TEXAS A&M UNIVERSITY KINGSVILLE

The Office of Research & Sponsored Programs
700 University Blvd., MSC 201
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To: Dr. Michelle Garcia

From:
IACUC Member – DMR Designee
Institutional Animal Care and Use Committee (IACUC)

Date: March 2, 2018

Subject: IACUC Evaluation of Research Proposal

The protocol titled, **"*ANSC 2310 Livestock Management Techniques course*,"** was approved by the IACUC.

- The protocol was approved on **March 1, 2018.**
- The protocol expires on **March 1, 2021**.
- The protocol number is **2018-03-01**.

Please note that any changes to the protocol procedures must be approved by the IACUC in advance of implementation.

The approval is granted for three years but will be subject to continuing review on an annual basis and may have periodic post approval monitoring.

Protocol for the Use of LIVE ANIMALS for Research, Teaching, or Demonstration

Institutional Animal Care and Use Committee

TEXAS A&M UNIVERSITY KINGSVILLE

USDA Pain Category	☐ C ☑ D ☐ E	**Expiration Date**	Mar 1, 2021	*(IACUC / ORSP Use Only) - Revised 02/23/2018*	
☐ USDA ☐ PHS ☑ Other		**ORSP Tracking#**	1407	**IACUC Approval #**	2018-03-01

Date Received Feb 16, 2018

Protocol Title ANSC 2310 Livestock Management Techniques course

PI Name Michelle Garcia

College / Department ARWS

Office / Cell Phone Howe bldg. Rm 206

Email michelle.garcia@tamuk.edu

Current/Proposed Funding Sources internal source

Expected Start January 22, 2018 **Expected End** May 17, 2021 **This project is:** Teaching/Demonstration

Other:

Section 1

1-A. Please fill in the chart below with the number of animals for the entire project, their common name, scientific name, sex, and age. *(If more species are to be used than will fit below, please make note and attach addition animals following the format of this chart)*

Add/Delete Rows	#	Common Name	Scientific Name	Sex (M/F)	Age
+ -	60	sheep	ovine	M and F	all
+ -	60	goat	caprine	M and F	all
+ -	60	cattle	bovine	M and F	all
+ -	60	pigs	porcine	M and F	all

1-B Location(s) of animals & project

TAMUK Farm

1-C The animals will be maintained in what type of caging/ housing?

TAMUK farm animal facilities

1-D **Source of animals, e.g., purchased, institutionally bred, captured wild?**	**TAMUK farm animals**

Section 2

2-A **Provide a SHORT, nontechnical, lay summary of the project, expressing its significance and your reasons for undertaking the study. Include project objectives and methods in lay terms.**	**All of the livestock species listed in section 1A are a part of the modern U.S. food animal industry. The ANSC 2310 course is designed to teach students the basic and foundational animal handling and management techniques that are utilized by the food animal industry to prepare Animal Science graduates for employment.**

Section 3

3-A **Provide the rationale and purpose of the proposed use of this species of animals. (State briefly why living vertebrates, especially the species you are using, are required rather than some alternative model).**	**Each animal handling and management skill taught in the ANSC 2310 course are skills currently utilized in the food animal industry. Active handling and management techniques cannot be limited to a textbook or lecture. Translating classroom taught material into an experiential learning opportunity provides active learning environment that enhances the competitive edge of TAMUK Animal Science graduates for potential employment opportunities.**

Section 4 - Provide justification of the number of animals requested.

4-A **Explain how you determined the total number of animals requested.**	**The number of animals requested is a minimum needed to allow each student ,in a course where the listed capacity is 60, the opportunity to individually apply each taught skill.**
4-B **Indicate all treatment and /or study groups.** *(Example: 5 animals/ treatment group X 5 treatment groups/study group X 4 study groups = 100 animals required)*	**No research conducted for the ANSC 2310 classroom experience.**

Section 5

5-A **Document that alternative procedures to the ones you are using are not available and cite literature supporting the proposed animal methodology.**	**The skills taught in the ANSC 2310 course follow modern standards employed by the food animal industry. The skill sets acquired through this course will improve the preparedness of the Animal Science student for employment in the food animal industry.**

Section 6

6-A **Provide a complete, detailed description of the proposed use of the animals. Describe exactly what you will do to the animals while they are alive and potential for discomfort, injury, or death resulting from use of the animals. Include ALL procedures/ treatments in your project that will be imposed on the live animals in chronological order. Cite literature/ published protocols supporting use of the proposed procedures.**	**Students will learn how to conduct the following:** **1. Conduct standard food animal industry restraint techniques for cattle, sheep, goats, and pigs.** **2. Conduct animal flight zone maneuvers.** **3. Hoof trimming sheep and goats using small hoof trimming shears.** **4. Horn tipping using embryotomy wire.** **5. Ear tagging cattle, sheep, and goats using an industry standard ear tags and tag applicators.** **6. Administering standard specie specific vaccinations.** **7. Tail docking sheep using banding methodology (industry standard rubber bands applied with an elastrator).** **8. Castration: for calves, lambs and kids banding methodology will be applied; for piglets (~1 week) old minor surgery will be conducted. For the piglets, the scrotum will be cleaned with iodine scrub and chlorohexidine. Lidocaine will be administered on the ventral side of the testicle where an incision through the skin will be made to expose the testicles. The ductus deferens and vasculature anterior of the testicle will be exposed and severed for complete removal of each testicle. The area will be cleaned with cholorhexidine solution immediately after castration and every day over a period of 5-7 days to reduce the incidence of infection.** **9. Blood collection exercise: Cattle - blood will be collected from the coccygeal vessel and /or jugular vein; sheep and goats - jugular vein. A 20'G x 1" needle will be utilized in the blood collection procedure.** **10. Piglet neonate processing (~1 week old), i.e., ear notching, tail docking, needle teeth clipping, iron injection. Piglet identification will be conducted using a V-ear notcher to notch the right and left ear with a standard industry numeric system. Approximately 1" - 1 1/2" from the caudal distal end of the tail will be snipped using the tooth cutter pliers.** **11. Management: feeding livestock and cleaning facilities (sow, sheep, goats husbandry project #13) daily.** **12. Daily bottle feeding: orphaned or milk deprived piglets, lambs, and kid goats will be supplemented with synthetic milk sources.** **13. Husbandry project: sheep and goat husbandry: students will be responsible for cleaning animal facilities and feeding the animals daily. Students will observe the progression of gestation as parturition approaches. If students are present for parturition they will observe to make sure the ewe/ nanny allow the newborn to suckle and then process them. If there are complications with the birth Dr.**

Garcia will practice aseptic techniques in preparation to assist, if necessary, by pulling the fetus by hand. If the fetus is too large then the attending veterinarian will be contacted for further direction. For processing of the newborns, the umbilicus will be dipped in iodine, they will be weighed, and then ear tagged. Both the dam and the babies will be weighed weekly until weaning at 45 days of age. At that time the husbandry project ends. Pig husbandry project: students will feed and wash gestating sows daily and move sows to farrowing crates when close to date of parturition. While in crates students will feed and wash sows in crates daily. During farrowing students may observe the process to make sure that there are no complications. If a sow is experiencing complications Dr. Garcia will practice aseptic techniques to assist, if necessary, by pulling the fetus by hand or using an obstetric tool. After 28 days the piglets will be weaned and the project ends.

14. Deworming of cattle, pigs, sheep, and goats.

15. Application of fly and tick drugs for cattle.

16. Ultrasounding pigs, sheep, and goats for presence of a fetus and/or placentome.

Section 7

A. Does this protocol involve *Major* survival surgery? No

If yes must consult with the IACUC Attending Veterinarian and complete the Surgery/Procedures Appendix (http://www.tamuk.edu/osr/Forms/index.html)

B. Does this protocol involve *Minor* survival surgery? Yes

C. Does this protocol involve *Medically Necessary* survival surgery? No

If yes must consult with the IACUC Attending Veterinarian

Section 8

Do you anticipate discomfort, distress, pain, and injury from the proposed activities? ☑ Yes ☐ No

8-A Explain why / why not: *(An answer is required, provide citations when applicable.)*

Some of the procedures will cause more than momentary discomfort, distress, and/or pain, specifically the tail docking and castration procedures, which utilize banding or scalpel. All procedures are current, standard industry practices, with the exception of the piglet castration where lidocaine is added to the procedure in an effort to reduce pain. Students are trained to be 'job ready' for animal industry jobs upon graduation.

Section 9

9-A. Do the proposed animal activities involve potentially painful procedures or death of the organism? *(Painful procedures include procedures but are not limited to USDA Pain Categories D and E. Please see Definition and Examples of USDA Pain and Distress Categories in back of this application).*

☑ Yes ☐ No **If YES, complete the following:**

9-B List the analgesics, anesthetics and (or) tranquilizing drugs and their dosages and routes of administration used to minimize discomfort, distress, pain and injury.

Lidocaine (2% lidocaine hydrochloride; 0.5 cc per testicle), piglet castration procedure.

