

Abigail J. Carpenter

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SUMMARY

I am experienced in research, teaching, and outreach in applied dairy cattle nutrition and management, both as an academic and as an industry professional.

EDUCATION

2015 Ph.D., Department of Animal Sciences & Industry, Kansas State University

2012 M.S., Department of Animal Science, University of Minnesota

2010 B.S., Department of Animal Science, Michigan State University

EMPLOYMENT

2021-present Assistant Teaching Professor, Department of Animal Science, Iowa State University

2019-2021 Dairy nutritionist, CSA Animal Nutrition, LLC

2016-2019 Assistant Professor, Department of Animal Biosciences, University of Guelph, Ridgetown

2016 Postdoctoral researcher, Department of Animal Sciences & Industry, Kansas State University

PUBLICATIONS

Refereed journal articles

Ylioja, C., A. Carpenter, L. Mamedova, K. Daniels, P. Ross, S. Laflin, T. Swartz, and B. Bradford. 2021. "Effects of sodium salicylate in early lactation on mammary tissue proliferation, gene transcript profile, and DNA methylation." *J Dairy Science* (*under review*)

Gee, S. W., D. F. Kelton, and A. J. Carpenter. 2021. "Survey of feeding practices on dairy farms in Ontario and western Canada." *Can J Anim Sci* (*accepted*)

Moore, S., M. King, A. Carpenter, and T. DeVries. 2020. "Behavior, health, and productivity of early-lactation dairy cows supplemented with molasses in automated milking systems." *J Dairy Sci* 103: 10506-10518

Havekes, C. D., T. F. Duffield, A. J. Carpenter, and T. J. DeVries. 2020. "Effects of molasses-based liquid feed supplementation to a high-straw dry cow diet on feed intake, health, and performance of dairy cows across the transition period." *J Dairy Sci* 103: 5070-5089.

Havekes, C. D., T. F. Duffield, A. J. Carpenter, and T. J. DeVries. 2020. "Moisture content of high-straw diets affects intake, health, and performance of transition dairy cows." *J Dairy Sci* 103: 1500-1515.

Havekes, C. D., T. F. Duffield, A. J. Carpenter, and T. J. DeVries. 2019. "Effects of wheat straw chop length in high-straw dry cow diets on intake, health, and performance of dairy cows across the transition period." *J Dairy Sci* 103: 254-271.

Carpenter, A. J., C. M. Ylioja, L. K. Mamedova, K. Olagaray, and B. J. Bradford. 2018. "Effects of early postpartum sodium salicylate treatment on long-term milk, intake, and blood parameters of dairy cows." *J Dairy Sci* 101: 1437-1447.

Fessenden, S. W., A. J. Carpenter, M. Ruiz-Moreno, T. C. Jenkins, and M. D. Stern. 2017. "Effects of bismuth subsalicylate and dietary sulfur level on fermentation by ruminal microbes in continuous culture." *Transl Anim Sci* 1: 559-569.

Carpenter, A. J., E. Binversie, M. Ruiz-Moreno, and M. D. Stern. 2017. "Effect of dried fermentation biomass on microbial fermentation in continuous culture and *in vitro* intestinal digestibility." *Anim Feed Sci Tech* 230: 47-58.

Carpenter, A. J., C. F. Vargas-Rodriguez, J. A. B. Jantz, and B. J. Bradford. 2017. "Short communication: Sodium salicylate negatively impacts rumen fermentation *in vitro* and *in situ*." *J Dairy Sci* 100: 1935-1939.

Binversie, E. Y., M. Ruiz-Moreno, A. J. Carpenter, B. J. Heins, G. I. Crawford, A. DiCostanzo, and M. D. Stern. 2016. "Effects of dietary roughage and sulfur in diets containing corn dried distillers grains with solubles on hydrogen sulfide production and fermentation by rumen microbes *in vitro*." *J Anim Sci* 94: 3883-3893.

Razzaghi, A., R. Valizadeh, A. A. Naserian, M. Danesh-Mesgaran, A. J. Carpenter, and M. H. Ghaffari. 2016. "Effect of dietary sugar concentration and sunflower seed supplementation on lactation performance, ruminal fermentation, milk fatty acid profile, and blood metabolites of dairy cows." *J Dairy Sci* 99: 3539-3548.

