plates are provided in size 0, 2, and size 4 occlusal. The scanning of the image is done by the ScanXduo system with management of the images provided by Visix software, both in association with AllProImaging.

<http://www.allproimaging.com/healthcare/veterinary.cfm>. Digital methods are primarily chosen as this reduces radiation exposure to the patient and operator when

compared with traditional film techniques. All three modalities utilize the intraoral technique with positioning of the primary beam to the film/sensor determined by the region to be radiographed. Mandibular premolars and molars are radiographed using the parallel technique, whereas for all other areas of the dentition, the bisecting angle technique is used.

The patient is recovered in a manner similar to the sterilization procedures described above.

TECHNIQUES LABORATORY (OCULAR DIAGNOSTICS)

Dogs or cats will be used to demonstrate and practice intraocular pressure determination using tonometry, fluorescein dye corneal staining, and Schirmer tear testing. Models (e.g., water balloons for ocular tonometry) will be used as alternatives whenever possible. Students are oriented to the techniques via didactic coursework beforehand.

Patient sedation/tranquilization may be used for this lab exercise, along with topical anesthetic for the eyes. A patient's eye will only be used once during the entire exercise.

Tonometry will be demonstrated with a water balloon and then students will then have an opportunity to practice with the models. If possible, dogs or cats will be then be utilized. The patient's eye will first be topically anesthetized with proparacaine.

The instructor will also demonstrate the technique for fluorescein staining and Schirmer tear testing with models or on a live dog or cat. Afterwards, students may practice the techniques with live dogs or cats when clinically indicated.

This is a summary of the ocular diagnostics laboratory activity. For the detailed approved study proposal with required literature search concerning this activity, the reader is referred to the Ocular Diagnostic Lab 2017 study document.

2. Who will perform surgery and dentistry and what are their qualifications and/or experience?

Regina Wilson, DVM 11 years of experience

Mary Aller, DVM 38 years of experience

3. Where will surgery be performed (Building and Room)?

LA building - Veterinary Technology surgical and dental suites

4. Describe post-operative care required, including consideration of the use of post-operative analgesics, and identify the responsible individual:

Analgesics will be given as described in section I. Animals will be closely monitored by the Veterinary Technology students and staff until they are ambulatory. Postoperatively, the animals will be evaluated for

pain using behavioral/psychological signs, response to handling, body posture, and physiological parameters (heart rate, respiratory rate). Cats will be evaluated for pain using the Colorado State University Veterinary Medical Center Feline Acute Pain Scale as a basis.

http://www.vasg.org/pdfs/CSU_Acute_Pain_Scale_Kitten.pdf

Dogs will be evaluated for pain using the Colorado State University Veterinary Medical Center Canine Acute Pain Scale as a basis.

http://www.vasg.org/pdfs/CSU_Acute_Pain_Scale_Canine.pdf

Generally, analgesics are given for 3-5 days post-operatively. If it is determined that the animal's pain is not adequately controlled, then additional analgesics will be given.

Surgical incisions and dental extraction sites will be examined for the first several days after the surgery for redness, swelling and/or discharge and treated appropriately as needed.

5. Has major survival surgery been performed on any animal prior to being placed on this study?

☐ Yes X No

If yes, please explain:

6. Will more than one major survival surgery be performed on an animal while on this study?

☐ Yes X No

If yes, please justify:

H. PAIN OR DISTRESS CATEGORY — The ACUC is responsible for applying U.S. Government Principle IV. Contained in Appendix 3: "Proper use of animals, including the avoidance or minimization of discomfort, distress, and pain when consistent with sound scientific practices, is imperative. Unless the contrary is established, investigators should consider that procedures that cause pain or distress in human beings may cause pain or distress in other animals." Check the appropriate category(ies) and indicate the approximate number of animals in each. Sum(s) should equal total from Section B.

IF ANIMALS ARE INDICATED IN COLUMN E, A SCIENTIFIC JUSTIFICATION IS REQUIRED TO EXPLAIN WHY THE USE OF ANESTHETICS, ANALGESICS, SEDATIVES OR TRANQUILIZERS DURING AND/OR FOLLOWING PAINFUL OR DISTRESSFUL PROCEDURES IS CONTRAINDICATED. PLEASE COMPLETE THE EXPLANATION FOR COLUMN E LISTINGS FORM AVAILABLE FROM OLAM. THIS FORM WILL ACCOMPANY THE NIH ANNUAL REPORT TO THE USDA. NOTE: THIS COLUMN E FORM, AND ANY ATTACHMENTS, e.g., THE ASP, ARE SUBJECT TO THE FREEDOM OF INFORMATION ACT.

Number of Animals Used Each Year:

	Year 1	Year 2	Year 3
<input type="checkbox"/> USDA Column C Minimal, Transient, or No Pain or Distress			
X USDA Column D Pain or Distress Relieved By Appropriate Measures	20 cats 50 dogs	20 cats 50 dogs	20 cats 50 dogs

<input type="checkbox"/> USDA Column E Unrelieved Pain or Distress			
--	--	--	--

Describe your consideration of alternatives to procedures in this protocol, and your determination that alternatives were not available. [Note: Principal Investigators must certify in paragraph N.5 that no valid alternative was identified to any described procedures which may cause more than momentary pain or distress whether it is relieved or not.] Delineate the methods and sources used in the search below. Database references must include databases (2 or more) searched, the date of the search, period covered and keywords used. Reduction, replacement, and refinement must be addressed. *For more information see USDA Policy #12 (<http://www.aphis.usda.gov/ac/policy/policy12.pdf>)*

On October 31, 2017, Dr. Mary Aller performed a literature review and general internet search.

1. PubMed (2000-2017) (<https://www.ncbi.nlm.nih.gov/pubmed/>)

The following terms were used:

Anesthesia, Training, veterinary - 208 references, 28 relevant
 Anesthesia, training veterinary students - 32 references, 29 relevant
 Anesthesia, training, simulation- 745 references
 Anesthesia, veterinary training, simulation- 3 references, 2 relevant
 Anesthesia, training, models- 828 references
 Anesthesia, veterinary training, models - 20 references, 6 relevant

Surgical training, veterinary technology students - 22 references, 17 relevant

Surgical training simulation- 487 references

Surgical training simulation, veterinary- 44 references, 30 relevant

Surgical training models- 9876 references

Surgical training models, veterinary- 120 references, 32 relevant

2. PubAg (Agricola) (2000- 2017) <https://pubag.nal.usda.gov/>

The following terms were used:

Anesthesia, training veterinary students- 4 references, 3 relevant
 Anesthesia, veterinary training- 15 references, 4 relevant
 Anesthesia, training, simulation- 0 references
 Anesthesia, training, models- 1 reference, 1 relevant
 Surgical training, veterinary- 39 references, 9 relevant
 Surgical training simulation- 0 references
 Surgical training models- 17 references, 5 relevant

3. A general internet search for veterinary models and simulators found a specialized prototype dental model for tooth extraction training that is in development at <http://vetsimulators.com/caninedentalsimulator/>. This may be a useful tool for training students in tooth extraction assistance when it becomes available.

Generally, many articles found in the literature search were not specific for veterinary technology students, but included training studies for veterinary students and medical students. Models and simulations in the human field are commonly available but do not relate to veterinary training as well as veterinary models and simulations specifically designed for training of students in the veterinary field. In general, pre-clinical training using video demonstrations, cadavers, models, and virtual simulations were considered valuable introductory learning tools. However, ultimately, clinical experience with live patients was found to be important for students to acquire proficiency in skills required for patient care.

At NOVA, the veterinary technology program routinely trains students with alternatives to live animals. Before working on live animals, pre-clinical training of our veterinary technology students includes video, and hands on training with equipment, models and mannequins in pre-requisite coursework.

Students are able to log in to an online training site (ACT training), where they can access educational videos on anesthesia, surgical assistance, dental techniques, and patient care. In many courses, these are now required viewing prior to lab participation.

Practical exams where the students are required to demonstrate competency on the use of the anesthesia machine and dental equipment are mandatory prior to allowing students' use of the equipment on live animals.

Venipuncture training is provided using the vascular access training models <http://www.vetmed.ucdavis.edu/products/> . Intubation models from Rescue Critters <http://www.rescuecritters.com/> are also utilized for intubation training to facilitate student learning before techniques are attempted on live animals. Synthetic injection trainers are used (Surgireal, Rescue Critters) for learning injection techniques.

CPCR labs are taught using Rescue Critter mannequins (<http://www.rescuecritters.com/>). Students also are trained in assistance with suturing techniques on synthetic skin models (Surgireal products- <http://shop.surgireal.com/collections/all>) before being allowed to assist in surgery. Dental technique training occurs in a prior course (VET 214) using canine and feline dental models purchased from Columbia Dentoforms. <https://www.columbiadentoform.com/catalog/veterinary-models>

Once students have completed the described pre-requisite training, they have utilized the alternatives to live animals. The students are then ready and prepared for working with live animals as outlined in this protocol.

- I. **ANESTHESIA, ANALGESIA, TRANQUILIZATION** — For animals indicated in Section H, Column D, specify the anesthetics, analgesics, sedatives or tranquilizers that are to be used. Include the name of the agent(s), the dosage, route and schedule of administration.

*All controlled substances will be secured and tracked in accordance with Federal Regulations

- 0.5 % proparacaine topical ophthalmic drops
- Acepromazine (10mg/ml, #50 ml)
0.02-0.05 mg/kg SQ or IM
- Alfaxan (alfaxalone 10 mg/ml)
1-4 mg/kg IV or IM
- Atipamezole (5mg/ml #10 ml)
equal to volume of medetomidine or dexmedetomidine for reversal IM
- Atropine (0.54 mg/ml #60ml)
0.01-0.02 mg/kg SQ, IM, or IV
- Bupivacaine 0.5%
1.0 mg/kg locally, may be combined with lidocaine
- Buprenorphine (0.3 mg/ml)
0.01 – 0.02 mg/kg SQ, IM, or sublingual
- Butorphanol (10 mg/ml #10 ml or 2 mg/ml #10 ml)
0.2 – 0.5 mg/kg IM
- Carprofen (50 mg/ml)
2 – 4 mg/kg SQ, IM, IV (in dogs), 2 mg/kg only (in cats)
- Dexmedetomidine (0.5 mg/ml#10ml)
10-20 micrograms/kg IV or IM
- Dexmedetomidine (0.5 mg/ml, #10 ml)/Butorphanol (10 mg/ml, #10 ml)/Ketamine (100mg/ml, #10)
“Kitty Magic” drug protocol – 0.1 mls of each drug/10 lbs. body weight IM (cats)
- Diazepam (5 mg/ml #10 ml)
0.1-0.3 mg/kg IV
- Isoflurane
Induction 3-4%
Maintenance 1-2%
- Ketamine (100mg/ml #10 ml)
1-2 mg/kg IV
10 mg/kg IM
- Ketamine/Diazepam Combination or Ketamine/Midazolam Combination
1 ml/40 lb of each drug IV
- Lidocaine 2%

1.0 mg/kg locally for dogs; 0.5 mg/kg locally for cats

- Meloxicam (5mg/ml injectable; 1.5 or 0.5 mg/ml oral)
0.2 mg/kg SQ injection, then 0.1 mg/kg PO SID X 3-4 days (dogs); 0.2 mg/kg SQ injection prior to surgery (injection for cats-once only)
- Midazolam (5 mg/ml)
0.1-0.2 mg/kg IV
- Propofol (10 mg/ml, #20 ml)
2-4 mg/ lb IV
- Robenacoxib (Onsior- 6 mg tablets)
1mg/kg for cats
- Sevoflurane
Induction 3-5%
Maintenance 2-4%
- Telazol (100 mg/ml #5 ml)
1-2 mg/lb IV
3-5 mg/lb IM

J. METHOD OF EUTHANASIA OR DISPOSITION OF ANIMALS AT END OF STUDY

Indicate the proposed method, and if a chemical agent is used, specify the dosage and route of administration. If the method(s) of euthanasia include those not recommended by the AVMA Panel Report on Euthanasia (<http://www.avma.org/resources/euthanasia.pdf>), provide justification why such methods must be used. Indicate the method of carcass disposal if not as MPW. Important references to consider:

It is not anticipated that any animal would require euthanasia on this protocol. However, in the case of an unanticipated severe illness or injury that did not respond to medical management the shelter would be notified for permission and euthanasia would be induced via lethal intravenous injection of a barbiturate overdose [Beuthanasia (CIII) IV 1 ml/4.5 kg BW]

K. HAZARDOUS AGENTS

Use of volatile anesthetics or formalin requires a description of scavenging methods used.

	YES	NO
Hazardous Chemicals or Drugs (List below)	X	<input type="checkbox"/>

Acepromazine, alfaxalone, butorphanol, dexmedetomidine, buprenorphine, meloxicam, lidocaine, bupivacaine, ketamine, diazepam, midazolam, propofol, tiletamine + zolazepam (Telazol), Isoflurane, Sevoflurane

Additional safety considerations:

Inhalant anesthetics will be used with appropriate active scavenging. All controlled substances will be secured and tracked in accordance

L. SPECIAL CONCERNS OR REQUIREMENTS OF THE STUDY — List any special housing, equipment, animal care (i.e., special caging, water, feed, or waste disposal, etc.). Include justification for exemption from participation in the environmental enrichment plan for nonhuman primates or exercise for dogs.

None

M. PRINCIPAL INVESTIGATOR CERTIFICATIONS:

1. I certify that the individuals listed in Section A are authorized to conduct procedures involving animals under this proposal have received training in the biology, handling, and care of this species; aseptic surgical methods and techniques (if necessary); the concept, availability, and use of research or testing methods that limit the use of animals or minimize distress; the proper use of anesthetics, analgesics, and tranquilizers (if necessary); procedures for reporting animal welfare concerns.
2. *FOR ALL COLUMN D AND COLUMN E PROPOSALS (see section H):* I certify that I have reviewed the pertinent scientific literature and the sources and/or databases (2 or more) as noted in paragraph H. and have found no valid alternative to any procedures described herein which may cause more than momentary pain or distress, whether it is relieved or not.
3. I will obtain approval from the ACUC before initiating any significant changes in this study.

Principal Investigator:

Signature _____ Date _____

N. CONCURRENCES: PROPOSAL NUMBER Advanced Clinics-17

Amy Laubinger DVM, Institutional Official & Chair

Signature _____ Date _____

Regina Wilson, DVM, Attending Veterinarian

Signature _____ Date _____

James Hillieary, Public Member

Signature _____ Date _____

Nancy Aiello, PhD, Scientist

Signature _____ Date _____

Diane Schrenzel, AAS, LVT, Non-Scientist

Signature _____ Date _____

P. FINAL APPROVAL:

Certification of review and approval by the NVCC Veterinary Technology Animal Care and Use Committee Chairperson.

