

Audra Harl

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Education

Ph.D

Virginia Tech

Major: Animal Science, September 2018

GPA: 3.89

Advisor: Dr. Michelle Rhoads

Emphasis: Oocyte physiology and influence of heat stress on fertility of cattle.

M.S.

Kansas State University

Major: Animal Science, August 2014

GPA: 3.3

Advisors: Dr. David Grieger & Dr. Brian Faris

Emphasis: Estrous synchronization, superovulation in sheep and goats.

B.S.

California State University, Chico

Major: Animal Science, May 2012

GPA: 3.5

Experience

Assistant Professor, Animal Science

College of Agriculture and Human Science

Prairie View A&M University

Sept 2018-Present

- Designed engaging course material to facilitate active learning
- Assembled student assessments to determine concept comprehension
- Incorporated new learning technology to encourage student engagement with course material
- Developed independent study course material for special topics students
- Collaborated with faculty to conduct teaching research studies
- Conducted research on student retention in animal science
- Developed original research proposal for university grant submission
- Authored research proposal for junior faculty grant submission
- Served on student retention task force

Graduate Research Assistant

Virginia Tech Department of Animal and Poultry Sciences

Aug 2015-Aug 2018

- Developed experimental *in-vitro* embryo culture media.
- Designed innovative research projects for graduate studies.
- Collected oocytes from ovaries via needle aspiration.
- Cultured oocytes for *in-vitro* fertilization.
- Prepared semen for *in-vitro* fertilization.

- Fertilized oocytes for *in-vitro* culture.
- Studied embryo development in culture.
- Analyzed gene expression in blastocysts via PCR.
- Evaluated ovarian dynamics via rectal ultrasound.
- Practiced safe animal handling for beef and dairy cattle.
- Artificially inseminated cattle.
- Designed biopsy needles and holding pipets for micromanipulation of oocytes/embryos.
- Assisted in the collection of oocytes via trans-vaginal ultrasound-guided aspiration.
- Assisted in swine handling for reproductive and nutrition research.
- Evaluated feed intake and weight gain of swine on trial.
- Performed tissue collections on gilts for gene expression analysis.
- Developed curriculum for Physiology of Reproduction class.
- Developed experiential learning curriculum for Physiology of Reproduction laboratory section.
- Guest lectured for Physiology of Reproduction.
- Reviewed submitted manuscripts for scientific publication.
- Attended scientific conferences to present research data.
- Conducted statistical analyses on collected data.
- Proposed novel research ideas to grant funding committees.
- Prepared manuscripts for publication in scientific journals.

Graduate Teaching Scholar

Virginia Tech Department of Animal and Poultry Sciences

Aug 2016-Aug 2018

- Attended seminars to cultivate teaching pedagogy.
- Created research proposals for teaching.
- Developed documents for teaching toolbox including syllabi, course proposals, classroom management strategies, and grading rubrics.
- Developed courses for the animal science and agricultural education department.
- Served as Instructor on Record for undergraduate courses.
- Provided constructive feedback to peers on teaching materials such as lesson plans and syllabi.
- Presented teaching research data at NACTA conference.

Lead Teaching Assistant-Physiology of Reproduction

Jan 2016-May 2018

Virginia Tech, Department of Animal and Poultry Sciences

- Coordinated teaching schedule for graduate teaching assistants.
- Developed hands-on activities for enhanced experiential learning.
- Conducted laboratory sessions including lecture and lab activities.
- Created quiz and lab exam materials for students.
- Graded student quizzes, lecture exams, and lab exams.

- Managed grade book for lecture and lab sections.
- Designed and conducted novel research evaluating effectiveness of experiential learning in the lab.

Lecturer

Aug 2014-Jun 2015

California State Polytechnic University, Pomona, Pomona, CA

- Researched and designed new course curriculum.
- Created student assessments and provided feedback on results.
- Provided mentoring to students on an academic level.
- Actively led class discussions and encouraged critical thinking skills.
- Participated in student advising and course recommendations.
- Advised undergraduate students on course schedules.
- Assisted undergraduate students in graduate program searches.

Herd Manager

Kansas State University Sheep and Meat Goat Center, Manhattan, KS

May 2013 - Aug 2014

- Performed and supervised daily care of 200 ewes and 50 does including nutritional, parasite, and reproductive management.
- Conducted lamb/kid processing including vaccinations, tail docking, ID tags, and weight.
- Managed undergraduate student team including student scheduling, training, and team-building.
- Ordered supplies and equipment needed for efficient operation of center.
- Handled public relations for the center including school tours, laboratory preparation and execution, and extension events.
- Created and managed sustainable budget for the center.
- Supervised all research trials including data collection and daily care of livestock.
- Created and supervised daily care records and health treatment records for all livestock.
- Selected classes of sheep and goats for the use of the Livestock Judging Team.