Carpenter, A. J., C. M. Ylloja, C. F. Vargas, L. K. Mamedova, L. G. Mendonça, J. F. Coetzee, L. C. Hollis, R. Gehring, and B. J. Bradford. 2016. "Hot topic: Early postpartum treatment of commercial dairy cows with nonsteroidal antiinflammatory drugs increases whole-lactation milk yield." *J Dairy Sci* 99: 672-679.

Bradford, B. J., K. Yuan, J. K. Farney, L. K. Mamedova, and A. J. Carpenter. 2015. "Invited review: Inflammation during the transition to lactation: New adventures with an old flame." *J Dairy Sci* 98: 6631-6650.

Van Engen, N. K., M. L. Stock, T. Engelken, R. C. Vann, L. W. Wulf, L. A. Karriker, W. D. Busby, J. Lakritz, A. J. Carpenter, B. J. Bradford, W. H. Hsu, C. Wang, and J. F. Coetzee. 2014. "Impact of oral meloxicam on circulating physiological biomarkers of stress and inflammation in beef steers after long-distance transportation." *J Anim Sci*. 92(2):498-510.

Hinde, K., A. J. Carpenter, J. S. Clay, and B. J. Bradford. 2014. "Holsteins Favor Heifers, Not Bulls: Biased Milk Production Programmed during Pregnancy as a Function of Fetal Sex." *PLoS ONE* 9(2): e86169.

Mullins, C. R., L. K. Mamedova, A. J. Carpenter, Y. Ying, M. S. Allen, I. Yoon, B. J. Bradford. 2013. "Analysis of rumen microbial populations in lactating dairy cattle fed diets varying in carbohydrate profiles and *Saccharomyces cerevisiae* fermentation product." *J Dairy Sci*. 96: 5872-5881.

Book chapters

Bradford, B. J., and A. J. Carpenter. 2017. "Utilization of By-Product and Co-Product Feeds" in Large Dairy Herd Management. 3rd ed. American Dairy Science Association, Champaign, IL.

Other publications

Carpenter, Gail. "Contain ration costs with alternative feeds." *Hoard's Dairyman*. September 2020.

Carpenter, Gail. "Farm focus group sheds light on repro." *Hoard's Dairyman*. July 2017.

Carpenter, Gail, and Barry Bradford. "Early Identification of Health Issues in Pre- and Post-Fresh Cattle." *Progressive Dairyman*. 25 May 2016.

Vargas-Rodriguez, F., G. Carpenter, J. DeFrain, and B. Bradford. 2015. "Effects of Cobalt Source on Rate and Extent of Dry Matter and Fiber Degradation in Vitro," Kansas Agricultural Experiment Station Research Reports: Vol. 1: Iss. 8. <http://dx.doi.org/10.4148/2378-5977.1151>

PRESENTATIONS

Research presentations

Lemay, B. R., R. L. Nagle, T. J. DeVries, M. Thimmanagari, and A. J. Carpenter. 2020. "Switchgrass (*Panicum virgatum*) harvested using two different strategies in lactating dairy rations switchgrass, milk production, harvest strategy." ADSA Annual Meeting poster presentation.

Nagle, R. L., T. J. DeVries, M. Thimmanagari, and A. J. Carpenter. 2020. "Feeding pattern of lactating dairy cows fed switchgrass (*Panicum virgatum*) as a replacement for wheat straw in total mixed rations." ADSA Annual Meeting oral presentation.

Carpenter, A. J., E. L. Karcher, and C. C. Williams. 2019. "Methods of assessing learning utilized by university faculty in animal and dairy science programs." ADSA Annual Meeting oral presentation. Cincinnati, OH, USA.

Gee, S. W., N. E. Lobos, and A. J. Carpenter. 2019. "Effect of rumen-protected lysine supplementation to total mixed rations differing in crude protein concentration in lactating cows." ADSA Annual Meeting oral presentation. Cincinnati, OH, USA.

Havekes, C., T. F. Duffield, A. J. Carpenter, and T. J. DeVries. 2019. "Effect of adding water to a high-straw diet on the intake and behavior of Holstein dairy cows." ADSA Annual Meeting poster presentation. Cincinnati, OH, USA.

Havekes, C., T. F. Duffield, A. J. Carpenter, and T. J. DeVries. 2019. "Effect of adding molasses-based liquid feed to a high-straw dry cow diet on intake and behavior of Holstein dairy cows." ADSA Annual Meeting oral presentation. Cincinnati, OH, USA.