Chairperson _____

Signature _____ Date _____

Leave Blank

PROPOSAL # _

APPROVAL DATE October 16, 2018

EXPIRATION DATE October 16, 2021

NOVA

Northern Virginia Community College

Loudoun Campus

PLEASE TYPE:

A. ADMINISTRATIVE DATA:

Principal Investigator Amy Laubinger, DVM

Mailing Address Northern Virginia Community College, Veterinary Technology
Program, 21200 Campus Drive, Sterling, VA 20164

Telephone 703-948-7794 - Fax 703-404-7318 Email alaubinger@nvcc.edu

Project Title Hematology & Urinalysis lab – provided in VET 131 Clinical Pathology I

Initial Submission ☒ Renewal ☐ X or Modification ☐ X of Proposal Number Hematology &
Urinalysis Lab 2018

List the names of all individuals authorized to conduct procedures involving animals under this proposal and identify key personnel (i.e., Co-investigator(s)). Signature confirms that personnel have read and understand the protocol.

Diane Schrenzel, LVT

Dawn Witter, LVT

Amy Laubinger, DVM

Linda Schnaible, LVT

Tregel Cockburn, DVM

Amy Laubinger, DVM

Regina Wilson, DVM

Kiana Adkisson-Selby, DVM

Lisa Scott, LVT

B. ANIMAL REQUIREMENTS:

Species Dogs and cats and chickens Age/Weight/Size adult Sex M/F

Stock or Strain Domestic

Source(s) Dog and cats: Animal Shelter: Frederick County *, Loudoun County
chickens: Privately owned. Holding Location(s) Veterinary Technology Building

Animal Procedure Location(s) Veterinary Technology Building

Number of Animals:

<u>20 dogs</u> <u>6 chickens</u> <u>2 cats</u>	<u>20 dogs</u> <u>6 chickens</u> <u>2 cats</u>	<u>20 dogs</u> <u>6 chickens</u> <u>2 cats</u>		<u>60 dogs</u> <u>18 chickens</u> <u>6 cats</u>
Year 1	Year 2	Year 3	=	TOTAL

***All animals received from the shelters have completed the minimum holding period required by Federal regulations.**

C. STUDY OBJECTIVES:

Briefly explain in non-technical terms the aim of the study and how the study may benefit human or animal health or advance scientific understanding of biological processes.

The purpose of this study is to allow veterinary technician students to integrate certain clinical skills with knowledge of laboratory procedures. The clinical skills emphasized in this course are: venipuncture, performing hematology tests including a CBC, and performing a complete urinalysis. The skills to be practiced with live animals are venipuncture and voided urine collection in order to obtain specimens for lab analysis.

D. RATIONALE FOR ANIMAL USE:

1) Explain your rationale for animal use. 2) Justify the appropriateness of the species selected. 3) Justify the number of animals to be used. (Use additional sheets if necessary.)

Initially the skills are practiced on training models. Once the skills are perfected, the techniques are practiced by the students on live animals under the direct supervision of the personnel listed on this protocol.

Dogs and cats are utilized because these are the animals most likely to be encountered in small animal veterinary clinics where the majority of our students will be employed. Avians are included to assure knowledge of these species. Complete clinical competency of our students is achieved only by having them practice the listed techniques on live animals.

There are 20-30 lab sessions that utilize animals. Each lab session utilizes one animal for venipuncture and urine collection equaling 20-30 animals/semester. The students have practiced their venipuncture techniques on models before attempting the technique on a live animal.

E. DESCRIPTION OF EXPERIMENTAL DESIGN AND ANIMAL PROCEDURES:

Briefly explain the experimental design and specify all animal procedures. This description should allow the ACUC to understand the experimental course of an animal from its entry into the experiment to the endpoint of the study. Specifically address the following:

(Use additional sheets if necessary.)

- **Injections or Inoculations** (substances, dose, sites, volume, route, and schedules)
- **Blood Withdrawals** (volume, frequency, withdrawal sites, and methodology)
- **Non-Survival Surgical Procedures** (Provide details of survival surgical procedures in Section G.)

- **Methods of Restraint** (e.g., restraint chairs, collars, vests, harnesses, slings, etc.)
- **Animal Identification Methods** (e.g., ear tags, tattoos, collar, cage card, etc.)
- **Other Procedures** (e.g., survival studies)
- **Resultant Effects**, if any, the animals are expected to experience (e.g., pain, distress, etc.)
- **Experimental Endpoint Criteria** (i.e., percentage body weight gain or loss, inability to eat or drink, behavioral abnormalities, clinical symptomatology. List the criteria to be used to determine when euthanasia is to be performed.

All procedures described below are performed by the personnel listed on the protocol, or by students under the direct supervision of the personnel listed on this protocol.

Restraint and handling. Manual restraint techniques, common to conventional small animal veterinary practice, will be practiced as it is inherent to the sampling technique. Examples include; restraint in sternal recumbency, lateral recumbency, or standing. Manual restraint of avian species, common to conventional avian practice, will be practiced.

Each dog and cat will be submitted to a physical examination.

Once restrained, dog or cat will have venipuncture performed. Venipuncture sites may include jugular vein, lateral saphenous vein, femoral vein or cephalic vein. A volume not to exceed 0.5% of body weight will be withdrawn. These procedures are performed a maximum of 3 times on each animal during the session. Hypodermic needle size will be species appropriate: dogs 20g or smaller, cats 22g or smaller, avian 25 g or smaller. After the session, the animals will be monitored closely for any hematoma formation or hemostatic defect, and treated accordingly if needed.

Any existing health problems (e.g., dental disease, abscess, skin wounds, etc.) will be treated using currently accepted standards of veterinary practice.

It is not anticipated that any of these animals will require euthanasia, but if an illness or injury should occur that does not respond to medical treatment, euthanasia would be performed (see section J).

Dogs and cats will be group-housed when compatible and provided an opportunity for exercise in accordance with the Animal Welfare Regulations. The veterinary technology students and staff also provide these animals positive socialization. The dogs are walked twice a day by staff or veterinary technology students. The dogs are also placed in outside runs as weather permits for additional exercise. Voided urine samples will be collected by walking dogs or cage collection.

Chickens will be outpatients brought to campus for the lab session only. They will be temporarily housed in indoor pet carriers with bedding, water and open ventilation.

F. SURVIVAL SURGERY — If proposed, complete the following:

1. Identify and describe the surgical procedure(s) to be performed. Include the aseptic methods to be utilized. *(Use additional sheets if necessary.):*

NONE

2. Who will perform surgery and what are their qualifications and/or experience?

N/A

3. Where will surgery be performed (Building and Room)?

N/A

4. Describe post-operative care required, including consideration of the use of post-operative analgesics, and identify the responsible individual:

N/A

5. Has major survival surgery been performed on any animal prior to being placed on this study?

☐ Yes ☒ No

If yes, please explain:

6. Will more than one major survival surgery be performed on an animal while on this study?

☐ Yes ☒ No

If yes, please justify:

H. PAIN OR DISTRESS CATEGORY — The ACUC is responsible for applying U.S. Government Principle IV. Contained in Appendix 3: "Proper use of animals, including the avoidance or minimization of discomfort, distress, and pain when consistent with sound scientific practices, is imperative. Unless the contrary is established, investigators should consider that procedures that cause pain or distress in human beings may cause pain or distress in other animals." Check the appropriate category(ies) and indicate the approximate number of animals in each. Sum(s) should equal total from Section B.

IF ANIMALS ARE INDICATED IN COLUMN E, A SCIENTIFIC JUSTIFICATION IS REQUIRED TO EXPLAIN WHY THE USE OF ANESTHETICS, ANALGESICS, SEDATIVES OR TRANQUILIZERS DURING AND/OR FOLLOWING PAINFUL OR DISTRESSFUL PROCEDURES IS CONTRAINDICATED. PLEASE COMPLETE THE EXPLANATION FOR COLUMN E LISTINGS FORM AVAILABLE FROM OLAM. THIS FORM WILL ACCOMPANY THE NIH ANNUAL REPORT TO THE USDA. NOTE: THIS COLUMN E FORM, AND ANY ATTACHMENTS, e.g., THE ASP, ARE SUBJECT TO THE FREEDOM OF INFORMATION ACT.

Number of Animals Used Each Year:

	Year 1	Year 2	Year 3
<i>X USDA Column C</i> Minimal, Transient, or No Pain or Distress	20 dogs 6 chickens	20 dogs 6 chickens	20 dogs 6 chickens

	2 cats	2 cats	2 cats
<input type="checkbox"/> USDA Column D Pain or Distress Relieved By Appropriate Measures			
<input type="checkbox"/> USDA Column E Unrelieved Pain or Distress			

Describe your consideration of alternatives to procedures in this protocol, and your determination that alternatives were not available. [Note: Principal Investigators must certify in paragraph N.5 that no valid alternative was identified to any described procedures which may cause more than momentary pain or distress whether it is relieved or not.] Delineate the methods and sources used in the search below. Database references must include databases (2 or more) searched, the date of the search, period covered and keywords used. Reduction, replacement, and refinement must be addressed. *For more information see USDA Policy #12 (<http://www.aphis.usda.gov/ac/policy/policy12.pdf>)*

On April 29, 2018 Dr. Amy Laubinger performed a literature search for consideration of alternatives using the following strategies.

1. Pubmed search terms and citations (1998-2018):

Dog and phlebotomy-210 citations, 0 relevant
 Dog and education and venipuncture - 3 citations, 2 relevant
 Feline, venipuncture and teaching - 7 citations, 0 relevant
 Feline, venipuncture and education - 1 citations, 0 relevant
 Cat and blood and collection - 162 citations, 0 relevant
 Avian and venipuncture and education- 2 citations, 0 relevant
 Dog and urine and collection - 100 citations, 1 relevant
 Dog and venipuncture and simulation - 1 citation, 0 relevant
 Chicken, venipuncture and simulation - 0 citations

2. Wiley search terms and citations (1998-2018)

Dog , vein, education- 184 citations, 0 relevant
 Training, alternative, venipuncture - 6 citations, 0 relevant
 Avian, venipuncture, education - 3 citations, 0 relevant
 Training, hematology, veterinary- 48 citations, 0 relevant
 Simulation, veterinary, and teaching - 26 citations, 0 relevant

For additional information regarding products that could serve as alternatives to live dogs, the following websites and databases were also searched.

3. Norina search terms and products

Medicine Simulators- 132 products, 6 relevant
 Hematology Simulators - 0 products

Four items work as alternatives for venipuncture practice. Two items work for urine collection practice. No items are alternatives for genuine blood

to perform blood smears and CBCs nor to collect genuine urine.

4. Rescue Critters <http://www.rescuecritters.com>

Dog/cat simulator - 48 items found

Two relevant products found for this study to practice venipuncture.
No relevant products for obtaining authentic blood samples or urine samples

5. International Network for Humane Education <http://www.interniche.org>

8 vein models for teaching venipuncture. No items for blood or urine products for lab procedures

6. American Anti-Vivisection Society <http://www.aavs.org> and <http://thesciencebank.org/> and <http://www.animalearn.org>

Products- videos, models, CD, online video links. Borrowing library for many items

7. Humane Society Veterinary Medical Association <http://alted.hsvma.org>

Educational DVD/video, simulated vein models

Suggestions for alternatives to using live animals in learning include models/simulators, film/video, computer simulations, anatomy specimens, and in vitro labs. The majority of relevant citations in this literature search discussed the use of live animals.

Most products that offered learning alternatives to anatomy specimens or live animals were anatomy models, videos, or CD's. A variety of links to online video demonstrations were readily available at <http://animalearn.org>. Anatomy models do not have free-flowing blood so that would not make a realistic simulation for venipuncture. Further, it does not supply the specimen needed for laboratory tests. Prepared slides are an alternative for performing some tests in the CBC and Urinalysis but some tests still need fresh blood and urine samples. In addition to sample analysis, specimen collection and processing are essential skills in the course.

The use of alternatives to live animals aid in preparing the student for clinical skills with the live animal patient. For training our students, we use didactic coursework, videos, and demonstrations. We also use our homemade veins fashioned out of small balloons filled with water to mimic the consistency and surface of a vein. This works well for training students with the equipment and materials used in venipuncture and iv drug administration. However, the model does not produce real blood specimens for examination in the way a real vein does. And restraint, which is an integral part of these techniques, is not included with the model training. Anatomy specimens from cadavers likewise are unsuitable for the same reasons. Alternatives for urine specimens for analysis include urine samples collected from students' personal animals and patients treated at their outside jobs.

Ultimate competency is achieved through the handling of live animals and performing tests with real blood and urine.

- I. ANESTHESIA, ANALGESIA, TRANQUILIZATION** — For animals indicated in Section H, Column D, specify the anesthetics, analgesics, sedatives or tranquilizers that are to be used. Include the name of the agent(s), the dosage, route and schedule of administration.

No anesthesia, analgesia or tranquilization is required.

*All controlled substances will be secured and tracked in accordance with Federal Regulations

J. METHOD OF EUTHANASIA OR DISPOSITION OF ANIMALS AT END OF STUDY

Indicate the proposed method, and if a chemical agent is used, specify the dosage and route of administration. If the method(s) of euthanasia include those not recommended by the AVMA Panel Report on Euthanasia (<http://www.avma.org/resources/euthanasia.pdf>), provide justification why such methods must be used. Indicate the method of carcass disposal if not as MPW. Important references to consider:

It is not anticipated that any animal would require euthanasia on this protocol. However, in the case of an unanticipated severe illness or injury that did not respond to medical management, the shelter would be notified and euthanasia would be induced via lethal intravenous injection of a barbiturate overdose [Beuthanasia (CIII) IV 1 ml/4.5 kg BW].

K. HAZARDOUS AGENTS

Use of volatile anesthetics or formalin requires a description of scavenging methods used.

	YES	NO
Hazardous Chemicals or Drugs (List below)		X

Additional safety considerations:

Students, faculty and staff are required to be vaccinated for rabies and to maintain documentation of a protective titer in their files at the Veterinary Program.

All animals undergo appropriate holding periods in accordance to state and Federal regulations prior to being brought to the Program for sterilization. Although this does not guarantee that the animals are free of zoonotic diseases, it does minimize the risk.

All students, faculty and staff undergo annual OSHA and lab safety training. Documentation of the training is kept on file at the facility.

There is an injury protocol in place for the college. This includes bite wounds. All injuries are to be reported to campus police and the injury documented after appropriate care has been rendered. The injured person is encouraged to seek immediate care from their regular physician.

L. SPECIAL CONCERNS OR REQUIREMENTS OF THE STUDY — List any special housing, equipment, animal care (i.e., special caging, water, feed, or waste disposal, etc.). Include justification for exemption from participation in the environmental enrichment plan for nonhuman primates or exercise for dogs.

NONE

M. PRINCIPAL INVESTIGATOR CERTIFICATIONS:

1. I certify that the individuals listed in Section A are authorized to conduct procedures involving animals under this proposal have received training in the biology, handling, and care of this species; aseptic surgical methods and techniques (if necessary); the concept, availability, and use of research or testing methods that limit the use of animals or minimize distress; the proper use of anesthetics, analgesics, and tranquilizers (if necessary); procedures for reporting animal welfare concerns.
2. *FOR ALL COLUMN D AND COLUMN E PROPOSALS (see section H):* I certify that I have reviewed the pertinent scientific literature and the sources and/or databases (2 or more) as noted in paragraph H. and have found no valid alternative to any procedures described herein which may cause more than momentary pain or distress, whether it is relieved or not.
3. I will obtain approval from the ACUC before initiating any significant changes in this study.