9-C C. If any procedure(s) will cause pain or distress and analgesia/anesthesia cannot be administered, list each procedure with justification for

Banding methodology is a current and standard animal industry practice that creates discomfort and potential pain exceeding 1 hour. Discomfort and pain diminishes as the region becomes desensitized to the rubber band pressure.

the exclusion of	

9-D **If painful or stressful outcomes occur in this project, describe the criteria and process for timely intervention, removal of animals from a study, or euthanasia. Wildlife capture and handling may qualify as a painful or stressful outcome. Animals that would otherwise experience severe or chronic pain or distress that cannot be relieved must be painlessly euthanized at the end of the procedure or during the procedure, if appropriate.**	**Bull calves, kid goats, and lambs will be banded at a young age (bulls 1-2 mos; lambs and kids 15-20 days of age), which will reduce the duration of discomfort and pain. There is less tissue development in the scrotal and tail regions in the younger animals, which substantially expedites the effectiveness of the banding process and reduces the discomfort and pain of the procedure. Animals will be monitored 2x daily and the banding site will be cleaned 1 x daily to reduce the potential incidence of infection around the banding area. This methodology has been taught in this class for 10 years and there has not been one case of infection due to banding for my classes.**
9-E **Document that less invasive procedures to the ones you are using are not available and cite literature supporting the proposed animal methodology.**	**Alternative castration methodologies include the use of an emasculator to crush the ductus deferens and a scalpel blade to cut the scrotum down the midline or remove the distal end of the scrotum where the testicles and ductus deferens will then be exposed for excision. Both techniques were utilized in the course over 10 years ago, but the learning environment created complications for the continued use. For the emasculator methodology, students are frequently hesitant and did not apply the appropriate pressure to crush the ductus deferens, which resulted in a repeat of the procedure and/or ineffective castration. For the surgical blade methodology, students were frequently hesitant resulting in more cutting than is required for the process and prolonged the pain experienced by the animal. Furthermore, due to the anatomical structure of the scrotum in the ruminant species the method for separating the scrotum from the testicles requires more cutting than in the piglets, which results in a much higher level of anxiety and discomfort for the student and pain for the animal.**

Section 10

10-A. Do these activities unnecessarily duplicate previous experiments?

☐ **Yes** ☑ **No**

10-B **Explain why / why not:** *(An answer is required, provide citations when applicable.)*	**No experiments are to be conducted.**

10-C. Was a veterinarian other than the IACUC attending veterinarian consulted on the animal procedure?

☐ **Yes** ☑ **No**

If YES, name the veterinarian:	

10-B. Are the activities such that a consultation with the IACUC Attending Vet is required prior to approval?

☑ **Yes** ☐ **No** If YES, enter consultation date January 2018

11-A **Veterinary care provided by whom?**	**IACUC attending veterinarian.**

Section 11

11-B
All health, veterinary treatment, surgical, wildlife capture, and wildlife handling records must be available for review by the IACUC. Location of these records:

TAMUK teaching farm office.

Section 12

12-A
If euthanasia of any animals is necessary during the project, list the method/agent of euthanasia:
(Include dosages and route of administration where applicable).

If euthanasia is potentially required for any of the farm animals the farm manager and IACUC attending veterinarian will be contacted. The decision for euthanasia and methodology is determined by the IACUC attending veterinarian.

12-B
Is this method consistent with the recommendation of the 2013 AVMA Guidelines for the Euthanasia of Animals? *(See* **https://www.avma.org/KB/Policies/Documents/euthanasia.pdf** *)*

☑ Yes ☐ No

If NO; give justification for not following the most current AVMA Guidelines recommendation.

Section 13

13-A
State the disposal of euthanatized or perished animals at the end of the study
(landfill, biosafety waste disposal company, return to natural habitat, etc.)

There are no studies conducted for teaching purposes in this course. Animals that have perished or have been euthanized will be disposed according to the TAMUK farm manager, risk management office, and IACUC attending veterinarian.

Section 14

14-A
Does this protocol include prescription drugs or a controlled substance?

☐ Yes ☑ No

14-A.1
If YES to prescription drugs, do you have permission to use prescription products from a veterinarian?

☐ Yes ☐ No

14-A.2
If YES, name the approving veterinarian:

14-C
If YES to controlled substances, has the use of these substances been approved by a veterinarian?

☐ Yes ☐ No

14-B
If YES to controlled substances, is your approved State and Federal DEA license on file?

☐ Yes ☐ No

14-C.1
If YES, name the approving veterinarian:

Section 15

All individuals involved in this project must be appropriately qualified and trained in the proposed animal use and care. List the personnel, including their title/position and describe their training and experience with the procedures used in this project. Training may include on-line classes, in-person classes, or workshops. Give the years of training/experience with each species in this protocol. Indicate if the CITI Research Course that has been completed for each individual. To meet Export Control Regulations, please identify non-U.S. personnel so ORSP can screen for any restrictions.

Add or Delete Rows

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Name	**Michelle Garcia**
Title	**Professor**
Species	**Bovine, ovine, caprine, porcine**
CITI Course	**Working with IACUC**
Other Training	**B.S. and M.S. Animal Science/Reproductive Physiology; PhD in Animal Science/Reproductive Physiology and Molecular Biol.**
Experience	**Over 15 years of experience teaching and conducting research on all of the listed species.**
Citizenship Country	

CITI Completion
Jun 8, 2016

CITI Expiration
Jun 8, 2019

OHP Enrollment
Mar 7, 2017

OHP Expiration
Mar 7, 2018

RPS Date
N/A

Restrictions?
☐ **YES** ☑ **NO**

Investigator Assurance

I hereby certify that to the best of my knowledge, the statements in this protocol are true and accurate. I further assure Texas A&M University-Kingsville that I am fully aware of our institutional policy, the Animal Welfare Act, the Public Health Service "Guide for the Care and Use of Laboratory Animals,"and the "Guide for the Care and Use of Agriculture Animals in Agriculture Research and Teaching" as they pertain to the use of animals in research and teaching.

By signing this statement, I am assuring the Institutional Animal Care and Use Committee (IACUC) that any and all animal use will be as described in the protocol by trained personnel and in accordance with the above existing policies.

Any significant changes in the proposed project or personnel will be submitted in writing by amendment to the IACUC prior to proceeding with any animal use.

All necessary State, Federal, or other required permits have been obtained at the time of this protocol's submission for approval.

Assurance of Non-Duplication: (Required by the Code of Federal Regulations, Chapter 9, Part 2.) I hereby assure that these experiments do not, to the best of my knowledge, unnecessarily duplicate any previous experiments

Please Type Investigators Full Name, select the digital date and send back with the Investigators Certified Electronic Digital or Hand Signature.

(IACUC / ORSP Use Only) - Revised 02/23/2018 **Signature pg. for IACUC tracking #:** 1407

Principal Investigator: Michelle Garcia **Date** February 28, 2018

Digital or Hand Signature: Michelle R. Garcia

Digitally signed by Michelle R. Garcia
Date: 2018.02.28 12:54:24 -06'00'

TEXAS A&M UNIVERSITY KINGSVILLE

The Office of Research & Sponsored Programs
700 University Blvd., MSC 201
Kingsville, Texas 78363-8202
(361) 593-3344 • Fax (361) 593-3409

To: Dr. Michelle Garcia

From:
Acting Chair
Institutional Animal Care and Use Committee (IACUC)

Date: July 19, 2018 – Approval Issued

Subject: IACUC Evaluation of Research Proposal – Approval

Approval Number: 2018-07-19

The protocol titled, "***ANSC 5390 Advanced Experimental Techniques***," was approved by the TAMUK IACUC.

- The protocol approval period is from **July 19, 2018 to July 19, 2021.**
- Species: Cattle (9)*
- Location: TAMUK Farm – cattle pens

*Captures original number approved.

Please note that any changes to the protocol procedures must be approved by the IACUC in advance of implementation.

Note: Please keep a copy of this Approval with your protocol documents.

Protocol for the Use of LIVE ANIMALS for Research, Teaching, or Demonstration

Institutional Animal Care and Use Committee

TEXAS A&M UNIVERSITY KINGSVILLE

USDA Pain Category	☐ C ☑ D ☐ E	**Expiration Date**	Jul 19, 2021	*(IACUC / ORSP Use Only) - Revised 02/06/2018*	
☑ USDA ☐ PHS ☐ Other		**ORSP Tracking#**	1417	**IACUC Approval #**	2018-07-19

Date Received	Jul 9, 2018
Protocol Title	**ANSC 5390 Advanced Experimental Techniques**
PI Name	**Michelle Garcia**
College / Department	**AGNRHS**
Office / Cell Phone	
Email	**michelle.garcia@tamuk.edu**
Current/Proposed Funding Sources	**internal sources**
Expected Start	**Jun 16, 2018**
Expected End	**August 10, 2018**
This project is:	**Teaching/Demonstration**
Other:	

Section 1

1-A. Please fill in the chart below with the number of animals for the entire project, their common name, scientific name, sex, and age. *(If more species are to be used than will fit below, please make note and attach addition animals following the format of this chart)*

Add/Delete Rows	#	Common Name	Scientific Name	Sex (M/F)	Age
+ -	9	Cattle	Bos Taurus	F	all

1-B Location(s) of animals & project

TAMUK Farm- cattle pens.