Havekes, C., T. F. Duffield, A. J. Carpenter, and T. J. DeVries. 2019. "Effect of wheat straw chop length in high-straw dry cow diets on intake, behavior, and health of dairy cows across the transition period." ADSA Annual Meeting poster presentation. Cincinnati, OH, USA.

Lemay, B. R., R. L. Nagle, J. C. DeBruyn, A. Heeg, M. Thimmanagari, and A. J. Carpenter. 2019. "Switchgrass (*Panicum virgatum*) as a replacement for wheat straw in lactating dairy cow rations." ADSA Annual Meeting poster presentation. Cincinnati, OH, USA.

Moore, S. M., M. T. M. King, A. J. Carpenter, and T. J. DeVries. 2019. "Effect of molasses-based liquid feed supplementation through robotic milking systems on fresh cow behavior, health, and production." ADSA Annual Meeting oral presentation. Cincinnati, OH, USA.

Nagle, R. L., B. R. Lemay, J. C. DeBruyn, A. Heeg, M. Thimmanagari, and A. J. Carpenter. 2019. "Switchgrass (*Panicum virgatum*) as a replacement for wheat straw in high-starch lactating cow rations." ADSA Annual Meeting poster presentation. Cincinnati, OH, USA.

Rivera, J. F., S. W. Gee, J. C. DeBruyn, A. Heeg, M. Thimmanagari, and A. J. Carpenter. 2019. "Effect of feeding switchgrass hay to dairy cows during the dry period." ADSA Annual Meeting poster presentation. Cincinnati, OH, USA.

Gee, S. W., L. McNea, B. Gilroyed, and A. J. Carpenter. 2018. "In vitro comparison of *Silphium perfoliatum* varieties and corn silage." ADSA Annual Meeting poster presentation. Knoxville, TN, USA.

Ylioja, C. M., A. J. Carpenter, M. Garcia, L. K. Mamedova, and B. J. Bradford. 2018. "Anti-inflammatory treatment in early lactation alters global mammary DNA methylation." ADSA Annual Meeting poster presentation. Knoxville, TN, USA.

DuMez, A. J., B. C. Dooley, E. H. Branstad, C. S. McCarthy, G. M. Bonetto, R. Zeeck, A. J. Carpenter, J. O. Sarturi, and H. A. Ramirez-Ramirez. 2018. "Effects of feeding corn stover pelleted with soybean meal or distillers grains on chewing activity and ruminal pH of dairy cows." ADSA Annual Meeting poster presentation. Knoxville, TN, USA.

Dooley, B. C., C. S. McCarthy, E. H. Branstad, G. M. Bonetto, R. Zeeck, A. J. Carpenter, J. O. Sarturi, and H. A. Ramirez-Ramirez. 2018. "Effects of feeding corn stover pelleted with soybean meal or distillers grains on lactating dairy cow performance." ADSA Annual Meeting oral presentation. Knoxville, TN, USA.

Hinbest, T., M. Mushtaq, R. Nicol, D. Young, D. Hooker, A. Carpenter, T. Thiruvengadathan, R. Gomez-Flores, A. Margaritis, L. Reid, M. Morrisson, and B. Gilroyed. 2018. "Sugar corn: a novel crop for conversion to alcohols, organic acids, and biogas." Eco-Bio oral presentation. Dublin, Ireland.

Carpenter, A., J. F. Rivera, C. Ylioja, K. Herrick, and B. J. Bradford. 2017. "Effect of source and pelleting on protein degradation of dried distillers grains with solubles." ADSA Annual Meeting poster presentation. Pittsburgh, PA, USA.

Carpenter, A. J., M. Wood, and B. J. Bradford. 2017. "Early lactation meal size, but not meal frequency, is positively associated with whole-lactation milk production and retention in the dairy herd." ADSA Annual Meeting oral presentation. Pittsburgh, PA, USA.

Ylioja, C. M., A. J. Carpenter, L. K. Mamedova, K. M. Daniels, P. J. Ross, S. L. Laflin, and B. J. Bradford. 2017. "Transcriptional changes in the early lactation mammary gland involved immune signaling pathways but were not affected by treatment." ASDA Annual Meeting poster presentation. Pittsburgh, PA, USA.

Carpenter, A. J., L. G. Mendonça, M. J. Brouk, and B. J. Bradford. 2016. "The influence of genetic potential on lactation curve and survival response to non-steroidal anti-inflammatory drug (NSAID) administration in early lactation to commercial dairy cattle." ADSA/ASAS Joint Annual Meeting oral presentation. Salt Lake City, UT, USA.