Principal Investigator:

Signature Amy Lauterger, DVM Date 4-4-2019

N. CONCURRENCES: PROPOSAL NUMBER Clinical Pathology 1-2018

Amy Laubinger, DVM, Institutional Official & Chair

Signature Amy Laubinger Date 10/16/18

Regina Wilson, DVM, Attending Veterinarian

Signature Regina E. Wilson DVM Date 10/16/18

James Hilleary, Outside Member

Signature [Signature] Date 16 Oct '18

Diane Mucci, PhD, Scientist

Signature Diane Mucci Date 10/16/18

Dawn Witter, AAS, LVT, Non-Scientist

Signature Dawn Witter Date 10/16/18

P. FINAL APPROVAL:

Certification of review and approval by the NVCC Veterinary Technology Animal Care and Use Committee Chairperson.

Chairperson Amy Laubinger DVM

Signature Amy Laubinger, DVM Date 10-16-18



**Northern Virginia
Community College**
Loudoun Campus

Leave Blank

PROPOSAL # VT-Clin Path II-15APPROVAL DATE April 28, 2015EXPIRATION DATE April 30, 2018

PLEASE TYPE:

A. ADMINISTRATIVE DATA:Principal Investigator Amy Laubinger, DVMMailing Address Northern Virginia Community College, Veterinary Technology Program, 21200 Campus Drive, Sterling, VA 20164Telephone 703-948-7794 Fax 703-404-7318 Email alaubinger@nvcc.eduProject Title Microbiology & Clinical Pathology – diagnostic sampling provided in VET 132 Clinical Pathology II laboratory sessionsInitial Submission ☐ Renewal or Modification ☒ of Proposal Number VT-Clin Path II-12

List the names of all individuals authorized to conduct procedures involving animals under this proposal and identify key personnel (i.e., Co-investigator(s)). Signature confirms that personnel have read and understand the protocol.

Diane Schrenzel, LVTDawn Witter, LVTLinda Schnaible, LVT**B. ANIMAL REQUIREMENTS:**Species Dogs and Cats Age/Weight/Size adult Sex M/FStock or Strain DomesticSource(s) Animal Shelter: Frederick County*, Loudoun County Holding Location(s) LA and LK BuildingsAnimal Procedure Location(s) Veterinary Technology, LA Building**Number of Animals:**

<u>4 dogs</u>	<u>4 dogs</u>	<u>4 dogs</u>		<u>12 dogs</u>
Year 1	Year 2	Year 3	=	TOTAL

***All animals received from the shelters have completed the minimum holding period required by Federal regulations.**

C. STUDY OBJECTIVES:

Briefly explain in non-technical terms the aim of the study and how the study may benefit human or animal health or advance scientific understanding of biological processes.

The purpose of this study is to allow veterinary technician students to integrate certain clinical skills with knowledge of lab procedures. The clinical skills emphasized in this course are performing clinical chemistry analysis and observing bacterial and fungal organisms. The skills to be practiced with animals are: venipuncture, pluck fur for KOH test, and collect ear or fecal swab samples for smears, in order to obtain specimens for lab analysis

D. RATIONALE FOR ANIMAL USE:

1) Explain your rationale for animal use. 2) Justify the appropriateness of the species selected. 3) Justify the number of animals to be used. (Use additional sheets if necessary.)

Initially the skills are practiced on training models. Once the skills are perfected, the techniques are practiced by the students on live animals under the direct supervision of the personnel listed on this protocol.

Dogs and cats are utilized because these are the animals most likely to be encountered in small animal veterinary clinics where the majority of our students will be employed. Complete clinical competency of our students is achieved only by having them practice the listed techniques on live animals.

There are 6 lab sessions that utilize animals. One lab session utilizes one animal for venipuncture and two lab sessions use two animals equaling 3 animals/semester. Two lab sessions use hair plucked from one animal for KOH testing and collection of ear and fecal samples. The students have practiced their venipuncture techniques on models before attempting the technique on a live animal.

E. DESCRIPTION OF EXPERIMENTAL DESIGN AND ANIMAL PROCEDURES:

Briefly explain the experimental design and specify all animal procedures. This description should allow the ACUC to understand the experimental course of an animal from its entry into the experiment to the endpoint of the study. Specifically address the following:

(Use additional sheets if necessary.)

- **Injections or Inoculations** (substances, dose, sites, volume, route, and schedules)
- **Blood Withdrawals** (volume, frequency, withdrawal sites, and methodology)
- **Non-Survival Surgical Procedures** (Provide details of survival surgical procedures in Section G.)
- **Methods of Restraint** (e.g., restraint chairs, collars, vests, harnesses, slings, etc.)
- **Animal Identification Methods** (e.g., ear tags, tattoos, collar, cage card, etc.)
- **Other Procedures** (e.g., survival studies)

- **Resultant Effects**, if any, the animals are expected to experience (e.g., pain, distress, etc.)
- **Experimental Endpoint Criteria** (i.e., percentage body weight gain or loss, inability to eat or drink, behavioral abnormalities, clinical symptomatology. List the criteria to be used to determine when euthanasia is to be performed.

All procedures described below are performed by the personnel listed on the protocol, or by students under the direct supervision of the personnel listed on this protocol.

Restraint and handling. Manual restraint techniques, common to conventional small animal veterinary practice, will be practiced as it is inherent to the sampling technique. Examples include; restraint in sternal recumbency, lateral recumbency, or standing.

Each dog and cat will be submitted to a physical examination.

Once restrained, animal will have venipuncture performed. Venipuncture sites may include jugular vein, lateral saphenous vein, femoral vein or cephalic vein. A volume not to exceed 0.5% of body weight will be withdrawn. Hypodermic needle size will be species appropriate: dogs 20g or smaller and cats 22g or smaller. These procedures are performed a maximum of 3 times on each animal during the session. After the session, the animals will be monitored closely for any hematoma formation or hemostatic defect, and treated accordingly if needed.

Hair-plucking technique will be performed by using a sterile instrument to pluck several hairs from the periphery of a suspicious lesion. Ear swab samples will be collected by gently rolling a moistened cotton swab in the external ear canal.

After being utilized a maximum of one time in this class, the animal may be rotated out into protocol Advanced Clinics (VET 221) for required surgical procedures and/or needed dental treatment by licensed veterinarian faculty assigned to the course.

Any existing health problems (e.g., dental disease, abscess, skin wounds, etc.) will be treated using currently accepted standards of veterinary practice.

It is not anticipated that any of these animals will require euthanasia, but if an illness or injury should occur that does not respond to medical treatment, euthanasia would be performed (see section J).

Dogs and cats will be group-housed when compatible and provided an opportunity for exercise in accordance with the Animal Welfare Regulations. The veterinary technology students and staff also provide these animals positive socialization. The dogs are walked twice a day by staff or veterinary technology students. The dogs are also placed in outside runs as weather permits for additional exercise.

F. SURVIVAL SURGERY — If proposed, complete the following:

1. Identify and describe the surgical procedure(s) to be performed. Include the aseptic methods to be utilized. *(Use additional sheets if necessary.):*

NONE

2. Who will perform surgery and what are their qualifications and/or experience?

N/A

3. Where will surgery be performed (Building and Room)?

N/A

4. Describe post-operative care required, including consideration of the use of post-operative analgesics, and identify the responsible individual:

N/A

5. Has major survival surgery been performed on any animal prior to being placed on this study?

☐ Yes ☒ No

If yes, please explain:

6. Will more than one major survival surgery be performed on an animal while on this study?

☐ Yes ☒ No

If yes, please justify:

H. PAIN OR DISTRESS CATEGORY — The ACUC is responsible for applying U.S. Government Principle IV. Contained in Appendix 3: "Proper use of animals, including the avoidance or minimization of discomfort, distress, and pain when consistent with sound scientific practices, is imperative. Unless the contrary is established, investigators should consider that procedures that cause pain or distress in human beings may cause pain or distress in other animals." Check the appropriate category(ies) and indicate the approximate number of animals in each. Sum(s) should equal total from Section B.

IF ANIMALS ARE INDICATED IN COLUMN E, A SCIENTIFIC JUSTIFICATION IS REQUIRED TO EXPLAIN WHY THE USE OF ANESTHETICS, ANALGESICS, SEDATIVES OR TRANQUILIZERS DURING AND/OR FOLLOWING PAINFUL OR DISTRESSFUL PROCEDURES IS CONTRAINDICATED. PLEASE COMPLETE THE EXPLANATION FOR COLUMN E LISTINGS FORM AVAILABLE FROM OLAM. THIS FORM WILL ACCOMPANY THE NIH ANNUAL REPORT TO THE USDA. NOTE: THIS COLUMN E FORM, AND ANY ATTACHMENTS, e.g., THE ASP, ARE SUBJECT TO THE FREEDOM OF INFORMATION ACT.

Number of Animals Used Each Year:

	Year 1	Year 2	Year 3
<input checked="" type="checkbox"/> USDA Column C Minimal, Transient, or No Pain or Distress	4 dogs	4 dogs	4 dogs
<input type="checkbox"/> USDA Column D Pain or Distress Relieved By Appropriate Measures			

<input type="checkbox"/> USDA Column E Unrelieved Pain or Distress			
--	--	--	--

Describe your consideration of alternatives to procedures in this protocol, and your determination that alternatives were not available. [Note: Principal Investigators must certify in paragraph N.5 that no valid alternative was identified to any described procedures which may cause more than momentary pain or distress whether it is relieved or not.] Delineate the methods and sources used in the search below. Database references must include databases (2 or more) searched, the date of the search, period covered and keywords used. Reduction, replacement, and refinement must be addressed. *For more information see USDA Policy #12 (<http://www.aphis.usda.gov/ac/policy/policy12.pdf>)*

On March 24, 2015, Dr. Amy Laubinger performed a literature search for consideration of alternatives using the following strategies.

1. Pubmed search terms and citations (1980-2015):

Dog, phlebotomy and teach- 3 citations, 0 relevant
 Dog and education and vein - 3 citations, 1 relevant
 Feline, venipuncture and teaching - 0 citations
 Cat and blood and collection - 176 citations, 1 relevant
 Hair and examination and dog - 189 citations, 0 relevant
 Hair and teaching and dog - 21 citations, 0 relevant
 Microbiology and teaching and cat - 134 citations, 0 relevant
 Blood transfusion, dog, and education - 4 citations, 0 relevant

2. Wiley search terms and citations (1995-2015)

Dog, vein, and education- 49 citations, 1 relevant
 Training, canine, venipuncture - 2 citations, 0 relevant
 Training, hematology, veterinary- 21 citations, 1 relevant
 Simulation, veterinary, and teaching - 15 citations, 0 relevant
 Dermatophyte and teaching and model - 233 citations, 0 relevant

For additional information regarding products that could serve as alternatives to live dogs, the following websites and databases were also searched.

3. Norina search terms and products

Medicine Simulators- 77 products, 4 relevant

Four items work as alternatives for venipuncture practice. No items are alternatives for real blood or genuine hair to perform KOH test and ear or fecal samples for smears.

4. Rescue Critters <http://www.rescuecritters.com>

No relevant product found for this study

5. International Network for Humane Education <http://www.interniche.org>

1 relevant reference¹ provides information on sources for teaching aids and animal alternatives.

6. American Anti-Vivisection Society <http://www.aavs.org> and <http://www.animalearn.org> Products- videos, models, CD, online video links. Borrowing library for many of these items.

7. Humane Society Veterinary Medical Association <http://alted.hsvma.org>

Microbiology kits for bacteria sensitivity

Suggestions for alternatives to using live animals in learning include models/simulators, film/video, computer simulations, student self-experimentation, anatomy specimens, and in vitro labs.

The use of alternatives to live animals aid in preparing the student for clinical skills with the live animal patient. For training our students, we use didactic coursework, videos, and demonstrations. We also use our homemade veins fashioned out of small balloons filled with water to mimic the consistency and surface of a vein. This works well for training students with the equipment and materials used in venipuncture and iv drug administration. However, the model does not produce real blood specimens for examination in the way a real vein does. And restraint, which is an integral part of these techniques, is not included with the model training. Anatomy specimens from cadavers likewise are unsuitable for the same reasons. Alternative would include purchase of outside lab blood products and prepared fungus & bacteria slides. Alternatives for fecal specimens and ear smears for analysis include samples collected from students' personal animals and patients treated at their outside jobs. Alternatives for hair pluck on live patients would include self-examination and hair collected at home and brought to the laboratory. Ultimate competency is achieved through the handling of live animals and performing tests with real blood, hair, ear and fecal specimens.

I. ANESTHESIA, ANALGESIA, TRANQUILIZATION — For animals indicated in Section H, Column D, specify the anesthetics, analgesics, sedatives or tranquilizers that are to be used. Include the name of the agent(s), the dosage, route and schedule of administration.

No anesthetics, analgesics, sedatives or tranquilizers are required for these procedures.

J. METHOD OF EUTHANASIA OR DISPOSITION OF ANIMALS AT END OF STUDY

Indicate the proposed method, and if a chemical agent is used, specify the dosage and route of

administration. If the method(s) of euthanasia include those not recommended by the AVMA Panel Report on Euthanasia (<http://www.avma.org/resources/euthanasia.pdf>), provide justification why such methods must be used. Indicate the method of carcass disposal if not as MPW. Important references to consider:

It is not anticipated that any animal would require euthanasia on this protocol. However, in the case of an unanticipated severe illness or injury that did not respond to medical management, the shelter would be notified and euthanasia would be induced via lethal intravenous injection of a barbiturate overdose [Beuthanasia (CIII) IV, 1 ml/4.5 kg BW].

K. HAZARDOUS AGENTS

Use of volatile anesthetics or formalin requires a description of scavenging methods used.

	YES	NO
Hazardous Chemicals or Drugs (List below)		X

Additional safety considerations:

Students, faculty and staff are required to be vaccinated for rabies and to maintain documentation of a protective titer in their files at the Veterinary Program.

All animals undergo appropriate holding periods in accordance to state and Federal regulations prior to being brought to the Program for sterilization. Although this does not guarantee that the animals are free of zoonotic diseases, it does minimize the risk.

All students, faculty and staff undergo annual OSHA and lab safety training. Documentation of the training is kept on file at the facility.

There is an injury protocol in place for the college. This includes bite wounds. All injuries are to be reported to campus police and the injury documented after appropriate care has been rendered. The injured person is encouraged to seek immediate care from their regular physician.

L. SPECIAL CONCERNS OR REQUIREMENTS OF THE STUDY — List any special housing, equipment, animal care (i.e., special caging, water, feed, or waste disposal, etc.). Include justification for exemption from participation in the environmental enrichment plan for nonhuman primates or exercise for dogs.