Graduate Research Assistant

Kansas State University, Sheep and Meat Goat Science, Manhattan KS

2012 – 2014

- Guest lectured for classes at the university and surrounding community colleges.
- Presented informative seminars on research topics.
- Created quizzes and exams.
- Proposed and executed novel research trials in multiple species.
- Collected and analyzed data during research trials.
- Processed blood samples for hormone analysis.
- Analyzed data to determine statistical results of research.
- Composed scientific articles for publication.
- Prepared interactive laboratory exercises.
- Planned and conducted laboratory sessions for anatomy and physiology

- and reproductive physiology courses.
- Graded exams and quizzes.
- Managed grade book.
- Served as an undergraduate student mentor.

Research Assistant

California State University, Chico – College of Agriculture, Chico CA May-Aug 2011

- Collected data for a reproductive study sponsored by the Northern California Meat Goat Association.
- Analyzed data to determine statistical results of research.
- Followed strict daily feeding protocols and daily data collection.
- Input collected data into spreadsheets for analysis.

Leadership

Future Professoriate Certificate, Virginia Tech Aug 2018

- Completed courses designed to enhance pedagogy development.
- Attended seminars on developing course content, syllabus construction, and lesson planning.

Kansas State University College of Agriculture Graduate Student Association

- President Aug 2013 – Jan 2014
 - Conducted monthly meetings.
 - Managed correspondence with campus graduate student council.
- Vice President Jan-Aug 2013
 - Recorded student work hours.
 - Ordered supplies needed for catering workers.

Kansas State University College of Agriculture

- Undergraduate Student Mentor Aug 2012-May 2014
 - Met weekly with students to discuss graduate school.
 - Assisted students with manuscript preparation.
 - Supervised students during research trials.

Chico St. Baldrick's Feb – Apr 2011

- Formed a team that raised funds to benefit childhood cancer research.

Ag Ambassadors, Merced College and CSU Chico Aug 2008 – May 2012

- Organized competition committees, planned recruitment and leadership workshops, planned and supervised events. Served as chair for FFA Field Day (March/April 2010).

Phi Theta Kappa, Merced College

2007-2009

- Performed community service. Organized “Locks of Love” program.
- Coordinated scholarship essay contest.
- Served as secretary for two years.

Research**Virginia Tech**

- Effects of estradiol concentration in follicular fluid on embryo development after follicular fluid culture *in-vitro*. Jan 2016-May 2016
- Using tactile-based activities to improve knowledge retention in laboratory sections Aug 2016-Present

Kansas State University

- Evaluation of estrus synchronization in 14 d vs. 7 d progesterone inserts with PGF_{2α} in ewes. Oct 2012-Mar 2014
- Soyhull vs. Corn-based pelleted diets & their effects on kid growth. Sept-Dec 2013
- Effects of superovulation with FSH on CL function in Boer goats. Nov-Dec 2013
- Effects of progesterone insert and PGF_{2α} protocols on estrous synchronization in Boer goats. May-Jun 2014

California State University, Chico

- The effect of genetics on average daily gain and backfat thickness in intact male goats. Jun-Aug2011
- High protein vs. high fat topdress on lamb growth. Aug-Nov 2011
- The effect of male pheromones on estrus synchronization in out-of-season ewes. Mar-May 2012

Teaching**Prairie View A&M University**

Sept 2018-Present

- General Animal Science
 - Instructor on record
- Disease and Sanitation
 - Instructor on record

Virginia Tech

Aug 2015-May 2018

- Physiology of Reproduction Lab
 - Instructor on record
- Introduction to Undergraduate Research Summer 2017

- Instructor on record
- Physiology of Reproduction Aug 2016-May 2018
 - Guest lecture
- Governor's School for Agriculture-Livestock Reproduction July 2017
 - Workshop
- California Polytechnic University, Pomona** Aug 2014-Jun 2015
 - Instructor on record
 - Intro to Food Animal Production
 - Agriculture in the Modern World
 - Special Topics in Animal Science
 - Ethics in Agriculture
- California State University, Chico** Apr 2014
 - Reproductive Management and Artificial Insemination in Goats
 - Clinic instructor
- Kansas Sheep Association** Feb 2014
 - Reproductive management of sheep
 - Presentation of data at annual meeting
- State Fair Community College** Nov 2013
 - Management of Small Ruminants
 - Guest lecture
- Kansas State University** Sept 2013
 - Male and Female Anatomy of Small Ruminants
 - Guest lecture
- Riley County 4-H** Oct 2013
 - Management of sheep and goat projects
 - Workshop
- Glenn County 4-H** Oct 2013
 - Beginning a goat breeding project
 - Workshop
- Kansas State University** Oct 2013
 - FAMACHA & Parasite Control of Small Ruminants
 - Guest lecture
 - Reproduction in Small Ruminants
 - Guest lecture
- Merced Community College** Mar 2011
 - Opportunities at CSU, Chico
 - Recruitment presentation

Manuscripts

C.R. Philips, Doyle, S.P., **Harl, A.**, C.B. Carpenter, and Aschenbrenner. 2015. Effect of almond hull level in a finishing diet on lamb growth and carcass performance. *J. Ag and Life Sci.* (2):11-15.

Manuscripts in preparation

Audra W. Harl, M.L. Rhoads, D. Westfall-Rudd. (Accepted). Incorporating tactile activities in reproductive physiology laboratory sections to improve cognitive learning. *NACTA Journal*.