1-C The animals will be maintained in what type of caging/ housing?

Cattle are maintained in outdoor facilities including pasture and penned spaces located around a working restraint chute.

1-D Source of animals, e.g., purchased, institutionally bred, captured wild?

TAMUK farm - institutionally bred.

Section 2

2-A **Provide a SHORT, nontechnical, lay summary of the project, expressing its significance and your reasons for undertaking the study. Include project objectives and methods in lay terms.**	**Advanced experimental techniques is a graduate level course that teaches students how to conduct cell culture, extract and analyze RNA and protein, conduct colorimetric enzymatic assays, polymerase chain reaction, research compliance, and grant writing. For the cell culture procedure, a subcutaneous adipose tissue sample from the tail-head region will be harvested and transported back to the lab for enzymatic dispersion, isolation of mature adipocytes, and subsequent culture. The collection of live animal tissue for the purpose of cell culture is a common practice across many animal science disciplines. This procedure is a basic, and simplistic technique with which the principle of the procedure can be applied to many different tissue collection and culture technique methodologies.**

Section 3

3-A **Provide the rationale and purpose of the proposed use of this species of animals. (State briefly why living vertebrates, especially the species you are using, are required rather than some alternative model).**	**1. Cattle are an ample source of adipose tissue. Adipocytes are very large cells, 50-150 microns in size; therefore, an ample source of tissue is required.** **2. For teaching purposes, the bovine species provides a large scale model for novice graduate students, which enhances visualization and clarity of the procedure that is needed to conduct it correctly.**

Section 4 - Provide justification of the number of animals requested.

4-A **Explain how you determined the total number of animals requested.**	**The number of animals required is equal to the number of 8 graduate students and an extra animal. in the course; therefore, each student has the opportunity to learn how to conduct a basic and simple procedure for tissue collection and subsequent primary cell culture.**
4-B **Indicate all treatment and /or study groups.** *(Example: 5 animals/ treatment group X 5 treatment groups/study group X 4 study groups = 100 animals required)*	**No treatment groups are required. Technique and procedures is for teaching purposes.**

Section 5

5-A Describe the availability or appropriateness of the use less-invasive procedures, lower species, isolated organ preparation, cell or tissue culture, or computer simulation.

1. Although cell lines are useful in determining the direction with which one can pursue research, the lines cannot duplicate primary cell cultures, i.e., non-transformed cells, nor in vivo regulation of cell metabolism and gene expression.

2. Cattle are an ample source of subcutaneous adipose tissue that is accessible without major invasive surgical techniques.

Section 6

6-A Provide a complete, detailed description of the proposed use of the animals. Describe exactly what you will do to the animals while they are alive and potential for discomfort, injury, or death resulting from use of the animals. Include ALL procedures/ treatments in your project that will be imposed on the live animals in chronological order. Cite literature/ published protocols supporting use of the proposed procedures.

A caudal epidural will be conducted to anesthetize the caudal tail-head region for subcutaneous tissue extraction (3-5 grams). The surgical procedure is considered minor in that the body cavity will not be exposed for simple subcutaneous extraction of fat tissue. The region of epidural administration and tissue extraction will be shaved and disinfected with chlorhexidine and then iodine solution. Lidocaine HCL (2%) will be administered (0.5-1ml/100lb; Hendrickson and Baird, 2013) into the epidural space between the first and second caudal vertebrae using an 20G x 1" needle in order to anesthetize the surgical site. A local is NOT administered for subcutaneous fat collection because the local anesthetizing agent mobilizes stored lipids immediately upon lidocaine exposure. The adipose tissue around the local injection becomes a lipid slurry. A one inch incision through the hide on each side of the tail head, lateral to the vertebral column, will be conducted to expose the underlying adipose tissue. Using tissue forceps and blunt edge surgical scissors tissue will be excised and placed in warmed Hanks media for transportation to the laboratory. An interlocking suture will close the incision site. Animals will be disinfected daily with chlorhexidine and then iodine solution to keep the incision site clean until the wound has healed and sutures have been removed. This procedure has been previously published by the PI.

1. Mama, F. Anesthesia and fluid therapy. In: Turner and McIlwraith's Techniques in Large Animal Surgery, D. A. Hendrickson and A.N. Baird (Ed). Blackwell Publishing Ltd. pgs 10-13.

2. Garcia M. R., M. Amstalden, C. D. Morrison, D. H. Keisler, and G. L. Williams. 2003. Age at puberty, total fat and conjugated linoleic acid content in carcass, and circulating metabolic hormones in beef heifers fed a diet high in linoleic acid from four months of age. J. Anim. Sci.,81:261-268.

3. Garcia M. R., M. Amstalden, S. W. Williams, C. D. Morrison, D. H. Keisler, and G. L. Williams. 2002. Serum leptin and its adipose gene expression during pubertal development, the estrous cycle, and different seasons in cattle. J. Anim. Sci., 80:2158-2167.

Section 7

A. Does this protocol involve *Major* survival surgery? No

If yes complete the Surgery/Procedures Appendix (http://www.tamuk.edu/osr/Forms/index.html)

B. Does this protocol involve *Minor* survival surgery? Yes

C. Does this protocol involve *Medically Necessary* survival surgery? No

If yes must consult with the IAUCU Attending Veterinarian

Section 8

Do you anticipate discomfort, distress, pain, and injury from the proposed activities? ☑ Yes ☐ No

8-A Explain why / why not: *(An answer is required, provide citations when*

During the epidural procedure only momentary pain is anticipated as the needle is inserted between the vertebrae; however, the pain will quickly dissipate upon administration of the anesthetic agent.

applicable.)

Section 9

9-A. Do the proposed animal activities involve potentially painful procedures or death of the organism? *(Painful procedures include procedures but are not limited to USDA Pain Categories D and E. Please see Definition and Examples of USDA Pain and Distress Categories in back of this application).*

☑ Yes ☐ No **If YES, complete the following:**

9-B List the analgesics, anesthetics and (or) tranquilizing drugs and their dosages and routes of administration used to minimize discomfort, distress, pain and injury.	**Lidocaine HCL (2%) will be administered (0.5-1ml/100lb; Hendrickson and Baird, 2013) for the caudal epidural procedure to prevent pain potentially associated with subcutaneous adipose tissue collection.**
9-C C. If any procedure(s) will cause pain or distress and analgesia/anesthesia cannot be administered, list each procedure with justification for the exclusion of analgesia/anesthesia.	**Anesthesia will be administered to prevent pain potentially associated with subcutaneous adipose tissue collection.**
9-D If painful or stressful outcomes occur in this project, describe the criteria and process for timely intervention, removal of animals from a study, or euthanasia. Wildlife capture and handling may qualify as a painful or stressful outcome. Animals that would otherwise experience severe or chronic pain or distress that cannot be relieved must be painlessly euthanized at the end of the procedure or during the procedure, if appropriate.	**If an animal is injured during the procedure the attending veterinarian, Dr. William Finney, or alternate attending veterinarian, Dr. Clay Hilton, will be contacted to consult on the proper route of care and management of the injury.**
9-E Document that alternative procedures to the ones you are using are not available and cite literature supporting the proposed animal	**Alternative methodology such as a cell line, ie. 3T3-L1 cells, are in pre-adipocyte form, i.e. pre-lipid filling. There are no lipid filled mature adipocyte cell lines. The proposed procedure requires mature adipocytes, which is a challenging cell type to work with. However, I have published the adipocyte cell culture technique for large animal species.** **1. Rosen E.D., and B. M. Speigleman. Molecular regulation of Adipogenesis. Annu. Rev. Cell Dev. Biol. 2000. 16:145-171.**

methodology.

2. Y. Matsumoto, C. W. O'Gorman, E. Gonzales, D. H. Keisler, R. L. Stanko, M. R. Garcia. 2006 Effects of Development, Estrous Cycle, and 17β-Estradiol on Adipocyte Leptin, ERα, and ERβ Gene Expression in Gilts. J. Anim. Veterin. Advan. 5:762.770.

3. Liu X, Kim JK, Li Y, Li J, Liu F, Chen X. Tannic acid stimulates glucose transport and inhibits adipocyte differentiation in 3T3-L1 cells. J. Nutr. 2005; 135:165-171.

4. E. Gonzales, C.W. O'Gorman, Y. Matsumoto, D.H. Keisler, R.L. Stanko, M.R. Garcia. Effects of PGF2α and 15-keto PGF2α on leptin and PGF receptor gene expression in adipose tissue at estrus and the mid-luteal stage of the estrous cycle revisited. 2008. Biol. Reprod. (Suppl. 1):183 (Abstract).

Section 10

10-A. Do these activities unnecessarily duplicate previous experiments?

☐ **Yes** ☑ **No**

10-B Explain why / why not: *(An answer is required, provide citations when applicable.)*

The proposed activity is not an experiment. The procedure is an educational activity for a graduate level advanced experimental techniques course.

10-C. Was a veterinarian other than the IACUC attending veterinarian consulted on the animal procedure?