NONE

REFERENCE :

1. Jukes, N and Chiuia M: "From Guinea Pig to computer mouse alternative methods for a progressive,

M. PRINCIPAL INVESTIGATOR CERTIFICATIONS:

1. I certify that the individuals listed in Section A are authorized to conduct procedures involving animals under this proposal have received training in the biology, handling, and care of this species; aseptic surgical methods and techniques (if necessary); the concept, availability, and use of research or testing methods that limit the use of animals or minimize distress; the proper use of anesthetics, analgesics, and tranquilizers (if necessary); procedures for reporting animal welfare concerns.
2. *FOR ALL COLUMN D AND COLUMN E PROPOSALS (see section H):* I certify that I have reviewed the pertinent scientific literature and the sources and/or databases (2 or more) as noted in paragraph H. and have found no valid alternative to any procedures described herein which may cause more than momentary pain or distress, whether it is relieved or not.
3. I will obtain approval from the ACUC before initiating any significant changes in this study.

Principal Investigator:

Signature _____ Date _____

N. CONCURRENCES: PROPOSAL NUMBER VT-Clin Path II-15

Tregel Cockburn, **DVM, Institutional Official & Chair**

Signature _____ Date _____

Mary Aller, **DVM, Attending Veterinarian**

Signature _____ Date _____

Corey Childs, **Outside Member**

Signature _____ Date _____

Nancy Aiello, **PhD, Scientist**

Signature _____ Date _____

Diane Schrenzel, **AAS, LVT, Non-Scientist**

Signature _____ Date _____

P. FINAL APPROVAL:

Certification of review and approval by the NOVA Veterinary Technology Animal Care and Use Committee Chairperson.

Chairperson _____

Signature _____ Date _____



**Northern Virginia
Community College**

Loudoun Campus

Leave Blank

PROPOSAL # VT - RADIOLOGY-14

APPROVAL DATE 4/25/17

EXPIRATION DATE 4/30/20

PLEASE TYPE:

A. ADMINISTRATIVE DATA:

Principal Investigator: Kiana Selby, DVM

Mailing Address Northern Virginia Community College, 21200 Campus Drive, Sterling, VA 20164

Telephone 703-450-2634 Fax 703-404-7322 Email kadkissonselby@nvcc.edu

Project Title Clinical Practices II (VET 122) ~~Small Mammals~~

Initial Submission ☒ Renewal or Modification XX of Proposal Number VT-Radiology-11

List the names of all individuals authorized to conduct procedures involving animals under this proposal and identify key personnel (i.e., Co-investigator(s)). Signature confirms that personnel have read and understand the protocol.

Gina Wilson, DVM *Gina E. Wilson, DVM* Dawn Witter, LVT *Dawn Witter, LVT*
 Diane Schrenzel, LVT *Diane Schrenzel, LVT*
 Linda Schniabel, LVT *Linda L. Schniabel*

B. ANIMAL REQUIREMENTS:

Species Cats/Dogs Age/Weight/Size Adult Sex M/F

Stock or Strain Domestic

Source(s) Animal Shelter: Frederick County, VA* Holding Location(s) Veterinary Technology Building

Animal Procedure Location(s) Veterinary Technology Building

Number of Animals:

<u>10 cats</u> <u>30 dogs</u>	<u>10 cats</u> <u>30 dogs</u>	<u>10 cats</u> <u>30 dogs</u>		<u>30 cats</u> <u>90 dogs</u>
Year 1	Year 2	Year 3	=	TOTAL

*All animals received from the shelters have completed the minimum holding period required by Federal regulations.

C. STUDY OBJECTIVES:

Briefly explain in non-technical terms the aim of the study and how the study may benefit human or animal health or advance scientific understanding of biological processes.

The purpose of this course is to teach veterinary technician students the safe and effective means to obtain diagnostic radiographs. The course will stress proper positioning and restraint of animals for a variety of radiologic views. Safety of the animal handlers will also be emphasized.

D. RATIONALE FOR ANIMAL USE:

1) Explain your rationale for animal use. 2) Justify the appropriateness of the species selected. 3) Justify the number of animals to be used. (Use additional sheets if necessary.)

Correct positioning of animals requires practice and necessitates the use of live animals because it is often difficult for students to visualize anatomy in a 3D perspective. Cats and dogs are utilized in this course because these are the animals most likely to be encountered in small animal veterinary clinics where the majority of our students will be employed after they graduate. In addition, these are required species per the AVMA required task list for veterinary technicians:

<https://www.avma.org/ProfessionalDevelopment/Education/Accreditation/Programs/Pages/cvtea-pp-appendix-i.aspx>

Most of the radiographs are taken on fully awake patients to allow our students realistic practice, because this is the method they will be expected to utilize when they are employed in the private sector. Sedation is used for radiographs that require immobilization for diagnostic purposes such as hip and skull films.

Initially, the students use bones from the anatomy teaching set to develop an understanding of contrast and density. A radiology dummy or plastinated specimens are also utilized to help improve technique prior to utilizing live animals. However, as stated above, to become adept at correct positioning for various radiographic views live animals must be used. Articulated skeletons or bones do not allow this. Cadaverous animals can also not be appropriately positioned.

The course is broken into 16 sessions, of which 10 sessions will use live animals. 6 animals are assigned to each week. One animal is assigned to each group (3 groups twice a week) and each animal should only need to be used for 1 session before being rotated out. During each session each animal will be subjected to 4-5 radiographs. Since these are diagnostic radiographs this is not an unreasonable level of radiation exposure and due to their relatively short life-span, maximum accumulated dosage to dogs and cats will be minimal.

E. DESCRIPTION OF EXPERIMENTAL DESIGN AND ANIMAL PROCEDURES:

Briefly explain the experimental design and specify all animal procedures. This description should allow the ACUC to understand the experimental course of an animal from its entry into the experiment to the endpoint of the study. Specifically address the following:

- **Injections or Inoculations** (substances, dose, sites, volume, route, and schedules)
- **Blood Withdrawals** (volume, frequency, withdrawal sites, and methodology)
- **Non-Survival Surgical Procedures** (Provide details of survival surgical procedures in Section G.)
- **Methods of Restraint** (e.g., restraint chairs, collars, vests, harnesses, slings, etc.)

- **Animal Identification Methods** (e.g., ear tags, tattoos, collar, cage card, etc.)
- **Other Procedures** (e.g., survival studies, etc.)
- **Resultant Effects**, if any, the animals are expected to experience (e.g., pain, distress, etc.)
- **Experimental Endpoint Criteria** (i.e., percentage body weight gain or loss, inability to eat or drink, behavioral abnormalities, clinical symptomatology. List the criteria to be used to determine when euthanasia is to be performed.

The animals will be restrained manually in a variety of positions (e.g., lateral, ventral and dorsal recumbency) to allow veterinary technician students to practice taking a variety of diagnostic quality radiographs that are typical in a small animal veterinary clinic.

Students are directly supervised, at all times, by at least one of the Veterinary Technology personnel listed in Section A of this protocol. This direct supervision assures the safety of both the animals and the students; additionally, individual dosimeter devices worn by personnel and students monitor exposure to x-rays. Each student must complete a radiology safety orientation before proceeding.

Although no pain or distress is anticipated on this protocol, if an animal appears to be distressed or uncomfortable with the manual restraint, a mild sedative or tranquilizer will be administered (see section I) as directed by the attending veterinarian to reduce anxiety. None of these procedures are anticipated to be physically painful to the animals.

There are some radiographic techniques that require general anesthesia in order to obtain diagnostic quality films (pelvis and skull). When these techniques are being practiced, animals will be placed under general anesthesia utilizing the drugs described in section I.

The animals utilized for this protocol are “in-patients” of the NOVA Veterinary Technology Program. However, ownership of these animals remains, at all times, with the animal shelters from which they were received. During the course of the semester the animals assigned to this protocol will be transferred to protocol Advanced Clinical Practices VET 221 to be surgically neutered by the attending veterinarian. They will then be returned to the animal shelters where they will be adopted into private homes.

It is not anticipated that any of these animals will require euthanasia, but if an illness or injury should occur that does not respond to medical treatment, euthanasia would be performed (see section J).

Dogs and cats will be group-housed when compatible and provided an opportunity for exercise in accordance with the Animal Welfare Regulations. The veterinary technology students and staff also provide these animals with positive socialization and enrichment. Staff or students walk dogs twice daily.

F. SURVIVAL SURGERY — If proposed, complete the following:

1. Identify and describe the surgical procedure(s) to be performed. Include the aseptic methods to be utilized. (*Use additional sheets if necessary.*):

NONE

2. Who will perform surgery and what are their qualifications and/or experience?

N/A

3. Where will surgery be performed (Building and Room)?

N/A

4. Describe post-operative care required, including consideration of the use of post-operative analgesics, and identify the responsible individual:

N/A

5. Has major survival surgery been performed on any animal prior to being placed on this study?

X Yes ☐ No

If yes, please explain: Anesthesia animals used from Advanced Clinical Practices III (VET 221) after spay, neuter or dental procedures and still under general anesthesia with student and veterinarian monitoring.

6. Will more than one major survival surgery be performed on an animal while on this study?

☐ Yes X No

If yes, please justify:

H. PAIN OR DISTRESS CATEGORY — The ACUC is responsible for applying U.S. Government Principle IV. Contained in Appendix 3: "Proper use of animals, including the avoidance or minimization of discomfort, distress, and pain when consistent with sound scientific practices, is imperative. Unless the contrary is established, investigators should consider that procedures that cause pain or distress in human beings may cause pain or distress in other animals." Check the appropriate category (ies) and indicate the approximate number of animals in each. Sum(s) should equal total from Section B.

IF ANIMALS ARE INDICATED IN COLUMN E, A SCIENTIFIC JUSTIFICATION IS REQUIRED TO EXPLAIN WHY THE USE OF ANESTHETICS, ANALGESICS, SEDATIVES OR TRANQUILIZERS DURING AND/OR FOLLOWING PAINFUL OR DISTRESSFUL PROCEDURES IS CONTRAINDICATED. PLEASE COMPLETE THE EXPLANATION FOR COLUMN E LISTINGS FORM AVAILABLE FROM OLAM. THIS FORM WILL ACCOMPANY THE NOVA ANNUAL REPORT TO THE USDA. NOTE: THIS COLUMN E FORM, AND ANY ATTACHMENTS, e.g., THE ASP, ARE SUBJECT TO THE FREEDOM OF INFORMATION ACT.

Number of Animals Used Each Year:

	Year 1	Year 2	Year 3
X USDA Column C Minimal, Transient, or No Pain or Distress	10 cats 30 dogs	10 cats 30 dogs	10 cats 30 dogs
<input type="checkbox"/> USDA Column D Pain or Distress Relieved By Appropriate Measures			
<input type="checkbox"/> USDA Column E Unrelieved Pain or Distress			

Describe your consideration of alternatives to procedures in this protocol, and your determination that alternatives were not available. [Note: Principal Investigators must certify in paragraph N.5 that no valid alternative was identified to any described procedures which may cause more than momentary pain or distress whether it is relieved or not.] Delineate the methods and sources used in the search below.

Database references must include databases (2 or more) searched, the date of the search, period covered and keywords used. Reduction, replacement, and refinement must be addressed. *For more information see USDA Policy #12:*

http://www.aphis.usda.gov/animal_welfare/downloads/policy/Policy%2012%20Final.pdf

Although the animals in this study are in category USDA "C", Dr. Selby using Medline and Agricola and the following key words performed a literature search on February 7th, 2017:

1. Animal, radiology, training, alternative – 210 results
2. Animal, radiology, training – 369 results
3. Animal, radiology, alternative – 216 results

The articles listed above did not describe an alternative to the use of live animals in teaching radiology techniques. As stated earlier, the students initially use bones and plastinated specimens from the anatomy teaching set to develop an understanding of contrast and density in the exposure of radiographs. However to become adept at correct positioning for various radiographic views live animals must be used. Articulated skeletons or bones do not allow this. Cadaverous animals can also not be appropriately positioned.

The Program has invested in a radiographic dog manikin that is articulated and allows students to practice positioning prior to utilizing live animals.

Animal Care Technologies is a web based video training service subscribed to by the Program that provides education on basic radiology skills including positioning and safety:

<http://lms.4act.com/>

-
- I. ANESTHESIA, ANALGESIA, TRANQUILIZATION** — For animals indicated in Section H, Column D, specify the anesthetics, analgesics, sedatives or tranquilizers that are to be used. Include the name of the agent(s), the dosage, route and schedule of administration.

If an animal appears to be distressed or uncomfortable with the manual restraint, a mild sedative or tranquilizer will be administered. For a few select procedures (hips or skull) general inhalant anesthesia will be utilized. Drugs* used will be one or more of the following:

Acepromazine (10mg/ml)

0.1 mg/lb SQ or IM, maximum of 3mg total in dogs

Atropine (0.54 mg/ml)

0.01mg/lb SQ or IM

Atipamezole (5mg/ml)

0.1mg/kg IM or equal volume of calculated Dexmedetomidine given for reversal

Buprenorphine (0.3 mg/ml) - CIII

0.01 mg/kg IM or IV

Butorphanol (10 mg/ml) - CIV

0.1-0.2 mg/lb SQ or IM

Carprofen (50mg/ml)

2-4mg/kg SQ, IM, IV (in dogs), 2mg/kg SQ only (in cats)

Dexmedetomidine (0.5mg/ml) + Butorphanol – CIV (10mg/ml) combination IM (for dogs)

0.01mg/kg dexmedetomidine + 0.2-0.4mg/kg butorphanol

Dexmedetomidine + Ketamine – CIII + Butorphanol – CIV combination IM (for cats)

0.1mls of all three (DKBut) for 6 to 10# B.Wt – adjust dose based on size of cat

Diazepam (5 mg/ml) - CIV

0.05 mg/lb IV

Flumazenil (0.1mg/ml) for reversal of benzodiazepines

0.01mg/kg IV

Isoflurane

Induction 3-4%, Maintenance 1-2%

Ketamine (100 mg/ml) - CIII

1-2 mg/lb IV **or** 10 mg/lb IM

Ketamine/Diazepam Cocktail IV – CIII, CIV

1 cc/20 lb of a ½ & ½ mix of ketamine/diazepam

Ketamine/Midazolam Cocktail IV – CIII, CIV

1 cc/20 lb of a ½ & ½ mix of ketamine/midazolam

Ketoprofen (100 mg/ml)

2mg/kg SQ, IM, IV (in dogs), 2mg/kg SQ (only once in cats)

Lidocaine 2% (20 mg/ml)

1.0 mg/kg locally for dogs; 0.5mg/kg locally for cats (can add sterile saline or water to increase volume)

Meloxicam (5mg/ml injectable; 1.5mg/ml or 0.5mg/ml oral)

0.2mg/kg SQ then 0.1mg/kg PO once daily for 3-4 days in dogs

0.1-0.2mg/kg SQ injection prior to surgery (one-time injection in cats)

Midazolam (5 mg/ml) - CIV

0.05 mg/lb IV

Naloxone (0.02mg/ml neonatal concentration or 0.4mg/ml for adults – check vial 1st) for reversal of opioids

0.01-0.02mg/kg IM or by slow IV

Onsior (robenacoxib) 6mg tablets, 1mg/kg for cats only

Propofol (10 mg/ml)

2-4 mg/lb IV

Sevoflurane

Induction 3-5%, Maintenance 2-4%

Telazol (100 mg/ml) - CIII

1-2 mg/lb IV **or** 3-5 mg/lb

*Controlled drugs are tracked in accordance with Federal Regulations; designated as CIII & CIV.

