

Brooke A. Clemmons, Ph.D.
Curriculum Vitae

Work: P.O. Box 3011
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College of Agriculture/Natural Resources
Commerce, TX 75429

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Caddo Mills, TX 75135
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Education

University of Tennessee, Knoxville, TN Summer 2020
Doctor of Philosophy in Animal Science
Thesis advisor: Dr. Phillip Myer
Dissertation title: Microbial and Metabolomic Biomarkers of Feed Efficiency in Angus Cattle

University of Tennessee, Knoxville, TN Fall 2019
Master of Science in Agricultural Leadership, Education, and Communications
Graduate advisor: Dr. Carrie Stephens
Concentration: Leadership
Project: “Microbes in Agriculture” Undergraduate course curriculum development

University of Tennessee, Knoxville, TN Spring 2018
Master of Science in Animal Science
Thesis advisor: Dr. Phillip Myer
Thesis title: Biochemical and microbial biomarkers mediating feed efficiency phenotypes in black Angus cattle

North Carolina State University, Raleigh, NC Spring 2013
Bachelor of Science in Animal Science

Appointments

Assistant Professor of Animal Science 2020 – current
Texas A&M University – Commerce
Graduate Research/Teaching Assistant 2016 – 2020
Animal Science, University of Tennessee, Knoxville, TN
Graduate Services Coordinator 2015 – 2016
Zoology Graduate Program, North Carolina State University, Raleigh, NC
Academic Support Associate 2014 – 2015
Biological Sciences, North Carolina State University, Raleigh, NC
Curriculum Developer 2014
Nextide Academy, Raleigh, NC
Chemistry, Earth Science
High School Science Teacher 2013 – 2014
Corinth – Holders High School, Wendell, NC
Physical Science, Chemistry (*Honors*), Earth Science (*Honors*)

Publications

Published (16)

1. Ault-Seay TB, Melchior-Tiffany EA, **Clemmons BA**, Cordero JF, Bates GE, Flythe MD, Klotz JL, Ji H, Goodman JP, McLean KJ, Myer PR*. 2020. Rumen and serum metabolomes in response to endophyte-infected tall fescue seed and isoflavone supplementation in beef steers. *Toxins* 12, no. 744.
2. Myer PR, McDanel TG, Kuehn LA, Dedonder KD, Apley MD, Capik SF, Lubbers BV, Harhay GP, Harhay DM, Keele JW, Henniger MT, **Clemmons BA**, Smith TPL*. 2020. Classification of 16S rRNA reads is improved using a niche-specific database constructed by near-full length sequencing. *PLoS ONE*
3. **Clemmons BA**, Schneider LG, Melchior EA, Lindholm-Perry AK, Hales KE, Wells JE, Freetly HC, Hansen SL, Drewnoski ME, Hartman SJ, Myer PR*. 2020. The effects of feeding ferric citrate on ruminal bacteria, methanogenic archaea, and methane production in growing beef steers. *Access Microbiology*
4. Seay TB, **Clemmons BA**, Myer PR*, McLean KJ*. 2020. Bacteria in the reproductive tract: they are not all bad! *Frontiers for Young Minds*.
5. **Clemmons BA**, Myer PR*. 2020. Microbes help predict more efficient cattle. *Frontiers for Young Minds*.
6. **Clemmons BA***, Hernandez-Sanabria E*. 2020. Getting big cows by feeding tiny microbes. *Frontiers for Young Minds*.
7. **Clemmons BA**, Campbell MA, Schneider LG, Grant RJ, Dann HM, Krawczel PD, Myer PR*. 2020. Effects of stocking density on the rumen bacteriome in dairy cows. *PeerJ*, e9079, doi: 10.7717/peerj.9079.
8. **Clemmons BA**, Powers JB, Martino C, Campagna SR, Embree MM, Myer PR*. 2019. Variation of rumen fluid metabolome in steers differing in feed efficiency. *Metabolomics*, 16(2), 23. <https://doi.org/10.1007/s11306-020-1643-x>.
9. **Clemmons BA**, Martino C, Powers JB, Campagna SR, Voy BH, Donohoe DR, Gaffney J, Embree MM, Myer PR*. 2019. Rumen bacteria and serum metabolites predictive of feed efficiency phenotypes in beef cattle. *Scientific Reports*. <https://doi.org/10.1038/s41598-019-55978-y>
10. **Clemmons BA**, Martino C, Schneider LG, Embree MM, Myer PR*. 2019. Temporal stability of the ruminal bacterial communities in beef steers. *Scientific Reports*. <https://doi.org/10.1038/s41598-019-45995-2>
11. Ault TB, **Clemmons BA**, Reese ST, Dantas FG, Franco GA, Smith TPL, Edwards JL, Pohler KP*, Myer PR. 2019. Bacterial taxonomic composition of the postpartum cow uterus and vagina prior to artificial insemination. *Journal of Animal Science*. skz212, <https://doi-org.proxy.lib.utk.edu/10.1093/jas/skz212>
12. Ault TB, **Clemmons BA**, Reese ST, Dantas FG, Franco GA, Smith TPL, Edwards JL, Pohler KP*, Myer PR. 2019. Uterine and vaginal bacterial community diversity prior to artificial insemination between pregnant and non-pregnant postpartum cows. *Journal of Animal Science*. skz210, <https://doi-org.proxy.lib.utk.edu/10.1093/jas/skz210>
13. Myer PR*, **Clemmons BA**, Schneider LG, Ault TB. 2019. Microbiomes in ruminant protein production and food security. *CAB Reviews*. 14(008):1-1. 10.1079/PAVSNNR201914008
14. **Clemmons BA**, Voy BH, Myer PR*. 2018. Altering the gut microbiome of cattle: Considerations of host-microbiome interactions for persistent microbiome manipulation. *Microbial Ecology*. <https://doi.org/10.1007/s00248-018-1234-9>
15. **Clemmons BA**, Mihelic RI, Beckford RC, Powers JB, Melchior EA, McFarlane ZD, Cope ER, Embree MM, Mulliniks JT, Campagna SR, Voy BH*, Myer PR*. 2017. Serum metabolites associated with feed efficiency in black angus steers. *Metabolomics*. 13:147. doi: 10.1007/s11306-017-1282-z