☑ **Yes** ☐ **No**

If YES, name the veterinarian:

Dr. William Finney was consulted and the alternate attending veterinarian, Dr. Clay Hilton, was consulted.

10-B. Are the activities such that a consultation with the IACUC Attending Vet is required prior to approval?

☑ **Yes** ☐ **No** If YES, enter consultation date 7/3/2018

11-A Veterinary care provided by whom?

Attending veterinarian, Dr. William Finney

Section 11

11-B All health, veterinary treatment, surgical, wildlife capture, and wildlife handling records must be available for review by the IACUC. Location of these records:

Dr. Michelle Garcia office, Howe Bldg. Rm 206.

Section 12

12-A If euthanasia of any animals is necessary during the project, list the method/agent of euthanasia: *(Include dosages and route of administration where applicable).*

The TAMUK Attending Veterinarian, Dr. William B. Finney, will be consulted if the animal were to experience something that would compromise its well-being. If it is determined that any animal will be euthanized then an IV administration of pentothal (390 mg pentobarbital sodium/ 50mg phenytoin sodium/ ml (1cc/10lb); barbituric acid derivative) will be used. According to 'AVMA guide lines on Euthanasia 2013 report (pg. 28), "all barbituric acid derivatives used for anethesia are acceptable for euthanasia when administered intravenously". However, an alternate method of euthanasia may be implemented as determined by the TAMUK Attending Veterinarian.

12-B
Is this method consistent with the recommendation of the 2013 AVMA Guidelines for the Euthanasia of Animals? *(See* **https://www.avma.org/KB/Policies/Documents/euthanasia.pdf** *)*

☑ Yes ☐ No

If NO; give justification for not following the most current AVMA Guidelines recommendation.	

Section 13

13-A **State the disposal of euthanatized animals at the end of the study** *(landfill, biosafety waste disposal company, return to natural habitat, etc.)*	**If animals are euthanized they will be buried (4ft depth and ~4ft in length) at the TAMUK farm at a site previously approved and dug with the supervision of the TAMUK Safety office.**

Section 14

14-A
Does this protocol include prescription drugs or a controlled substance?

☑ Yes ☐ No

14-A.1
If YES to prescription drugs, do you have permission to use prescription products from a veterinarian?

☑ Yes ☐ No

14-A.2 **If YES, name the approving veterinarian:**	**Dr. William Finney**

14-C
If YES to controlled substances, has the use of these substances been approved by a veterinarian?

☐ Yes ☐ No

14-B
If YES to controlled substances, is your approved State and Federal DEA license on file?

☐ Yes ☐ No

14-C.1 **If YES, name the approving veterinarian:**	

Section 15

All individuals involved in this project must be appropriately qualified and trained in the proposed animal use and care. List the personnel, including their title/position and describe their training and experience with the procedures used in this project. Training may include on-line classes, in-person classes, or workshops. Give the years of training/experience with each species in this protocol. Indicate if the CITI Research Course that has been completed for each individual. To meet Export Control Regulations, please identify non-U.S. personnel so ORSP can screen for any restrictions.

Add or Delete Rows			
+ -	**Name** Michelle Garcia **Title** Professor, Animal Science, Molecular Biology **Species** bovine, porcine, ovine, and caprine **CITI Course** IACUC (May 2016) **Other Training** B.S. Anim. Sci.; M.S. Anim. Sci/Reproductive physiology; Ph.D. Anim. Sci./reproductive phys and molecular biol. **Experience** 18 years of surgical and non-surgical experience in the livestock species; i.e. hysterectomies, ovariectomies, neurosurgery, cesareans, and adipose tissue biopsies. Additionally, 14 yrs of experience in routine care and management of the livestock species. **Citizenship Country**	**CITI Completion** Jun 8, 2016 **CITI Expiration** Jun 8, 2019 **OHP Enrollment** Mar 5, 2018 **OHP Expiration** Mar 5, 2019 **RPS Date** N/A **Restrictions?** ☐ YES ☑ NO
Add or Delete Rows		
+ -	**Name** **Title** M.S. Graduate Student **Species** sheep and goats **CITI Course** Working With The IACUC/Cattle(July 2018) **Other Training** B.S. in the sciences. PI will be present to supervise the students during the procedure. **Experience** Care and management of sheep and goat livestock species. **Citizenship Country**	**CITI Completion** 4/25/2016 **CITI Expiration** 4/25/2019 **OHP Enrollment** 1/4/2018 **OHP Expiration** 1/4/2019 **RPS Date** N/A **Restrictions?** ☐ YES ☑ NO
Add or Delete Rows		
+ -	**Name** **Title** M.S. Graduate Student **Species** sheep, pigs, goats **CITI Course** Working With The IACUC/Cattle(May 2018) **Other Training** B.S. in the sciences. PI will be present to supervise the students during the procedure. **Experience** Care and management of sheep, goats, and pig livestock species. **Citizenship Country**	**CITI Completion** 10/12/2016 **CITI Expiration** 10/12/2019 **OHP Enrollment** 9/26/2017 **OHP Expiration** 9/26/2018 **RPS Date** N/A **Restrictions?** ☐ YES ☑ NO

Add or Delete Rows			
+ -	**Name**		**CITI Completion** 1/17/2018
	Title	B.S. undergraduate student	**CITI Expiration** 1/17/2021
	Species	pigs and goats	**OHP Enrollment** 1/17/2018
	CITI Course	Working With The IACUC/Cattle(July 2018)	**OHP Expiration** 1/17/2019
	Other Training	B.S. in the sciences August 2018. PI will be present to supervise the students during the procedure.	**RPS Date** N/A
	Experience	Care and management of sheep, goats, and pig livestock species.	**Restrictions?** ☐ YES ☑ NO
	Citizenship Country		
Add or Delete Rows			
+ -	**Name**		**CITI Completion** 8/17/2016
	Title	M.S. Graduate Student	**CITI Expiration** 8/17/2019
	Species	pigs, sheep, goats	**OHP Enrollment** 8/14/2017
	CITI Course	Working With The IACUC/Cattle(July 2018)	**OHP Expiration** 8/14/2018
	Other Training	B.S. in the sciences. PI will be present to supervise the students during the procedure.	**RPS Date** N/A
	Experience	Care and management of sheep, goats, and pig livestock species.	**Restrictions?** ☐ YES ☑ NO
	Citizenship Country		
Add or Delete Rows			
+ -	**Name**		**CITI Completion** Jul 9, 2018
	Title	M.S. Graduate Student	**CITI Expiration** Jul 9, 2021
	Species	cattle	**OHP Enrollment** Jul 19, 2018
	CITI Course	Working With The IACUC/Cattle(July 2018)	**OHP Expiration** Jul 19, 2019
	Other Training	B.S. in the sciences. PI will be present to supervise the students during the procedure.	**RPS Date** N/A
	Experience	Care and management of sheep, goats, and pig livestock species.	**Restrictions?** ☐ YES ☑ NO
	Citizenship Country		

Add or Delete Rows		
+ -	**Name**	**CITI Completion** Jul 10, 2018
	Title M.S. Graduate Student	**CITI Expiration** Jul 10, 2019
	Species none	**OHP Enrollment** Jul 12, 2018
	CITI Course Working With The IACUC	**OHP Expiration** Jul 12, 2019
	Other Training B.S. in the sciences. PI will be present to supervise the students during the procedure.	**RPS Date** N/A
	Experience No livestock animal experience	**Restrictions?** ☐ YES ☑ NO
	Citizenship Country	

Add or Delete Rows		
+ -	**Name**	**CITI Completion** Jul 13, 2018
	Title M.S. Graduate Student	**CITI Expiration** Jul 13, 2018
	Species none	**OHP Enrollment** Jul 11, 2019
	CITI Course Working With The IACUC	**OHP Expiration** Jul 11, 2019
	Other Training B.S. in the sciences. PI will be present to supervise the students during the procedure.	**RPS Date** Jul 10, 2018
	Experience No livestock animal experience	**Restrictions?** ☐ YES ☑ NO
	Citizenship Country	

Investigator Assurance

I hereby certify that to the best of my knowledge, the statements in this protocol are true and accurate. I further assure Texas A&M University-Kingsville that I am fully aware of our institutional policy, the Animal Welfare Act, the Public Health Service "Guide for the Care and Use of Laboratory Animals,"and the "Guide for the Care and Use of Agriculture Animals in Agriculture Research and Teaching" as they pertain to the use of animals in research and teaching.

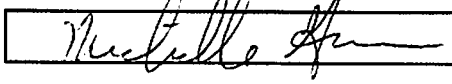
By signing this statement, I am assuring the Institutional Animal Care and Use Committee (IACUC) that any and all animal use will be as described in the protocol by trained personnel and in accordance with the above existing policies.

Any significant changes in the proposed project or personnel will be submitted in writing by amendment to the IACUC prior to proceeding with any animal use.

All necessary State, Federal, or other required permits have been obtained at the time of this protocol's submission for approval.

