

Curriculum Vitae

NAME: Christianne Magee

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Pronouns: she/her/ella

EDUCATION

- 2000 BS (Biotechnology), Worcester Polytechnic Institute, Worcester, MA, USA
- 2004 DVM, Cummings School of Veterinary Medicine at Tufts University, North Grafton, MA, USA
- 2007 MS (Clinical Sciences), Colorado State University, Fort Collins, CO, USA
- 2007 Diplomate, American College of Theriogenologists (equine reproduction specialist)
- 2010 PhD (Biomedical Sciences), Colorado State University, Fort Collins, CO, USA

CV SECTION 1: Employment History and Awards

ACADEMIC POSITIONS

- 2021-present Associate Professor (with tenure) Department of Biomedical Sciences, College of Veterinary Medicine and Biomedical Sciences, Colorado State University, Fort Collins, CO.
- 2018-2021 Assistant Professor, Regular Appointment (TT), Department of Biomedical Sciences, College of Veterinary Medicine and Biomedical Sciences, Colorado State University, Fort Collins, CO.
- 2012-2018 Assistant Professor, Special Appointment (NTT), Department of Biomedical Sciences, College of Veterinary Medicine and Biomedical Sciences, Colorado State University, Fort Collins, CO.

JOB DESCRIPTION

	%Teaching/ Mentoring	% Research / Creative Activity	% Service / Outreach	% Administrative
2018-present	65	20	15	0

HONORS AND AWARDS (since 2008)

- 2022 *Veterinarian of the Year*, Colorado Veterinary Medical Association. Nominated by students and faculty for my service and dedication to advancing education in the veterinary profession.
- 2011-2015 *Clinical Award* (\$96,000) from National Institutes of Health (NIH) Contraception and Infertility Loan Repayment Program (LRP), funded by National Institute of Child Health and Human Development (NICHD)
- 2013 *Teaching Fellow*, The Institute for Teaching and Learning (TILT) at Colorado State University. TILT/Reinvention Center Science of Learning Course Development Competition is an ambitious effort to enhance learning, increase engagement, and promote pedagogical innovation undergraduate course redesign. Department heads must support faculty applications and selection is made by TILT. This opportunity was used to re-design BMS305 and create a programmatic vision for animal anatomy instruction in BMS.
- 2008-2010 *Trainee*, NIH Training Grant in Mammalian Reproductive Biology (T32-HD007031). Animal Reproduction and Biotechnology Laboratory, Department of Biomedical Sciences, Colorado State University, Fort Collins, CO
- 2009 *Young Investigator Award*, American Quarter Horse Foundation. Competitive award to support the applicant and their research.
- 2008 *Storm Cat Career Advancement Award*, Grayson Jockey Club Foundation. One time (\$20,000) personal award intended to support the development of promising equine investigators.

CV SECTION 2: Publications/Scholarly Record

PUBLISHED WORKS

Refereed Journal Articles (*corresponding author; #honors thesis student):

1. Martin JF, Arnold OR, Linton A, Jones JD, Garrett AC, Mango DW, Juarez KA, Gloeckner G, ***Magee C**. 2022. How Virtual Animal Anatomy Facilitated a Successful Transition to Online Instruction and Supported Student Learning During the Coronavirus Pandemic. *Anatomia, Histologia, Embryologia*. PMID: 35243669. 1 citation as of 8-2022.
2. #Lee S, Wendland TM, Rao S, ***Magee C**. 2021. Orthotic Device Use in Canine Patients: Owner Perception of Quality of Life for Owners and Patients. *Frontiers in Veterinary Science*. 2021; 8:1264. PMID: 34805329.
3. Linton A, Garrett AC, Ivie KR, Jones JD, Martin JF, Delcambre JD, ***Magee C**. 2021. Enhancing anatomical instruction: Impact of a virtual canine anatomy program on learning outcomes. *Anatomical Sciences Education*. PMID: 33838080. 2 citations as of 8-2022.
4. *Hollinshead FK, Ontiveros M, Burns JG, **Magee C**, Hanlon DW. Factors influencing parentage ratio in canine dual-sired litters. *Theriogenology*. 2020;158:24-30. PMID: 32927197. 5 citations as of 8-2022.
5. ***Magee C**, Bruemmer JE, Kirkley KS, Sylvester LA, Runyan B, Nett TM, Squires EL, Clay CM. Kisspeptin has an independent and direct effect on the pituitary gland in the mare. *Theriogenology*. 2020;157:199-209. PMID: 32814247. 1 citation as of 8-2022.
6. ***Magee C**, #McDaniel S, Turk P, Striegel N, Roman-Muniz IN. Information-Seeking Preferences of the Colorado Equine Industry for Distribution of Disease Outbreak Information. *J Equine Vet Sci*. 2020;91:103126. PMID: 32684264.
7. Murtazina DA, Arreguin-Arevalo JA, Cantlon JD, Boroojeny AE, Shrestha A, Hicks JA, **Magee C**, Kirkley KS, Jones KL, Nett TM, Chitsaz H, *Clay CM. 2020. Enrichment of ovine gonadotropes via adenovirus gene targeting enhances assessment of transcriptional changes in response to estradiol. *Biology of Reproduction*, 102:156-169. PMID: 31504222. 3 citations as of 8-2022.
8. Urias-Castro CA, Arreguin-Arevalo JA, **Magee C**, Weber E, *Nett TM. 2019. Hypothalamic Concentrations of Kisspeptin (KP) and Gonadotropin-Releasing Hormone (GnRH) during the Breeding Season and Non-Breeding season in Ewes. *American Journal of Reproductive Immunology*. 82:e13146. PMID: 31206871. 4 citations as of 8-2022.
9. Hall H, **Magee C**, *Clapp T. 2016. 4-Step Model to Approach Case-Base Learning in the Classroom. *Journal of Adult Education* 45:24-27. 6 citations as of 8-2022.
10. Dang AK, Murtazina DA, **Magee C**, Navratil AM, Clay CM, *Amberg GC. 2014. GnRH evokes localized subplasmalemmal calcium signaling in gonadotropes. *Mol Endocrinol*. 28:2049-59. PMID: 25333516. 23 citations as of 8-2022.
11. **Magee C**, Bruemmer JE, Nett TM, Squires EL, *Clay CM. 2012. Kisspeptide in the estrous mare: Is it an appropriate ovulation-inducing agent? *Theriogenology*. 78:1987-96. PMID: 23040060. 11 citations as of 8-1-2022.
12. Seachrist DD, Johnson E, **Magee C**, Clay CM, Graham JK, Veeramachaneni DN, *Keri RA. 2012. Overexpression of follistatin in the mouse epididymis disrupts fluid resorption and sperm transit in testicular excurrent ducts. *Biol Reprod* 87:41. PMID: 22649074. 12 citations as of 8-1-2022.
13. **Magee C**, Foradori CD, Bruemmer JE, Arreguin-Arevalo JA, McCue PM, Handa RJ, Squires EL, *Clay CM. 2009. Biological and anatomical evidence for kisspeptin regulation of the hypothalamic-pituitary-gonadal axis of estrous horse mares. *Endocrinology*. 150:2813-21. PMID 19228887. 76 citations as of 8-1-2022.
14. *McCue PM, **Magee C**, Gee EK. 2007. Comparison of Compounded Deslorelin and hCG for Induction of Ovulation in Mares. *J Equine Vet Science*. 27, 58-61. 48 citations as of 8-1-2022.
15. *McCue PM, Logan NL, **Magee C**. 2007. Management of the transition period: hormone therapy. Tutorial article. *Equine Vet Educ*. 19, 215-221. 29 citations as of 8-1-2022.
16. *McCue PM, Logan NL, **Magee C**. 2007. Management of the transition period: physiology and artificial photoperiod. Tutorial article. *Equine Vet Educ*. 19, 146-150. 19 citations as of 8-1-2022.

