

C.V.
Stephanie Laura Hansen, Ph.D.

Education

B.S., Animal Science, Distinction and University Honors, Iowa State University, 2002

M.S., Animal Science, North Carolina State University, 2005

Thesis title: The Effect of Dietary Manganese on Growth, Reproductive Performance, and Manganese Status of Beef Heifers; Advisor: Jerry W. Spears

Ph.D., Nutrition, North Carolina State University, 2008

Dissertation Title: Nutritional Interrelationships between Iron, Copper and Manganese in Domestic Livestock; Advisor: Jerry W. Spears

Summary of Professional Experience

Aug 2003 - Dec 2008 – North Carolina State University, Raleigh, North Carolina, Research Assistant, Animal Science Department.

Dec 2008 – July 2009 – North Carolina State University, Raleigh, North Carolina, Post Doctoral Research Associate, Animal Science Department.

Aug. 2009 - June 2015 - Iowa State University, Ames, Iowa, Assistant Professor, Beef Feedlot Nutrition, Animal Science Department.

July 2015 - Present - Iowa State University, Ames, Iowa, Associate Professor, Beef Feedlot Nutrition, Animal Science Department.

July 2020 - Present- Iowa State University, Ames, Iowa, Professor, Beef Feedlot Nutrition, Animal Science Department.

Recent Professional Honors and Awards

Kenneth R. Keller Award for Excellence in Doctoral Dissertation Research (NCSU) - 2009
Iowa State University College of Agriculture Early Achievement in Teaching Award - 2014
Iowa State University Honors Program Excellence in Mentoring and Teaching Award - 2015
Iowa State University College of Agriculture Early Achievement-Research Award - 2016
Iowa State University Award for Early Achievement in Research - 2016
North Carolina State University Outstanding Young Alumni - 2016
Midwest ASAS Early Achievement in Research - 2017
American Society of Animal Science Early Career Achievement - 2017

Professional Affiliations and Activities

American Society of Animal Science

Ruminant Nutrition Editorial Board Member-Journal of Animal Science - 2013-2017

Inaugural Editorial Board Member-Translational Animal Science - 2017-present

Midwest Section of American Society of Animal Science

Academic Quadrathlon Committee - 2010-present (*Responsible for organizing the lab practicum held at Iowa State University in conjunction with this meeting - 2011-2013*)

Ruminant Nutrition Program Committee - 2012-2015 (*Chair, 2013-2014*)

American Society of Nutrition

Iowa Cattlemen's Association

American Dairy Science Association

Zinpro Corp. Feedlot Advisory Board – 2017-present

ISU Personnel Record

Assistant Professor, August 2009 – June 2015: B-base, 70% research 30% teaching

Associate Professor, July 2015 – present: B-base, 70% research 30% teaching

Chair, College of Ag and Life Sciences Honors Program Committee

Member of Interdepartmental Graduate Program in Nutritional Sciences

Member of Nutritional Sciences Council

Member of Interdepartmental Graduate Program in Toxicology

Member of CIAG (Center for Integrated Animal Genomics)

Member of Iowa State Biotechnology Faculty Group

Member of Project LEA/RN Group

Research (70% of Appointment)

Publications and Research Presentations

Peer-Reviewed Publications

Prior to joining faculty at Iowa State University

1. H. S. Stahlhut, C. S. Whisnant, K. E. Lloyd, E. J. Baird, L. R. Legleiter, **S. L. Hansen**, and J. W. Spears. 2006. Effect of chromium supplementation and copper status on glucose and lipid metabolism in Angus and Simmental beef cows. *Anim. Feed Sci. Technol.* 128: 253-265.
2. **Hansen, S. L.**, J. W. Spears, K. E. Lloyd, and C. S. Whisnant. 2006. Feeding a low manganese diets to heifers during gestation impairs fetal growth and development. *J. Dairy Sci.* 89:4305-4311.

3. **Hansen, S. L.**, J. W. Spears, K. E. Lloyd, and C. S. Whisnant. 2006. Growth, reproductive performance, and manganese status of heifers fed varying concentrations of manganese. *J. Anim. Sci.* 84:3375-3380.
4. Legleiter, L. R., H. C. Liu, K. E. Lloyd, **S. L. Hansen**, R. S. Fry, and J. W. Spears. 2007. Exposure to low dietary copper or low copper coupled with high dietary manganese for one year does not alter brain prion protein characteristics in the mature bovine. *J. Anim. Sci.* 85: 2895-2903.
5. **Hansen, S. L.**, P. Schlegel, L. R. Legleiter, K. E. Lloyd, and J. W. Spears. 2008. Bioavailability of copper from copper glycinate in steers fed high dietary sulfur and molybdenum. *J. Anim. Sci.* 86:173-179.
6. **Hansen, S.L.**, M.S. Ashwell, L.R. Legleiter, R.S. Fry, K.E. Lloyd, and J.W. Spears. 2009. The addition of high manganese to a copper-deficient diet further depresses copper status and growth of cattle. *Br. J. Nutr.* 101:1068-1078.
7. **Hansen, S.L.** and J.W. Spears. 2009. Bioaccessibility of iron from soil is increased by silage fermentation. *J. Dairy Sci.* 92: 2896-2905.
8. Hepburn, J. J., J. D. Arthington, **S. L. Hansen**, J. W. Spears, and M. D. Knutson. 2009. Copper chaperone for Cu, Zn superoxide dismutase: A potential biomarker for copper status in cattle. *J. Anim. Sci.* 87:4161-4166.
9. **Hansen, S.L.**, N. Trakooljul, H-C. Liu, A. J. Moeser, and J. W. Spears. 2009. Iron transporters are differentially regulated by dietary iron, and modifications are associated with changes in manganese metabolism in young pigs. *J. Nutr.* 139:1474 - 1479.
10. **Hansen, S.L.**, Trakooljul, H.C. Liu, J.A. Hicks, M.S. Ashwell, and J.W. Spears. 2010. Proteins involved in iron metabolism in beef cattle are affected by copper deficiency in combination with high dietary manganese, but not by copper deficiency alone. *J. Anim. Sci.* 88(1):275-83.
11. **Hansen, S.L.**, M.S. Ashwell, A.J. Moeser, R.S. Fry, M.D. Knutson, and J.W. Spears. 2010. High dietary iron reduces transporters involved in iron and manganese metabolism and increases intestinal permeability in calves. *J. Dairy Sci.* 93(2):656-665. .
12. **Hansen, S.L.**, Trakooljul, N., Spears J.W., and H.C. Liu. 2010. Age and dietary iron affect expression of genes involved in iron acquisition and homeostasis in young pigs. *J. Nutr.* 140:271-277.
13. Fry, R.S., T.T. Brown Jr, K.E. Lloyd, **S.L. Hansen**, L.R. Legleiter, W.P. Robarge and J.W. Spears. 2011. Effect of dietary boron on physiological responses in growing steers inoculated with bovine herpesvirus type-1. *Res. Vet. Sci.* 90:78-83.

Since joining faculty at Iowa State University

Grants listed in parentheses can be found on pages 37-52 of the C.V.