J. METHOD OF EUTHANASIA OR DISPOSITION OF ANIMALS AT END OF STUDY

Indicate the proposed method, and if a chemical agent is used, specify the dosage and route of administration. If the method(s) of euthanasia include those not recommended by the AVMA Panel Report on Euthanasia (<http://www.avma.org/resources/euthanasia.pdf>), provide justification why such methods must be used.

It is not anticipated that any animal would require euthanasia on this protocol. However, in the case of an unanticipated severe illness or injury that did not respond to medical management the shelter would be notified for permission and euthanasia would be induced via lethal intravenous injection of a barbiturate overdose [Beuthanasia (CIII) IV 1 ml/4.5 kg BW]. Animals that do not have severe illness or injury unresponsive to medical management will be returned to the shelter for adoption.

K. HAZARDOUS AGENTS

Use of volatile anesthetics or formalin requires a description of scavenging methods used.

	YES	NO
Hazardous Chemicals or Drugs (List below)	X	<input type="checkbox"/>

Acepromazine, butorphanol, dexmedetomidine, buprenorphine, meloxicam, lidocaine, ketamine, diazepam, tiletamine + zolazepam (Telazol), Isoflurane, Sevoflurane, Beuthansia.

Inhalant anesthetics will be used in conjunction with an appropriate active scavenging system. All controlled substances will be secured and tracked in accordance with Federal Regulations.

Additional safety considerations:

Students are fully attired in personal protective attire (lead apron, thyroid protector, gloves and leaded glasses) and supervised at all times by at least one investigator listed on this protocol. Personnel and students use radiation badges to monitor personal exposure. As part of the student's first lab, all safety equipment is tested to determine that all equipment is functioning properly (aprons, gloves and neck shields). In addition, the radiology machine is tested and calibrated by an independent state certified inspector as required by state law.

All students are required to be vaccinated for rabies and to provide proof of vaccination to the facility. There is an animal injury protocol in place with any bites, scratches or other injury being reported to the

business office and after first aid is administered, the victim is urged to contact their family physician or proceed to urgent or emergency care as needed.

L. SPECIAL CONCERNS OR REQUIREMENTS OF THE STUDY — List any special housing, equipment, animal care (i.e., special caging, water, feed, or waste disposal, etc.). Include justification for exemption from participation in the environmental enrichment plan for nonhuman primates or exercise for dogs.

NONE

M. PRINCIPAL INVESTIGATOR CERTIFICATIONS:

1. I certify that the individuals listed in Section A are authorized to conduct procedures involving animals under this proposal have received training in the biology, handling, and care of this species; aseptic surgical methods and techniques (if necessary); the concept, availability, and use of research or testing methods that limit the use of animals or minimize distress; the proper use of anesthetics, analgesics, and tranquilizers (if necessary); procedures for reporting animal welfare concerns.
2. *FOR ALL COLUMN D AND COLUMN E PROPOSALS (see section H):* I certify that I have reviewed the pertinent scientific literature and the sources and/or databases (2 or more) as noted in paragraph H. and have found no valid alternative to any procedures described herein which may cause more than momentary pain or distress, whether it is relieved or not.
3. I will obtain approval from the ACUC before initiating any significant changes in this study.

Principal Investigator:

Signature



Date

4/26/17

N. CONCURRENCES: PROPOSAL NUMBER # VT-RADIOLOGY-14

Amy Laubinger, DVM, Executive Secretary

Signature Amy Laubinger, DVM Date 4-25-2017

Gina Wilson, DVM, Attending Veterinarian

Signature Gina E. Wilson Date 4/28/17

James Hilleary, Public Member

Signature [Signature] Date 25 Apr '17

Nancy Aiello, PhD, Scientist

Signature Nancy C Aiello Date 4/25/17

Diane Schrenzel, AAS, LVT, Non-Scientist

Signature [Signature] Date 4/25/17

P. FINAL APPROVAL:

Certification of review and approval by the NOVA Veterinary Technology Animal Care and Use Committee Chairperson.

Chairperson Amy Laubinger, DVM

Signature Amy Laubinger, DVM Date 4-25-2017



**Northern Virginia
Community College**
Loudoun Campus

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PROPOSAL # VT-Hematology-15APPROVAL DATE April 28, 2015EXPIRATION DATE April 30, 2015

PLEASE TYPE:

A. ADMINISTRATIVE DATA:Principal Investigator Amy Laubinger, DVMMailing Address Northern Virginia Community College, Veterinary Technology Program, 21200 Campus Drive, Sterling, VA 20164Telephone 703-948-7794 Fax 703-404-7318 Email alaubinger@nvcc.eduProject Title Hematology and Urinalysis – diagnostic sampling provided in VET 131 Clinical Pathology I laboratoriesInitial Submission ☐ Renewal or Modification ☒ of Proposal Number VT-Hematology-12

List the names of all individuals authorized to conduct procedures involving animals under this proposal and identify key personnel (i.e., Co-investigator(s)). Signature confirms that personnel have read and understand the protocol.

Diane Schrenzel, LVTDawn Witter, LVTLinda Schnaible, LVT**B. ANIMAL REQUIREMENTS:**Species Dogs, Cats and Chickens Age/Weight/Size adult Sex M/FStock or Strain DomesticSource(s) Dog and cats: Animal Shelter: Frederick County *, Loudoun CountyChickens: Privately owned Holding Location(s) LA and LK BuildingsAnimal Procedure Location(s) Veterinary Technology, LA Building**Number of Animals:**

<u>30 dogs</u> <u>3 chickens</u>	<u>30 dogs</u> <u>3 chickens</u>	<u>30 dogs</u> <u>3 chickens</u>		<u>90 dogs</u> <u>9 chickens</u>
Year 1	Year 2	Year 3	=	TOTAL

***All animals received from the shelters have completed the minimum holding period required by Federal regulations.**

C. STUDY OBJECTIVES:

Briefly explain in non-technical terms the aim of the study and how the study may benefit human or animal health or advance scientific understanding of biological processes.

The purpose of this study is to allow veterinary technician students to integrate certain clinical skills with knowledge of laboratory procedures. The clinical skills emphasized in this course are: venipuncture, performing hematology tests including a CBC, and performing a complete urinalysis. The skills to be practiced with live animals are venipuncture and voided urine collection in order to obtain specimens for lab analysis.

D. RATIONALE FOR ANIMAL USE:

1) Explain your rationale for animal use. 2) Justify the appropriateness of the species selected. 3) Justify the number of animals to be used. (Use additional sheets if necessary.)

Initially the skills are practiced on training models. Once the skills are perfected, the techniques are practiced by the students on live animals under the direct supervision of the personnel listed on this protocol.

Dogs and cats are utilized because these are the animals most likely to be encountered in small animal veterinary clinics where the majority of our students will be employed. Avians are included to assure knowledge of these species. Complete clinical competency of our students is achieved only by having them practice the listed techniques on live animals.

There are 30 lab sessions that utilize animals. Each lab session utilizes one animal for venipuncture and urine collection equaling 30 animals/semester. The students have practiced their venipuncture techniques on models before attempting the technique on a live animal.

E. DESCRIPTION OF EXPERIMENTAL DESIGN AND ANIMAL PROCEDURES:

Briefly explain the experimental design and specify all animal procedures. This description should allow the ACUC to understand the experimental course of an animal from its entry into the experiment to the endpoint of the study. Specifically address the following:

(Use additional sheets if necessary.)

- **Injections or Inoculations** (substances, dose, sites, volume, route, and schedules)
- **Blood Withdrawals** (volume, frequency, withdrawal sites, and methodology)
- **Non-Survival Surgical Procedures** (Provide details of survival surgical procedures in Section G.)
- **Methods of Restraint** (e.g., restraint chairs, collars, vests, harnesses, slings, etc.)
- **Animal Identification Methods** (e.g., ear tags, tattoos, collar, cage card, etc.)
- **Other Procedures** (e.g., survival studies)

- **Resultant Effects**, if any, the animals are expected to experience (e.g., pain, distress, etc.)
- **Experimental Endpoint Criteria** (i.e., percentage body weight gain or loss, inability to eat or drink, behavioral abnormalities, clinical symptomatology. List the criteria to be used to determine when euthanasia is to be performed.

All procedures described below are performed by the personnel listed on the protocol, or by students under the direct supervision of the personnel listed on this protocol.

Restraint and handling. Manual restraint techniques, common to conventional small animal veterinary practice, will be practiced as it is inherent to the sampling technique. Examples include restraint in sternal recumbency, lateral recumbency, or standing. Manual restraint of avian species, common to conventional avian practice, will be practiced.

Each dog and cat will be submitted to a physical examination.

Once restrained, dog or cat will have venipuncture performed. Venipuncture sites may include jugular vein, lateral saphenous vein, femoral vein or cephalic vein. A volume not to exceed 0.5% of body weight will be withdrawn. These procedures are performed a maximum of 3 times on each animal during the session. Hypodermic needle size will be species appropriate: dogs 20g or smaller, cats 22g or smaller, avian 25 g or smaller. After the session, the animals will be monitored closely for any hematoma formation or hemostatic defect, and treated accordingly if needed.

After being utilized a maximum of one time in this class, the animal may be rotated out into protocol Anesthesia (VT-Anesthesia-14) for surgical neutering by Dr. Tregel Cockburn, DVM.

Any existing health problems (e.g., dental disease, abscess, skin wounds, etc.) will be treated using currently accepted standards of veterinary practice.

It is not anticipated that any of these animals will require euthanasia, but if an illness or injury should occur that does not respond to medical treatment, euthanasia would be performed (see section J).

Dogs and cats will be group-housed when compatible and provided an opportunity for exercise in accordance with the Animal Welfare Regulations. The veterinary technology students and staff also provide these animals positive socialization. The dogs are walked twice a day by staff or veterinary technology students. The dogs are also placed in outside runs as weather permits for additional exercise. Voided urine samples will be collected by walking dogs or cage collection. Chickens will be outpatients brought to campus for the lab session only. They will be temporarily housed in indoor pet carriers with bedding, water and open ventilation.

F. SURVIVAL SURGERY — If proposed, complete the following:

1. Identify and describe the surgical procedure(s) to be performed. Include the aseptic methods to be utilized. *(Use additional sheets if necessary.):*

NONE

2. Who will perform surgery and what are their qualifications and/or experience?

N/A

3. Where will surgery be performed (Building and Room)?

N/A

4. Describe post-operative care required, including consideration of the use of post-operative analgesics, and identify the responsible individual:

N/A

5. Has major survival surgery been performed on any animal prior to being placed on this study?

☐ Yes ☒ No

If yes, please explain:

6. Will more than one major survival surgery be performed on an animal while on this study?

☐ Yes ☒ No

If yes, please justify:

H. PAIN OR DISTRESS CATEGORY — The ACUC is responsible for applying U.S. Government Principle IV. Contained in Appendix 3: "Proper use of animals, including the avoidance or minimization of discomfort, distress, and pain when consistent with sound scientific practices, is imperative. Unless the contrary is established, investigators should consider that procedures that cause pain or distress in human beings may cause pain or distress in other animals." Check the appropriate category(ies) and indicate the approximate number of animals in each. Sum(s) should equal total from Section B.

IF ANIMALS ARE INDICATED IN COLUMN E, A SCIENTIFIC JUSTIFICATION IS REQUIRED TO EXPLAIN WHY THE USE OF ANESTHETICS, ANALGESICS, SEDATIVES OR TRANQUILIZERS DURING AND/OR FOLLOWING PAINFUL OR DISTRESSFUL PROCEDURES IS CONTRAINDICATED. PLEASE COMPLETE THE EXPLANATION FOR COLUMN E LISTINGS FORM AVAILABLE FROM OLAM. THIS FORM WILL ACCOMPANY THE NIH ANNUAL REPORT TO THE USDA. NOTE: THIS COLUMN E FORM, AND ANY ATTACHMENTS, e.g., THE ASP, ARE SUBJECT TO THE FREEDOM OF INFORMATION ACT.

Number of Animals Used Each Year:

	Year 1	Year 2	Year 3
<input checked="" type="checkbox"/> USDA Column C Minimal, Transient, or No Pain or Distress	30 dogs 3 chickens	30 dogs 3 chickens	30 dogs 3 chickens
<input type="checkbox"/> USDA Column D Pain or Distress Relieved By Appropriate Measures			

<input type="checkbox"/> USDA Column E Unrelieved Pain or Distress			
--	--	--	--

Describe your consideration of alternatives to procedures in this protocol, and your determination that alternatives were not available. [Note: Principal Investigators must certify in paragraph N.5 that no valid alternative was identified to any described procedures which may cause more than momentary pain or distress whether it is relieved or not.] Delineate the methods and sources used in the search below. Database references must include databases (2 or more) searched, the date of the search, period covered and keywords used. Reduction, replacement, and refinement must be addressed. *For more information see USDA Policy #12 (<http://www.aphis.usda.gov/ac/policy/policy12.pdf>)*

On April 16, 2015 Dr. Amy Laubinger performed a literature search for consideration of alternatives using the following strategies.

1. Pubmed search terms and citations (1995-2015):

Dog and phlebotomy-196 citations, 0 relevant
 Dog and education and venipuncture - 2 citations, 1 relevant
 Feline, venipuncture and teaching - 0 citations
 Feline, venipuncture and education - 0 citations
 Cat and blood and collection - 176 citations, 0 relevant
 Avian and venipuncture and education- 2 citations, 0 relevant
 Dog and urine and collection - 176 citations, 1 relevant
 Dog and venipuncture and simulation - 1 citation, 1 relevant
 Chicken, venipuncture and simulation - 0 citations

2. Wiley search terms and citations (1995-2015)

Dog , vein, education- 184 citations, 0 relevant
 Training, alternative, venipuncture - 49 citations, 1 relevant
 Avian, venipuncture, education - 115 citations, 0 relevant
 Training, hematology, veterinary- 21 citations, 1 relevant
 Simulation, veterinary, and teaching - 15 citations, 0 relevant

For additional information regarding products that could serve as alternatives to live dogs, the following websites and databases were also searched.

3. Norina search terms and products

Medicine Simulators- 77 products, 4 relevant
 Hematology Simulators - 0 products

Four items work as alternatives for venipuncture practice. No items are alternatives for genuine blood to perform blood smears and CBCs.

4. Rescue Critters <http://www.rescuecritters.com>
 Dog/cat simulator - 36 items found

One relevant product found for this study to practice venipuncture. No relevant products for obtaining authentic blood samples or urine samples.

5. International Network for Humane Education <http://www.interniche.org>

1 relevant virtual slidebox and 6 vein models for teaching venipuncture. No items for blood or urine products for lab procedures.

6. American Anti-Vivisection Society <http://www.aavs.org> and <http://www.animalearn.org> Products- videos, models, CD, online video links. Borrowing library for many of these items.

7. Humane Society Veterinary Medical Association <http://alted.hsvma.org>

Educational DVD/video, simulated vein models

Suggestions for alternatives to using live animals in learning include models/simulators, film/video, computer simulations, anatomy specimens, and in vitro labs. The majority of relevant citations in this literature search discussed the use of live animals.