Textbooks:

1. Falls AD and **Magee C**. 2018. *Anatomy and Physiology of Farm Animals*. 8th Edition. Wiley. (Reviewed in JAVMA 2019, 274 citations as of 8-1-2022)

Refereed Proceedings/Transactions (since 2019, *presenter):

1. *Martin JF, Linton A, Garrett A, Svec P, Mango D, **Magee C**. Comparing concurrent and consecutive enrollment in anatomy: a mixed method analysis. 2022 Veterinary Educators Collaborative of the American Association Veterinary Medical Colleges, Kansas State University, Manhattan, KS. Platform talk July 2022.

2. *Mango D, Applegate T, Hall K, Becker J, Echols S, **Magee C**. Vascular perfusion models for veterinary education using canine cadavers. 2022 Veterinary Educators Collaborative of the American Association Veterinary Medical Colleges, Kansas State University, Manhattan, KS. Poster presentation.
3. Mango D, Johnson J, Svec P, Garrett A, Ivie K, Echols S, ***Magee C**. Observations and initial impressions of a formaldehyde-free embalming technique for use in a canine cadaveric anatomical dissection course. 2022 Veterinary Educators Collaborative of the American Association Veterinary Medical Colleges, Kansas State University, Manhattan, KS. Poster presentation July 2022.
4. *Martin JF, Arnold O, Linton A, Garret A, **Magee C**. How Virtual Animal Anatomy Facilitated a Successful Transition to Online Instruction and Supported Student Learning During the Coronavirus Pandemic. 2022 CVMBS Research Day. Student Poster.
5. Martin JF, Linton A, ***Magee C**. Evaluating Learning Resources Developed as a Result of the 2020 COVID-19 100% Online Transition in the 2021 Hybrid Learning Environment. Western Consortium Regional Teaching Academy Biennial Meeting. Scholarship Platform Session. Online, July 2021.
6. *Salman S, Asghar A, **Magee C**, Winger Q, Bouma G, Bruemmer J. 2019. Establishment and characterization of Day 30 equine chorionic girdle and allantochorion cell lines. *Reproduction, Fertility and Development* 32, 171-171. Proceedings of the 2020 Annual Conference of the International Embryo Technology Society, New York, NY.
7. ***Magee C**, Kirkley K, Sylvester L, Runyan B, Clay C. 2019 Immunohistochemical evidence for kisspeptin signaling in equine gonadotropes. Society for Theriogenology Annual Conference. Poster Presentation. Savannah, GA.
8. *AC Garrett, *Ivie KR, Linton A, Martin JF, Delcambre JJ, Whalen LW, **Magee C**. Use of Virtual Canine Anatomy Improves Student Outcomes in an Undergraduate Domestic Gross Anatomy Course. 2019. American Association Veterinary Anatomists Annual Meeting. Poster Presentation. University of Calgary, Canada.
9. AC Garrett, Ivie KR, Linton A, Martin JF, Delcambre JJ, Whalen LW, ***Magee C**. Use of Virtual Canine Anatomy Improves Student Outcomes in a Domestic Gross Anatomy Course. 2019. Western Consortium Regional Teaching Academy Biennial Meeting. Scholarship Platform Session. UC Davis, California.

CONTRACTS & GRANTS ^αdisciplinary, ^δinterdisciplinary, ^φservice, ^εengagement

Externally-Funded Projects as PI (since 2018)

- ^δ2020-2022 "Virtual Bovine Anatomy: Pelvic Limb" \$150,000 *USDA-NIFA Higher Education Challenge*. Primary Objectives: 1) development of a 3D VBA Pelvic Limb module for DVM education; 2) the creation of an undergraduate (UG) Applied Food Animal Anatomy curricula; 3) engagement of UG and DVM students in learning, teaching, and outreach activities. Progress Report submitted in 2021 outlining launch of BMS380 (Aim 2) and work towards Aims 1 and 3 within the scope of the COVID pandemic
- ^α2017-2020 "Evaluation of Kisspeptin in the Pregnant Mare" \$113,000. *Grayson Jockey Club Foundation*, Lexington, KY. Aims: 1) Quantification of kisspeptin during equine pregnancy; 2) characterization of Kiss1/Kiss1r expression at the fetal-maternal interface. This work was interrupted by the pandemic and is being concluded with support from startup funds.

Externally-Funded Projects as Co-PI

- ^α2022-2023 "Evaluating extracellular vesicles from equine fetally-derived mesenchymal stem cells as an endometritis therapeutic" Role: Co-PI, PI: Hollinshead. Grayson-Jockey Club Research Foundation, \$45,418. Aim 1: assess equine fetally-derived mesenchymal stem cells for their anti-inflammatory cargo and their effects on reducing inflammation in an in vitro equine endometritis model.
- ^α2021-2022 "Exploring the Development of Relationships between Students and Faculty in Veterinary Medicine: A Mixed Methods Study Comparing Remote and In Person Techniques." \$3,000.00. PI: Marino T Western Consortium Regional Teaching Academy - Novel and Innovative Educational Research.
- ^α2021-2022 "Validation of chorionic girdle organoid cell culture as an in vitro source of equine chorionic gonadotropin" \$20,000.00, PI: Hollinshead FK The Foundation for The Horse. Primary Aim is to validate organoids for eCG production. Abstract submitted to the International Congress on Animal Reproduction meeting in 2022.
- ^α2021-2022 "Validation of chorionic girdle organoid cell culture as an in vitro source of equine chorionic gonadotropin" \$20,000.00, PI: Hollinshead FK The Foundation for The Horse. Primary Aim is to validate organoids for eCG production. Abstract submitted to the International Congress on Animal Reproduction meeting in 2022.
- ^α2021-2026 "Reproductive Biotechnology for Sustainable Animal Production: A Multidisciplinary Graduate Fellowship Program" PI: Tesfaye D. USDA-National Needs Fellowship. (Support of PhD student, Jason Martin, 2021.)
- ^α2020-2021 "Kisspeptins as Pro-apoptotic Mediators during Equine Endometrial Cup Demise" \$5,000. PI: Gomes VCL, Co-PI: Sones JL. Theriogenology Foundation. Primary Aim is to compare the spatiotemporal Kiss1/Kiss1r gene and protein expression during pregnancy. This has supported Gomes PhD work and I serve on her committee.

Externally-Funded Projects as Collaborator

^a2020-2021 "Equine fetally-derived mesenchymal stem cells (FDMSC) and their generated extracellular vesicles (EV) as a novel treatment for equine osteoarthritis." \$20,000. Co-PIs: FK Hollinshead & L Goodrich, AAEP Foundation for the Horse. Primary Aim is to demonstrate that EVs from FDMCS are a superior treatment for equine osteoarthritis. Preliminary data from this will support Hollinshead as PI for Boettcher and TMI TAP grants in 2022 and a manuscript is in progress.

Internally-Funded Projects as PI (since 2012)

^a2021-2022 "Determining the pituitary contribution to the delayed LH surge in obese ewes" \$23,356 CVMBS College Research Council, Colorado State University. Aim 1: To determine if the delayed and blunted estradiol-induced LH surge in obese ewes reflects a pituitary lesion. Our preliminary data clearly demonstrate that obesity leads to both a delayed and blunted LH surge in response to estradiol (E2). In this aim, we will first evaluate LH pulse frequency and amplitude in lean and obese ewes (Experiment 1). We will also determine if obesity is associated with attenuated pituitary and/or hypothalamic responses to E2 as assessed by pituitary GnRH receptor (GnRHR) expression (Experiment 2). In addition to a manuscript in preparation, this is serving a preliminary data for a resubmitted R21 with Clay-PI.