16. **Clemmons BA**, Reese ST, Dantas FG, Franco GA, Smith TPL, Adeyosoye OI, Pohler KG*, Myer PR*. 2017. Vaginal and uterine bacterial communities in postpartum lactating cows. *Front. Microbiol.*8:1047. doi: 10.3389/fmicb.2017.01047

In review (1)

1. **Clemmons BA**, Melchior EA, McFarlane Z, Cope ER, Embree MM, Mulliniks JT, Lindholm-Perry A, Myer PR*. 2018. Rumen protozoal communities differ in Angus steers differing in feed efficiency. *Frontiers in Microbiology*.

In preparation (4)

1. **Clemmons BA**, Powers JB, Mulon PY, Anderson D, Schneider LG, Campagna SR, Voy BH, Donohoe DR, McLean KJ, Staton ME, Myer PR*. Establishment of the rumen microbiome throughout suckling in Angus calves and effects on host physiology.
2. **Clemmons BA**, Powers JB, Mulon PY, Anderson D, Schneider LG, Campagna SR, Voy BH, Donohoe DR, McLean KJ, Staton ME, Myer PR*. 2020. Effects of first-calf pregnancy on rumen microbiome and host physiology in Angus heifers.
3. **Clemmons BA**, Powers JB, Mulon PY, Anderson D, Schneider LG, Campagna SR, Voy BH, Donohoe DR, McLean KJ, Staton ME, Myer PR*. 2020. Rumen and serum biomarkers of feed efficiency in Angus heifers.
4. **Clemmons BA**, Henniger MT, Schneider LG, Powers JB, Campagna SR, Voy BH, Donohoe DR, Myer PR*. 2019. Physiological and microbial effects of rumen content exchange in postpartum Angus cows.