14. Drewnoski, M.E., S.M. Ensley, D.C. Beitz, D.D. Loy, P.M. Imerman, J.A. Rathje, and **S.L. Hansen**. 2012. Assessment of ruminal hydrogen sulfide or urine thiosulfate as diagnostic tools for sulfur induced polioencephalomalacia in cattle. *Journal of Veterinary Diagnostic Investigation*. 24:702-709.
15. Drewnoski, M. E., E. L. Richter, and **S. L. Hansen**. 2012. Dietary sulfur concentration affects rumen hydrogen sulfide concentrations in feedlot steers during transition and finishing. *J. Anim. Sci.* 90:4478-4486.
16. Richter, E. L., M. E. Drewnoski, and **S. L. Hansen**. 2012. Effects of increased dietary sulfur on beef steer mineral status, performance, and meat fatty acid composition *J. Animal. Sci.* 90:3945-3953.
17. Pogge, D.J., E. L. Richter, M. E. Drewnoski and **S. L. Hansen**. 2012. Mineral concentrations of plasma and liver following injection with a trace mineral complex differ among Angus and Simmental cattle. *J. Animal. Sci.* 90: 2692-2698.
18. Pogge, D. J. and **S. L. Hansen**. 2013. Supplemental vitamin C improves marbling in feedlot cattle consuming high sulfur diets. *J. Anim. Sci.* 90:4303-4314.
19. Pogge, D. J. and **S. L. Hansen**. 2013. Effect of varying concentrations of vitamin C on performance, blood metabolites, and carcass characteristics of steers consuming a common high-sulfur (0.55% S) diet. *J. Anim. Sci.* 91:5754-5761.
20. Drewnoski, M. E. and **S. L. Hansen**. 2013. Effect of delaying the feeding of high sulfur until 28 days after adaptation to finishing diet on cattle intake, gain, and ruminal hydrogen sulfide concentrations. *Livestock Science*. 155:230-235.
21. Drewnoski, M. E., P. Doane, and **S. L. Hansen**. 2014. Ferric citrate decreases ruminal hydrogen sulphide concentrations in feedlot cattle fed diets high in sulphate. *British Journal of Nutrition*. 111:261-269.
22. Genter, O. N. and **S. L. Hansen**. 2014. Effect of dietary trace mineral supplementation and a multi-element trace mineral injection on shipping response and growth performance of beef cattle. *J. Anim. Sci.* 92:2522-2530.
23. Genter, O. N. and **S. L. Hansen**. 2014. A multi-element trace mineral injection improves liver copper and selenium concentrations and manganese superoxide dismutase activity in beef steers. *J. Anim. Sci.* 92:695-704.

24. Pogge, D. J., S. M. Lonergan, and **S. L. Hansen**. 2014. Influence of supplemental vitamin C on postmortem protein degradation and fatty acid profiles of the longissimus thoracis of steers fed varying concentrations of dietary sulfur. *Meat Sci.* 96:956-963.
25. Pogge, D. J., S. M. Lonergan, and **S. L. Hansen**. 2014. Influence of supplementing vitamin C to yearling steers fed a high sulfur diet during the finishing period on meat color, tenderness and protein degradation, and fatty acid profile of the longissimus muscle. *Meat Sci.* 97:419-427.
26. Morine, S. J., M. E. Drewnoski, and **S. L. Hansen**. 2014. Increasing dietary NDF concentration decreases ruminal hydrogen sulfide concentrations in steers fed high-sulfur diets based on ethanol co-products. *J. Anim. Sci.* 92:3035-3041
27. Drewnoski, M. E., C. J. Brasche, and **S. L. Hansen**. 2014. Effects of dietary sulfur source on rumen pH and hydrogen sulfide gas concentration. *Livestock Sci.* 165:66-69.
28. Pogge, D. J., M. E. Drewnoski, and **S. L. Hansen**. 2014. High dietary sulfur decreases the retention of copper, manganese, and zinc in steers. *J. Anim. Sci.* 92:2182-2191.
29. Pogge, D. J., M. E. Drewnoski, and **S. L. Hansen**. 2014. Feeding ferric ammonium citrate to decrease the risk of sulfur toxicity: effects on trace mineral absorption and status of beef steers. *J. Anim. Sci.* 92:4005-4013.
30. Morine, S. J., M. E. Drewnoski, A. K. Johnson, and **S. L. Hansen**. 2014. Determining the influence of dietary roughage concentration and source on ruminal parameters related to sulfur toxicity. *J. Anim. Sci.* 92:4068-4076.
31. Drewnoski, M. E., D. J. Pogge, and **S. L. Hansen**. 2014. Board Invited Review: High-sulfur in beef cattle diets: a review. *J. Anim. Sci.* 92:3763-3780.
32. Saatchi, M., J. E. Beever, J. E. Decker, D. B. Faulkner, H. C. Freetly, **S. L. Hansen**, H. Yampara-Iquise, K. A. Johnson, S. D. Kachman, M. S. Kerley, J. Kim, D. D. Loy, E. Marques, H. L. Neibergs, E. J. Pollak, R. D. Schnabel, C. M. Seabury, D. W. Shike, W. M. Snelling, M. L. Spangler, R. L. Weaver, D. J. Garrick and J. F. Taylor. 2014. QTL, candidate genes, metabolic and signaling pathways associated with growth, metabolic mid-test weight, feed intake and feed efficiency in beef cattle. *BMC Genomics.* 15(1):1004.
33. Genther, O. N. and **S. L. Hansen**. 2014. The effect of trace mineral source and concentration on ruminal digestion and mineral solubility. *J. Dairy Sci.* 98:566-573.
34. Pogge, D. J., S. M. Lonergan, and **S. L. Hansen**. 2014. Impact of supplementing vitamin C for 56, 90, or 127 days on growth performance and carcass characteristics of steers fed a 0.31 or 0.59% sulfur diet. *J. Anim. Sci.* 93:2297-2308.

35. Genter, O. N. and **S. L. Hansen**. 2014. Effect of a multielement trace mineral injection prior to transit stress on inflammatory response, growth performance, and carcass characteristics of beef steers. *J. Anim. Sci.* 93:1767-1779.
36. Lundy, E. L., D. D. Loy, and **S. L. Hansen**. 2014. Influence of distillers grains from a cellulosic ethanol process utilizing corn kernel fiber on nutrient digestibility of lambs and steer feedlot performance. *J. Anim. Sci.* 93:2265-2274.
37. Van Emon, M. L., D. D. Loy, and **S. L. Hansen**. 2014. Determining the preference, *in vitro* digestibility, *in situ* digestibility, and receiving period performance of steers fed a novel algae meal derived from heterotrophic microalgae. *J. Anim. Sci.* 93:3121–3129.
38. Gutierrez, N. A., N. V. L. Serão, A. J. Elsbernd, **S. L. Hansen**, C. L. Walk, M. R. Bedford, and J. F. Patience. 2014. Quantitative relationships between standardized total tract digestible phosphorus and calcium intake and its retention and excretion in growing pigs fed corn-soybean meal diets. *J. Anim. Sci.* 93:2174–2182.
39. Stokes, R. S., M. L. Van Emon, D. D. Loy, and **S. L. Hansen**. 2015. Assessment of algae meal as a ruminant feedstuff: Nutrient digestibility in sheep as a model species. *J. Anim. Sci.* 93:5386-5394.
40. Pogge, D. J., S. M. Lonergan, and **S. L. Hansen**. 2015. Effects of duration of vitamin C supplementation during the finishing period on postmortem protein degradation, tenderness, and meat color of the longissimus muscle of calf-fed steers consuming a 0.31 or 0.59% sulfur diet. *J. Anim. Sci.* 93:2567-2575.
41. Lundy, E. L., B. E. Doran, E. E. Vermeer, D. D. Loy, and **S. L. Hansen**. 2015. Effect of corn particle size with moderate amounts of wet distillers grains in finishing diets on starch digestibility and steer performance. *Prof. Anim. Sci.* 31:535-542.
42. Stokes, R. S., D. D. Loy, and **S. L. Hansen**. 2016. Effects of increased inclusion of algae meal on finishing steer performance and carcass characteristics. *J. Anim. Sci.* 94:687-696.
43. Russell, J. R., N. O. Minton, W. Sexten, M. Kerley, **S. L. Hansen**. 2016. Influence of feed efficiency classification on diet digestibility and growth performance of beef steers. *J. Anim. Sci.* 94:1610-1619.
44. Russell, J. R., E. L. Lundy, N. O. Minton, W. J. Sexten, M. S. Kerley, **S. L. Hansen**, and National Program for Genetic Improvement of Feed Efficiency in Beef Cattle. 2016. Influence of growing phase feed efficiency classification on finishing phase growth performance and carcass characteristics of beef steers fed different diet types. *J. Anim. Sci.* 94:2927-2936.