^a2020-2021 "Metabolic and Reproductive Consequences of Elevated Free Fatty Acids in Domestic Ruminants" \$25,000 CVMBS College Research Council, Colorado State University. Aim 1: By using normal weight, normally cycling ewes during diestrus, we test the specific hypothesis that increased circulating FFAs and hyperinsulinemia result in reduced pituitary sensitivity to GnRH in the normal ewe. Aim 2: Decreased pituitary sensitivity to GnRH is understood to be responsible in humans for the gonadotropin phenotype observed in reprometabolic syndrome. In this aim we propose to validate an in vitro model for reprometabolic syndrome using primary sheep pituitary cells by testing the specific hypothesis that E2 induced increase in specific gonadotrope gene expression will be eliminated (or reduced) by the presence of increased fatty acids in the culture media. In addition to a manuscript in preparation, this is served a preliminary data for an R21, Clay-PI.

^f2019-2020 "Development of a Curricular Mapping Tool" Role: PI, \$14,800. Colorado State University Provost's Digital Learning Initiative. Collaborative proposal with faculty from LIFE102, CVMBS BMS, MIP, ERHS, CSU DVM, and UC Denver medical program. The specific project deliverables include: 1) a curriculum map of BMS and LIFE102 student learning objectives; 2) a searchable database of BMS/LIFE102 student learning objectives; 3) course staffing information related to percent efforts and types of teaching for each course. Project not initiated and funding returned in 2021 due to COVID pandemic.

^d2013-2014 "Development of a Virtual Bovine Anatomy (VBA) Tool" Role: PI, \$23,500 CVMBS College Research Council, Colorado State University, Fort Collins, CO. The specific project deliverable was the bovine osteology module for VBA which served as preliminary data for USDA NIFA HEC grant applications.

^a2011-2012 "Measurement of Kisspeptin in the Horse" Role: PI, \$16,500 CVMBS College Research Council, Colorado State University, Fort Collins, CO. The specific project deliverable was an equine radioimmunoassay for kisspeptin that I developed and was necessary to secure a Grayson Jockey Club Research Foundation grant (2017-2020). The RIA methods and materials contributed to the Urias-Castro et al., 2019 manuscript.

Select Applications Submitted but not Funded (shown by year submitted, since 2019)

^a2020 "Convergent Mechanisms Underlying Reprometabolic Syndrome in Women and Sheep" Role: Co-PI, PIs: Clay C & Santoro N. Colorado Clinical and Translational Sciences Institute Co-Pilot grant. \$45,600.00. Primary Aim to demonstrate the fidelity of the obese sheep model for human reprometabolic syndrome.

^o2020. "Development of Virtual Reality to Train, Teach, and Simulate Veterinary Practice (phase anesthesia)" Role: Co-PI, PI: Boscan P. Aims: 1) Develop an interactive virtual reality application to simulate the practice of veterinary medicine (VetVR). Specifically, veterinary anesthesia for this phase. 2) Demonstrate that interactive systems using virtual reality enhances cognitive outcomes (knowledge and self-efficacy) as well as clinical skill outcomes (task process and professional skills) to improve professional performance, medical and anesthesia care. Submitted to the following: 1) American Kennel Club – Canine Health Foundation (\$49,795); 2) Colorado State University Office of the Vice President for Research Q1FY20 Award (\$20,000); 3) CSUVentures Launchpad Fuel Program

^e2019 Science Education Partnership Award (SEPA, R25 PAR-17-339, Limited Submission by CSU). "Fostering Diversity and Capacity in Biomedical Sciences and Veterinary Medicine through Outreach and Engagement." \$1.25M/5y Role: PI; Co-I: Gilbert John, PhD. Aims: to integrate the broad outreach activities in the CVMBS by scientifically evaluating current programmatic efforts, expanding impact, advancing collaboration, strengthening infrastructure, and broadening participation. **Program plan used to secure funding for Zoetis Pre-Veterinary Discovery Camp and model CVMBS Outreach Director position (Wade Ingle).**

PAPERS PRESENTED/SYMPOSIA/*INVITED LECTURES/PROFESSIONAL MEETINGS/WORKSHOPS (since 2017)

- 2022 "Virtual Animal Anatomy VR in Veterinary Anatomy Education" – VR demos at the Veterinary Educators Collaborative of the American Association Veterinary Medical Colleges, Kansas State University, Manhattan, KS.
- *2022 "Virtual Reality in Veterinary Education." Online Symposium between Colorado State University and Hokkaido University, Japan.
- 2021 "How High School Students with Limited Access to Mentoring in Veterinary Medicine Received College Credit and Experiential Learning: Veterinary Perspectives Virtual Institute" CSU Diversity Symposium. Fort Collins, CO.
<https://www.youtube.com/watch?v=ppkCZJdpoWc> – also accepted as a 2022 CSU TILT PDI Jan 12, 2022.
- *2021 "Evidence-based strategies for scaffolding anatomy learning." Louisiana State University School of Veterinary Medicine Seminar Series, Virtual Presentation.
- *2020 "Using Virtual Animal Anatomy to bridge the COVID-19 gap in cadaveric access and laboratory learning." [World Association Veterinary Anatomists 1st Online Meeting](#). Meeting abstract received highest score, resulting in the only abstract invited for platform presentation. Co-authors were the Spring 2020 VVET and Animal Anatomy teaching team: A Linton, A Garrett, K Juarez, and D Mango. Abstracts to be published in *Anatomia, Histologia, Embryologia*.
- *2020 "Development of 3D VR assets and Evaluation of VR in DVM teaching." Invited talk and VR demonstration at the UC Davis School of Veterinary Medicine. Davis, CA.
- *2019 "Virtual Animal Anatomy in DVM Education." E-Health Summer University. Invited talk and VR demonstration. Castres, France
- *2019 "Anatomical Education using Case Based Inquiry and Virtual Reality." Veterinary Medical Association Executives (VMAE) ThinkWorks Conference. Invited talk & VAA VR demonstrations. San Francisco, CA
- 2019 "Virtual Animal Anatomy – VR Education." Veterinary Innovation Summit. Selected start-up for VR demonstrations. College Station, TX
- 2018 "Virtual Animal Anatomy: From Research to Market." Presenter at Department of Biomedical Sciences Annual Retreat. Colorado State University, Estes Park, CO
- *2018 "Virtual Animal Anatomy - Japanese Translation." Invited talk at University of Hokkaido Veterinary School. Sapporo, Japan
- *2017 "Scaffolding Learning in Anatomy: The Pelvic Limb." Invited Talk at Tufts University Cummings School of Veterinary Medicine, Grafton, MA
- *2017 "Virtual Animal Anatomy: User Experiences and Future Directions." Invited Talks at Daktari Animal Hospital, Tokyo and University of Hokkaido Veterinary School. Sapporo, Japan
- 2017 "Virtual Animal Anatomy: User Experiences and Future Directions." Special Seminar, Department of Biomedical Sciences, Fort Collins, CO

COLLABORATIVE, INTERCOLLEGIATE & INTERDISCIPLINARY SCHOLARSHIP

Virtual Veterinary Education Tools (VVET) – 2012-present, Program Lead as of 2018

- - **Virtual Animal Anatomy (VAA)** is a suite of virtual anatomy (canine, feline, equine, bovine) software programs produced by the Virtual Veterinary Education Tools (VVET) group within the College of Veterinary Medicine and Biomedical Sciences. Designed as a virtual atlas for use in all areas of domestic animal anatomic instruction to enhance student learning and availability of instructional materials given the challenges of maintaining a cadaver laboratory and staff. I joined the team in 2012 under the leadership of Ray Whalen and following his retirement in 2018 became the Program Lead. My direct contributions to VVET include securing extramural funding (USDA, \$150,000), learner outcomes analyses of educational interventions, dissection, image acquisition, and annotation of the *Virtual Equine Anatomy*, *Virtual Feline Anatomy*, and *Virtual Bovine Anatomy*, as well as development and distribution for additional income (>\$200,000) from these programs. The VR program also continues to support other teaching, outreach and engagement efforts, but is not yet commercially distributed. This work is completed with the assistance of 2 full-time developer/programmers, 2-6 student employees working full-time during summer months and 10-20 hours work/week during the school year, and anatomy faculty in BMS. Prior to 2021, funding for VVET came from the DVM program (VTA \$25,000/year) and total faculty/staff BMS subsidized input to VAA program development was approximately \$250,000/year with the intention of creating a self-sustained financial model based on subscription services and limited use licensing of the 3D VR assets. In 2021, all of the DVM support for VTAs and some of the salary support of staff has been able to shift to program income and support from CSU Spur. My goal as Program Lead continues to be that VVET will be financially independent of CVMBMS and the DVM program by 2023.