Most products that offered learning alternatives to anatomy specimens or live animals were anatomy models, videos, or CD's. A variety of links to online video demonstrations were readily available at <http://animalearn.org>. Anatomy models do not have free-flowing blood so that would not make a realistic simulation for venipuncture. Further, it does not supply the specimen needed for laboratory tests. Prepared slides are an alternative for performing some tests in the CBC and Urinalysis but some tests still need fresh blood samples. In addition to sample analysis, specimen collection and processing are essential skills in the course.

The use of alternatives to live animals aid in preparing the student for clinical skills with the live animal patient. For training our students, we use didactic coursework, videos, and demonstrations. We also use our homemade veins fashioned out of small balloons filled with water to mimic the consistency and surface of a vein. This works well for training students with the equipment and materials used in venipuncture and iv drug administration. However, the model does not produce real blood specimens for examination in the way a real vein does. And restraint, which is an integral part of these techniques, is not included with the model training. Anatomy specimens from cadavers likewise are unsuitable for the same reasons. Alternatives for urine specimens for analysis include urine samples collected from students' personal animals and patients treated at their outside jobs.

Ultimate competency is achieved through the handling of live animals and performing tests with real blood and urine.

I. ANESTHESIA, ANALGESIA, TRANQUILIZATION — For animals indicated in Section H, Column D, specify the anesthetics, analgesics, sedatives or tranquilizers that are to be used. Include the name of the agent(s), the dosage, route and schedule of administration.

No anesthesia, analgesia or tranquilization is required.

*All controlled substances will be secured and tracked in accordance with Federal Regulations

J. METHOD OF EUTHANASIA OR DISPOSITION OF ANIMALS AT END OF STUDY

Indicate the proposed method, and if a chemical agent is used, specify the dosage and route of administration. If the method(s) of euthanasia include those not recommended by the AVMA Panel Report on Euthanasia (<http://www.avma.org/resources/euthanasia.pdf>), provide justification why such methods must be used. Indicate the method of carcass disposal if not as MPW. Important references to consider:

It is not anticipated that any animal would require euthanasia on this protocol. However, in the case of an unanticipated severe illness or injury that did not respond to medical management, the shelter would be notified and euthanasia would be induced via lethal intravenous injection of a barbiturate overdose [Beuthanasia (CIII), IV 1 ml/4.5 kg BW].

K. HAZARDOUS AGENTS

Use of volatile anesthetics or formalin requires a description of scavenging methods used.

	YES	NO
Hazardous Chemicals or Drugs (List below)		X

Additional safety considerations:

Students, faculty and staff are required to be vaccinated for rabies and to maintain documentation of a protective titer in their files at the Veterinary Program.

All animals undergo appropriate holding periods in accordance to state and Federal regulations prior to being brought to the Program for sterilization. Although this does not guarantee that the animals are free of zoonotic diseases, it does minimize the risk.

All students, faculty and staff undergo annual OSHA and lab safety training. Documentation of the training is kept on file at the facility.

There is an injury protocol in place for the college. This includes bite wounds. All injuries are to be reported to campus police and the injury documented after appropriate care has been rendered. The injured person is encouraged to seek immediate care from their regular physician.

L. SPECIAL CONCERNS OR REQUIREMENTS OF THE STUDY — List any special housing, equipment, animal care (i.e., special caging, water, feed, or waste disposal, etc.). Include justification for exemption from participation in the environmental enrichment plan for nonhuman primates or exercise for dogs.

NONE

M. PRINCIPAL INVESTIGATOR CERTIFICATIONS:

1. I certify that the individuals listed in Section A are authorized to conduct procedures involving animals under this proposal have received training in the biology, handling, and care of this species; aseptic surgical methods and techniques (if necessary); the concept, availability, and use of research or testing methods that limit the use of animals or minimize distress; the proper use of anesthetics, analgesics, and tranquilizers (if necessary); procedures for reporting animal welfare concerns.
2. *FOR ALL COLUMN D AND COLUMN E PROPOSALS (see section H):* I certify that I have reviewed the pertinent scientific literature and the sources and/or databases (2 or more) as noted in paragraph H. and have found no valid alternative to any procedures described herein which may cause more than momentary pain or distress, whether it is relieved or not.
3. I will obtain approval from the ACUC before initiating any significant changes in this study.

Principal Investigator:

Signature _____ Date _____

N. CONCURRENCES: PROPOSAL NUMBER VT-Hematology-15

Tregel Cockburn, **DVM, Institutional Official & Chair**

Signature _____ Date _____

Mary Aller, **DVM, Attending Veterinarian**

Signature _____ Date _____

Corey Childs, **Outside Member**

Signature _____ Date _____

Nancy Aiello, **PhD, Scientist**

Signature _____ Date _____

Diane Schrenzel, **AAS, LVT, Non-Scientist**

Signature _____ Date _____

P. FINAL APPROVAL:

Certification of review and approval by the NOVA Veterinary Technology Animal Care and Use Committee Chairperson.

Chairperson _____

Signature _____ Date _____



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PROPOSAL # Ocular Diagnostics Lab-17

APPROVAL DATE November 10, 2017

EXPIRATION DATE November 10, 2020

PLEASE TYPE:

A. ADMINISTRATIVE DATA:

Principal Investigator Mary S. Aller, DVM

Mailing Address Northern Virginia Community College, Veterinary Technology Program, 21200 Campus Drive, Sterling, VA 20164

Telephone 703-450-2623 Fax 703-404-7322 Email maller@nvcc.edu

Project Title Ocular diagnostics lab – provided in VET 221 Advanced Clinical Practices

Initial Submission ☐ **Renewal X** or Modification of Proposal Number Ocular Diagnostics Lab-2011

List the names of all individuals authorized to conduct procedures involving animals under this proposal and identify key personnel (i.e., Co-investigator(s)). Signature confirms that personnel have read and understand the protocol.

Linda Schnaible, LVT

Mary S. Aller, DVM

Dawn Witter, LVT

Regina Wilson, DVM

Diane Schrenzel, LVT

B. ANIMAL REQUIREMENTS:

Species Dogs and cats Age/Weight/Size juvenile to adult Sex M/F

Stock or Strain Domestic

Source(s) Animal Shelter: Frederick County, Virginia and privately owned pets * Holding Location(s) Veterinary Technology Building

Animal Procedure Location(s) Veterinary Technology Building

Number of Animals:

<u>4 dogs</u> <u>2 cats</u>	<u>4 dogs</u> <u>2 cats</u>	<u>4 dogs</u> <u>2 cats</u>	=	<u>12 dogs</u> <u>6 cats</u>
Year 1	Year 2	Year 3		TOTAL

***All animals received from the shelters have completed the minimum holding period required by Federal regulations.**

C. STUDY OBJECTIVES:

Briefly explain in non-technical terms the aim of the study and how the study may benefit human or animal health or advance scientific understanding of biological processes.

The purpose of this study is to allow veterinary technician students to integrate certain clinical skills with knowledge of small animal diseases. The clinical skills emphasized in this course are: restraint and handling, physical examination, nursing care, and to assist in diagnostic corneal staining, Schirmer tear test, and measurement of intraocular pressure. The skills to be practiced with animals are restraint and handling, physical examination, diagnostic corneal staining, Schirmer tear test, and measurement of intraocular pressure.

D. RATIONALE FOR ANIMAL USE:

1) Explain your rationale for animal use. 2) Justify the appropriateness of the species selected. 3) Justify the number of animals to be used. (Use additional sheets if necessary.)

Initially the skills are practiced on training models. Once the skills are perfected, the techniques are practiced by the students on live animals under the direct supervision of the personnel listed on this protocol.

Dogs and cats are utilized because these are the animals most likely to be encountered in small animal veterinary clinics where the majority of our students will be employed. Complete clinical competency of our students is achieved only by having them practice the listed techniques on live animals.

There are 2 to 3 training lab sessions that utilize animals. Each lab session utilizes one to two animals as a demonstration animal equaling up to 6 animals/semester. The demonstrations are performed by the veterinarian or licensed veterinary technician. The students then practice their techniques on models before attempting the technique on a live animal.

E. DESCRIPTION OF EXPERIMENTAL DESIGN AND ANIMAL PROCEDURES:

Briefly explain the experimental design and specify all animal procedures. This description should allow the ACUC to understand the experimental course of an animal from its entry into the experiment to the endpoint of the study. Specifically address the following:

(Use additional sheets if necessary.)

- **Injections or Inoculations** (substances, dose, sites, volume, route, and schedules)
- **Blood Withdrawals** (volume, frequency, withdrawal sites, and methodology)
- **Non-Survival Surgical Procedures** (Provide details of survival surgical procedures in Section G.)
- **Methods of Restraint** (e.g., restraint chairs, collars, vests, harnesses, slings, etc.)
- **Animal Identification Methods** (e.g., ear tags, tattoos, collar, cage card, etc.)
- **Other Procedures** (e.g., survival studies)

- **Resultant Effects**, if any, the animals are expected to experience (e.g., pain, distress, etc.)
- **Experimental Endpoint Criteria** (i.e., percentage body weight gain or loss, inability to eat or drink, behavioral abnormalities, clinical symptomatology. List the criteria to be used to determine when euthanasia is to be performed.

All procedures described below are performed by the personnel listed on the protocol, or by students under the direct supervision of the personnel listed on this protocol.

Restraint and handling. Manual restraint techniques, common to conventional small animal veterinary practice, will be practiced. Examples include; restraint in sternal recumbency, lateral recumbency, sitting, or standing.

Each dog and cat will be submitted to a physical examination.

The ocular techniques may be performed in an awake cooperative animal or under tranquilization or sedation. Animals will have a Schirmer tear test, corneal stain evaluation using fluorescein dye, and measurement of intraocular pressure performed using a Tonovet® or Tonopen® device.

The Schirmer tear test is performed using Schirmer Tear Test standardized sterile paper strips. One end of the paper is gently placed between the lower lid and conjunctiva at the level midway between the lateral canthus and middle of the palpebral opening. The paper is allowed to rest in this position for 60 seconds before removal. The amount of wetting on the paper is measured in millimeters and gives an estimate of tear production, confirming or ruling out dry eye conditions.

Corneal staining is performed using fluorescein ophthalmic strips. The strip is moistened with isotonic eye irrigating solution and the resultant liquid is dripped onto the upper conjunctival surface. The animal distributes the dye by blinking, and excess dye is removed by gentle irrigation with the isotonic solution. An intact cornea does not stain. Corneal epithelium that has been damaged by injury or disease will exhibit stain uptake, and would indicate injury or disease of the cornea.

Topical anesthetic (0.5 % topical proparacaine) delivered to the eye as ophthalmic drops will be used when intraocular pressure measurements are made. Measurement of intraocular pressure is a screening test for intraocular hypertension or glaucoma.

These procedures are performed once on each eye during the session. After the session, the animals will be monitored closely for any ocular irritation, and treated accordingly if needed.

After being utilized a maximum of two times for ocular diagnostic technique practice, the animal may be rotated into the protocol Advanced Clinics (AdvClinics-17) for surgical neutering or dental prophylaxis.

Any existing health problems (e.g., dental disease, abscess, skin wounds, dermatitis, etc.) will be treated using currently accepted standards of veterinary practice.

It is not anticipated that any of these animals will require euthanasia, but if an illness or injury should occur that does not respond to medical treatment, euthanasia would be performed (see section J).

Dogs and cats (cats housed separately from dogs) will be group-housed when compatible and provided an opportunity for exercise in accordance with the Animal Welfare Regulations. The veterinary technology students and staff also provide these animals positive socialization. The dogs are walked twice a day by staff or veterinary technology students. The dogs are also placed in outside runs as weather permits for additional exercise.

F. SURVIVAL SURGERY — If proposed, complete the following:

1. Identify and describe the surgical procedure(s) to be performed. Include the aseptic methods to be utilized.
(Use additional sheets if necessary.):

NONE

2. Who will perform surgery and what are their qualifications and/or experience?

N/A

3. Where will surgery be performed (Building and Room)?

N/A

4. Describe post-operative care required, including consideration of the use of post-operative analgesics, and identify the responsible individual:

N/A

5. Has major survival surgery been performed on any animal prior to being placed on this study?

☐ Yes ☒ No

If yes, please explain:

6. Will more than one major survival surgery be performed on an animal while on this study?

☐ Yes ☒ No

If yes, please justify:

H. PAIN OR DISTRESS CATEGORY — The ACUC is responsible for applying U.S. Government Principle IV. Contained in Appendix 3: "Proper use of animals, including the avoidance or minimization of discomfort, distress, and pain when consistent with sound scientific practices, is imperative. Unless the contrary is established, investigators should consider that procedures that cause pain or distress in human beings may cause pain or distress in other animals." Check the appropriate category(ies) and indicate the approximate number of animals in each. Sum(s) should equal total from Section B.

IF ANIMALS ARE INDICATED IN COLUMN E, A SCIENTIFIC JUSTIFICATION IS REQUIRED TO EXPLAIN WHY THE USE OF ANESTHETICS, ANALGESICS, SEDATIVES OR TRANQUILIZERS DURING AND/OR FOLLOWING PAINFUL OR DISTRESSFUL PROCEDURES IS CONTRAINDICATED. PLEASE COMPLETE THE EXPLANATION FOR COLUMN E LISTINGS FORM AVAILABLE FROM OLAM. THIS FORM WILL ACCOMPANY THE NIH ANNUAL REPORT TO THE USDA. NOTE: THIS COLUMN E FORM, AND ANY ATTACHMENTS, e.g., THE ASP, ARE

SUBJECT TO THE FREEDOM OF INFORMATION ACT.

Number of Animals Used Each Year:

	Year 1	Year 2	Year 3
X USDA Column C Minimal, Transient, or No Pain or Distress	4 dogs 2 cats	4 dogs 2 cats	4 dogs 2 cats
<input type="checkbox"/> USDA Column D Pain or Distress Relieved By Appropriate Measures			
<input type="checkbox"/> USDA Column E Unrelieved Pain or Distress			

Describe your consideration of alternatives to procedures in this protocol, and your determination that alternatives were not available. [Note: Principal Investigators must certify in paragraph N.5 that no valid alternative was identified to any described procedures which may cause more than momentary pain or distress whether it is relieved or not.] Delineate the methods and sources used in the search below.

Database references must include databases (2 or more) searched, the date of the search, period covered and keywords used. Reduction, replacement, and refinement must be addressed. *For more information see USDA Policy #12 (<http://www.aphis.usda.gov/ac/policy/policy12.pdf>)*

On October 31, 2017 Dr. Mary S. Aller performed a literature search for consideration of alternatives using the following strategies.