45. Russell, J. R., W. J. Sexten, M. S. Kerley, and **S. L. Hansen**. 2016. Relationship between antioxidant capacity, oxidative stress, and feed efficiency in beef steers. *J. Anim. Sci.* 94:2942-2953.
46. Genter-Schroeder, O. N., M. Branine, and **S. L. Hansen**. 2016. The effects of increasing supplementation of zinc-amino acid complex on growth performance, carcass characteristics, and inflammatory response of beef cattle fed ractopamine hydrochloride. *J. Anim. Sci.* 94:3389-3398.
47. Yihang, Li, **S. L. Hansen**, L. B. Borst, J. W. Spears, and A. J. Moeser. 2016. Dietary Iron Deficiency and Oversupplementation Increase Intestinal Permeability, Ion Transport, and Inflammation in Pigs. *J. Nutr.* jn231621; doi:10.3945/jn.116.231621.
48. Pogge, D. J., Drewnoski, M. E., D. Snider, W. Rumbelha, and **S. L. Hansen**. 2016. Effect of ferric ammonium citrate in feedlot diets with varying dried distillers grains inclusion on ruminal hydrogen sulfide concentrations and steer growth. *J. Anim. Sci.* 94:3894-3901.
49. Genter-Schroeder, O. N., M. E. Branine, and **S. L. Hansen**. 2016. The influence of supplemental Zn-amino acid complex and ractopamine hydrochloride feeding duration on growth performance and carcass characteristics of finishing beef cattle. *J. Anim. Sci.* 94:4338-4345
50. Cassady, C. J., T. L. Felix, J. E. Beever, D. W. Shike and And The National Program for Genetic Improvement of Feed Efficiency in Beef Cattle (**S. L. Hansen**). 2016. Effects of timing and duration of test period and diet type on intake and feed efficiency of Charolais-sired cattle. *J. Anim. Sci.* 94:4748-4758.
51. Blank, C. P., D. D. Loy and **S. L. Hansen**. 2017. Effect of post-ethanol extraction sorghum silage as a forage source in growing and finishing diets on steer performance carcass characteristics, and nutrition digestibility. *J. Anim. Sci.* 95:3206-3213.
52. Blank, C. P., J. Russell, S. M. Lonergan and **S. L. Hansen**. 2017. Influence of feed efficiency classification and growing and finishing diet type on meat tenderness attributes of beef steers. *J. Anim. Sci.* 95: 2986-2992.
53. Hartman, S. J., O. N. Genter-Schroeder, and **S. L. Hansen**. 2017. Effect of trace mineral source on mineral status and performance of beef steers fed low- or high-sulfur diets. *J. Anim. Sci.* 95:4139-4149.
54. Niedermayer, E. K., O. N. Genter-Schroeder, D. D. Loy and **S. L. Hansen**. 2017. The effects of injectable trace minerals on growth performance and mineral status of Angus beef steers raised in a natural feedlot program. *Prof. Anim. Sci.* 33:186-193.

55. Seabury, C. M., D.L. Oldeshulte, M. Saatchi, J. E. Beever, J. E. Decker, Y. A. Halley, E. K. Bhattarai, M. Molaei, H. C. Freetly, **S. L. Hansen**, H. Yampara-Iquise, K. A. Johnson, M. S. Kerley, J. W. Kim, D. D. Loy, E. Marques, H. L. Neibergs, R. D. Schnabel, D. W. Shike, M. L. Spangler, R. L. Weaber, D. J. Garrick and J. F. Taylor. 2017. Genome-wide association study for feed efficiency and growth traits in U.S. beef cattle. *BMC Genomics* 18: 386.
56. Niedermayer, E. K., O. N. Genter-Schroeder, D. D. Loy and **S. L. Hansen**. 2018. Effect of varying trace mineral supplementation of steers with or without hormone implants on growth and carcass characteristics. *J. Anim. Sci.* 96(3):1159-1170
57. Hartman, S. J., O. N. Genter-Schroeder, and **S. L. Hansen**. 2018. Comparison of trace mineral repletion strategies in feedlot steers to overcome diets containing high concentrations of sulfur and molybdenum. *J. Anim. Sci.* 96(6):2504-2515.
58. Genter-Schroeder, O. N., M. E. Branine, **S. L. Hansen**. 2018. Effects of increasing supplemental dietary Zn concentration on growth performance and carcass characteristics in finishing steers fed ractopamine hydrochloride. *J. Anim. Sci.* 96(5):1903-1913.
59. Carmichael, R. N., O. N. Genter-Schroeder, C. P. Blank, E. L. Deters, S. J. Hartman, E. K. Niedermayer, and **S. L. Hansen**. 2018. The influence of supplemental zinc and ractopamine hydrochloride on mineral and nitrogen retention of beef steers. *J. Anim. Sci.* 96(7):2939-2948.
60. Deters, E. L., R. S. Stokes, O. N. Genter-Schroeder, and **S. L. Hansen**. 2018. Effects of Original XPC in receiving diets of newly weaned beef steers I: Growth performance and antioxidant defense. *J. Anim. Sci.* 96(9):3897-3905.
61. Deters, E. L., R. S. Stokes, O. N. Genter-Schroeder, and **S. L. Hansen**. 2018. Effects of Original XPC in receiving diets of newly weaned beef steers II: Digestibility and response to a vaccination challenge. *J. Anim. Sci.* 96(9):3906-3915.
62. VanValin, K. R., O. N. Genter-Schroeder, Carmichael, R. N., C. P. Blank, E. L. Deters, S. J. Hartman, E. K. Niedermayer, S. B. Laudert and **S. L. Hansen**. 2018. Influence of dietary zinc concentration and supplemental zinc source on nutrient digestibility, zinc absorption, and retention in sheep. *J. Anim. Sci.* 96(12):5336-5344.
63. Olsen, K. M., S. A. Gould, C. L. Walk, N. V. L. Serão, **S. L. Hansen**, and J. F. Patience. 2018. Evaluating phosphorus release by phytase in diets fed to growing pigs that are not deficient in phosphorus. *J. Anim. Sci.* 97(1):327-337.
64. Carmichael, R. N., O. N. Genter-Schroeder, E. L. Deters, T. D. Jackson, E. M. Messersmith, K. R. VanValin, and **S. L. Hansen**. 2019. The influence of supplemental

zinc and dietary fiber concentration on mineral retention of beef steers. *Transl. Anim. Sci.* 3: 784-795. doi:10.1093/tas/txz032.

65. VanValin, K. R., Genter-Schroeder O.N., Laudert S.B., and **S. L. Hansen**. 2019. Relative bioavailability of organic and hydroxy copper sources in growing steers fed a high antagonist diet. *J. Anim. Sci.* 97:1375-1383. doi:10.1093/jas/sky487
66. Deters, E. L. and **S. L. Hansen**. 2019. Effect of supplementing a *Saccharomyces cerevisiae* fermentation product during a preconditioning period prior to transit on receiving period performance, nutrient digestibility and antioxidant defense by beef steers. *Transl. Anim. Sci.* 3(4): 1227-1237. <https://doi.org/10.1093/tas/txz140>
67. Deters, E. L. and **S. L. Hansen**. 2019. Vitamin E supplementation strategies during feedlot receiving: effects on beef steer performance, antibody response to vaccination and antioxidant defense. *J. Anim. Sci.* 97:4362-4369.
68. Ramirez, B., H. Xin, P. G. Halbur, D. H. Beermann, **S. L. Hansen**, D. C. L. Linhares, J. M. Peschel, C. J. Rademacher, J. M. Reecy, J. W. Ross, T. A. Shepherd, and J. E. Koltes. 2019. At the intersection of industry, academia, and government: how do we facilitate productive precision livestock farming in practice? *Animals.* 9:635.
69. Radke, S. L., S. M. Ensley, and **S. L. Hansen**. 2019. Inductively coupled plasma mass spectrometry determination of hepatic copper, manganese, selenium, and zinc concentrations in relation to sample amount and storage duration. *J. Vet. Diagn. Inv.* <https://doi.org/10.1177/1040638719894988>
70. Deters, E. L., and **S. L. Hansen**. 2019. Invited review: Linking road transportation with oxidative stress in cattle and other species. *Applied Animal Science*. Accepted Dec. 18, 2019.
71. Jackson, T. D., R. N. Carmichael, E. L. Deters, E. M. Messersmith, K. R. VanValin, D. D. Loy, and **S. L. Hansen**. 2020. Comparison of multiple single-use, pulse-dose trace mineral products provided as injectable, oral drench, oral paste, or bolus on circulating and liver trace mineral concentrations of beef steers. *Applied Animal Science.* 36:26-35.