My specific accomplishments as Program Lead (2018-present) include:

- **Supporting >12,000 learners at 148 different schools** from March-July 2020 during lockdown with free access to the VAA-LTI, leading to presentations at the World Association for Veterinary Anatomists meeting and worldwide recognition of our efforts at CSU.

- Completion of the **CSUVentures Research to Market** in 2018 program to improve my understanding of VAA's value proposition, target market, and market potential. Resulted in ***Invention Disclosure (INV18-084)*** for the Adobe Flash version of the program that generated more than \$25,000 in individual program sales 2018-2020.
- **VAA-LTI** - I initiated development of this HTML5 coded version of the software program to facilitate a subscription model of Software as a Service to other universities using a secure learning management system and a Learning Tool Interoperability (LTI) standard. ***Since July 2020, VAA-LTI has generated more than \$150,000 of direct income to BMS/CVMS.*** These funds contribute to additional program development and sustaining efforts in BMS and DVM anatomy. In 2021, an ADA compliance update of the software interaction was completed using consulting services from Perkins Access fro Perkins School for the Blind, paid for by VAA-LTI income.
- **VAA-Single User** - soft-launch September 2020. <https://www.csuvtce.com/virtual-animal-anatomy/> At a cost of either \$40/year or \$5/mo, this unadvertised launch has generated ***~\$8,000 of income in 2021*** and we continue to work with TMI to resolve their distribution challenges for further accessibility.
- **Collaborations & Engagement Approved by CSU Office of General Counsel**
 - 2017, Faculty at the **University of Hokkaido in Japan**. The translation to Japanese was completed December 2021 and is being tested by collaborating in Japan with final contracts for distribution in progress.
 - 2019, William Pérez, PhD, Professor of Anatomy at **Universidad de la República de Uruguay** and current President of the World Association of Veterinary Anatomists. Translation of the VCA to Spanish (launched August 2020) with ongoing VEA Spanish translation.
 - 2020, **UCDavis School of Veterinary Medicine**, Development of 3D VR assets and evaluation of VR in DVM teaching, invited talk at UCDavis January 2020
 - 2020, Marco A. Pereira-Sampaio DVM, MS, PhD, Professor, Department of Morphology, **Fluminense Federal University (Brazil)**, President of the World Association of Veterinary Anatomists. Collaboration as of August 2020 for Portuguese translation of VAA.
 - 2021, **ENGAGE** – A VR platform introduced to us by the Anatomy team at Stanford Medical School. We have an MTA for transfer of our VR objects into their platform to validate ENGAGE as a learning platform for Spur and CVMS Outreach engagement
 - 2021, **Scarlet Imaging (SI)** and Scott Echols, DVM. Dr. Echols is the inventor of BriteVu, a contrast media for post-mortem imaging, when coupled with a non-formaldehyde-based preservation medium. In conjunction with Dr. Tanya Applegate, we have a research agreement with an NDA for SI patented and patent pending products. This project has been supported by income from VAA-LTI as an opportunity to develop new learning tools and methods for teaching gross anatomy and surgical training.
- **Additional Demonstrations of VAA-VR program**
 - **InterNICHE** - Leicester, England. Nick Jukes, Coordinator – Documentary Interviews (2 days, 2019) Goal of Documentary: Highlight educational practices that reduce or replace cadaver instruction.
 - **University of Hokkaido**, Anatomy Faculty visit, Fort Collins, CO (2019)
 - **CSU VTH Open House**, Fort Collins, CO (1 day, 2019)
 - **CSU DVM Alumni Weekend**, Fort Collins, CO (1 day, 2019)
 - **Veterinary Information Network**, Founder Dr. Paul Pion, Fort Collins, CO (1 day, 2019)
 - **Theriogenology Student Conference**, Savannah, GA (1 day, 2019)
 - **CSU BMS MSB Alumni Weekend**, Fort Collins, CO (1 day, 2019)
 - **Colorado Veterinary Medical Association Annual Meeting**, Keystone, CO (3 days, 2019)
 - **Veterinary Innovation Summit**, Translational Medical Institute, Fort Collins, CO (3 days, 2019)
 - **Georgia Veterinary Medical Association**, Fort Collins, CO (2 hours, 2019)
 - **UCDavis DVM Program**, Fort Collins, CO (5 hours, 2019)
 - **Louisiana State University School of Veterinary Medicine**, Baton Rouge, LA (1 day, 2019)
 - **CSU Vice President for Research Demo Day**, Fort Collins, CO (1 day, 2018-19)
 - **Zoobiquity Conference**, Fort Collins, CO (1 day, 2019)
 - **CSU CVMS Outreach program** – Larimer County, Weld County, and Colorado State Fair, Summer 2021

CONTRACTS

Virtual Animal Anatomy (HTML5-LTI) Software as a Subscription *I develop all strategies for creation and distribution of anatomical content and ensure that we are compliant with CSU policies as well as accessibility (ADA), privacy (FERPA) and security regulations. I foster collaborations, monitor external communications, determine product pricing, provide customer service, conduct customer discovery, provide user training, supervise 2 full-time staff and 2-6 part-time student employees. From March -July 2020 the VAA-LTI program freely distributed to more than 140 schools (K-12, undergraduate, and professional veterinary and technician programs) with >12,000 users from around the world. Since July 2020, there are more than 75 new, with more than 50% renewals in 2021, of VAA-LTI educational subscribers and many more are directing their students to be individual subscribers.*

Virtual Animal Anatomy (3D VR Software) - Limited Purpose Software License

Mars, Incorporated. Mars Petcare (Future of Technology, Pet Health and Innovation)
International Network for Humane Education (InterNICHE). Program promotion and distribution of humane alternatives in education <http://www.interniche.org/cs/node/5941>

Continuing Education and Professional Development since 2018 (Approx. No. of Hours Spent Per Year)