Carpenter, A. J., C. M. Ylioja, and B. J. Bradford. 2016. "Early postpartum administration of sodium salicylate to multiparous dairy cattle is associated with alterations in feeding behavior up to 120 days in milk." ADSA/ASAS Joint Annual Meeting oral presentation. Salt Lake City, UT, USA.

Coetzee, H., G. Carpenter, C. Ylioja, L. Mamedova, F. Vargas Rodriguez, L. Mendonça, L. Hollis, R. Gehring, and B. Bradford. 2016. "Early postpartum treatment of commercial dairy cows with nonsteroidal antiinflammatory drugs increases whole-lactation milk yield." World Buiatrics Congress. Dublin, Ireland.

Ylioja, C. M., A. J. Carpenter, L. K. Mamedova, and B. J. Bradford. 2015. "Effects of sodium salicylate on early lactation milk production parameters." ADSA/ASAS Joint Annual Meeting poster presentation. Orlando, FL, USA.

Vargas-Rodriguez, C. F., A. J. Carpenter, J. DeFrain, and B. J. Bradford. 2015. "Effects of cobalt source on rate and extent of DM and NDF degradation *in vitro*." ADSA/ASAS Joint Annual Meeting poster presentation. Orlando, FL, USA.

Carpenter, A. J., C. F. Vargas-Rodriguez, J. A. B. Jantz, and B. J. Bradford. 2015. "Sodium salicylate alters ruminal digestion *in vitro* and *in situ*." ADSA/ASAS Joint Annual Meeting oral presentation. Orlando, FL, USA.

Carpenter, A. J., C. F. Vargas-Rodriguez, J. A. B. Jantz, and B. J. Bradford. 2015. "Sodium salicylate depresses fermentation by ruminal microbes *in vitro*." ADSA/ASAS Joint Annual Meeting poster presentation. Orlando, FL, USA.

Carpenter, A. J., C. M. Ylioja, C. F. Vargas Rodriguez, L. G. D. Mendonça, L. Mamedova, J. F. Coetzee, L. Hollis, R. Gehring, and B. Bradford. 2014. "Effect of postpartum treatment with nonsteroidal anti-inflammatory drugs (NSAID) on reproductive performance and removal from the herd in dairy cattle through mid-lactation." ADSA/ASAS Joint Annual Meeting oral presentation. Kansas City, MO, USA.

De Vries, A., K. Hinde, A. J. Carpenter, J. Clay, and B. Bradford. 2014. "Biased milk production programmed by fetal sex affects sexed semen economics." ADSA/ASAS Joint Annual Meeting oral presentation. Kansas City, MO, USA.

Montgomery, S. R., L. Mamedova, A. J. Carpenter, and B. Bradford. 2014. "Sodium salicylate decreases glucose turnover rate in periparturient dairy cows, likely through enhanced liver insulin sensitivity." ADSA/ASAS Joint Annual Meeting oral presentation. Kansas City, MO, USA.

Carpenter, A. J., C. M. Ylloja, C. F. Vargas, L. K. Mamedova, L. G. Mendonça, J. F. Coetzee, L. C. Hollis, R. Gehring, and B. J. Bradford. 2014. "Effect of post-partum treatment with non-steroidal anti-inflammatory drugs (NSAID) on milk production and blood parameters in dairy cattle." Joint International Symposium on the Nutrition of Herbivores/International Symposium on Ruminant Physiology poster presentation. Canberra, ACT, Australia.

Carpenter, A. J., K. Hinde, J. S. Clay, and B. J. Bradford. 2013. "Calf sex influences whole-lactation milk and component production in Holstein cows." ADSA/ASAS Joint Annual Meeting oral presentation. Indianapolis, IN, USA.

Fessenden, S. W., A. J. Carpenter, M. Ruiz-Moreno, and M. D. Stern. 2013. "Effects of bismuth subsalicylate and dietary sulfur level on in vitro rumen fermentation in continuous culture." ADSA/ASAS Joint Annual Meeting oral presentation. Indianapolis, IN, USA.

Carpenter, A., E. Binversie, M. Ruiz-Moreno, J. Usry, I. Shinzato, and M. D. Stern. 2012. "Effect of dried fermentation biomass on microbial fermentation in continuous culture." ADSA/ASAS Joint Annual Meeting poster presentation. Phoenix, AZ, USA.