Scientific abstracts (16)

1. **Clemmons BA**, Mulon PY, Anderson D, Myer PR*. Rumen bacteria associated with feed efficiency in Angus heifers. Microbiological Society Annual Conference 2020.
2. **Clemmons BA**, Powers JB, Campagna SR, Seay TB, Embree MM, Myer PR*. 2020. Rumen fluid metabolites as potential biomarkers of feed efficiency in Angus steers. ASAS Southern Section Meeting 2020.
3. **Clemmons BA**, Myer PR*. 2019. Rumen bacteria associated with feed efficiency in Angus heifers. UT Beef and Forage Center Research and Recommendation Meeting.
4. **Clemmons BA**, Martino C, Schneider LG, Embree MM, Myer PR*. Temporal stability of the ruminal bacterial communities in beef steers. 2019. Congress on Gastrointestinal Function Biannual Conference.
5. **Clemmons BA**, Henniger MT, Voy BH, Donohoe DR, Myer PR*. 2019. Effects of rumen content exchange on bacterial community dynamics and production-relevant parameters. ASM Microbe 2019.
6. **Clemmons BA**, Campbell MA, Grant RJ, Dann HM, Krawczel PD, Myer PR*. 2019. Effect of stocking density on ruminal bacterial communities of Holstein dairy cows. ASM Microbe 2019.
7. **Clemmons BA**, Henniger MT, Powers JB, Campagna SR, Voy BH, Donohoe DR, Myer PR*. 2018. Rumen and serum metabolomes differ in Angus cows. UT Beef and Forage Center Research and Recommendation Meeting.
8. **Clemmons BA**, Henniger MT, Powers JB, Campagna SR, Voy BH, Donohoe DR, Myer PR*. 2018. Comparison of rumen fluid and serum metabolomes in black angus cows. ASAS Annual Meeting 2018.
9. Founts R, **Clemmons BA**. 2018. Peer advising leadership program. NACADA Region 2 2018.
10. **Clemmons BA**, Melchior EA, Martino C, Embree MM*, Myer PR*. 2018. Temporal stability of the rumen bacteriome in Black Angus steers. ASM Microbe 2018.
11. **Clemmons BA**, Martino C, Embree MM, Melchior EA, Voy BH, Campagna SR, Myer PR*. 2018. 441 Biochemical and microbial biomarkers of feed efficiency in Black Angus steers. ASAS Midwest 2018. *Journal of Animal Science*, 96(Supplement 2) 237. doi: <https://doi.org/10.1093/jas/sky073.438>

12. **Clemmons BA**, Martino C, Embree MM, Voy BH, Myer PR*. 19 December 2017. Biochemical and microbial biomarkers mediating feed efficiency phenotypes in cattle. UT Beef and Forage Center Research and Recommendation Meeting.
13. Ault TB, **Clemmons BA**, Myer PR, Pohler KG. 19 December 2017. Comparison of vaginal and uterine bacterial communities between pregnant and non-pregnant postpartum cows. UT Beef and Forage Center Research and Recommendation Meeting.
14. **Clemmons BA**, Mulliniks JT, Donohoe DR, Myer PR*. 13 April 2017. Host animal genetic influence on rumen microbial community establishment in cows. University of Tennessee Knoxville Graduate Student Poster Showcase.
15. **Clemmons BA**, Reese ST, Dantas FG, Franco GA, Smith TPL, Adeyosoye OI, Pohler KG*, Myer PR*. 2017. Vaginal and uterine bacterial communities in postpartum lactating cows. *Journal of Animal Science*, 95(Supplement 1) 51-53.
16. **Clemmons BA**, Mulliniks JT, Donohoe DR, Myer PR*. 2016. Host animal genetic influence on rumen microbial community establishment in cows. UT Beef and Forage Center Research and Recommendation Meeting.

University/Extension (7)

1. Ruminant Gut Microbe of the Month – Authored the feature *Ureaplasma spp.*
August 2019
2. Ruminant Gut Microbe of the Month – Authored the feature *Butyrivibrio fibrosolvens*,
May 2019
3. UTBFC Facebook Live – The rumen microbiome and feed efficiency.
July 2018
4. Ruminant Gut Microbe of the Month – Authored the feature 2017 Review.
Jan 2018
5. Ruminant Gut Microbe of the Month - Authored the feature *Dasytricha ruminantium*.
Nov 2017
6. Ruminant Gut Microbe of the Month – Authored the feature *Neocallimastix frontalis*.
Sep 2017
7. Ruminant Gut Microbe of the Month – Authored the feature *Ruminococcus flavefaciens*.
Jul 2017

Grants and Funding

Awarded (2)

1. Aquino T, Frost KJ*, **Clemmons BA***. 2020. Award value: **\$270**
Texas A&M University – Commerce. Undergraduate Research Grant Competition. *Beef Cattle Producer Attitudes Toward Breed and Management Styles in Northeast Texas*.
2. **Clemmons BA**, Myer PR. 2018. Award value: **\$4,180**
University of Tennessee, Knoxville. University of Tennessee Graduate School Student/Faculty Research Award. *Molecular and physiological effects of first pregnancy on feed efficiency in female cattle*.