- 2022 Veterinary Educators Collaborative of the American Association of Veterinary Medical Colleges (6h)
CSU Annual Conference for Veterinarians (16h)
CSU Alliance Diversity and Mentorship training (2h)
American Red Cross CPR Training (4)
- 2021 CSU Alliance Diversity and Mentorship training (2h)
CSU Annual Conference for Veterinarians (16h)
CSU Diversity Symposium (8h)
Western Consortium Regional Teaching Academy annual meeting (6h)
Society for Theriogenology Meeting, online (16h)
USDA APHIS Category II Renewal (6 modules)
DEA license (RM0586670) Renewal
- 2020 Colorado Veterinary Medical Association, mandatory Controlled Substance training (2.5h)
Society for Theriogenology Meeting, online
- 2019 CSU CVMBS Inclusive Pedagogy Training (10h)
 - Who are you Teaching-The Identity of Your Students
 - Who you are- Assumptions and Biases of the Instructor
 - How are you Teaching- Pedagogy and Praxis- Part 1
 - How are you Teaching- Pedagogy and Praxis- Part 2
 - What are you Teaching- Examining Your CurriculumCSU CVMBS Teaching Academy Seminars (2h)
 - Strategies for Making the Most Important Ideas in a Lecture Clear to Students
 - Conversations About Medical Education: Team Based LearningCSU Ventures State of Innovation: Education Series - Considerations for Protecting Intellectual Property for Software, AI, & AR/VR Applications by Bob O'Loughlin (2h)
CSU Annual Conference for Veterinarians. Fort Collins, CO (16h)
Regional Teaching Academy VETS 2.0 Curriculum Development Workshop, UC Davis, CA (20h)
Society for Theriogenology Meeting, Savannah, GA (16h)
- 2018 – 2019 Mentoring Program, "ENCIRCLE," CSU - Standing Committee on the Status of Women Faculty & Office of the Vice Provost for Faculty Affairs. (3h)
- 2018 Conference Attendance, "Record Freshmen Enrollment: What to Expect in the Future and What We Can Learn from the Past," TILT PDI CSU. Fort Collins, CO (2h)
Short Course, "Research to Market (R2M) - Virtual Animal Anatomy," CSU Ventures, Launchpad, September - December 2018. Fort Collins, CO. (100h)
CSU Supervisor Training, "Inclusive Excellence Part 1" (2.5h)
CSU Supervisor Training, "Effective Teams" (2.5h)
CSU Supervisor Training, "Mindset for Supervisors" (3h)
CSU Supervisor Training, "Inclusive Excellence Part 2" (2.5h)
CSU Supervisor Training, "Emerging Women Leaders Webinar" (1.5h)
CSU Supervisor Training, "Effective Communication and Conflict Resolution Skills" (2h)
CSU Supervisor Training, "Systems Thinking: Your Role in the Bigger Picture" (3h)
CSU Supervisor Training, "Rules of the Road" (4h)
CSU Annual Conference for Veterinarians (16h)
- 2014 – 2018 CSU CVMBS Leadership Development Group Training with Cindy Anderson Consulting, LLC. Monthly leadership seminars and workshops. Fort Collins, CO (50h)

CV SECTION 3: EVIDENCE OF TEACHING AND ADVISING EFFECTIVENESS

TEACHING:

Courses as Course Director: *I am responsible for all programmatic and curricular development, content, delivery, and assessment. I provide a great deal of mentoring, advising, and individualized support to my students.*

VM618 Professional Veterinary Medicine – Histology and Physiology, 7 cr, Fall 2016-22. Avg. 138 students

I have aligned the physiology content with histology and gross anatomy, as well as the University of Alaska Fairbanks (UAF) course. In addition to the leadership necessary for execution of the course throughout the semester, my lectures have included Endocrinology, Cell Biology, Neural Signaling (11 hrs, 2016-21), Acid Base Physiology (3 h, 2021), Pulmonary Physiology (11hr, 2017-18), and Cardiovascular Physiology (2015). I work with the DVM Curriculum Committee and the Capstone Exam I coordinator to ensure that VM618 learning objectives are aligned with the Core Competencies for our DVM students and the Capstone Examination questions. DVM students must pass Capstone I exam to matriculate to Year 2. Major efforts in 2020 were course renovation for 100% online instruction Fall 2020. 2021 was a return to in-person teaching with extensive student absences, accommodations, and a major effort for Capstone remediation of students at CSU and UAF. Prior to 2022, I only coordinated the physiology portion (5 cr) of the course and the histology portion (2 cr) was coordinated by another faculty. In 2022, I coordinated both physiology and histology, providing histology as a combined online course for CSU and UAF students, and supporting the 6 histology content expert teaching faculty with the assistance of one graduate student.

VM795 Large Animal Anatomy Independent Study, 1 cr, Spring 2016-22 (12-35 students)

This curriculum focuses on dissection of fresh and embalmed equine, bovine, ovine, caprine, and porcine specimens as well as canine and feline specimens for comparative anatomy. The experience is enriched with other learning opportunities including advanced clinical applications such as nerve blocks, nasogastric tube placement, and surgical approaches and a case study that is intended to improve communication skills related to anatomy and disease. I share this course with Dr. Jeremy Delcambre and I spend on average 4 hrs/week with these students. Major effort in 2020 to transition remainder of semester to online due to COVID-19 pandemic. 2021 was a return to in-person dissection and learning prior to April, and case studies shifted to after the delayed Spring break.

BMS305 Domestic Animal Gross Anatomy(Honors), 4 cr, Spring 2012-22, Avg. 120 students This course is a survey of domestic animal anatomy using prosected specimens. I provide an average of 19 (of 45) hrs lecture/semester, oversee two regular laboratory sections of 2 hours each/week, and organize 12 additional “open lab” hours each week for students in our laboratory facility that are facilitated by our GTAs (BMS684) and TAs (BMS384). I gave fewer hours of lecture SP19, but provided regular input and lecture attendance for the new instructor (Andrew Garrett). Major effort in 2020 to transition remainder of semester to online due to COVID-19 pandemic. 2021 was a return of in-person labs prior to Spring Break and all pre-recorded lecture. Canine hemiskulls were also 3D printed using VAA images and provided to students for free for online learning of the Head/Neck unit for the remote section of the semester. Manuscript in preparation from assessment of this learning tool.

BMS496D Honors Breakout Session BMS305, 1 cr, Spring 2013-22, Avg. 10 students

I developed this is a case-based study of anatomy for the University Undergraduate Honors students enrolled in BMS305 that integrates physiology and developmental anatomy with the basics of clinical reasoning. The students assemble a canine skull, thoracic and pelvic limbs (canid, equid, bovid) that they are able to keep, and give final course reflective presentations. Major effort in 2020 to transition remainder of semester to online due to COVID-19 pandemic. Skeletal assembly returned in 2021, but all course interactions were online via Teams. 2022 was a resumption of normal course interactions.

BMS 531 Domestic Animal Dissection, 3 cr, Spring 2012-22, Avg. 30 students

This dissection course provides the specimens used in the BMS305 class and uses the didactic content taught in BMS305 to ask for higher order integration of anatomical concepts. I currently spend 6 of 9 hrs of scheduled laboratory time each week for this course to guide dissections and learning. Major effort in 2020 to transition remainder of semester to online due to COVID-19 pandemic. In 2021, all students used an Oculus Quest 2 VR headset with VAA-VR for the Head/Neck unit in the last 3 weeks of the semester for online learning and assessments. Manuscript in preparation from assessment of this learning tool.

BMS 633 Domestic Animal Anatomy – Case Discussions, 2 cr, Spring 2012-21, enrollment increased in 2020-21 from avg of 16 to 20 students This is an advanced, case-based study of anatomy for development of critical thinking and problem-solving skills. Group case presentations are used to develop communication and teamwork skills, with individual unit assessments. The course directly prepares graduate students for the Comprehensive Examination in Animal Anatomy. I attend DVM Continuing Education (CE) events each year and review current literature so that I may continue to develop new anatomy-related clinical case studies for this course, and provide an up to date clinical perspective. Major effort in 2020 to transition remainder of semester to online due to COVID-19 pandemic, with return to in-person teaching in 2021 until mandatory remote learning after Spring Break.

BMS 384 Supervised College Teaching, 1-3 cr, Spring 2012-21, Avg. 25 students

Teaching assistants (TAs) have completed BMS305 with a B or higher and are typically co-enrolled in BMS531. TAs improve the student: support ratio in BMS305 and staff BMS305 open labs (12 hrs/week). In 2014, I initiated a weekly (1 hr) TA meeting to provide them with mentorship, review teaching strategies, and prepare the team for upcoming laboratory sessions. TAs assist with set up and proctoring of laboratory assessments. Major effort in 2020 to transition remainder of semester to online due to COVID-19 pandemic. In 2021, hybrid TA meetings with Zoom and in-person Open Labs were provided.

BMS 684 Supervised College Teaching, 1-3 cr, Spring 2012-21, Avg. 5 students

Teaching assistants (TAs) have completed BMS531 with a B or higher and improve student: support ratio in BMS531. Participation in BMS384 TA meetings for mentorship is required, and these students are typically co-enrolled in BMS495. BMS684 enrollment also includes 2 Graduate Teaching Assistants who are mentored and trained annually to provide support for the animal anatomy BMS305/531 courses. Major effort in 2020 to transition remainder of semester to online due to COVID-19 pandemic. In 2021, hybrid TA meetings with Zoom and in-person Open Labs were provided.