Seitz, E., A. Carpenter, M. Ruiz-Moreno, M.D. Stern, G.I. Crawford. 2011. "Effect of dietary roughage and sulfur concentration on hydrogen sulfide production from corn-based diets containing dried distillers grains." ADSA/ASAS Joint Annual Meeting poster presentation. New Orleans, LA, USA.

Carpenter, A. J. 2009. "The Effects of Breeding for Increased Milk Production in Dairy Cattle on Other Productive Traits." ADSA-SAD Undergraduate Oral Competition. Montreal, QC, Canada.

Invited presentations

Carpenter, G. 2019. "Assessing Alternate Dairy Forages and the Potential of Exogenous Enzyme Use." Canadian Biosystems' North American Nutrition Summit. Niagara Falls, ON, Canada.

Carpenter, G. 2019. "Feeding switchgrass to dairy cattle: What we know and don't know." Ontario Biomass Producers Annual General Meeting. Campbellville, ON, Canada.

Carpenter, G. 2019. "Biochar: Use in Livestock Systems." Biochar in Temperate Agriculture Workshop. Kitchener, ON, Canada.

Carpenter, G. 2018. "Switchgrass as a Straw Replacement for Lactating Dairy Cattle." Dairy Research & Innovation Day. Guelph, ON, Canada.

Carpenter, G. 2018. "Harnessing Forages to Drive Milk Production." Ontario Harvestore Lunch & Learn. Mount Forest, ON, Canada.

Carpenter, G. 2017. "Strengths and Weaknesses in the Canadian and U.S. Milk Production/Marketing System." Essex-Kent Holstein Club. Ridgeway, ON, Canada.

Carpenter, A. J. 2016. "Transition cow strategies to program lactation." Huron-Perth Dairy Committee Meeting. Mitchell, ON, Canada.

Carpenter, A. J. 2016. "(Young Scholar) Strategies for programming the lactation." ASAS Midwestern Section & ADSA Midwest Branch Meeting. Des Moines, IA, USA.

HONORS AND AWARDS

2016 Midwest Young Dairy Scholar, American Dairy Science Association

2014 Graduate Student Council Travel Award, Kansas State University

GRANTS

2019 Ontario Agri-Food Innovation Alliance-KTT Mobilization, \$40,000 for project title "Enhanced adoption of switchgrass use by the dairy sector" (Carpenter, Paibomesai, Samson, Thimmanagari)

2019 Natural Sciences and Engineering Research Council (NSERC) Discovery Launch Supplement, \$12,500 for project title "Enhancing the sustainability of dairy farm rations through the use of byproduct feeds" (Carpenter)

2018 Ontario Ministry of Food, Agriculture, and Rural Affairs (OMAFRA) – U of G Research Program, \$112,470 for project title "Evaluation of cup plant (*Silphium perfoliatum*) as a new perennial biomass and forage crop for Ontario" (Gilroyed, Carpenter, Todd, DeBruyn, Thimmanagari, Van Acker)

2018 NSERC Discovery Grant, \$120,000 for project title "Enhancing the sustainability of dairy farm rations through the use of byproduct feeds" (Carpenter)

2017 Ontario Agricultural College (OAC), \$1,000 for development of a Dairy Challenge Team at the University of Guelph, Ridgeway Campus. (Carpenter)

2017 OMAFRA – U of G Research Program, \$129,302 for project title "Strategies for utilizing switchgrass in Canadian dairy rations" (Carpenter, DeBruyn, Heeg, Thimmanagari)

2017 OMAFRA – U of G Research Program, \$52,000 for project title "Fibre requirements for market lambs" (Luimes, Mandell, Penner, Wood, Carpenter, Kouwenberg)

2016 OAC, \$2,700 for development of experiential learning programs in dairy production at the University of Guelph, Ridgeway Campus. (Carpenter)

2016 Ontario Sheep Marketing Agency, \$124,175 for project title "Fibre requirements for market lambs" (Luimes, Mandell, Penner, Wood, Carpenter, Kouwenberg)

2014 Professional Dairy Producers Foundation, \$1,500 for the continued development of the Kansas Jr. Dairy Show (van Horn and Carpenter)

TEACHING EXPERIENCE

University of Guelph, Ridgeway Campus

Managed Grasslands (guest lecture, January 2018)

Introduction to Animal Science (winter 2018-winter 2019)

Dairy Production I (fall 2017-fall 2019)

Dairy Production II (winter 2017-winter 2019)

Kansas State University

Dairy Cattle Nutrition (co-instructor; spring 2016)