Books or Book Chapters

Prior to joining faculty at Iowa State University

1. Spears, J. W. and **S. L. Hansen**. 2008. Bioavailability criteria for trace minerals in monogastrics and ruminants. In: P. Schlegel, S. Durosoy and A.W. Jongbloed (Eds.). *Trace Elements in Animal Production Systems*. Wageningen Academic Publishers. Wageningen, the Netherlands. Pg. 187-201.

Since joining faculty at Iowa State University

2. Spears, J. W., R. S. Fry, and **S. L. Hansen**. 2011. Physiology of trace mineral absorption in mammals. In: Spurenelementforschung an der Schnittstelle zwischen Elementanalytik und Biofunktionalitar (C. Mair, W. Windisch, and K. Schedle Eds.) pp. 43-51, Herbert Utz Verlag, Munchen, Germany.
3. Jurgens, M., K. Bregendahl, J. Coverdale, and **S. Hansen**. 2012. Animal Feeding & Nutrition, 11th Ed. Kendall Hunt Publishers. Dubuque, IA.

U.S. Patent Applications

1. Perry Doane and **Stephanie Laura Hansen**. Method to decrease hydrogen sulfide production in ruminant animals. U.S. Patent Application 61/484,829, filed May 11, 2011.
2. **Stephanie L. Hansen**, Daniel D. Loy, Olivia Genther-Schroeder, Rebecca Stokes, Megan Van Emon, John Piechocki. Microalgae meal. U.S. Patent Application 14/706,862, filed May 7, 2015.

Published Abstracts

Prior to joining faculty at Iowa State University

1. Stahlhut, H. S., C. S. Whisnant, K. E. Lloyd, E. J. Baird, L. R. Legleiter, **S. L. Hansen**, and J. W. Spears. 2004. Effect of chromium supplementation and copper status on glucose metabolism in beef cows. *J. Anim. Sci.* 82 (Suppl. 1): 469.
2. **Hansen, S. L.**, C. S. Whisnant, K. E. Lloyd, E. J. Baird, L. R. Legleiter, H. S. Stahlhut, and J. W. Spears. 2004. Growth, reproductive performance, and manganese status of heifers fed varying concentrations of manganese. *J. Anim. Sci.* 82 (Suppl. 1):470.
3. **Hansen, S. L.**, C. S. Whisnant, K. E. Lloyd, L. R. Legleiter, H. S. Stahlhut, and J. W. Spears. 2005. Long term effects of dietary manganese in beef heifers on performance and manganese status of their offspring. *J. Anim. Sci.* 83(Suppl. 1):335.
4. Legleiter, L. R., J. W. Spears, K. E. Lloyd, **S. L. Hansen** and R. S. Fry. 2006. Copper deficiency results in decreased brain copper but does not affect prion protein characteristics in mature Angus cows. *J. Anim. Sci.* 84 (Suppl. 2):6.
5. **Hansen, S. L.**, C. S. Whisnant, K. E. Lloyd, and J. W. Spears. 2006. The effect of dietary manganese on growth, reproductive performance, and manganese status of beef heifers. *J. Anim. Sci.* 84 (Suppl. 2):46.
6. **Hansen, S. L.**, P. Schlegel, K. E. Lloyd, L.R. Legleiter, and J. W. Spears. 2006. Bioavailability of copper from copper glycinate when fed in the presence of high sulfur and molybdenum. *J. Anim. Sci.* 84 (Suppl. 1):601.
7. **Hansen, S. L.**, L. R. Legleiter, R. S. Fry, K. E. Lloyd, and J. W. Spears. 2007. Impacts on growth of beef cattle due to long-term copper deficiency are further exacerbated in the presence of high dietary manganese. *J. Anim. Sci.* 85 (Suppl. 1): 616.
8. R. S. Fry, T. T. Brown, Jr., K. E. Lloyd, **S. L. Hansen**, L. R. Legleiter, W. P. Robarge, and J. W. Spears. 2008. Effect of dietary boron on physiological responses in growing steers inoculated with bovine herpesvirus type-1. *J. Anim. Sci.* Vol. 86, E-Suppl. 3:22.

9. Rilmington, V. D., **S. L. Hansen**, J. A. Hicks, J. W. Spears, and H-C. Liu. 2008. Effect of copper deficiency on intestinal gene expression in beef cattle FASEB J. 22:692.7.
10. McAdams, C. P., **S. L. Hansen**, H.C. Liu and J. W. Spears. 2008. Severe copper deficiency combined with high dietary manganese does not affect bovine prion characteristics. J. Anim. Sci. Vol. 86, E-Suppl. 3:36.
11. Spears, J. W. and **S. L. Hansen**. 2008. Absorption and metabolism of iron and manganese. J. Anim. Sci. Vol. 86, E-Suppl. 2: 126.
12. **Hansen, S. L.** and J. W. Spears. 2008. New insights into trace mineral interactions in ruminants. The Crissey Zoological Nutrition Symposium. NCSU Veterinary Medicine.
13. **Hansen, S. L.**, and J. W. Spears. 2008. Bioavailability of iron from soil contamination as affected by silage fermentation. J. Anim. Sci. Vol. 86, E-Suppl. 3: 10.
14. **Hansen, S. L.** and J. W. Spears. 2008. Impact of copper deficiency in cattle on proteins involved in iron metabolism. FASEB J. 22:443.5
15. **Hansen, S. L.** and J. W. Spears. 2008. Impact of copper deficiency in the presence or absence of high dietary manganese on iron status of cattle. J. Anim. Sci. Vol. 86, E-Suppl. 2: 139.
16. Fry, R. S., M. S. Ashwell, **S. L. Hansen**, T. E. Engle, H. Han and J. W. Spears. 2008. Effects of long-term copper deficiency on gene expression profiles of copper transporters and chaperones in the liver of cattle. 13th International meeting on Trace Elements in Man and Animals. Pucon, Chile. Pg. 79.
17. Spears, J. W., **S. L. Hansen** and R. S. Fry. 2008. Trace mineral transporters: implications for animal nutrition. 13th International meeting on Trace Elements in Man and Animals. Pucon, Chile. Pg. 58.
18. **Hansen, S. L.** and J. W. Spears. 2008. Dietary iron affects proteins involved in iron metabolism in weanling pigs. 13th International meeting on Trace Elements in Man and Animals. Pucon, Chile. Pg 66.
19. Fry, R. S., M. S. Ashwell, **S. L. Hansen**, T. E. Engle, H. Han and J. W. Spears. 2009. Effects of copper deficiency on gene expression profiles of copper transporters and chaperones in steers J. Anim. Sci. Vol. 87, E-Suppl. 2: 561.
20. **Hansen, S. L.**, M. S. Ashwell, R. S. Fry, and J. W. Spears. 2009. High dietary iron negatively impacts proteins important in iron and manganese metabolism in young calves. J. Anim. Sci. Vol. 87, E-Suppl. 2:516.

Since joining faculty at Iowa State University

21. Fry, R. S., J. W. Spears, **S. L. Hansen** and M. S. Ashwell. 2010. Dietary iron affects mRNA expression of porcine copper transporters. FASEB J. 24:229.7.
22. Fry, R. S., J. W. Spears, **S. L. Hansen**, H. C. Liu, and M. S. Ashwell. 2010. Effects of dietary iron and age on cellular copper metabolism in liver of weanling pigs. J. Anim. Sci. (Suppl. 2) 88:499.
23. Drewnoski, M. E., E. L. Richter, and **S. L. Hansen**. 2010. Days on feed and dietary sulfur content affect rumen hydrogen sulfide concentrations in feedlot steers J. Anim. Sci. (Suppl. 2) 88:513.