1. PubMed (<https://www.ncbi.nlm.nih.gov/pubmed/>)

search terms and citations (2000-2017):

Dogs and teaching and eye- 65 citations, 3 relevant
 Dogs and training and eye- 44 citations, 2 relevant
 Veterinary teaching and ophthalmology- 67 citations, 4 relevant
 Teaching corneal staining- 90 citations, 1 relevant
 Teaching Schirmer tear test- 60 citations, 0 relevant
 Teaching Schirmer tear test in dogs- 7 citations, 0 relevant
 Teaching and intraocular pressure testing- 23 citations, 0 relevant
 Teaching veterinary ophthalmology- 136 citations, 2 relevant
 Dog and eye examination and teaching- 27 citations, 2 relevant
 Animal eye models for teaching- 203 citations, 25 relevant

2. Agricola/PubAg <https://pubag.nal.usda.gov/>

search terms and citations via Pubag (2000-2017)

Dog or canine eye examination- 169 citations, 2 relevant
 Cat eye examination- 71 citations, 1 relevant
 Training, examination, eye- 71 citation, 2 relevant
 Eye, examination, teaching- 17 citations, 1 relevant
 Animal eye models - 338 citations, 2 relevant
 Animal eye training models - 5 citations, 0 relevant

The above citations generally involved using virtual simulations or anatomy specimens from animal cadavers for training medical or veterinary students in surgical techniques.

For additional information regarding products that could serve as alternatives to live dogs, the following websites and databases were also searched.

3. Norina/Norecopa <https://norecopa.no/norina>
search terms and products

Dog examination- 42 products, 5 relevant
Cat examination- 28 products, 5 relevant

4. Rescue Critters <http://www.rescuecritters.com>
No relevant product found for this study.

5. International Network for Humane Education <http://www.interniche.org>

1 relevant book reference¹ provides comprehensive information on sources for teaching aids and animal alternatives.

6. American Anti-Vivisection Society <http://www.aavs.org> and
<http://www.animalearn.org>

Products- videos, models, CD, online video links. Borrowing library for many items

7. Humane Society Veterinary Medical Association <http://www.hsvma.org/>

alternatives databases

http://www.hsvma.org/alternatives_databases#.VDtTLSx0yAY

Educational DVD/video, plastic eye models

8. On the YouTube site <http://www.youtube.com/>, one can find many videos posted by credentialed individuals demonstrating the corneal fluorescein dye stain, Schirmer tear test, and measurement of intraocular pressures in the dog.

Summary--Suggestions for alternatives to using live animals in learning include models/simulators, film/video, computer simulations, student self experimentation, anatomy specimens, quail eggs, and in vitro labs. The majority of relevant citations in this literature search discussed the use of animal eyes obtained from sheep and pig cadavers for training in ophthalmologic techniques. Some references described synthetic models or computer simulations for training but these were much less common.

Most products that offered learning alternatives to anatomy specimens or live animals were anatomy models, videos, or CD's. A variety of links to online video demonstrations were readily available at <http://animalearn.org>. There were numerous plastic eye anatomy models available but these were modeled after the human eye. Anatomy models were all made of hard plastic that would not make a realistic simulation for ocular diagnostics.

The use of alternatives to live animals aids in preparing the student for clinical skills with the live animal patient. For training our students, we use didactic coursework, videos, and demonstrations. We also use our homemade eye models fashioned out of small balloons filled with water or air to mimic the consistency and surface of an eye. This works well enough

for training students with the equipment and materials used in corneal staining, Schirmer tear test, and intraocular pressure measurements. However, the model does not respond to the diagnostic tests in the way a real eye does. And restraint, which is an integral part of these techniques, is not included with the model training. Anatomy specimens from cadavers likewise are unsuitable for the same reasons.

Student self experimentation, meaning that students would practice on themselves or each other as volunteers, was suggested as one alternative source of learning. However, this would be inappropriate for us to use this method since we are a veterinary facility, and do not have legal authority to practice techniques on humans.

Therefore, to obtain competence in the clinical skill of ocular diagnostics for animals ultimately requires the use of a live animal.

I. ANESTHESIA, ANALGESIA, TRANQUILIZATION — For animals indicated in Section H, Column D, specify the anesthetics, analgesics, sedatives or tranquilizers that are to be used. Include the name of the agent(s), the dosage, route and schedule of administration.

*All controlled substances will be secured and tracked in accordance with Federal Regulations

- 0.5 % proparacaine topical ophthalmic drops
- Acepromazine (10mg/ml, #50 ml)
0.02-0.05 mg/kg SQ or IM
- Alfaxan (alfaxalone 10 mg/ml)
1-4 mg/kg IV or IM
- Atipamezole (5mg/ml #10 ml)
equal to volume of medetomidine or dexmedetomidine for reversal IM
- Atropine (0.54 mg/ml #60ml)
0.01-0.02 mg/kg SQ, IM, or IV
- Bupivacaine 0.5%
1.0 mg/kg locally for dogs; 0.5 mg/kg locally for cats
- Buprenorphine (0.3 mg/ml)
0.01 – 0.02 mg/kg SQ, IM, or sublingual

- Butorphanol (10 mg/ml #10 ml or 2 mg/ml #10 ml)
0.2 – 0.5 mg/kg IM
- Carprofen (50 mg/ml)
2 – 4 mg/kg SQ
- Dexmedetomidine (0.5 mg/ml #10ml)
10-20 micrograms/kg IV or IM
- Dexmedetomidine (0.5 mg/ml, #10 ml)/Butorphanol (10 mg/ml, #10 ml)/Ketamine (100mg/ml, #10)
“Kitty Magic” drug protocol – 0.1 mls of each drug/10 lbs. body weight IM (cats)
- Diazepam (5 mg/ml #10 ml)
0.1-0.3 mg/kg IV
- Isoflurane
Induction 3-4%
Maintenance 1-2%
- Ketamine (100mg/ml #10 ml)
1-2 mg/kg IV
10 mg/kg IM
- Ketamine/Diazepam Combination or Ketamine/Midazolam Combination
1 ml/40 lb of each drug IV
- Lidocaine 2%
1.0 mg/kg locally for dogs; 0.5 mg/kg locally for cats
- Meloxicam (5mg/ml injectable; 1.5 or 0.5 mg/ml oral)
0.2 mg/kg SQ injection, then 0.1 mg/kg PO SID X 3-4 days (dogs); 0.2 mg/kg SQ injection prior to surgery
(injection for cats-once only)
- Midazolam (5 mg/ml)
0.1-0.2 mg/kg IV
- Propofol (10 mg/ml, #20 ml)
2-4 mg/ lb IV
- Robenacoxib (Onsior- 6 mg tablets)
1mg/kg for cats

- Sevoflurane
Induction 3-5%
Maintenance 2-4%
- Telazol (100 mg/ml #5 ml)
1-2 mg/lb IV
3-5 mg/lb IM

J. METHOD OF EUTHANASIA OR DISPOSITION OF ANIMALS AT END OF STUDY

Indicate the proposed method, and if a chemical agent is used, specify the dosage and route of administration. If the method(s) of euthanasia include those not recommended by the AVMA Panel Report on Euthanasia (<http://www.avma.org/resources/euthanasia.pdf>), provide justification why such methods must be used. Indicate the method of carcass disposal if not as MPW. Important references to consider:

It is not anticipated that any animal would require euthanasia on this protocol. However, in the case of an unanticipated severe illness or injury that did not respond to medical management, the shelter would be notified and euthanasia would be induced via lethal intravenous injection of a barbiturate overdose [Beuthanasia (CIII) IV 1 ml/4.5 kg BW].

K. HAZARDOUS AGENTS

Use of volatile anesthetics or formalin requires a description of scavenging methods used.

	YES	NO
Hazardous Chemicals or Drugs (List below)	X	<input type="checkbox"/>

Acepromazine, alfaxalone, butorphanol, dexmedetomidine, buprenex, Metacam, lidocaine, bupivacaine, ketamine, diazepam, midazolam, tiletamine + zolazepam (Telazol), Isoflurane, Sevoflurane

Additional safety considerations:

If general anesthesia is in use, inhalant anesthetics will be used with appropriate active scavenging. All controlled substances will be secured and tracked in accordance with Federal Regulations.

L. SPECIAL CONCERNS OR REQUIREMENTS OF THE STUDY — List any special housing, equipment, animal care (i.e., special caging, water, feed, or waste disposal, etc.). Include justification for exemption from participation in the environmental enrichment plan for nonhuman primates or exercise for dogs.

NONE

REFERENCE :

1. Jukes, N and Chiuia M: "From Guinea Pig to computer mouse alternative methods for a progressive, humane education" 2nd edition, InterNICHE, Leicester, England, 2003. Updated downloadable version available online at <http://www.interniche.org> under Resources or at <http://www.interniche.org/en/resources/book>

M. PRINCIPAL INVESTIGATOR CERTIFICATIONS:

1. I certify that the individuals listed in Section A are authorized to conduct procedures involving animals under this proposal have received training in the biology, handling, and care of this species; aseptic surgical methods and techniques (if necessary); the concept, availability, and use of research or testing methods that limit the use of animals or minimize distress; the proper use of anesthetics, analgesics, and tranquilizers (if necessary); procedures for reporting animal welfare concerns.
2. *FOR ALL COLUMN D AND COLUMN E PROPOSALS (see section H):* I certify that I have reviewed the pertinent scientific literature and the sources and/or databases (2 or more) as noted in paragraph H. and have found no valid alternative to any procedures described herein which may cause more than momentary pain or distress, whether it is relieved or not.
3. I will obtain approval from the ACUC before initiating any significant changes in this study.

Principal Investigator:

Signature _____

Date _____

N. CONCURRENCES: PROPOSAL NUMBER Ocular Diagnostics Lab-17

Amy Laubinger, DVM, Institutional Official & Chair

Signature _____ Date _____

Regina Wilson, DVM, Attending Veterinarian

Signature _____ Date _____

James Hilleary, Public Member

Signature _____ Date _____

Nancy Aiello, PhD, Scientist

Signature _____ Date _____

Diane Schrenzel, AAS, LVT, Non-Scientist

Signature _____ Date _____

P. FINAL APPROVAL:

Certification of review and approval by the NVCC Veterinary Technology Animal Care and Use Committee Chairperson.

Chairperson _____

Signature _____ Date _____



Leave Blank

PROPOSAL # VT-Cattle Protocol-15

APPROVAL DATE April 28, 2015

EXPIRATION DATE April 30, 2015

PLEASE TYPE:

A. ADMINISTRATIVE DATA:

Principal Investigator Mary S. Aller, DVM

Mailing Address Northern Virginia Community College, Veterinary Technology Program, 21200 Campus Drive, Sterling, VA 20164

Telephone 703-450-2623 Fax 703-404-7322 Email maller@nvcc.edu

Project Title Cattle Skills lab – VET 221 Advanced Clinical Practices, Vet 105 Introduction to Veterinary Technology, VET 212 Animal Diseases II, and VET 290 Coordinated Internship

Initial Submission ☐ Renewal or Modification ☒ of Proposal Number VT-Cattle Protocol-12

List the names of all individuals authorized to conduct procedures involving animals under this proposal and identify key personnel (i.e., Co-investigator(s)). Signature confirms that personnel have read and understand the protocol.

Amy Laubinger, DVM _____

Tregel Cockburn, DVM _____

Diane Schrenzel, LVT _____

Dawn Witter, LVT _____

Linda Schnaible, LVT _____

B. ANIMAL REQUIREMENTS:

Species: Bovine Age/Weight/Size: young to adult

Sex: immature males and females, mature females, mature males

Stock or Strain: various domestic

Source: Privately owned cattle presented to Rose Hill Veterinary Practice PC, Large Animal Clinic, 21 A Christmas Tree Lane, Washington, Virginia 22747 for clinical services; Holding Location Rose Hill Veterinary Practice in Washington, Virginia

Source: Privately owned cattle at Rose Hill Farm, 13320 Lee Highway, Washington, Virginia 22747: Holding location Rose Hill Farm, Washington, Virginia

Source: Privately owned cattle at Dogwood Farm, 17888 Lincoln Road, Purcellville, Virginia, 20132; Holding Location Dogwood Farm in

Purcellville, Virginia

Source: Cattle owned and managed by Northern Virginia Regional Park Authority at Temple Hall Farm, 15789 Temple Hall Ln, Leesburg, Virginia 20176; Holding location Temple Hall Farm, Leesburg, Virginia

Animal Procedure Location(s):

-Rose Hill Veterinary Practice, 21A Christmas Tree Lane, Washington, Virginia, 22747

-Rose Hill Farm 13320 Lee Highway, Washington, VA 22747

-Dogwood Farm, 17888 Lincoln Road, Purcellville, Virginia, 20132

-Temple Hall Farm, 15789 Temple Hall Ln, Leesburg, VA 20176

Number of Animals:

Year 1	Year 2	Year 3	=	TOTAL
45	45	45		135

C. STUDY OBJECTIVES:

Briefly explain in non-technical terms the aim of the study and how the study may benefit human or animal health or advance scientific understanding of biological processes.

The purpose of this laboratory is to allow veterinary technician students to practice restraint, handling, husbandry, and clinical skills with cattle by performing haltering, handling and restraint, and physical examination. Students also receive instruction on cattle behavior, sanitation, injection sites, vaccination, animal identification, drug withdrawal times, blood collection sites, use of an oral speculum, ororumen intubation, administration of oral medications, magnets, and life stage nutrition. This lab reinforces instruction the student has received in courses VET 105 Introduction to Veterinary Technology, VET 121 Clinical Practices I, Vet 212 Animal Diseases II, and VET 221 Advanced Clinical Practices. Students develop competence in handling and nursing skills of cattle through this study and will deliver better veterinary services to the bovine patient.

D. RATIONALE FOR ANIMAL USE:

1) Explain your rationale for animal use. 2) Justify the appropriateness of the species selected. 3) Justify the number of animals to be used. (Use additional sheets if necessary.)

The students have received instruction on topics about bovine handling and care in previous coursework, as mentioned above. The students also have access to instructional videos at the Animal Care Technologies (ACT) website <http://www.4act.com> through an account provided by the program. Course instruction and video prepare students for hands on activities and clinical practice with patients, but they are not a substitute for actually acquiring the skill with a live animal.

Acquisition of bovine skills requires practice with real cattle.

Approximately 45 bovines per year are used. The students are divided into groups of 2-4, an average of 1 animal for every 2 students. The cattle participate in one lab session for one semester per year at each source location.

E. DESCRIPTION OF EXPERIMENTAL DESIGN AND ANIMAL PROCEDURES:

Briefly explain the experimental design and specify all animal procedures. This description should allow the ACUC to understand the experimental course of an animal from its entry into the experiment to the endpoint of the study. Specifically address the following:

(Use additional sheets if necessary.)

- **Injections or Inoculations** (substances, dose, sites, volume, route, and schedules)
- **Blood Withdrawals** (volume, frequency, withdrawal sites, and methodology)
- **Non-Survival Surgical Procedures** (Provide details of survival surgical procedures in Section G.)
- **Methods of Restraint** (e.g., restraint chairs, collars, vests, harnesses, slings, etc.)
- **Animal Identification Methods** (e.g., ear tags, tattoos, collar, cage card, etc.)
- **Other Procedures** (e.g., survival studies)
- **Resultant Effects**, if any, the animals are expected to experience (e.g., pain, distress, etc.)
- **Experimental Endpoint Criteria** (i.e., percentage body weight gain or loss, inability to eat or drink, behavioral abnormalities, clinical symptomatology. List the criteria to be used to determine when euthanasia is to be performed.