Assurance of Non-Duplication: (Required by the Code of Federal Regulations, Chapter 9, Part 2.) I hereby assure that these experiments do not, to the best of my knowledge, unnecessarily duplicate any previous experiments

Please Type Investigators Full Name, select the digital date & Print this page with the Investigators Hand Signature. Please scan and forward along with your digital IACUC Application.

Principal Investigor	**Michelle Garcia**	**Date**	July 9, 2018
Hand Signature			

TEXAS A&M UNIVERSITY KINGSVILLE

The Office of Research & Graduate Studies
700 University Blvd., MSC 201
Kingsville, Texas 78363-8202
Phone (361) 593-3344 / Fax (361) 593-3409

To: Dr. Michelle R. Garcia

From: Institutional Animal Care and Use Committee (IACUC)

Date: March 24th, 2019 – Approval Issued

Subject: IACUC Evaluation of Research Proposal – Approval

Approval Number: 2019-04-24A / 1439

The protocol titled, "***Introduction to Animal Science Lactational Weight Change Project***," was approved by the TAMUK IACUC.

- The protocol approval period is from **March 24th, 2019 to March 24th, 2022.**
- Species: Sheep
- Location: Horse Pavillion

Please note that any changes to the protocol procedures must be approved by the IACUC in advance of implementation.

The approval is granted for three years but will be subject to continuing review on an annual basis and may have periodic post approval monitoring (PAM).

****Note: Please keep a copy of this Approval Notice with your protocol documents and retain per the TAMUS records retention schedule.**

A copy of all protocols, amendments, and Continuing Reviews must be kept in the Research Facility to be viewed during inspections.

Protocol for the Use of LIVE ANIMALS for Research, Teaching, or Demonstration

TEXAS A&M UNIVERSITY KINGSVILLE

Institutional Animal Care and Use Committee

USDA Pain Category: ☑ C ☐ D ☐ E **Expiration Date:** Apr 29, 2022 (IACUC / ORGS Use Only) - Revised 01-10-2019

☐ USDA ☐ PHS ☑ Other **ORGS Tracking #:** 1439 **IACUC Approval #:** 2019-04-24A

Date Received: Mar 9, 2019 **Are there any departures from "The Guide"?** No

If **"YES"**, that there are any departures from "The Guide" please explain in Section 3-A.

Protocol Title: Introduction to Animal Science Lactational Weight Change Project

PI Name: Michelle Garcia

College & Department: ASVT

Office & Cell Phone Number:

E-mail: michelle.garcia

Current / Proposed Funding Source(s): I-CARE

Expected Start: February 14, 2019 **Expected End:** May 7, 2019 **This Project is:** Teaching / Demonstration

Other:

Section 1

1-A. Please fill in the chart below with the number of animals for the entire project, their common name, scientific name, sex, and age. *(If more species are to be used than will fit below, please make note and attach addition animals following the format of this chart)*

Add/Delete Rows	#	Common Name	Scientific Name	Sex (M/F)	Age
+ -	75	sheep	Ovis Aries	F	mature

1-B Location(s) of animals & project:

On Campus: Please check one of the boxes below and refer to the IACUC PI Map View for Specific Location Names. If you do not have access to the Map(s) please e-mail Research Compliance for access to the map. (Maps are Google based and do not require a Google account to view.) If the location you need is not on the map select "Other On Campus Location" and list he Building Name(s) and Room Number(s) or Other On Campus Location in the box below.

☐

☑ Horse Pavillion ☐ Farm ☐ National Natural Toxins Research Center

☐ Caesar Kleberg Wildlife Research Institute ☐ Other On Campus Location list in box below

☐ Off Campus: Please list the Off Campus location in the box below

1-C The animals will be maintained in what type of caging / housing?

Enclosed pen with dirt floors and roof

1-D Source of animals, e.g., purchased, institutionally bred, captured wild?

TAMUK farm

Section 2

2-A Provide a Brief (200 words or less), nontechnical, lay summary of the project, expressing your reasons and its significance for undertaking the study. Include project objectives and methods in lay terms.

Introduction to Animal Science is a freshman level 4 hr credit course that has both lecture and a lab with a student enrollment that ranges from 50-70 persons. The course introduces students to the different components of the animal industry and the basic principles of nutrition, animal growth, genetics, physiology, and animal behavior. The course lab has been re-designed to incorporate lecture material into a class experiential learning project that teaches students about research, i.e. teaching and applying the Scientific Method. Students will compare weight changes and ADG in a lactating ewe nursing a baby lamb to the weight changes and ADG of the ewe after she has weaned the lamb. Normally, lactating animals supporting a nursing baby lose a significant amount of weight due to the high energetic demand for the production of milk. Theoretically, once the baby is weaned, lactation declines and the ewe regains weight. For the lab experiential learning project students will be taught the Scientific Method, develop a hypothesis, and create objectives to determine (test the hypothesis) the potential affect of lactation and weaning on ADG in ewes. Students will be divided into teams of 5-6 and will be assigned a lactating ewe and record her weight weekly during mid-late lactation for 4 weeks and then after weaning for 4 weeks. Following the 8-week period of time each student team will meet with the professor to learn how to analyze the data to determine potential differences between weight changes at different physiological stages. It is anticipated that this lab course exercise will teach students the basic concepts of conducting research and encourage the pursuit of research in future endeavors.

Section 3

3-A Provide the rationale and purpose of the proposed use of this species of animals. (State briefly why living vertebrates, especially the species you are using, are required rather than some alternative model). If there are any departure from "The Guide" explain in this section.

The TAMUK sheep herd has a very short, defined lambing season in the spring semester that makes it possible to record the progressive weight changes of a lactating animal and weaned for the purpose of teaching students the basics about research, i.e. the scientific method, process of recording data, and how to analyze and interpret the outcomes.

Section 4

4-A Explain how you determined the total number of animals requested.

The number is the current number of mature ewes lactating in the time frame needed to complete the classroom experiential learning educational project.

4-B **Indicate all treatment and /or study groups.** (Example: 5 animals / treatment group X 5 treatment groups / study group X 4 study groups = 100 animals required)

No treatments. Only available ewes are being weighed to record changes in weekly weight during mid-late lactation and then after weaning.

Section 5

5-A **Document that alternative procedures to the ones you are using are not available and cite literature supporting the proposed animal methodology.**

Using a weigh scale is the most accurate methodology to record animal weights. There is weigh tape that is utilized when a scale is not available; however, breed type, satiety of the animal, type of feed, and tightness of the tape contribute to inaccurate weight calculation. Furthermore, the animal must be physically handled with either the use of a weigh scale or weigh tape estimators; therefore, the more accurate measurement methodology of a weigh scale will be utilized.

Janzekovic, M., M. Brus, B. Mursec, F. Cus. 2007. Accuracy of calculation of body mass on the basis of measurements. J. Achievem. Mat. Manufact. Eng. 23(2): 47-50.

Section 6

6-A **Provide a complete, detailed description of the proposed use of the animals. Describe exactly what you will do to the animals while they are alive and potential for discomfort, injury, or death resulting from use of the animals. Include ALL procedures / treatments in your project that will be imposed on the live animals in chronological order. Cite literature / published protocols supporting use of the proposed procedures.**

Students will record the weights of available mature lactating ewes (mid-late lactation period) 1x/week for 4 weeks using a portable W-W livestock scale for small livestock. After the lambs are weaned from the ewes the weights of the 11 ewes will be recorded 1x/ weekly for 4 weeks. All mature ewes have been raised at the TAMUK farm and have experienced frequent handling by students from previous courses, research projects, and farm management staff; therefore, all of the ewes are gentle in temperament and are not expected to have a stressful experience during the weight recording sessions.

Janzekovic, M., M. Brus, B. Mursec, F. Cus. 2007. Accuracy of calculation of body mass on the basis of measurements. J. Achievem. Mat. Manufact. Eng. 23(2): 47-50.

Section 7

A. **Does this protocol involve Major survival surgery?** **No**

If yes must consult with the IACUC Attending Veterinarian and complete the Surgery / Procedures Appendix (http://www.tamuk.edu/osr/Forms/index.html)

B. **Does this protocol involve Minor survival surgery?** **No**

C. **Does this protocol involve Medically Necessary survival surgery?** **No**

If yes must consult with the IACUC Attending Veterinarian

Section 8

8-A. **Do you anticipate more than momentary pain, discomfort, distress, and potential injury from the proposed activities?**

☐ **Yes** ☑ **No**

8-B. **Explain why / why not:** (An answer is required, provide citations when applicable.)

All mature ewes have been raised at the TAMUK farm and have experienced frequent handling by students

from previous courses, research projects, and farm management staff; therefore, all of the ewes are gentle in temperament and are not expected to have a stressful experience during the weight recording sessions.

Section 9

9-A. Do the proposed animal activities involve potentially painful procedures or death of the organism? (Painful procedures include procedures but are not limited to USDA Pain Categories D and E. Please see Definition and Examples of USDA Pain and Distress Categories in back of this application).

☐ **Yes** ☑ **No** **If YES, complete the following:**

9-B. List the analgesics, anesthetics and (or) tranquilizing drugs and their dosages and routes of administration used to minimize discomfort, distress, pain and injury.