24. Richter, E. L., M. E. Drewnoski, and **S. L. Hansen**. 2010. Dietary sulfur negatively affects gain and mineral status in beef steers. *J. Anim. Sci. (Suppl. 2)* 88:511.
25. **Hansen, S. L.**, E. L. Richter, and M. E. Drewnoski. 2010. Angus and Simmental calves exhibit differential trace mineral metabolism. *J. Anim. Sci. (Suppl. 2)* 88:298.
26. Richter, E. L., M. E. Drewnoski, C. J. Ziemer and **S. L. Hansen**. 2011. High dietary sulfur modifies volatile fatty acid profiles and increases hydrogen sulfide gas production. *J. Anim. Sci. (Suppl. 2)* 89:150.
27. Morine, S. J., M. E. Drewnoski and **S. L. Hansen**. 2011. Effects of corn addition to fiber-based supplements on growing cattle performance and forage digestion. *J. Anim. Sci. (Suppl. 2)* 89:163. *Undergraduate Poster Competition Paper-1st place*.
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29. Drewnoski, M. E. and **S. L. Hansen**. 2011. Effect of delaying the feeding of high sulfur diets to feedlot cattle until after adaptation to a finishing diet. *J. Anim. Sci. (Suppl. 1)* 89:451.
30. Pogge, D. J. and **S. L. Hansen**. 2011. Effect of supplemental vitamin C on performance and antioxidant capacity of cattle fed varying concentrations of dietary sulfur. *J. Anim. Sci. (Suppl. 1)* 89:259.
31. Drewnoski, M. E., P. Doane, and **S. L. Hansen**. 2011. Ferric citrate decreases ruminal hydrogen sulfide production in feedlot cattle fed diets high in sulfate. *Late Breaking Abstract. J. Anim. Sci. (Suppl. 1)* 89:iii.
32. Pogge, D. J., E. Richter, M. E. Drewnoski, and **S. L. Hansen**. 2011. Mineral clearance from plasma and liver following injection with a trace mineral complex is affected by cattle breed. 14th International meeting on Trace Elements in Man and Animals. Enshi, China. Pg. 187.
33. **Hansen, S. L.**, H-C. Liu, J. W. Spears. 2011. Influence of dietary iron concentration on metabolism of other trace minerals in pigs and cattle. 14th International meeting on Trace Elements in Man and Animals. Enshi, China. Pg. 78.
34. Pogge, D. J. and **S. L. Hansen**. 2011. Effect of supplemental vitamin C on performance and carcass characteristics of cattle fed varying concentrations of dietary sulfur. *Proceedings of Plains Nutrition Council Spring Conference*. Pg 108-109.
35. Brasche, C. J., M. E. Drewnoski, and **S. L. Hansen**. 2012. Effects of dietary sulfur source on ruminal pH and hydrogen sulfide of feedlot steers. *J. Anim. Sci. (Suppl. 2)* 90:132. *Undergraduate Poster Competition Paper*.
36. Daniels, L. J., M. E. Drewnoski, **S. L. Hansen**. 2012. Quick Test for Sulfur Level in Ethanol Co-products. *J. Anim. Sci. (Suppl. 2)* 90:131. *Undergraduate Poster Competition Paper*.
37. Morine, S. J., M. E. Drewnoski, **S. L. Hansen**. 2012. Determining the influence of dietary roughage concentration and source on rumen parameters related to sulfur toxicity. *J. Anim. Sci. 90 (Suppl. 2):15. Undergraduate Oral Competition Paper*.
38. Genther, O. N., and **S. L. Hansen**. 2012. Use of an injectable mineral in beef cattle: Mineral status. *J. Anim. Sci. 90 (Suppl. 3):194*.
39. Genther, O. N., and **S. L. Hansen**. 2012. Use of an injectable mineral in beef cattle: Growth and carcass characteristics. *J. Anim. Sci. 90 (Suppl. 3):194*.

40. Pogge, D. J. M. E. Drewnoski, and **S. L. Hansen**. 2012. High dietary sulfur decreases apparent absorption of copper and manganese by steers. *J. Anim. Sci.* 90 (E-Suppl. 3):429.
41. Pogge, D. J. and **S. L. Hansen**. 2012. Supplemental vitamin C alleviates the negative effects of high sulfur diets on beef quality. Distillers Grains Technology Council Symposium, St. Louis, MO.
42. Russell, J. R., E. L. Lundy, N. O. Minton, W. J. Sexten, M. S. Kerley and **S. L. Hansen**. 2013. Growth and carcass characteristics of feed efficiency sorted cattle fed corn or roughage-based diets and finished with corn or byproduct-based diets *J. Anim. Sci.* 91(E-Suppl. 2) Abst. 737.
43. Drewnoski, M. E. and **S. L. Hansen**. 2013. Effect of source and concentration of copper on cattle growth and copper status. *J. Anim. Sci.* 91 (E-Suppl.23):56.
44. Drewnoski, M. E., and **S. L. Hansen**. 2013. Feeding ferric citrate to decrease risk of sulfur toxicity: effects on trace mineral absorption and trace mineral status of steers. *J. Anim. Sci.* 91(E-Suppl. 2) Abst. 36.
45. Drewnoski, M. E., S. J. Morine, and **S. L. Hansen**. 2013. Inclusion of ferric ammonium citrate to safely increase inclusion of distillers grains in cattle diets. *J. Anim. Sci.* 91(E-Suppl. 2) Abst. 35.
46. Pogge, D. J., S. M. Lonergan, **S. L. Hansen**. 2013. Effect of varying doses of vitamin C growth and carcass characteristics of cattle consuming a high sulfur diet. *J. Anim. Sci.* 91(Suppl. 1) Abst. O149.
47. Pogge, D. J., S. M. Lonergan, **S. L. Hansen**. 2013. Influence of supplementing vitamin C to cattle fed a high sulfur diet late in the finishing period on meat color and tenderness. *J. Anim. Sci.* 91(E. suppl. 2) Abst. 39.
48. Fry, R. S., J. W. Spears, M. S. Ashwell, and **S. L. Hansen**. 2013. Invited: Exploring cellular trace mineral metabolism in bovine and porcine tissues. *J. Anim. Sci.* 91 (Suppl. 2) Abst. 271.
49. **Hansen, S. L.** 2013. Invited: Best practices and benefits of involving students in animal sciences research - early career faculty perspective. *J. Anim. Sci.* 91 (Suppl. 1) Abst. O111.
50. Genther, O. N. and **S. L. Hansen**. 2013. The effect of trace mineral source and concentration on ruminal digestion and mineral solubility. *J. Anim. Sci.* 91(Suppl. 1) Abst. O246.
51. Genther, O. N. and **S. L. Hansen**. 2013. Effect of a supplemental zinc complex on beef cattle performance and plasma and liver trace mineral concentrations. *J. Anim. Sci.* 91(Suppl. 2) Abst. 40.
52. Lundy, E. L., M. L. Van Emon, D. D. Loy, and **S. L. Hansen**. 2014. Digestibility of traditional and Adding Cellulosic Ethanol wet distillers grains in finishing lambs. *J. Anim. Sci.* 92 (E-Suppl. 2) Abst.704.
53. Lundy, E. L., B. E. Doran, E. Vermeer, D. D. Loy, and **S. L. Hansen**. 2014. Effects of corn particle size on steer performance and carcass characteristics when fed diets with moderate amounts of wet distillers grains plus solubles. Plains Nutrition Conference, San Antonio, Texas. Pg. 156.