A memorandum of understanding (MOU) is established between the veterinary technology program and the source location as to the specific tasks to be practiced or demonstrated at a lab session. The source locations have been previously observed by the PI or the co-investigators to be suitable and to follow the standards of practice in transport, handling, and care of cattle.¹

All procedures on this protocol are under the immediate supervision of at least one of the Veterinary Technology faculty or staff listed on page one. In addition, authorized personnel of the source locations are in attendance to supervise. Generally, young dairy bovines are observed by students where they are housed in pens or hutches. Adult dairy cows are restrained using a head stanchion or if trained, a halter and lead line. Beef cattle are handled and restrained using a squeeze chute and head catch. Animals are identified using an ear tag system.

There are 2 types of lab sessions. One type of lab session is devoted to instruction in husbandry, physical examination, and nursing practices. The other lab session is devoted to instruction in and practice of clinical services which includes handling, restraint, physical examination, vaccination, blood collection, and administration of oral medication.

For the lab session on husbandry, physical examination, and nursing

skills, students are divided into groups of 4-6 and visit stations where groups of animals are kept. The animals are grouped by age and the students are instructed in topics that pertain to the management of each age group. Students may practice common husbandry skills as predetermined by the MOU, but hands on activities are generally limited to physical examination, auscultation, or feeding. This lab session occurs with dairy cattle at the Dogwood Farm location.

For the lab session on clinical services, the students receive an orientation to the facility and a review of skills pertaining to handling, restraint, and clinical services which includes techniques for injection and blood collection. Students are in groups of 2 and are assigned to 1 animal. Students may practice clinical skills as predetermined by the MOU which typically include haltering, physical examination, vaccination, and blood collection. Any site used for injection or blood collection is inspected first for cleanliness before proceeding with the technique. Substances to be injected are either sterile normal saline or vaccines using a 3 cc syringe with an 18-20 gauge needle. Needles and syringes are only used once, then discarded. The typical volume to be administered is 1 to 2 cc by intramuscular or subcutaneous routes in the lateral aspect of the neck. Blood collection occurs from the jugular or coccygeal vein. Three attempts are allowed per site and 1 cc of blood is collected from each successful attempt. This lab session occurs with beef cattle at Rose Hill Veterinary Practice, Rose Hill Farm, or Temple Hall Farm locations.

Here following is a complete list of procedures about which the students may receive instruction with live cattle. The specific list for each lab session will be less, and the specific tasks are predetermined by the MOU. Note that "Demonstrate/discuss/observe" indicates a student does not perform the task individually, but the task may be demonstrated once to the group as a whole or simply discussed with a mock demonstration at the site.

Patient handling

- Operate a cattle chute/headgate safely (observe)
- Halter
- Quick release knot
- apply tail restraint

Patient assessment

- temperature
- pulse
- respiration
- auscultation of thorax
- auscult and ballot gut, check for pings
- assess hydration status

Sample collection

- jugular venipuncture
- coccygeal venipuncture
- discuss and demonstrate collecting voided urine samples
- demonstrate/discuss milk sample collection and mastitis testing (CMT)

Patient Care/husbandry

Discuss hoof maintenance and care
Discuss identification methods
Demonstrate or perform ear tagging
Discuss grooming
Discuss teeth care
Discuss dehorning methods

Therapeutics

SQ, IM, IV injections
Demonstrate/discuss intramammary therapy
Discuss drug withdrawal times
Topical application of medications
Use of balling gun
Use of dose syringe
Demonstrate oral speculum and stomach tube

Sanitation

Clean up procedures of work area
Waste management of barn, enclosures, and fields
Clean up of footwear, etc.

F. SURVIVAL SURGERY — If proposed, complete the following:

1. Identify and describe the surgical procedure(s) to be performed. Include the aseptic methods to be utilized.
(Use additional sheets if necessary.):

N/A

2. Who will perform surgery and what are their qualifications and/or experience?

N/A

3. Where will surgery be performed (Building and Room)?

N/A

4. Describe post-operative care required, including consideration of the use of post-operative analgesics, and identify the responsible individual:

N/A

5. Has major survival surgery been performed on any animal prior to being placed on this study?

☐ Yes **X** No

If yes, please explain:

6. Will more than one major survival surgery be performed on an animal while on this study?

☐ Yes **X** No

If yes, please justify:

H. PAIN OR DISTRESS CATEGORY — The ACUC is responsible for applying U.S. Government Principle IV. Contained in Appendix 3: "Proper use of animals, including the avoidance or minimization of discomfort, distress, and pain when consistent with sound scientific practices, is imperative. Unless the

contrary is established, investigators should consider that procedures that cause pain or distress in human beings may cause pain or distress in other animals." Check the appropriate category (ies) and indicate the approximate number of animals in each. Sum(s) should equal total from Section B.

IF ANIMALS ARE INDICATED IN COLUMN E, A SCIENTIFIC JUSTIFICATION IS REQUIRED TO EXPLAIN WHY THE USE OF ANESTHETICS, ANALGESICS, SEDATIVES OR TRANQUILIZERS DURING AND/OR FOLLOWING PAINFUL OR DISTRESSFUL PROCEDURES IS CONTRAINDICATED. PLEASE COMPLETE THE EXPLANATION FOR COLUMN E LISTINGS FORM AVAILABLE FROM OLAM. THIS FORM WILL ACCOMPANY THE NIH ANNUAL REPORT TO THE USDA. NOTE: THIS COLUMN E FORM, AND ANY ATTACHMENTS, e.g., THE ASP, ARE SUBJECT TO THE FREEDOM OF INFORMATION ACT.

Number of Animals Used Each Year:

	Year 1	Year 2	Year 3
<input checked="" type="checkbox"/> USDA Column C Minimal, Transient, or No Pain or Distress	45	45	45
<input type="checkbox"/> USDA Column D Pain or Distress Relieved By Appropriate Measures			
<input type="checkbox"/> USDA Column E Unrelieved Pain or Distress			

Describe your consideration of alternatives to procedures in this protocol, and your determination that alternatives were not available. [Note: Principal Investigators must certify in paragraph N.5 that no valid alternative was identified to any described procedures which may cause more than momentary pain or distress whether it is relieved or not.] Delineate the methods and sources used in the search below.

Database references must include databases (2 or more) searched, the date of the search, period covered and keywords used. Reduction, replacement, and refinement must be addressed. *For more information see USDA Policy #12 (<http://www.aphis.usda.gov/ac/policy/policy12.pdf>)*

On April 26, 2015 Dr. Mary S. Aller performed a literature search for consideration of alternatives using the following strategies.

1. Pubmed Search terms and citations (1985-2015)

(Cow or bovine) AND husbandry practices AND (teaching students OR alternatives) - 11 citations, 3 relevant

(Cow or bovine) and injection techniques AND (teaching students OR alternatives) - 14 citations, 1 relevant

(Cow or bovine) and blood collection AND (teaching students OR alternatives) - 3 citations, 0 relevant

2. Pubmed limit Veterinary Science (1985-2015)

Teaching students AND (cows or bovine) 72 citations, and 36 relevant

Teaching students AND techniques AND (cows or bovine) - 46 citations, 29 relevant

Teaching students AND animal handling AND (cows or bovine) - 8 citations, 8 relevant

3. Agricola Search terms and citations (2000-2015)

Cows AND physical AND examination- 25 citations, 0 relevant

Cows AND blood AND (sampling OR collection) - 46 citations, 2 relevant

Cows AND blood collection AND education 21 citations, 2 relevant

Cows AND husbandry- 249 citations, 4 relevant

Cows AND husbandry AND education 10 citations, 0 relevant

Teaching AND cows 18 citations, 4 relevant

For additional information regarding products that could serve as training alternatives to live cattle, the following websites and databases were also searched.

4. NORINA (1995-2015)

http://oslovet.norecopa.no/fag.aspx?fag=57&mnu=databases_1

Search term and citation

Bovine 18 products, 4 relevant

Cow - 45 products, 27 relevant

5. Rescue Critters <http://www.rescuecritters.com>

No bovine specific products. IM and SubQ trainer pad available for teaching basic injection techniques.

6. International Network for Humane Education <http://www.interniche.org>

Search terms: clinical skills and model, manikin, simulator

1 relevant book reference³ provides comprehensive information on sources for teaching aids and animal alternatives

258 products, 5 relevant specifically to bovine related subjects, involve rectal palpation and dystocia training

7. American Anti-Vivisection Society <http://www.aavs.org>

This website describes many live animal alternatives. Some alternatives advocate using bovine cadaver specimens from slaughterhouses, usually for ophthalmologic testing.

8. Veterinary Simulator Industries <http://www.vetsimulators.com>

4 bovine teaching models for dystocia training
Holstein dystocia model and Hereford dystocia model both with functional simulated udders. Calf dystocia model offered separately.

9. Humane Society Veterinary Medical Association <http://alted.hsvma.org>

39 items related to bovines, training, models, simulators, or manikins
Educational videos listed, some commercially available and some free on youtube²

Virtual world simulations integrated with fiberglass models (Haptic Cow)
<http://www.live.ac.uk/haptic-cow>

10. Breed'n Betsy - bovine simulators for training in reproductive techniques <http://www.breednbetsy.com.au/index.php>

11. Recirculating milking cow by Fiberglass Creations by FiberStock

<http://www.fiberstock.com/products/recirculating-milking-cow>

Use as a model for haltering, milking, CMT techniques, finding anatomical landmarks for auscultation.

Most of these citations from Pubmed and Agricola describe using live cattle for skills training in an agricultural setting using institutionally owned animals, privately owned animals at an approved farm site, or clinical training in a preceptorship with approved private ambulatory practices. Some citations describe using teaching aids and resources such as illustrative posters, commercial videos, DVD's, YouTube videos², interactive CD's or DVD's, anatomy specimens from slaughterhouses or grocery stores, computerized simulations with haptic models, and handbooks or training programs from extension services. The citations that addressed skills training indicated that student preparedness was enhanced when the aforementioned teaching aids and resources were used in the classroom before hands on training. Studies indicated that experiential learning with live animals was essential to developing competency and could not be completely replaced with simulations, models, or anatomy specimens, no matter how realistic.

Currently the program prepares students before training with live cattle through work in several courses. Products that were recommended for preparedness training, such as videos, are already in use in our program through the ACT account. IM and SubQ injection trainer pads are already in use for training the students on basic injection techniques. Some bovine mannequins were found in the search that could be useful in training students before working with live cattle. Mannequins are a welcome addition to enhancing student preparedness. Therefore, for training students, the program has acquired the Recirculating milking cow "Maggie" by Fiberglass Creations noted in item number 11 above. However, ultimately, the use of live cattle in obtaining the required hands on cattle skills is essential for effective learning.

I. ANESTHESIA, ANALGESIA, TRANQUILIZATION — For animals indicated in Section H, Column D, specify the anesthetics, analgesics, sedatives or tranquilizers that are to be used. Include the name of the

agent(s), the dosage, route and schedule of administration.

Anesthetics, analgesics, sedatives, or tranquilizers are not indicated for the procedures listed. If an animal should become injured during the activities, authorized personnel are available at each site to address the situation. Any treatments or medications used will be prescribed and caused to be administered by a licensed veterinarian practiced in large animal medicine. The drugs and dosages used will be based upon standard veterinary care and will comply with drug withdrawal times. Specific drugs and dosages are recorded on appropriate records.

J. METHOD OF EUTHANASIA OR DISPOSITION OF ANIMALS AT END OF STUDY

Indicate the proposed method, and if a chemical agent is used, specify the dosage and route of administration. If the method(s) of euthanasia include those not recommended by the AVMA Panel Report on Euthanasia (<http://www.avma.org/resources/euthanasia.pdf>), provide justification why such methods must be used. Indicate the method of carcass disposal if not as MPW. Important references to consider: Euthanasia is not indicated for this protocol.

K. HAZARDOUS AGENTS

Use of volatile anesthetics or formalin requires a description of scavenging methods used.

	YES	NO
Hazardous Chemicals or Drugs (List below)		X

Additional safety considerations:

Vaccines and medications are handled and stored in accordance with Federal and State regulations. Sharps are disposed of in an approved Sharps container for proper disposal.

L. SPECIAL CONCERNS OR REQUIREMENTS OF THE STUDY — List any special housing, equipment, animal care (i.e., special caging, water, feed, or waste disposal, etc.). Include justification for exemption from participation in the environmental enrichment plan for nonhuman primates or exercise for dogs.

NONE

REFERENCES :

1. Federation of Animal Science Societies: Guide for the Care and Use of Agricultural Animals in Research and Teaching. Third edition, January 2010. <http://www.fass.org/page.asp?pageID=216>
2. YouTube videos - a website containing a video repository. The videos are made and donated by the public on a wide variety of topics. The videos vary in quality, appropriateness, accuracy, and availability.

<http://www.youtube.com>

3. Jukes, N and Chiuia M: "From Guinea Pig to computer mouse alternative methods for a progressive, humane education" 2nd edition, InterNICHE, Leicester, England, 2003. Updated downloadable version available online <http://www.interniche.org/en/resources/book> at <http://www.interniche.org>
4. Holtgrew-Bohling K: "Large Animal Clinical Procedures for Veterinary Technicians 2nd edition" Elsevier Mosby St. Louis, 2012, pp. 44-56, 332-372
5. General resources for educational techniques and issues:

Journal of Veterinary Medical Education

<http://www.aavmc.org/publications/journal-of-veterinary-medical-education.aspx>

Journal of Extension <http://www.joe.org/>

M. PRINCIPAL INVESTIGATOR CERTIFICATIONS:

1. I certify that the individuals listed in Section A are authorized to conduct procedures involving animals under this proposal have received training in the biology, handling, and care of this species; aseptic surgical methods and techniques (if necessary); the concept, availability, and use of research or testing methods that limit the use of animals or minimize distress; the proper use of anesthetics, analgesics, and tranquilizers (if necessary); procedures for reporting animal welfare concerns.
2. *FOR ALL COLUMN D AND COLUMN E PROPOSALS (see section H):* I certify that I have reviewed the pertinent scientific literature and the sources and/or databases (2 or more) as noted in paragraph H. and have found no valid alternative to any procedures described herein which may cause more than momentary pain or distress, whether it is relieved or not.
3. I will obtain approval from the ACUC before initiating any significant changes in this study.

Principal Investigator:

Signature: _____ Date: _____

N. CONCURRENCES: PROPOSAL NUMBER VT-Cattle Protocol-15

Tregel Cockburn, **DVM, Institutional Official & Chair**

Signature _____ Date _____

Mary Aller, **DVM, Attending Veterinarian**

Signature _____ Date _____

Corey Childs, **Outside Member**

Signature _____ Date _____

Nancy Aiello, **PhD, Scientist**

Signature _____ Date _____

Diane Schrenzel, **AAS, LVT, Non-Scientist**

Signature _____ Date _____

P. FINAL APPROVAL:

Certification of review and approval by the NOVA Veterinary Technology Animal Care and Use Committee Chairperson.

Chairperson _____

Signature _____ Date _____