9-C. If any procedure(s) will cause pain or distress and analgesia / anesthesia cannot be administered, list each procedure with justification for the exclusion of analgesia / anesthesia.

9-D. If painful or stressful outcomes occur in this project, describe the criteria and process for timely intervention, removal of animals from a study, or euthanasia. Wildlife capture and handling may qualify as a painful or stressful outcome. Animals that would otherwise experience severe or chronic pain or distress that cannot be relieved must be painlessly euthanized at the end of the procedure or during the procedure, if appropriate.

9-E. Document that less invasive procedures to the ones you are using are not available and cite literature supporting the proposed animal methodology.

Section 10

10-A. Do these activities unnecessarily duplicate previous experiments?

☐ **Yes** ☑ **No**

10-B Explain why / why not: (An answer is required, provide citations when applicable.)

Weight loss during lactation and weight regain following weaning is animal science textbook taught knowledge. The goal of educational project of recording and comparing weight changes in lactating and weaned ewes is to apply textbook knowledge with which to teach freshman students the process of scientific methodology.

Snowder and Glimp, 1991. Influence of breed, number of suckling lambs, and stage of lactation on ewe milk production and lamb growth under range conditions. J Anim. Sci. 1991 69:923-930.

10-C. Was a veterinarian other than the IACUC attending veterinarian consulted on the animal procedure?

☐ **Yes** ☑ **No** **If YES, name the veterinarian below:**

Project concept was discussed with previous IACUC vet, prior to departure from TAMUK.

10-D. Are the activities such that a consultation with the IACUC Attending Vet is required prior to approval?

☐ **Yes** ☑ **No** If YES, enter the consultation date:

Section 11

11-A Veterinary care provided by whom?

Dr. Glen Wilkinson.

11-B All health, veterinary treatment, surgical, wildlife capture, and wildlife handling records must be available for review by the IACUC. Location of these records:

TAMUK farm office.

Section 12

12-A If euthanasia of any animal(s) is necessary during the project, list the method / agent of euthanasia: (Include dosages and route of administration where applicable).

The TAMUK farm manager has had to euthanize the production livestock for various reasons, i.e., illness, severe injury, etc. On these occasions the farm manager has indicated that he uses a captive bolt gun. If one of the ewes experience injury or illness then the farm manager will use the captive bolt gun as the AVMA approved method of euthanasia for livestock.

12-B Is this method consistent with the recommendation of the 2013 AVMA Guidelines for the Euthanasia of Animals? (See https://www.avma.org/KB/Policies/Documents/euthanasia.pdf)

☑ **Yes** ☐ **No**

If NO; give justification for not following the most current AVMA Guidelines recommendation.

Section 13

13-A State the disposal of euthanatized or perished animals at the end of the study (landfill, biosafety waste disposal company, return to natural habitat, etc.)

Burial at the TAMUK farm in the west pasture.

Section 14: Prescription Drug(s) and Controlled Substances

14-A. Does this protocol include prescription drug(s) that ARE NOT controlled substances?

☐ **Yes** ☑ **No**

14-A-1. If YES, has the use of the drug(s) been approved by a veterinarian?

☐ **Yes** ☐ **No**

14-A-2. If YES, name the approving veterinarian below:

14-B Does this protocol include prescription drug(s) that ARE a controlled substance(s)?

☐ Yes ☑ No

14-B-1. If YES, has the use of the controlled substance(s) been approved by a veterinarian?

☐ Yes ☐ No

14-B-2. If YES, name the approving veterinarian below:

14-B-3. If YES, is your DEA Registration on file with The Office of Research & Graduate Studies (ORGS) and with Enterprise Risk Management (ERM):

☐ Yes ☐ No

Section 15

All individuals involved in this project must be appropriately qualified and trained in the proposed animal use and care. List the personnel, including their title / position and describe their training and experience with the procedures used in this project. Training may include on-line classes, in-person classes, or workshops. Give the years of training / experience with each species in this protocol. Indicate if the CITI Research Course that has been completed for each individual. To meet Export Control Regulations, please identify Non - U.S. personnel so ORGS can screen for any restrictions.

Add or Delete Rows

\+
\-

Name Michelle Garcia

Title Professor

Job Position: Faculty

Species bovine, ovine, porcine, caprine

CITI Course Working with IACUC

Other Training B.S. and M.S. Animal Science/Reproductive Physiology; PhD in Animal Science/Reproductive Physiology and Molecular Biol.

Experience Over 15 years of experience teaching and conducting research on all of the listed species.

Citizenship Country

CITI Completion Jun 8, 2016

CITI Expiration Jun 8, 2019

OHP Enrollment March 7, 2018

OHP Expiration March 7, 2019

RPS Date N/A

Restrictions? ☐ YES ☑ NO

Add or Delete Rows

\+
\-

Name

Title M.S. Graduate student

Job Position: Grad Assistant

Species carpine, ovine, porcine

CITI Course

Other Training B.S. in the sciences.

Experience Care and management of sheep, goats, and pig livestock species.

Citizenship Country

CITI Completion Jul 10, 2018

CITI Expiration Jul 10, 2021

OHP Enrollment 3/1/2018

OHP Expiration 3/1/2019

RPS Date N/A

Restrictions? ☐ YES ☑ NO

Add or Delete Rows			
+ -	**Name**		**CITI Completion** 1/17/2018
	Title	M.S. Graduate student	**CITI Expiration** 1/17/2021
	Job Position:	Grad Assistant	**OHP Enrollment** 1/17/2019
	Species	porcine, ovine, caprine, bovine	**OHP Expiration** 1/17/2020
	CITI Course	Working with IACUC	**RPS Date** N/A
	Other Training	B.S. in the sciences August 2018.	**Restrictions?** ☐ YES ☑ NO
	Experience	Care and management of sheep, goats, cattle, and pig livestock species.	
	Citizenship Country		

Investigator Assurance

I hereby certify that to the best of my knowledge, the statements in this protocol are true and accurate. I further assure Texas A&M University-Kingsville that I am fully aware of our institutional policy, the Animal Welfare Act, the Public Health Service "Guide for the Care and Use of Laboratory Animals,"and the "Guide for the Care and Use of Agriculture Animals in Agriculture Research and Teaching" as they pertain to the use of animals in research and teaching.

By signing this statement, I am assuring the Institutional Animal Care and Use Committee (IACUC) that any and all animal use will be as described in the protocol by trained personnel and in accordance with the above existing policies.

Any significant changes in the proposed project or personnel will be submitted in writing by amendment to the IACUC prior to proceeding with any animal use.

All necessary State, Federal, or other required permits have been obtained at the time of this protocol's submission for approval.

Assurance of Non-Duplication: (Required by the Code of Federal Regulations, Chapter 9, Part 2.) I hereby assure that these experiments do not, to the best of my knowledge, unnecessarily duplicate any previous experiments

Please Type Investigators Full Name, select the digital date and send back with the Investigators Certified Electronic Digital or Hand Signature.

(IACUC / ORGS Use Only) - Revised 09-06-2018 **Signature pg. for IACUC tracking #:** **1439 /**

Principal Investigator: **Michelle Garcia** **Date** Mar 4, 2019

Digital or Hand Signature: **Michelle R. Garcia** **Digitally signed by Michelle R. Garcia Date: 2019.03.04 16:06:34 -06'00'**

TEXAS A&M UNIVERSITY KINGSVILLE

The Office of Research & Graduate Studies
700 University Blvd., MSC 201
Kingsville, Texas 78363-8202
Phone (361) 593-3344 / Fax (361) 593-3409

To: Dr. Clayton D. Hilton

From: Institutional Animal Care and Use Committee (IACUC)

Date: February 2nd, 2021 – Approval Issued

Subject: IACUC Evaluation of Research Proposal – Approval

Approval Number: 2021-02-02 / 1466

The protocol titled, "**Veterinary Technology Teaching Protocol**," was approved by the TAMUK IACUC.

- The protocol approval period is from ***February 2nd 2021 to February 2nd 2024.***
- Species: Domestic Dog, Domestic Cat, Cattle, Horse, Goat, Sheep, Pig, Snakes, Lizards Tortoises, Domestic Chicken, Domestic Rabbit
- Location: Farm, Caesar Kleberg Wildlife Research Institute, VETT, Off Campus

Please note that any changes to the protocol procedures must be approved by the IACUC in advance of implementation.

The approval is granted for three years but will be subject to continuing review on an annual basis and may have periodic post approval monitoring (PAM).

****Note: Please keep a copy of this Approval Notice with your protocol documents and retain per the TAMUS records retention schedule.**

A copy of all protocols, amendments, and Continuing Reviews must be kept in the Research Facility to be viewed during inspections.

Protocol for the Use of LIVE ANIMALS for Research, Teaching, or Demonstration

TEXAS A&M UNIVERSITY KINGSVILLE

Institutional Animal Care and Use Committee

USDA Pain Category: ☐ C ☑ D ☐ E **Expiration Date:** (IACUC / ORGS Use Only) - Revised 09-01-2019

☐ USDA Biomed ☐ USDA ☐ PHS ☐ Other **Date Received:**

ORGS Tracking #: **IACUC Approval #:**

Are there any departures from "The Guide"? No

If **"YES"**, that there are any departures from "The Guide" please explain in Section 3-A.