Submitted but not awarded (10)

1. Myer PR, **Clemmons BA**. 2017. Award value: **\$15,000**
Illumina. Illumina 2018 Agricultural Greater Good Initiative. *Sequencing Grant Program for Illumina Sequencing Products: Host and mitochondrial genomic variants associated with gut microbiome structure and function*.
2. **Clemmons BA**, Myer PR, Ivey JZ, Voy BH. 2017. Potential Award: **\$935,259**
National Science Foundation. Division of Molecular and Cellular Biosciences: Investigator-Initiated Research Projects. *Host and mitochondrial genomic variants associated with gut microbiome structure and function*.

3. **Clemmons BA**. 2018. Award: **\$500**
American Society of Microbiology. *American Society of Microbiology Student Travel Award*.
4. Myer PR, Pohler K, Voy BH, **Clemmons BA**. 2017. Award: **\$877,352**
National Science Foundation. Dimensions of Biodiversity. *Dimensions: Host influence and heritability of rumen and reproductive microbiome biodiversity and physiology in cows*.
5. **Clemmons BA**, Myer PR. Spring 2017. Award: **\$5,000**
University of Tennessee, Knoxville. University of Tennessee Graduate School Student/Faculty Research Award. *Host animal genetic influence in rumen microbial community establishment in cows*.
6. **Clemmons BA**, Myer PR. Spring 2017. Award: **\$5,000**
American Simmental Association. Walton-Berry Graduate Student Support Grant. *Host animal genetic influence in rumen microbial community establishment in cows*.
7. **Clemmons BA**, Myer PR. Fall 2016. Award: **\$5,000**
University of Tennessee, Knoxville. University of Tennessee Graduate School Student/Faculty Research Award. *Host animal genetic influence in rumen microbial community establishment in cows*.
8. **Clemmons BA**, Myer PR, Pohler K. Summer 2016. Award value: **\$10,000**
Pacific Biosciences. PacBio Plant and Animal SMRT Grant. FINALIST.
9. **Clemmons BA**. 2016. National Science Foundation Graduate Research Fellowship Program.
10. **Clemmons BA**. 2015. National Science Foundation Graduate Research Fellowship Program.

Teaching Experience

Course Instructor

ANS 1319: Introduction to Animal Science Texas A&M University – Commerce	Fall 2020
ANS 308: Animal Nutrition Texas A&M University – Commerce	Fall 2020
ANS 317: Livestock Management Techniques Texas A&M University – Commerce	Fall 2020
ANS 231: Nutrition of Domestic Animals Lab North Carolina State University	Fall 2012

Teaching Assistant

ANSC 330: Comparative Animal Nutrition University of Tennessee, Knoxville	Spring 2020
MICR 479/679: Advanced Techniques in Nucleic Acid Sequencing University of Tennessee, Knoxville	Fall 2019
ANSC 495: Ethics in Agriculture University of Tennessee, Knoxville	Fall 2018
ANSC 160: Introduction to Animal Science University of Tennessee, Knoxville	Spring 2018
ANSC 160: Introduction to Animal Science University of Tennessee, Knoxville	Fall 2017
ANSC 100: Orientation to Animal Science University of Tennessee, Knoxville	Fall 2017
ANSC 281: Companion, Exotic and Equine Management University of Tennessee, Knoxville	Spring 2017
ANSC 281: Companion, Exotic and Equine Management University of Tennessee, Knoxville	Fall 2016