BMS495 or 695F Independent Study, 1-2 cr, 2012-21, Avg. 12 students/yr

These students will complete a variety of assignments for credit including but not limited to clinical experience in conjunction with a skeletal assembly, and a reflective, anatomy-based, clinical case report. Students who have previously completed BMS531 may register for BMS695F to participate in BMS795. Curriculum in 2021 ran in parallel to VM795.

BMS380A1 Applied Food and Fiber Animal Anatomy Course, 3 cr, Fall 2021-22, Avg 20-30 students

Launched Fall 2021 and an Aim of the USDA-HEC grant. This course is a case-based survey of those anatomically related diseases in chickens, camelids, sheep, goats, cattle, and pigs. Each unit has 4 major "problems" from each of these major production species that the students use Team Based Learning strategies to solve. Students also tour animal production sites including the Animal Sciences JBS Global Food Innovation Center (an abattoir) and have a necropsy lab with a DVM Food Animal faculty. The course is under University Curriculum Committee review to become a regular course with the number BMS304.

VMBS180A1 Alliance Institute Veterinary Perspectives, 1 cr online course, Summer 2020-2021, 20-40 students

Online course supports the Zoetis Veterinary Perspectives Institute with a focus on reflective, career development activities while developing an understanding of careers in One Health.

Courses as Lecturer or Course Support (since 2015): *I provide guest lectures, support to laboratory teaching, and assist with exam question development or grading when related to my area of support or expertise. Learning objectives are developed in conjunction with the course director to ensure continuity in the curriculum.*

CRN64744VM 616 Professional Veterinary Medicine – Functional Anatomy, 9 cr, Avg. 138 students,

Fall 2022, floor anatomist, lab coordination, and course support as needed and 3 recitations (40 hours to date)

Fall 2021, floor anatomist and course support as needed (15 hours)

Fall 2020, floor anatomist (8h/week) section B (70 students) for the entire semester (128h)

Fall 2018-2019, floor anatomist and course support as needed, case study/recitation (1 hr)

Fall 2016-2017, floor anatomist (32 hrs of equine clinical and reproductive anatomy) case study/recitation (1 hr)

Fall 2014-2015, floor anatomist (64 hrs for Head and Thorax, Abdomen, Pelvis Units)

CRN64749 VM618 Professional Veterinary Medicine – Histology and Physiology, 7 cr, Avg. 138 students

Fall 2015, Cardiovascular Physiology (11 hrs), Endocrinology, Nerve and Muscle Cell Biology (11 hrs)

Fall 2014, Endocrinology, Nerve and Muscle Cell Biology (11 hrs)

CRN64760 VM722-001 Professional Veterinary Medicine – Pharmacology, 4 cr, Avg. 138 students

Fall 2015-19, Capstone Lecture "Inflammatory Airway Disease" (1 hr)

CRN15460 BMS260-R01, BMS 260 Introduction to Biomedical Sciences, 72 students

Spring 2018 Faculty Guest Lecturer "From research to teaching: how are things at your end?" (1 hour)

Evidence of Teaching Effectiveness

A review of my teaching activities was provided in 2020 by Dr. John Walrond (Chair, BMS Undergraduate Curriculum Committee). An "Extended Summary" was provided to Dr. Walrond for this review. Each course in the Extended Summary has its own summary of course specific changes with supporting evidence as indicated below. Please use the hyperlinks provided for access to these materials.

Peer Evaluations of Teaching

- [1. 2015 - Drs. Andrew West \(Director CVMBS Academy for Learning and Teaching\) and Sherry Stewart \(Professor, Clinical Sciences\)](#)
- [2. 2017 - Dr. Andrew West \(Director CVMBS Academy for Learning and Teaching\)](#)

Student Course Surveys

-[CSU DVM Class of 2023 Gratitude Statements](#)

-For a previous comprehensive summary, please see 2020 Educator's CV Section III [Quantitative Course Survey Data and Qualitative Course Survey Data](#) beginning on page 3.

Examples of Course Improvements

-Please see: Courses 1 (BMS305), 3 (BMS531), 4 (BMS633), 5 and 6 (BMS384/684) in the [Extended Summary](#)

-Please see BMS305/531 Laboratory Manual in the [Extended Summary](#)

Development of New Courses

-[VMBS1801 - Alliance Institute Veterinary Perspectives, Su21-22](#) – Supported by Zoetis, this Alliance Summer Institute program for 20 high school students to explore topics in One Health and related veterinary medicine careers. See Outreach

-[BMS380A1 – Applied Food and Fiber Animal Anatomy, Fa21-22](#) – This course has only been offered to MSB students (enrollment max 30) Fall 2021-22, but will be expanded as a service course for Animal Sciences and other students upon full UCC approval as BMS304 (estimated Fall 2022).

-Please see: Courses 2 (BMS496D) and 7 (VM795) in the [Extended Summary](#)

ADVISING:

SUMMARY:

Current Graduate Committee Memberships (excluding those chaired):

_____	# Plan C
<u>20</u>	# Plan B
_____	# Plan A
_____	# MS/MA (no plan)
<u>1</u>	# PhD
<u>4</u>	# DVM

Graduate Committee Memberships (for past 5 years, not including those above)

_____	# Plan C
<u>65</u>	# Plan B
_____	# Plan A
<u>2</u>	# MS/MA (no plan)
_____	# PhD
<u>3</u>	#DVM

UNDERGRADUATE STUDENTS:

*University Honors Program, Thesis Advisor (*indicates matriculation to DVM program)*

-Clarisse Nadeau, ongoing, preliminary thesis development stage

-Aleyse Evers, proposal approved, "Articulation of Canine Skeleton and Analysis of Hip Dysplasia as it is Connected to Anatomy and Mechanics of Coxofemoral Joint in Canines."

-Delany Lord, ongoing, "Understanding Equine Recurrent Airway Obstruction, its Treatment, and its Management," committee member and but essentially co-advising with new Clinical Sciences faculty Dr. Anna Bracken.

-Daniela Leopardi, Spring 2022, "Cadaver Usage as an Effective Learning Tool."

-John Powel*, Spring 2022, "A Study on the Mental Health Crisis in the Field of Veterinary Medicine", Thesis improvement grant (\$400, 2021), **manuscript in preparation.**

-Julia Love, Spring 2022, "Domestic animal models for wild felid reproduction - understanding fertility regulation in felid animal models and wild cat populations" Co-advised by Dr. Barb Wolfe

-Lexxee Wilson, Fall 2020-2021 "Building teaching models for equine biomechanics"

-Jordan Sandoval, Fall 2019. "Comparative Anatomy of High Altitude Disease in Camelids and Bovids."

-Sera Lee*, Spring 2018. "Owner Satisfaction with Canine Orthotic Device Use." **Published in Frontiers in Veterinary Science, 2021.**

-Jordan Tarbutton*, Fall 2018. "Bovine Claw Zone Anatomy as VR Outreach Tool" **Preliminary data for USDA NIFA HEC grant "Virtual Bovine Anatomy"**

-Marion Steiblen*, Fall 2018. "An Equine Medicine Case Study – From Dystocia to Discharge."

-Carli Evatz*, Spring 2017. "Equine Dentistry: A Case Study".