Abstracts

Audra W. Harl, Larimore EL, Al Naib A, et al. 182 Maturation of bovine cumulus-oocyte complexes with follicle fluid varying in estradiol content affects cumulus cell expansion without affecting subsequent embryo development *in vitro*. *Reproduction, Fertility and Development*. 2017;29:199.

Audra W. Harl, M.L. Rhoads. Using Active Learning Activities to Improve Student Knowledge Retention in Laboratory Sections. *Conference of Higher Education Pedagogy*. 2017;35:18.

Submitted Grants

Audra W. Harl, Daley, M., Kidane, N. (2019). Comparison of gonadotropin releasing hormone analogues (Cystorelin, Factrel) administered as an epidural during estrous synchronization on fertility in Brangus cattle. FY2019 Research Development Grant Program, Prairie View A&M University.

Audra W. Harl. 2017. Mitigating damaging effects of heat stress on *Bos taurus* oocytes by reconstruction with *Bos indicus* ooplasm. Virginia Tech Graduate Development Program Grant.

Seminars and Professional Presentations

International Embryo Transfer Society Annual Meeting, January 2017. Maturation of bovine cumulus-oocyte complexes with follicle fluid varying in estradiol content affects cumulus cell expansion without affecting subsequent embryo development.

- Graduate poster presentation

Conference on Higher Education Pedagogy, February 2017. Using Active Learning Activities to Improve Student Knowledge Retention in Laboratory Sections.

- Graduate poster presentation

Department of Animal and Poultry Sciences, Virginia Tech, April 2016. Bovine Oocyte Ultrastructure and Oocyte Competence.

- Departmental seminar

Department of Animal and Poultry Sciences, Virginia Tech, September 2016. Active Learning-based Activities in Reproductive Physiology Labs.

- Departmental seminar

Department of Animal Science, Kansas State University, August, 2014. Comparison of short-term vs long-term estrous synchronization protocols using CIDR devices in sheep and goats during and outside the natural breeding season.

- Thesis seminar

Department of Animal Science, Kansas State University, May 2014. Induction of cyclicity in anestrous does.

- Departmental seminar

Department of Animal Science, Kansas State University, April 2013. The effects of superovulatory protocols on early corpus luteum regression and embryo recovery via non-surgical embryo transfer in goats.

- Departmental seminar

Skills

Microsoft Office

- Word documents
- Excel
- Powerpoint

Polymerase Chain Reaction (PCR)

- Relative gene expression in reproductive tissues and embryos.

In vitro embryo culture

- Generation of cattle embryos suitable for transfer or research *in vitro*.

Ultrasonography

- Use of ultrasonography for the purpose of ovarian structure identification, follicular dynamics, ovulation, corpus luteum function, and pregnancy diagnosis, and fetal sexing in cattle.
- Pregnancy & gestational age determination in sheep and goats.

Artificial insemination

- Certified to artificially inseminate goats. Apr 2011
- Certified to artificially inseminate cattle. Mar 2012

Statistical analysis

- Proficient in Statistical Analysis Software (SAS).

Grant writing

- Graduate Research Development Grant Mar 2017
- *Virginia Tech Graduate Student Assembly*
- USDA Exploratory Research Grant Jun 2017

Trailer driving

- Gooseneck trailer hookup, hauling, backing.
- Ball trailer hookup, hauling, backing.

Institutional Animal Care and Use Committee Successful Applications

- Evaluation of estrus synchronization in 14 d vs. 7 d progesterone inserts with PGF_{2α} in ewes. Oct 2012
- Effects of superovulation with FSH on CL function in Boer goats. Nov 2013
- Effects of progesterone insert and PGF_{2α} protocols on estrous May 2014

synchronization in Boer goats.

- Effects of estradiol concentration in follicular fluid on embryo development after follicular fluid culture *in-vitro*. Jan 2016

Institutional Review Board Successful Applications

- Using Active Learning Activities to Improve Student Knowledge Retention in Laboratory Sections Aug 2016
- Utilizing Online Course Enhancement Materials to Improve Student Knowledge Retention in Reproductive Physiology Aug 2016

Professional Organizations

North American Colleges and Teachers of Agriculture	Feb 2017-present
International Embryo Transfer Society	Aug 2016-present
Society for the Study of Reproduction	Feb 2016-present
American Dairy Science Association	Feb 2017-Present

Clubs and Extracurricular Activities

Southwest Virginia Rabbit Breeders Association Oct 2015-Present

- Raised and trained rabbits for exhibition.
- Managed show setup and teardown.
- Assisted judges with animal evaluation.

Kansas Meat Goat Association Jan 2012-Aug 2014

- Presented novel and relevant topics to Kansas meat goat producers including nutritional management, parasite management, and reproductive management of meat goats.
- Hosted annual livestock show at Kansas State Sheep and Meat Goat facility.

Kansas Sheep Association Aug 2013-Aug 2014

- Hosted annual meeting at KSU Sheep and Meat Goat Center.
- Presented relevant research data to producers and stakeholders.
- Organized workshops for 4-H/FFA sheep projects.