Dairy Judging Coach (fall 2013-fall 2015)

Advanced Dairy Cattle Judging (sole instructor; fall semester 2015, 2014, and 2013)

Dairy Cattle Judging (sole instructor; spring semester 2014 and 2015)

Anatomy and Physiology (graduate lab assistant; fall semester 2015)

Principles of Animal Disease Control (graduate teaching assistant; spring 2013)

Principles of Animal Science (graduate teaching assistant; fall 2012)

University of Minnesota

Companion Animal Nutrition and Care (graduate teaching assistant; spring 2011)

Animal Nutrition (graduate teaching assistant; fall 2010 and 2011)

RESEARCH EXPERIENCE

- 2016-2019 Assistant professor, University of Guelph, Ridgetown Campus
I focused on applied dairy nutrition strategies, relevant to the dairy industry in Ontario and Canada. I utilized *in vivo* and *in vitro* methodology, as well as survey data collection. I conducted research on low-footprint forages, such as switchgrass and cup plant, as dairy feeds as well as feed supplements, including activated charcoal and rumen-protected lysine.
- 2012-2016 Graduate & post-graduate research assistant, Dr. B. J. Bradford, Kansas State University
I performed analyses of large data sets and conducted research in transition dairy cattle in the area of nutritional physiology, including laboratory analysis and on-farm data collection.
- 2010-2012 Graduate research assistant, Dr. M. D. Stern, University of Minnesota
I trained in techniques of *in vitro* rumen fermentation—including batch culture fermentation and a dual-flow continuous culture system—and *in vitro* estimation of post-ruminal digestion; I used these techniques to investigate protein sources for ruminants.

SERVICE TO PROFESSION

- 2020 Judge, ADSA graduate student presentation competition
- 2020-present Organizing committee, Virtual Dairy Nutrition & Management Series
- 2020-present Co-chair, Midwest Dairy Challenge planning committee
- 2020 Volunteer, Midwest Dairy Challenge competition
- 2019-present Program committee for Production, Management, and the Environment, ADSA Annual Meeting
- 2019 Graduate student poster competition judge, Animal Nutrition Conference of Canada
- 2019 Manuscript review, Canadian Journal of Animal Science
- 2018 Judging official, Ontario Inter-County Dairy Cattle Judging Competition
- 2018-present Program committee for Teaching/Undergraduate & Graduate Education, ADSA Annual Meeting
- 2018 Proposal review, NSERC Collaborative Research and Development Grant
- 2017 Proposal review, Canola Agri-Science Research Cluster AAFC Next Policy Framework
- 2017-2018 Abstract review, ADSA Annual Meeting (Ruminant Nutrition)
- 2016-present Manuscript review, Journal of Dairy Science

UNIVERSITY SERVICE

Thesis committee examiner, Sydney Moore, April 2020

Thesis committee examiner, Casey Havekes, August 2019

M.Sc. advisory committee member, Katherine Trottier, January 2018-August 2019

M.Sc. advisory committee member, Sydney Moore, January 2018-April 2020

M.Sc. advisory committee member, Casey Havekes, September 2017-August 2019

Ph.D. advisory committee member, Asma Sabir, September 2017-August 2019

Thesis committee examiner, Rachael Coon, August 2017

Ridgetown campus hiring committee, Agricultural Assistants, September 2016

Kansas 4-H Dairy Action Team, August 2013-November 2015

2013-2015 Judging Contest Committee Chair

2014 Sweepstakes Rules Review Committee Chair

2015 Kansas 4-H dairy judging coach

Master's Student Representative, U of MN Department of Animal Science Graduate Seminar Committee, April 2011-April 2012

EXTRACURRICULAR UNIVERSITY SERVICE

2018 Chaperone, student agricultural tour of Belize

2018-2019 Coach and founder, Ridgetown Midwest Regional Dairy Challenge Team

2017-2019 Coach and founder, Ridgetown Dairy Judging Team

2016-2019 Founding advisor, Ridgetown Dairy Club

2016 Chaperone and co-coordinator, student trip to World Dairy Expo

2014-2015 Graduate student advisor, Kansas State Dairy Science Club

2013-2015 Social chair, Animal Science Graduate Student Association, Kansas State University

2011-2012 President, Animal Science Graduate Club, University of Minnesota

PROFESSIONAL AFFILIATIONS

Canadian Society of Animal Science, 2017-present

American Dairy Science Association, 2011-present