BIO 233: Human – Animal Interactions North Carolina State University	Fall 2011
ANS 230: Nutrition of Domestic Animals North Carolina State University	Fall 2012
ANS/PO 415: Comparative Nutrition North Carolina State University	Spring 2013
<i>Invited Guest Lecture</i>	
AREC 444: Agriculture Production and Technology Management University of Tennessee, Knoxville “Using the GrowSafe System for Beef Management”	November 2019
MICR 679: Nucleic Acid Sequencing University of Tennessee, Knoxville “Introduction to Bioinformatics and Bioinformatic Tools”	October 2019
ANSC 495: Ethics in Agriculture University of Tennessee, Knoxville “Breed Specific Legislation”	September 2019
ANSC 495: Ethics in Agriculture University of Tennessee, Knoxville “Breed Specific Legislation”	September 2018
ANSC 160: Introduction to Animal Science University of Tennessee, Knoxville “Common Livestock Breeds”	January 2018
AGNR 103: Introduction to Team Building University of Tennessee, Knoxville “Teamwork and Teambuilding”	October 2017
ANSC 100: Orientation to Animal Science University of Tennessee, Knoxville “Strategies for Adapting”	October 2017
ANSC 281: Equine, Exotic, and Companion Animal Management University of Tennessee, Knoxville “Basics of Equine Nutrition”	March 2017
ANSC 281: Equine, Exotic, and Companion Animal Management University of Tennessee, Knoxville “Domestication of Dogs and Cats”	January 2017
ANSC 281: Equine, Exotic, and Companion Animal Management University of Tennessee, Knoxville “Dog and Cat Nutrition”	November 2016
ANSC 281: Equine, Exotic, and Companion Animal Management University of Tennessee, Knoxville “Domestication of Dogs and Cats”	November 2016
<i>K-12 Experience</i>	
Curriculum Developer, Nextide Academy Chemistry, Earth Science	Summer 2014
High School Science Teacher, Corinth Holders High School Chemistry (Honors), Physical Science, Earth Science	2013-2014
<i>Certification</i>	
Best Practices in Teaching	Spring 2017

Awards and Honors

Jimmy & Ileen Cheek Graduate Student Medal of Excellence Award Recipient	Spring 2020
ASAS Southern Section 2020 PhD 3 Minute Thesis Competition Third Place	Spring 2020
University of Tennessee Fellowship for Graduate Excellence Recipient	2018 – 2022
ASAS Midwest 2017 MS Poster Competition First Place	Spring 2017
UT Beef and Forage Center Research and Recommendation Meeting Graduate Student Poster Competition Third Place	Fall 2016

Service

Disciplinary

Reviewer, Journal of Applied Microbiology	2020 – current
American Society of Animal Science Southern Section Section co-chair	2020 – current
Reviewer, Scientia Agricola	2020 – current
Reviewer, FEMS Microbiology	2020 – current
Reviewer, Journal of Animal Science	2019 – current
Science Mentor (Reviewer), Frontiers for Young Minds	2018 – current

Society Affiliations

National Academic Advising Association	2018 – current
Gamma Sigma Delta Honor Society of Agriculture	2017 – current
Gamma Beta Phi National Honor Society	2017 – current
American Society of Animal Science	2017 – current
American Society of Microbiology	2017 – current

University/Extension

Ag Ambassador Interview Committee	September 2020
Steak and Potatoes Field Day Speaker	August 2019
SASEF Science and Engineering Fair, Lead Judge	March 2018
State 4-H Horse Educational Contest, Assistant	February 2018
Wilson County Fair 4-H/FFA Goat Show	August 2017
Department of Animal Science Undergraduate Orientation	Summer 2017
State 4-H Livestock Judging Education Contest, Assistant	June 2017
State 4-H Horse Educational Contest, Assistant	February 2017

K-12 Outreach

Skype-A-Scientist, participant	Jan/Feb 2020
Skype-A-Scientist, participant 3 classes	February 2020
Skype-A-Scientist, participant 3 classes	November 2019
Invited speaker: “Animal Agriculture in the Modern World” Hardin Valley High School	October 2016

Leadership

American Society of Animal Science Southern Section Graduate Director	2019-2021
Animal Science Graduate Student Association Vice President	2019-2020
President	Fall 2018
Fundraising Chair	2016-2018
Department of Animal Science Peer Advisor Leader (PAL)	Fall 2017
Assistant Coordinator, PAL Cohort Leader (3 cohorts)	
Leader Training Coordinator	Spring 2018