Protocol Title: Veterinary Technology Teaching Protocol

PI Name: Clayton D. Hilton

College: Agriculture & Natural Resources **Dept.:** ASVT

Office & Cell Phone Number: 361-593-3258;

E-mail: clayton.hilton@tamuk.edu

Current / Proposed Funding Source(s): State line item

Anticipated Start Date: 01Feb2021 **This Project is:** Teaching / Demonstration

Other:

Section 1

1-A. Please fill in the chart below with the number of animals for the entire project, their common name, scientific name, sex, and age. *(If more species are to be used than will fit below, please make note and attach addition animals following the format of this chart)*

Add/Delete Rows	#	Common Name	Scientific Name	Sex (M/F)	Age
+ -	90	Domestic dog	Canis familiaris	both	All
+ -	108	Domestic cat	Felis catus	both	All
+ -	45	Cattle	Bos indicus, B. tarus and cross breeds	both	All
+ -	45	Horse	Equus caballus	both	All
+ -	45	Goat	Capra hircus	both	All

+ -	45	Sheep	Ovis aries	both	All
+ -	45	Pig	Sus scrofa	both	All
+ -	12	Snakes	Order Serpentes	both	All
+ -	12	Lizards	Order Lacertilia	both	All
+ -	12	Tortoises	Order Testudines	both	All
+ -	36	Domestic chicken	Gallus gallus	both	All
+ -	36	Domestic Rabbit	Oryctolagus cuniculus	both	All

1-B Location(s) of animals & project:

☑ **On Campus: Please check one of the boxes below and refer to the IACUC PI Map View for Specific Location Names. If you do not have access to the Map(s) please e-mail Research Compliance for access to the map. (Maps are Google based and do not require a Google account to view.) If the location you need is not on the map select "Other On Campus Location" and list he Building Name(s) and Room Number(s) or Other On Campus Location in the box below.**

☐ **Horse Pavillion** ☑ **Farm** ☐ **National Natural Toxins Research Center**

☑ **Caesar Kleberg Wildlife Research Institute** ☑ **Other On Campus Location list in box below**

Dogs, cats and reptiles are located at the VETT facility. All livestock and rabbits are located at the University Farm. Chickens are housed at the CKWRI aviary.

☑ **Off Campus: Please list the Off Campus location in the box below**

Horses are maintained at King Ranch.

1-C The animals will be maintained in what type of caging / housing?

Dogs, cats and reptiles are maintained indoors following USDA guidelines in individual species-appropriate enclosures. All livestock and rabbits are maintained at the TAMUK North Farm. Chickens are housed in pre-fab pens at the CKWRI aviary.

1-D Source of animals, e.g., purchased, institutionally bred, captured wild?

Dogs and cats are on loan from Kingsville Animal Control (KAC) and/or property of TAMUK faculty or staff. Horses are property of King Ranch. All livestock including chickens and rabbits are property of TAMUK. Reptiles are on loan from Reptile Hospice and Sanctuary of Texas. MOU's are in place, where appropriate.

Section 2

2-A Provide a Brief (200 words or less), nontechnical, lay summary of the project, expressing your reasons and its significance for undertaking the study. Include project objectives and methods in lay terms.

AVMA CVTEA accreditation standards maintain that the VETT curriculum must prepare graduates who will be fully capable of performing in a wide variety of professional roles within the veterinary field. At the completion of the curriculum, graduates must have attained entry-level skills needed to support companion animal, equine, food animal practice, biomedical research, and other veterinary medical activities. The

curriculum shall provide a foundation in veterinary technology that will prepare the student to successfully become credentialed. Procedures include, but are not limited to, physical examination, manual restraint, administration of medications, sample collection techniques (urine, feces, blood, culture swabs, etc), injection techniques (subcutaneous, intramuscular, intravascular), catheter placement (urinary, intravenous), surgical preparation and nursing, and imaging techniques.

Section 3

3-A Provide the rationale and purpose of the proposed use of this species of animals. (State briefly why living vertebrates, especially the species you are using, are required rather than some alternative model). If there are any departure from "The Guide" explain in this section.

AVMA CVTEA accreditation standards maintain that the VETT program must prepare graduates who will be fully capable of performing in a wide variety of professional roles within the veterinary field. At the completion of the curriculum, graduates must have attained entry-level skills needed to support companion animal, equine, and food animal practice, biomedical research, and other veterinary medical activities. This is accomplished through experiential learning and each student accomplishing AVMA CVTEA prescribed and required psychomotor (hands on) competencies and skills on the variety of live animal species listed in this protocol. (See AVMA CVTEA Accreditation standards, Appendix I, Veterinary Technology Student Essential and Recommended Skills List, included with this protocol.

Section 4

4-A Explain how you determined the total number of animals requested.

AVMA CVTEA accreditation standards state that each student MUST accomplish AVMA CVTEA prescribed and required psychomotor (hands on) competencies and skills on the live animals species listed in this protocol. (See AVMA CVTEA Accreditation standards, Appendix I, Veterinary Technology Student Essential and Recommended Skills List and Animal usage frequencies, included with this protocol.) The total numbers were calculated based on the anticipated numbers of students enrolled in the VETT program, the required hands on competencies for each student and the IACUC approved animal usage procedure frequency and maximum housing abilities of the various facilities.

4-B Indicate all treatment and /or study groups. (Example: 5 animals / treatment group X 5 treatment groups / study group X 4 study groups = 100 animals required)

15 dogs per semester x 6 semesters = 90 dogs, 18 cats per semester x 6 = 108 cats, 15 cattle/sheep/goat/pig/horses per semester x 6 = 45 each species, 4/snakes/lizards/tortoises each year x 3 years = 12 each species, 12 chickens per year x 3 years = 36 chickens, 12 rabbits per year x 3 years = 36 rabbits

Section 5

5-A Document that alternative procedures to the ones you are using are not available and cite literature supporting the proposed animal methodology.

Mannequins are available and utilized in the VETT program for students to learn to listen for heart and respiratory sounds, feel for femoral pulses, place an endotracheal tube, and draw blood from and insert intravenous catheters in the cephalic vein. Other animal alternatives that also exist and are often used in place of live animals in teaching /research include: cell tissue cultures, cadavers, videos, and 3-dimensional interactive programs. These alternatives will be used for students to become comfortable with various procedures before attempting them on live animals in adherence to the 3 Rs (Refinement, Replacement and Reduction). However many AVMA CVTEA required psychomotor competencies MUST be accomplished using live animals.

Section 6

6-A **Provide a complete, detailed description of the proposed use of the animals. Describe exactly what you will do to the animals while they are alive and potential for discomfort, injury, or death resulting from use of the animals. Include ALL procedures / treatments in your project that will be imposed on the live animals in chronological order. Cite literature / published protocols supporting use of the proposed procedures.**

Please see the, AVMA CVTEA Standards for Accreditation, Appendix I (included with this protocol), for a comprehensive list of all procedures involving the use of live animals performed in the VETT program at TAMUK. All procedures will be conducted by or under the supervision of a State of Texas licensed veterinarian in good standing. IAW State and Federal laws and regulations (9 CFR AWR and The Texas Veterinary Practice Act)

Section 7

A. **Does this protocol involve Major survival surgery?** **Yes**

If yes must consult with the IACUC Attending Veterinarian and complete the Surgery / Procedures Appendix (http://www.tamuk.edu/osr/Forms/index.html)

B. **Does this protocol involve Minor survival surgery?** **Yes**

C. **Does this protocol involve Medically Necessary survival surgery?** **Yes**

If yes must consult with the IACUC Attending Veterinarian

Section 8

8-A. **Do you anticipate more than momentary pain, discomfort, distress, and potential injury from the proposed activities?**

☑ **Yes** ☐ **No**

8-B. **Explain why / why not:** (An answer is required, provide citations when applicable.)

There are procedures that may cause more than momentary pain and/or distress such as ovariohisterectomies and orchiectomies. These procedures, performed by a licensed veterinarian, are necessary to create conditions requisite to accomplishing prescribed AVMA CVTEA Appendix I competencies. All procedures are in compliance with accepted standards of care within the field of veterinary medicine.

Section 9

9-A. **Do the proposed animal activities involve potentially painful procedures or death of the organism?** (Painful procedures include procedures but are not limited to USDA Pain Categories D and E. Please see Definition and Examples of USDA Pain and Distress Categories in back of this application).

☑ **Yes** ☐ **No** **If YES, complete the following:**

9-B. **List the analgesics, anesthetics and (or) tranquilizing drugs and their dosages and routes of administration used to minimize discomfort, distress, pain and injury.**

All procedures will be conducted by or under the supervision of a State of Texas licensed veterinarian in good standing and IAW State and Federal laws and regulations (9 CFR AWR and The Texas Veterinary Practice Act).