54. Lundy, E. L., D. D. Loy, and **S. L. Hansen**. 2014. Effects of Adding Cellulosic Ethanol wet distillers grains on steer performance and carcass characteristics. Distillers Grains Technology Council Symposium, Dallas, Texas.
55. Genther, O. N., M. E. Branine, and **S. L. Hansen**. 2014. Effect of a supplemental zinc complex and ractopamine hydrochloride on blood markers of the immune and beta-adrenergic responses in beef steers. *J. Anim. Sci.* 92(Suppl. 2):43. *Ph.D. oral paper competition- 2nd place.*
56. Genther, O. N. and **S. L. Hansen**. 2014. Impact of student engagement activities on student performance on a short assessment. *J. Anim. Sci.* 92(E-Suppl. 2):387.
57. Van Emon, M. L., D. D. Loy, and **S. L. Hansen**. 2014. Determining the preference and *in situ* digestibility of a microalgae co-product for beef cattle. *J. Anim. Sci.* 92 (Suppl. 2) Abst 352.
58. Genther, O.N. and **S. L. Hansen**. 2014. Interaction between a β -agonist and supplemental zinc in cattle. 15th International meeting on Trace Elements in Man and Animals. Orlando, Fl. Pg. 39.
59. **Hansen, S. L.** and O. N. Genther. 2014. Interactions between trace minerals and production practices in beef cattle. 15th International meeting on Trace Elements in Man and Animals. Orlando, Fl. Pg. 44. *Invited.*
60. Pogge, D. J., S. M. Lonergan, and **S. L. Hansen**. 2014. Effects of duration of vitamin C supplementation on growth performance, carcass traits, and protein degradation of the longissimus thoracis of steers fed a 0.31 or 0.59% sulfur diet. *J. Anim. Sci.* 92 (Suppl. 2) Abst 425.
61. Russell, J. R., N. O. Minton, W. J. Sexten, M. S. Kerley, and **S. L. Hansen**. 2014. Feedlot performance and diet digestibility of feed efficiency-ranked beef steers fed corn or roughage-based diets and finished with corn or byproduct-based diets. *J. Anim. Sci.* 92 (Suppl. 2) Abst 589.
62. Stokes, R. S., D. D. Loy, M. L. Van Emon, and **S. L. Hansen**. 2015. Influence of algae meal as a replacement of corn in feedlot lamb diets on nutrient digestibility. *J. Anim. Sci.* 93(Suppl. 2):0418 (Abstr.) *Poster; MS poster competition-1st place.*
63. Stokes, R. S., M. L. Van Emon, D. D. Loy, and **S. L. Hansen**. 2015. Algae meal for ruminants I: Nutrient digestibility in finishing lambs. *J. Anim. Sci.* 93(Suppl. 3):347 (Abstr.)
64. Stokes, R. S., D. D. Loy, and **S. L. Hansen**. 2015. Algae meal for ruminants II: Growth and carcass characteristics of finishing steers. *J. Anim. Sci.* 93(Suppl. 3):348 (Abstr.)
65. Stokes, R. S., D. D. Loy, M. L. Van Emon, and **S. L. Hansen**. 2015 Effects of increased inclusion of algae meal with differing fatty acid profiles on lamb total tract digestibility. *J. Anim. Sci.* 93(Suppl. 3):M427 (Abstr.)
66. Russell, J. R., W. J. Sexten, M. S. Kerley, and **S. L. Hansen**. 2015. Relationship between antioxidant capacity, oxidative stress and feed efficiency in beef steers. *J. Anim. Sci.* 93 (Suppl. 3):334. (Abstr.)
67. Russell, J. R., N. O. Minton, W. J. Sexten, M. S. Kerley and **S. L. Hansen**. 2015. Influence of feed efficiency ranking on diet digestibility and performance of beef steers. 2015 Plains Nutrition Council Spring Conference Proceedings. AREC 2015. (Abstr.)

68. Russell, J. R., N. O. Minton, W. J. Sexten, M. S. Kerley and **S. L. Hansen**. 2015. Influence of feed efficiency ranking on diet digestibility and performance of beef steers. *J. Anim. Sci.* 93 (Suppl. 3):393. (Abstr.) *Ph.D. oral paper competition- 1st place*.
69. Genther-Schroeder, O. N., M. E. Branine, and **S. L. Hansen**. 2015. The influence of supplemental Zn-amino acid complex and Optaflexx feeding duration on growth performance and carcass characteristics of finishing beef cattle. *J. Anim. Sci.* 93 (Suppl. 2):867. (Abstr.).
70. Genther-Schroeder, O. N., and **S. L. Hansen**. 2015. Injectable trace minerals in beef cattle. *J. Anim. Sci.* 93 (Suppl. 3):197. (Abstr.). Invited: ASAS Young Scholar Presentation.
71. Reis, A., R. Ostrem, K. Heiderscheit, O. Genther-Schroeder, C. Clark, D. Loy and **S. L. Hansen**. 2016. Evaluation of perennial switchgrass as a replacement for cornstalks in high sulfur beef cattle diet. *J. Anim. Sci.* 94 (Suppl. 3) (Abstr.) *Undergraduate poster competition-2nd place*.
72. Blank, C. P., J. R. Russell, S. M. Lonergan, and **S. L. Hansen**. 2016. Post-mortem proteolysis and meat tenderness in crossbred steers identified as lowly or highly feed efficient. *J. Anim. Sci.* 94 (Suppl. 3) (Abstr.) *MS oral competition*.
73. Niedermayer, E. K. O. N. Genther-Schroeder, and **S. L. Hansen**. 2016. Effect of a zinc injection on finishing performance and carcass characteristics of Limousin steers. *J. Anim. Sci.* 94 (Suppl. 3) (Abstr.).
74. Russell, J. R., E. L. Lundy, N. O. Minton, W. J. Sexten, M. Kerley and **S. L. Hansen**. 2016. Influence of growing phase feed efficiency classification on finishing phase growth performance and carcass characteristics of beef steers fed different diet types. *J. Anim. Sci.* 94 (Suppl. 3) (Abstr.) *PhD poster competition-2nd place*.
75. Blank, C. P., J. R. Russell, S. M. Lonergan, and **S. L. Hansen**. 2016. Influence of feed efficiency on meat tenderness attributes of beef steers: implications for the selection of improved feed efficiency. Plains Nutrition Conference. San Antonio, TX. Pg. 101.
76. Hartman, S. J., O. N. Genther-Schroeder, and **S. L. Hansen**. 2016. Effect of micronutrient source on mineral status and performance of steers fed low or high sulfur diets. *J. Anim. Sci.* 94 (Suppl. 2) Abstract 1532.
77. **Hansen, S. L.** 2016. Adding a student-generated summary of main points to a lecture as a learning tool in an advanced nutrition course. *J. Anim. Sci.* 94 (Suppl. 2) Abstract 1748.
78. Genther-Schroeder, O. N., E. Huff-Lonergan, M. E. Branine and **S. L. Hansen**. 2016. Influence of zinc amino acid complex and ractopamine hydrochloride supplementation on the sarcoplasmic protein profile of finishing steers. *J. Anim. Sci.* 94 (Suppl. 2) Abstract 880.
79. Genther-Schroeder, O. N., E. Huff-Lonergan, M. E. Branine and **S. L. Hansen**. 2016. Influence of zinc amino acid complex and ractopamine hydrochloride supplementation on the sarcoplasmic protein profile of finishing steers. FASEB Trace Elements in Biology and Medicine. Big Sky, MT.
80. Blank, C. P., D. D. Loy, and **S. L. Hansen**. 2016. Effects of post-ethanol extraction sorghum silage as an alternative forage in growing and finishing diets on steer performance, carcass characteristics and nutrient digestibility. *J. Anim. Sci.* (Suppl. 2). Abstract 1418.
81. Blank, C. P., P. J. Gunn, D. Schrunk, S. Ensley, D. Madson, and **S. L. Hansen**. 2016. Effects of injectable trace mineral supplementation on yearling bull growth, carcass