-Rowan Seabolt*, Fall 2017. "Establishing and Characterizing Transgenic Mice Expressing a Firefly-luciferase Reporter Driven by the Ovine GnRHR Promoter" **Manuscript in preparation**

- Sabrina Litzelman, Fall 2017. "Comparison of Protocols and Standards of Care with a Spectrum of Veterinarians"
- Ellie Beniston*, Fall 2017. "Diabetes and Uveitis: A comparative analysis of causes, connections, and treatments in canids and humans".
- Shelly McDaniel*, Fall 2016 "Social Media and the Equine Industry". **Published in JEVS, 2020.**
- Hunter Kothenbeutel*, Fall 2016. "A Comprehensive Review of Onychectomy (declaw) of Domestic Cats".
- Alyx Moose*, Spring 2015. "Surveying the Potential Use of Shelter Animals for Service Function".
- Alyssa Carson*, Fall 2015. "Uterine Torsion in Llamas and Alpacas: Review Study and Design".
- Katherine Watts, Fall 2015. "He Made Their Glowing Colors, and Made their Tiny Wings: Short Stories of Veterinary Medicine".
- Amy Scott*, Spring 2014. "BMS305 Reference Manual: Comparative Anatomy of the Canid, Equid and Bovid; Developing Teaching Aids for a Comparative Approach to Anatomy".
- Sophia Nelson*, Spring 2014. "A Comparative Analysis of Adjunct Therapies in Equine Sports Medicine".
- Katherine Yunker*, Spring 2014. "A Comparison of Fixation Techniques for Diaphyseal Femoral Fracture in Canids".
- Hannah C. Lewis*, Spring 2014. "Branching of the Abdominal Aorta and Symptoms Related to Blocked Blood Flow Restrictions".
- Kelsey Jung*, Fall 2013. "Revealing the Role of Estrogen Receptor alpha (ER α) via Adenoviral Delivery of siRNA for Knockdown of ER α in Gonadotrope Cells".
- Brandi Heckel*, Fall 2012. "What Domestic Ruminant Anatomy Tells Us About Feeding Wild Cervids".
- Nicole Mikoni*, Fall 2012. "Femoral Fracture Repair".

GRADUATE/PROFESSIONAL STUDENTS:

Jason Frederick Martin, PhD candidate. Preliminary exams completed January 2022. Jason's PhD work will be focused on strategies for successful learning outcomes following integration of virtual reality anatomical teaching tools in veterinary education.

Department of Biomedical Sciences Master of Science (1 year, MS-B) program, 20 students, 2012-current
Academic Advisor for animal anatomy concentration students. This includes MS-B program admissions, student support, mentorship, and grading of annual Comprehensive Exams in animal anatomy. Most students are applying to veterinary school and hoping to demonstrate academic capacity to DVM admissions panels.

Viviane C Leite Gomes. PhD student in Clinical Sciences at Louisiana State University, Baton Rouge, LA. Advisor, *Jenny Sones*, DVM, PhD, DACT. 2019-present. Combined PhD/Theriogenology Residency program. Interest in kisspeptin during equine pregnancy. Dr. Gomes visited CSU in May 2019, I visited LSU in November 2019. Preliminary exam completed August 2021, defense scheduled for October 2022.

Saleh Salman, Master of Science in Animal Science at CSU, 2018-2019. Fulbright Scholar. PhD at University of Connecticut started Fall 2019.

Sophia Nelson. 2015-2016. Master of Science in Student Affairs in Higher Education. Unique, joint program designed for Ms. Nelson to allow her to complete the MS prior to matriculating to CSU DVM program Fall 2015.

DVM Faculty Advising program. Avg 1-2 DVM students/year. 2013-current. Advising relationship initiated either prior to DVM program enrollment or in Year 1. Provide faculty mentorship until graduation.

DVM Summer Scholars Program

2022 Linda Lott "Kisspeptin in the equine maternal-fetal interface"

2020 Elizabeth Sullivan "Understanding the role of fatty acids in gonadotrope signaling"

POSTDOCTORAL STUDENTS/RESEARCH ASSOCIATES:

2019-present Olivia Arnold, PhD, Graduate Coordinator and Instructor, Department of Environmental and Radiological Health Sciences, CSU

2017-2020 Kelly S. Kirkley, DVM, PhD – co-advised with Dr. Colin M. Clay

FACULTY MENTORING:

2019-present Kimberley Jeckel, PhD, Assistant Professor (non-tenure track), Department of Biomedical Sciences, CSU

LETTERS OF RECOMMENDATION (since 2012): 33 total student letters in 2021

- DVM program applicants (VMCAS +/- supplemental packets), 15-20 annually
- DVM students seeking externship or research opportunities, 5-10 annually
- Other requests from students, 2-3 annually

OTHER EVIDENCE OF ADVISING EXCELLENCE:

2017-20 - Nomination for Jack E. Cermak Advising Award

CV SECTION 4: Evidence of Outreach/Service/Engagement

COMMITTEES

Colorado State University

2022

Provosts Council for Engagement

Animal Sciences Department Equine Reproductive Physiologist, Search Committee Member, search ongoing

College of Veterinary Medicine and Biomedical Sciences

2022

DVM Scholastic Standards Committee This committee reviews DVM students who have not met academic standards with recommendations for retention with a plan for rehabilitation or program dismissal.

2021

Clinical Sciences Department Equine Ambulatory Clinician, Search Committee Member, first search failed, second search resulted in the hire of Dr. Anna Bracken (a former MSB student and anatomy GTA)

Spur-Vida-Content Creation and Review – I work closely with Kathryn Venzor (CSU Spur Director of Education) to create novel content for the Vida Center. In addition to creating storylines for veterinary cases, the VVET team has created anatomical models, videos, and other content to support outreach at Vida. The 40 Oculus Quest 2 VR headsets with VAA-VR that purchased with VVET funds for BMS531 in 2021 are being used to launch the VR learning center at Vida in 2021. In return for my efforts and those of Andrea Linton and Andrew Garrett, AL and AG are supported by Spur funds.

2019-present

DVM Curriculum Renewal Committee (5% effort) – my role is to provide basic sciences (anatomy, physiology) and BMS input to proposed changes in the DVM curriculum. This committee meets weekly additional efforts to develop goals (first draft accomplished Fall 2019), assess faculty input (ongoing) and drafted a strategic plan in 2020 for DVM curricular changes, with ongoing faculty votes for curricular changes. In 2021-22 I have provided leadership in the development of the Endocrinology, Reproduction, and Biomedical Building Blocks sections.

2019-2021 CVMBBS Representative to CSU's Faculty Council – replaced due to teaching conflicts Spring 2021

2013-2019 DVM Admissions Committee

2014-2019 Multiple Mini-Interview Committee, Question Development and Interviewer Training – I had a major role in the development of the MMI for CSU through three different Directors of DVM Admissions over the course of 4 years. The DVM applicant was invited to the MMI based on holistic review of their application, and acceptance decisions currently utilize the MMI score (50%) and the holistic packet review (50%).

2015, 2016 Alaska 2+2 admissions selection committee

2014, 2015 WICHE admissions selection committee

2014-2016 DVM Curriculum Committee

Department of Biomedical Sciences

2022

Non-Tenure Track Faculty Assistant-Associate Professor of Anatomy and Physiology, Search Chair (2 positions) – committee charged August 25, 2022

Animal Anatomy Laboratory Coordinator, Hiring Authority, ongoing search

Director of Animal Anatomy Programming and Strategic Planning (since 2019). Faculty and Staff Supervised: Andrew Garrett, MS (Instructor, VAA Developer), Andrea Linton, MS (Instructional Designer, VAA Programmer), Student anatomy embalming technicians (Damon Mango, Linda Lott, Ethan Powers, Paulina Svec).

DVM & Clinical Services Committee, Chair since 2017. I collect and provide input to DVM budget requests and program planning to ensure DVM and Clinical Services needs are met by BMS.

Research and Facilities Committee, Member since 2015

Graduate Education Committee, Member since 2013. MS-B Steering and Admissions Sub-Committees – 2013-ongoing; PhD Education Curriculum Task Force, 2020-ongoing.