Example Canine pain management options:

Anesthesia (local and general), analgesia, tranquilizers, sedatives:

1. Acepromazine, preoperative 0.02-0.2 mg-kg IM, IV, or SQ
2. BAG preoperative 1mL/20# IM (Butorphanol/Ace/Glycopyrolate)

3. Hydromorphone preoperative 0.05mg/kg IM
4. Ketamine induction 5.5-22 mg/kg IV, IM
5. Xylazine induction I .I mg/kg IV, IM
6. Diazepam induction 0.5mg/kg IV
7. Dexdomitor induction 7.5mcg /kg IM
8. Propofol induction 2-4mg/kg (to effect) IV
9. Isoflurane induction 0.5-5% (to effect) inhalant or maintenance 0.5-5% (to effect) inhalant
10. Carprofen postoperati vely 2 mg/lb q 24 hrs x 5 days PO, SQ
1 1. Butorphanol postoperatively 0.3 mg/kg SQ, IM
12. Buprenorphine postoperatively 0.005-0.0I mg/kg SQ, IM, Oral Sublingual

*A mixture of any of the above drugs may be used for canine procedures necessitating sedation.
** IV volume of anesthetic drugs injected not to exceed 20 mL, IM volume of anesthetic drugs injected not to exceed 15mL.
***A patient may not be sedated or anesthetized for any procedure more than once per week unless deemed medically necessary

9-C. If any procedure(s) will cause pain or distress and analgesia / anesthesia cannot be administered, list each procedure with justification for the exclusion of analgesia / anesthesia.

N/A

9-D. If painful or stressful outcomes occur in this project, describe the criteria and process for timely intervention, removal of animals from a study, or euthanasia. Wildlife capture and handling may qualify as a painful or stressful outcome. Animals that would otherwise experience severe or chronic pain or distress that cannot be relieved must be painlessly euthanized at the end of the procedure or during the procedure, if appropriate.

All procedures will be conducted by or under the supervision of a State of Texas licensed veterinarian in good standing and IAW State and Federal laws and regulations (9 CFR AWR and The Texas Veterinary Practice Act) and AVMA guidelines. Species specific post-operative pain management protocols are in place.

9-E. Document that less invasive procedures to the ones you are using are not available and cite literature supporting the proposed animal methodology.

Alternatives to the use of live animals in procedures that will likely cause more than momentary pain and/or distress were considered. The following methods/databases were searched for such alternatives and no sufficient alternatives were found:

AGRICOLA Database (National Agriculture Library) http://www.nal.usda.gov
MEDLINE Database http://medline.cos.com/
ERIC EDUCATIONAL RESOURCES INFO center http://www.eduref.org/Eric/
TOXNET Web Interface http://www.toxnet.nlm.nih.gov/
BIOSIS Database http://www.biosis.org/
ANIMAL WELFARE INFO Center (AWIC) http://www.nal.usda.gov/awic/index.html
PUBMED http://www.ncbi.nlm.nih.gov/PubMed/
Lab Animal Journals/magazines

Keywords used in search:
Animal alternative surgery, live animal alternative surgery, post-operative live animal care alternative,animal spay alternative, animal castration alternative, animal neuter alternative

Section 10

10-A. Do these activities unnecessarily duplicate previous experiments or teaching / demonstration?

☐ **Yes** ☑ **No**

10-B Explain why / why not: (An answer is required, provide citations when applicable.)

10-C. Was a veterinarian other than the IACUC attending veterinarian consulted on the animal procedure?

☑ Yes ☐ No **If YES, name the veterinarian below:**

Dr. Clayton D. Hilton, Dr. Cariann Galloway

10-D. Are the activities such that a consultation with the IACUC Attending Vet is required prior to approval?

☐ Yes ☑ No If YES, enter the consultation date:

Section 11

11-A Veterinary care provided by whom?

Dr. Clayton Hilton and/or Dr. Cariann Galloway

11-B All health, veterinary treatment, surgical, wildlife capture, and wildlife handling records must be available for review by the IACUC. Location of these records:

All files (electronic and hard copies) are located at the TAMUK Veterinary Technology Facility

Section 12

12-A If euthanasia of any animal(s) is necessary during the project, list the method / agent of euthanasia: (Include dosages and route of administration where applicable).

If necessary, it will be performed by a State of Texas licensed veterinarian in good standing and IAW State and Federal laws and regulations (9 CFR AWR and The Texas Veterinary Practice Act) and 2013 AVMA guidelines for the Euthanasia of Animals.

12-B Is this method consistent with the recommendation of the 2013 AVMA Guidelines for the Euthanasia of Animals? (See https://www.avma.org/KB/Policies/Documents/euthanasia.pdf)

☑ Yes ☐ No

If NO; give justification for not following the most current AVMA Guidelines recommendation.

Section 13

13-A State the disposal of euthanatized or perished animals at the end of the study (landfill, biosafety waste disposal company, return to natural habitat, etc.)

Any euthanized animals would be used for teaching purposes (if appropriate) and then disposed of through Envirotech Carriers (a hazardous waste company).

Section 14: Prescription Drug(s) and Controlled Substances

14-A. Does this protocol include prescription drug(s) that ARE NOT controlled substances?

☑ Yes ☐ No

14-A-1. If YES, has the use of the drug(s) been approved by a veterinarian?

☑ Yes ☐ No

14-A-2. If YES, name the approving veterinarian below:

Clayton D. Hilton

14-B Does this protocol include prescription drug(s) that ARE a controlled substance(s)?

☑ Yes ☐ No

14-B-1. If YES, has the use of the controlled substance(s) been approved by a veterinarian?

☑ Yes ☐ No

14-B-2. If YES, name the approving veterinarian below:

Clayton Hilton

14-B-3. If YES, is your DEA Registration on file with The Office of Research & Graduate Studies (ORGS) and with Enterprise Risk Management (ERM):

☑ Yes ☐ No

Section 15

All individuals involved in this project must be appropriately qualified and trained in the proposed animal use and care. List the personnel, including their title / position and describe their training and experience with the procedures used in this project. Training may include on-line classes, in-person classes, or workshops. Give the years of training / experience with each species in this protocol. Indicate if the CITI Research Course that has been completed for each individual. To meet Export Control Regulations, please identify Non - U.S. personnel so ORGS can screen for any restrictions.

Add or Delete Rows

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Name Clayton D. Hilton

Title Director of Veterinary Technology

Job Position: Faculty

Species wide range of vertebrate taxa including all species listed on this protocol

CITI Course Working with the IACUC

Other Training Multiple CITI modules, B.S. Wildlife Biology, M.S. Wildlife Ecology, DVM, Large Animal Medicine & Surgery Internship

Experience 24 years of experiences as a veterinarian

Citizenship Country

CITI Completion

CITI Expiration

OHP Enrollment

OHP Expiration

RPS Date

Restrictions?

☐ YES ☐ NO

Add or Delete Rows

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Name Christine Hoskinson

Title Assistant Director of Veterinary Technology

Job Position: Staff

Species wide range of vertebrate taxa including all species listed on this protocol

CITI Course Working with the IACUC

Other Training Multiple CITI modules, B.S. Wildlife Biology, M.S. Range & Wildlife Management

Experience 11 years as a licensed veterinary technologist

Citizenship Country

CITI Completion

CITI Expiration

OHP Enrollment

OHP Expiration

RPS Date

Restrictions?

☐ YES ☐ NO

Add or Delete Rows

+ -

Name Cariann Galloway

Title Assistant Professor to the Profession

Job Position: Faculty

Species Wide range of vertebrate taxa

CITI Course Basic Biosafety

Other Training

Experience Over 10 years as a veterinarian

Citizenship Country

CITI Completion

CITI Expiration

OHP Enrollment

OHP Expiration

RPS Date

Restrictions?

☐ YES ☐ NO

Add or Delete Rows

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Name Tiffany Pope

Title Instructional Veterinary Nurse II

Job Position: Staff

Species Wide range of taxa, including all species on this protocol

CITI Course Working with the IACUC

Other Training CITI modules, B.S. Veterinary Technology, M.S. Range and Wildlife Management. ALAT Certified

Experience Over 10 years of experience as a licensed veterinary technologist

Citizenship Country

CITI Completion

CITI Expiration

OHP Enrollment

OHP Expiration

RPS Date

Restrictions?

☐ YES ☐ NO

Add or Delete Rows

+ -

Name Julia Rogers

Title Instructional Veterinary Nurse I

Job Position: Staff

Species Wide range of taxa, including all species on this protocol

CITI Course Basic biosafety

Other Training

Experience Over 9 years as a licensed veterinary technician

Citizenship Country

CITI Completion

CITI Expiration

OHP Enrollment

OHP Expiration

RPS Date

Restrictions?

☐ YES ☐ NO

Add or Delete Rows		
+ -	**Name** Christina Loftin **Title** Instructional Veterinary Nurse I **Job Position:** Staff **Species** Wide range of taxa **CITI Course** Basic biosafety **Other Training** M.S. in Sociology **Experience** Over 12 years as a certified veterinary technician **Citizenship Country**	**CITI Completion** **CITI Expiration** **OHP Enrollment** **OHP Expiration** **RPS Date** **Restrictions?** ☐ YES ☐ NO