- characteristics, testicular development and semen quality attributes. *J. Anim. Sci.* 94 (Suppl. 2). Abstract 244.
82. Niedermayer, E. K., O. N. Genter-Schroeder, and **S. L. Hansen**. 2016. Evaluating the effects of an injectable trace mineral product on steers raised in a natural beef feedlot program. *J. Anim. Sci.* 94 (Suppl. 2) Abstract 1376.
83. Michal, J. J., J. R. Russell, **S. L. Hansen**, J. F. Taylor, M. S. Kerley, U. S. Feed Efficiency Consortium and K. A. Johnson. 2016. NADH dehydrogenase (ubiquinone) Fe-S protein-1 (NDUFS1), a core subunit of mitochondrial complex I, is not differentially expressed in peripheral blood mononuclear cells of beef steers with divergent residual feed intakes. *J. Anim. Sci.* 94 (Suppl. 2) Abstract 1483.
84. Hartman, S. J., O. N. Genter-Schroeder, and **S. L. Hansen**. 2017. Comparison of trace mineral repletion strategies to overcome a high antagonist diet. *J. Anim. Sci.* 95 (Suppl. 3) Abstract 355.
85. Taylor, J. F., J. E. Beever, J. E. Decker, H. C. Freetly, D. J. Garrick, **S. L. Hansen**, K. A. Johnson, M. S. Kerley, D. D. Loy, H. L. Neibergs, M. Saatchi, R. D. Schnabel, C. M. Seabury, D. W. Shike, M. L. Spangler and R. L. Weaver. 2017. The genetic improvement of feed efficiency in beef cattle. *J. Anim. Sci.* 95 (Suppl. 3) Abstract 331. Invited.
86. **Hansen, S. L.**, M. S. Kerley, and J. R. Russell. 2017. Impact of diet type on repeatability of feed efficiency in beef cattle. *J. Anim. Sci.* 95 (Suppl. 3) Abstract 333. Invited.
87. Deters, E. L., R. S. Stokes, O. N. Genter-Schroeder and **S. L. Hansen**. 2017. Effect of Original XPC in receiving diets on newly weaned beef steer performance. *J. Anim. Sci.* 95 (Suppl. 3) Abstract 107. *MS Poster Competition*.
88. Deters, E.L., R. S. Stokes, O. N. Genter-Schroeder, and **S.L. Hansen**. 2017. Effect of original XPC in receiving diets on newly weaned beef steer performance and response to a *Mannheimia haemolytica* vaccination challenge. *J. Anim. Sci.* (Suppl. 4) Abstract 559.
89. Genter-Schroeder, O. N. and **S. L. Hansen**. 2017. The effect of dietary grain inclusion and Zn concentration on rumen epithelial structure and Zn transporter expression in sheep. *J. Anim. Sci.* (Suppl. 4) Abstract 636.
90. Carmichael, R., O. N. Genter-Schroeder, C. P. Blank, E. L. Deters, S. J. Hartman, E. K. Niedermayer and **S.L. Hansen**. 2017. The influence of supplemental zinc and ractopamine hydrochloride on mineral and nitrogen retention of beef steers. *J. Anim. Sci.* (Suppl. 4) Abstract 638.
91. Niedermayer, E. K., E. M. McDonald, O. N. Genter-Schroeder, D. D. Loy and **S.L. Hansen**. 2017. Effect of trace mineral supplementation with or without hormone implants on growth and carcass characteristics of steers. *J. Anim. Sci.* (Suppl. 4) Abstract 639.
92. Lundy, E. L., O. N. Genter-Schroeder, M. E. Branine and **S. L. Hansen**. 2017. Effect of dietary zinc amino-acid complex supplementation on cattle performance, biomarkers of inflammation and metabolism, and liver abscess formation on steers receiving a mild acidosis challenge. *J. Anim. Sci.* (Suppl. 4) Abstract 640.
93. Huff-Lonergan, E., S. Lonergan, and **S. Hansen**. 2018. The intricate relationship between animal nutrition, muscle growth and fresh meat quality: how does it all fit together? *J. Anim. Sci.* 96(Suppl. 3): 494-495. Lonergan invited talk.
94. **S. L. Hansen** and O. N. Genter-Schroeder. 2018. The effect of dietary grain inclusion and Zn concentration on rumen epithelial structure and Zn transporter expression in sheep.

- FASEB Trace Elements in Biology and Medicine. Tahoe City, Nevada. Invited as short talk.
95. Deters, E. L. and **S. L. Hansen**. 2018. Effect of Diamond V NaturSafe on receiving period cattle performance and markers of oxidative stress relative to transit. American Society of Animal Science National Meeting. Vancouver, BC. Abstract 70.
 96. Messersmith, E., O. N. Genther-Schroeder, M. Branine, and **S. L. Hansen**. 2018. The effect of liver copper status in finishing steers fed three dietary levels of copper with or without ractopamine hydrochloride on liver copper status, growth performance and carcass characteristics. American Society of Animal Science National Meeting. Vancouver, BC.
 97. VanValin, K. R., and **S. L. Hansen**. 2018. Building a Community of Learners: Strategies to Enhance Student Engagement and Learning. *Nacta Journal*, 62(supplement 1), 49.
 98. VanValin, K. R., Genther-Schroeder, O. N., R. N. Carmichael, C. P. Blank, E. L. Deters, S. J. Hartman, E. K. Niedermayer., and **S. L. Hansen**. 2018. Evaluation of nutrient digestibility, apparent absorption and retention of zinc in lambs supplemented with zinc from zinc hydroxychloride, zinc sulfate or zinc methionine. American Society of Animal Science National Meeting. Vancouver, BC. Abstract 53.
 99. VanValin, K. R., Genther-Schroeder, O. N., R. N. Carmichael, C. P. Blank, E. L. Deters, S. J. Hartman, E. K. Niedermayer., and **S. L. Hansen**. 2018. Apparent absorption, zinc retention and nutrient digestibility in lambs during an adrenocorticotrophic hormone challenge. *Journal of Animal Science* American Society of Animal Science National Meeting. Vancouver, BC. Abstract 55.
 100. Carmichael, R. N. O. N. Genther-Schroeder, E. L. Deters, T. D. Jackson, E. M. Messersmith, K. R. VanValin, and **S. L. Hansen**. 2018. The influence of supplemental Zinc and dietary energy concentrations on mineral retention of beef steers. *J. Anim. Sci.* 96 (Suppl 3): 388-389.
 101. **Hansen, S. L.** 2018. Metabolism of injectable trace minerals in beef cattle. American Association of Veterinary Laboratory Diagnosticians Meeting, Kansas City, MO.
 102. Carmichael, R., O. N. Genther-Schroeder, and **S. L. Hansen**. 2019. The influence of supplemental zinc, zinc source, and dietary energy level on performance measures of beef steers. American Society of Animal Science Midwest Meeting.
 103. Jackson, T. D., R. N. Carmichael, E. L. Deters, E. M. Messersmith, K. R. VanValin, and **S. L. Hansen**. 2019. Comparison of multiple trace mineral products provided to beef cattle as injectable, oral drench, oral paste, or bolus. American Society of Animal Science Midwest Meeting.
 104. DiRusso, G., E. Niedermayer, and **S. L. Hansen**. 2019. Determination of relative bioavailability of copper from GemStone copper in growing beef steers. American Society of Animal Science Midwest Meeting. *Second place undergraduate oral competition.*
 105. VanValin, K. and **S. L. Hansen**. 2019. Supplemental copper concentration and feed restriction influence plasma metabolome of growing beef steers. American Society of Animal Science Midwest Meeting.
 106. Deters, E. L. and **S. L. Hansen**. 2019. Injectable vitamin C improves post-transit performance of beef steers. Plains Nutritional Council Spring Conference. *Poster winner.*

107. Messersmith, E., E. Niedermayer, G. Crawford, **S. L. Hansen**. 2019. Effect of Zn supplementation on performance, carcass characteristics, and liver mineral concentrations of heifers receiving a single Revalor-XH or a Revalor-200/Revalor-200 re-implant program. Plains Nutrition Council. *Poster winner*.
108. Deters, E. L. and **S. L. Hansen**. 2019. Effect of supplemental vitamin E in feedlot receiving diets on steer performance, immune function and antioxidant defense. American Society of Animal Science Midwest Meeting.
109. Schulte, M. D., K. G. Hochmuth, E. M. Steadham, K. J. Prusa, S. M. Lonergan, **S. L. Hansen**, E. Huff-Lonergan. 2019. Influence of zinc and beta agonist supplementation on beef carcass characteristics, early postmortem pH, and longissimus thoracis Warner – Bratzler shear force. International Congress of Meat Science Technology, Poster, Potsdam, Germany.
110. Schulte, M. D., K. G. Hochmuth, E. M. Steadham, K. J. Prusa, S. M. Lonergan, **S. L. Hansen**, E. Huff-Lonergan. 2019. Influence of zinc and ractopamine hydrochloride supplementation on beef carcass characteristics and quality attributes of aged ribeye steaks. Reciprocal Meat Conference, Poster, Fort Collins, CO.
111. Deters, E. L., and **S. L. Hansen**. 2019. Transportation stress elicits changes in Mn-superoxide dismutase activity and antioxidant status in cattle. Cell Biology of Metals Gordon Research Conference. Casteldelfas, Spain.