2020

CVMBBS Assistant Dean for Outreach, Search Chair, (Hired Wade Ingle)

CSU/CU MD program Educational Specialist, Search Committee Member, (Hired Ellen Aster)

2019

BMS Department Head Search Committee, (Hired Bret Smith)

DVM Instructional Technologist Search Committee (Hired Sonja Berkenpas)

2018

Anatomy Education Strategic Planning. Effort included bringing in an outside consultant (Cindy Anderson Consulting) and included anatomy (neuro/human/animal), physiology teaching and outreach teams for strategic planning as the HEOC building, UG umbrella major, and CU/CSU medical program were launched.

2017

DVM Lab Coordinator Search Committee, Chair (Hired Julie Becker)

2014

Program Review Committee, member (developed VM795-005, BMS380A/304 as a result)

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

2019-present Teaching Academy Fellow, Consortium of West Region Colleges of Veterinary Medicine, member of Faculty Development Working Group

2016-present Colorado State University Center for the Analytics of Learning and Teaching, PI for 3D Visualization in Domestic Gross Anatomy.

2007-present American College of Theriogenologists, Question Development Committee member 2008-2011

2006-present Society for Theriogenology

2009-2014 The Endocrine Society

2007-2014 Society for the Study of Reproduction,

Licensed to practice veterinary medicine with USDA certification* in Colorado*, Massachusetts*, and New Hampshire

Scientific Journal Reviewer (since 2020)

Journal of Neuroendocrinology (1 in 2021)

American Journal of Physiology-Regulatory, Integrative and Comparative Physiology (1 in 2020, 1 in 2021)

Clinical Theriogenology (1 in 2020)

Anatomical Sciences Education (1 in 2020)

Domestic Animal Endocrinology (1 in 2020)

Anatomia, Histologia, Embryologia (2 in 2020)

OUTSIDE REVIEWER FOR PROMOTION AND TENURE

2021- 2 faculty from WICHE veterinary colleges

OTHER ACTIVITIES/ACCOMPLISHMENTS – SERVICE/OUTREACH (since 2015)

Program Director, Zoetis Veterinary Perspectives Institute, College of Veterinary Medicine and Biomedical Sciences, CSU.

Initially planned as a residential program for summer 2020, this was put on hold as result of COVID-19. This summer program is in partnership with the Alliance Center at CSU to develop an opportunity for students from diverse backgrounds and underresourced high schools, to learn about careers in veterinary medicine. Funded by Zoetis, Inc. (\$50,000 2020) the program is intended to host approximately 40 students for 6 nights, 7 days in the CSU residence halls, including students from Western Region DVM Consortium states (i.e. California, Nevada, Oregon, etc.). Participating high school students are paired with an Alliance Summer Institute alumnus as a primary counselor, as well as near-peer mentors from the CSU UG/G/DVM programs. Students interact with real anatomical specimens, use case studies to understand applied anatomy and One Health, and study comparative anatomy using virtual anatomy. The Veterinary Perspectives Institute also gives CSU students the opportunity to provide community service and gain leadership experience by teaching in the curriculum and mentoring participating students. For 2021, I re-designed this as a virtual program so that approximately 40 students from high schools in the Western Consortium could explore an "outbreak" and interact with faculty experts to solve the outbreak. Students met from 9-12 daily for 5 days to develop skills to solve this novel problem as well as explore major themes including 1) exploration of the veterinary profession, 2) pathways to veterinary medicine; 2) topics in veterinary medicine including debt awareness and repayment programs, wellness, leadership and communication skills. Participants received 1 academic credit for their efforts through CSUOnline as VMBS180A1. In 2021, we secured additional funding (\$30,000) from Zoetis for delivery of the program as a residential program summer 2022. The previously designed 2020 program was merged with the virtual curriculum from 202, to deliver an exceptional academic program in 2022 for 36 student participants and 15 peer mentors.

Anatomy Camp, Department of Biomedical Sciences, CSU

Summer 2016-2019; This academic camp for high school students uses hands-on learning to create an enriched learning environment. Many are considering pre-professional majors in college and the goal is to engage high school students in health education and to encourage their interest in college STEM majors. Campers dissect real anatomical specimens, use case studies to diagnose medical problems, and study cross sectional anatomy using virtual anatomy. Anatomy Camp also gives CSU students the opportunity to provide community service by teaching anatomy and mentoring campers. I provide the Suture Clinic portion of the camp as well as a source of advising/mentorship for counselors and campers, and faculty support for the program.

Colorado 4-H State Conference, Fort Collins, CO

Virtual Bovine Anatomy Workshops 2018-19; cancelled 2020-21 due to COVID-19: – Presentation for high school 4-H members on CVMBS major(s) and career paths, as well as a wetlabs with anatomical specimens and VAA-VR demos

DVM Tutoring Program, CVMBS, CSU

In 2018 I worked with Dr. Andrew West, then Director of the CVMBS Academy for Teaching and Learning/now CVMBS Associate Dean for Teaching and Learning, to revamp the DVM Tutoring program to include a summer Capstone review as well as a new Canvas based Group Tutoring program for each of the major DVM year 1 and 2 courses beginning Fall 2018. I now supervise 1 program coordinator, a DVM Program Teaching Assistant (DPTA) for each of the major courses (5-8/semester), and the 2-3 Student Assistant Study Session (SASS) Coordinators per course (7-15/semester) who facilitate each of the weekly group study hall sessions. The Fall semester is initiated with Echo recorded “How to be successful in vet school” feedback sessions for 1st year DVM students, as well as training and support for the tutors to improve their teaching skills. The need for summer Capstone support was eliminated thanks to this program in 2019. 2022 marks the program’s 5th year, with student surveys and course performance evaluation demonstrating this program as a positive draw for students to select CSU’s DVM program as well as a continued reduction in dependence on 1:1 tutoring and improved student outcomes.

MSPro Café Workshop, Department of Biomedical Sciences, CSU

September 2016-19, 2021-22: Led a 2 hour Suture Clinic for 20 MS students using the Canvas teaching module. Assisted by 2-3 other PA/MD/DVMs.

Suture Clinic Level 1, Canvas Course and Suture Skills Program Offering

November 2021: Worked with PreMedica student club president to offer Level 1 in December 2021 and plans for additional offerings with BSA and PreVet club for 2022. Goal remains student club collaboration.

November 2019: I convinced the two student organizations (BMS Student Association and PreVet Club) to work together to offer an introductory (Level 1) suture clinic. The 60 student suture lab was facilitated by me with the help of 15 club officers who had attended a previous suture clinic. The plan is to host a Level 2 suture clinic in the spring to focus on more advanced skills, including suture patterns. Student participants in Level 2 will be required to demonstrate correct instrument holding, a simple continuous suture pattern, and the ability to tie a square knot.

Pre-Veterinary Club Day, College of Veterinary Medicine and Biomedical Sciences, CSU

2015: Provided lecture and laboratory activities for the Artificial Insemination session
2017: Invited talk “So you want to be a veterinarian?” at PreVet Club Monthly meeting
2017: Key Note Address to Pre-Vet Club Annual Symposia
2019: Small Animal Reproduction: Spay and Neuter Laboratory session

Predator vs. Prey – How can you tell?

2021 – Grades 5-8, Saint Joseph’s Catholic School, Fort Collins, CO, in-class outreach for > 80 students with both anatomy specimens as well as 20 VR Oculus Quest 2 headsets using VAA-VR with CVMBS Outreach staff as a trial for SPUR Vida

2019 - Sheila Henke, 3rd grade class, Bennett Elementary School, Fort Collins, CO, In-class outreach program with 22 students using canine, equine, feline, and bovine skulls and a plastinated sagittal fetal calf head, as well as demonstration of the VAA-VR program.

Biomedical Sciences Student Association, College of Veterinary Medicine and Biomedical Sciences, CSU

February 2016: Invited talk “So you want to go to professional school?” at BSA monthly meeting
April 2016: Suture Clinic for 50 BSA members with the help of 5 other faculty and MD/DVMs

STEM Anatomy Lecture for CSU Senior Scholarship Day – recruitment Fall 2015