Published Conference Proceedings

Prior to joining faculty at Iowa State University

1. Spears, J. W. and **S. L. Hansen**. 2006. Trace mineral nutrition update. Proceedings of the 36th Annual Liquid Feed Symposium. Pg. 53-67.
2. **Hansen, S. L.**, P. Schlegel, K. E. Lloyd, L. R. Legleiter, and J. W. Spears. 2007. Bioavailability of copper from copper glycinate when fed in the presence of high sulfur and molybdenum. Organic Trace Elements for Animal Nutrition and the Environment Symposium. Geneva, Switzerland.
3. **Hansen, S. L.** and J. W. Spears. 2007. Effect of manganese on reproductive performance of beef cows and heifers. Organic Trace Elements for Animal Nutrition and the Environment Symposium. Geneva, Switzerland.

Since joining faculty at Iowa State University

4. **Hansen, S. L.**, M. E. Drewnoski, J. Russell, and D. Loy. 2011. Iowa State University Research Update. Invited presentation. Proceedings of Plains Nutrition Council Spring Conference. Pg 79-83.
5. **Hansen, S. L.** 2013. Practical trace element nutrition. Invited presentation. Proceedings of the Australian Veterinary Association Annual Conferences, Cairns, Australia.
6. **Hansen, S. L.** 2013. Interactions among trace elements. Invited presentation. Proceedings of the Australian Veterinary Association Annual Conferences, Cairns, Australia.

7. **Hansen, S. L.** and O. N. Genther. 2014. The economic value of trace mineral supplementation to the farmer and veterinarian. Invited presentation. Proceedings of the South African Veterinary Association Livestock Health and Production Group, Kruger National Park, South Africa.
8. Weaber, R. L., J. E. Beever, H. C. Freetly, **S. L. Hansen**, K. A. Johnson, M. S. Kerley, D. D. Loy, E. Marques, H. L. Neibergs, E. J. Pollak, R. D. Schnabel, C. M. Seabury, D. W. Shike, M. L. Spangler, D. J. Garrick and J. F. Taylor. 2014. Analysis of US Cow-Calf Producer Survey Data to Assess Knowledge, Awareness and Attitudes Related to Genetic Improvement of Feed Efficiency. Proceedings of the 10th World Congress on Genetics Applied to Livestock Production. Vancouver, B.C.
9. **Hansen, S. L.**, J. R. Russell, N. O. Minton, W. J. Sexten, M. S. Kerley, E. L. Lundy, E. K. Niedermayer, and National Program for Genetic Improvement of Feed Efficiency in Beef Cattle. 2016. Effects of diet digestibility on feed efficiency and impact of diet type and feeding phase on repeatability of feed efficiency phenotype. Proceedings of the Beef Improvement Federation Conference. Manhattan, KS. Pgs. 75-89.
10. Weaber, R. L., J. E. Beever, H. C. Freetly, D. J. Garrick, **S. L. Hansen**, K. A. Johnson, M. S. Kerley, D. D. Loy, E. Marques, H. L. Neibergs, E. J. Pollak, R. D. Schnabel, C. M. Seabury, D. W. Shike, M. L. Spangler, and J. F. Taylor. 2016. Results of survey of stakeholders regarding knowledge of and attitudes towards feed efficiency and genetic improvement concepts. Proceedings of the Beef Improvement Federation Conference. Manhattan, KS. Pgs. 90-94.
11. **Hansen, S. L.** 2018. Research Updated. Proceedings of the Plains Nutrition Conference. San Antonio, TX. Pgs. 100-105.
12. Messersmith, E., E. Niedermayer, D. Loy and **S. L. Hansen**. 2019. Effects of trace mineral supplementation of steers with or without hormone implants on growth and carcass characteristics. Proceedings of the Driftless Region Beef Conference. Dubuque, IA. Pgs. 47-54.

Department of Animal Science Animal Industry Reports

Available at: https://lib.dr.iastate.edu/ans_air/

1. Drewnoski, M. E., E. L. Richter and **S. L. Hansen**. 2011. Days on feed and dietary sulfur content affect rumen hydrogen sulfide concentrations in feedlot steers. Iowa State University Animal Industry Report: 2588.
2. Pogge, D. J. E. Richter, M. E. Drewnoski, and **S. L. Hansen**. 2011. Trace mineral clearance from plasma and liver following injection is affected by cattle breed. Iowa State University Animal Industry Report: 2593.
3. Richter, E. L., M. E. Drewnoski, and **S. L. Hansen**. 2011. Effects of dietary sulfur on carcass quality, performance and mineral status in beef cattle. Iowa State University Animal Industry Report: 2589.
4. Drewnoski, M. E., D. C. Beitz, S. Ensley, D. Loy, and **S. L. Hansen**. 2011. Factors Affecting Ruminant Hydrogen Sulfide Concentration of Cattle. Iowa State University Animal Industry Report: 2587.

5. Brasche, C. J., M. E. Drewnoski, and **S. L. Hansen**. 2012. Effects of Dietary Sulfur Source on Rumen pH and Hydrogen Sulfide Gas Concentration. Iowa State University Animal Industry Report: 2696.
6. Morine, S. J., M. E. Drewnoski, and **S. L. Hansen**. 2012. Determining the Influence of Dietary Roughage Concentration and Source on Rumen Parameters related to Sulfur Toxicity. Iowa State University Animal Industry Report: 2695.
7. Drewnoski, M. E. and **S. L. Hansen** 2012. Effect of delaying the feeding of high sulfur until after adaptation to a finishing diet. Iowa State University Animal Industry Report: 2694.
8. Pogge, D. J., and **S. L. Hansen**. 2012. Effect of vitamin C on performance and antioxidant capacity of cattle fed varying concentrations of dietary sulfur. Iowa State University Animal Industry Report: 2689.
9. Genther, O., and **S. L. Hansen**. 2012. Investigation of the impact of mineral status and use of an injectable mineral on beef cattle performance. Iowa State University Animal Industry Report: 2693.
10. Pogge, D., S. Lonergan, and **S. Hansen**. 2013. Supplemental Vitamin C Alleviates the Negative Effect of High Sulfur on Meat Quality. Iowa State University Animal Industry Report: 2766.
11. Genther, O., and **S. Hansen**. 2013. The Effect of Trace Mineral Source and Concentration on Mineral Solubility in the Rumen and Diet Digestibility. Iowa State University Animal Industry Report: 2778.
12. Pogge, D., and **S. Hansen**. 2014. The Effect of Varying Concentrations of Vitamin C on Performance, Blood Metabolites, and Carcass Characteristics of Steers Consuming a Common High Sulfur Diet. Iowa State University Animal Industry Report: 2844.
13. Pogge, D., P. Summer, and **S. Hansen**. 2014. Impact of Dietary Cation-Anion Difference on Steer Performance and Carcass Characteristics. Iowa State University Animal Industry Report: 2859.
14. Morine, S., M. Drewnoski, **S. Hansen**. 2014. Corn Addition in Fiber-Based Supplements to Grazing Cattle. Iowa State University Animal Industry Report: 2863.
15. Genther, O., and **S. Hansen**. 2014. Effects of Supplemental Availa®Zn on Growth and Carcass Characteristics of Finishing Cattle Fed Diets With or Without Optaflexx. Iowa State University Animal Industry Report: 2849.
16. Loy, D, B. Doran, P. Summer, A. Trenkle, D. Busby, Z. Gray, E. Lundy, and **S. Hansen**. 2014. Fecal Starch Content and Apparent Starch Digestibility using Field Methods in Feedlot Cattle Fed 25, 50, or 75% Modified Distillers Grains with Solubles. Iowa State University Animal Industry Report: 2850.
17. Russell, J., E. Lundy, and **S. Hansen**. 2014. Growth and Carcass Characteristics of Feed Efficiency Sorted Cattle Fed Corn or Roughage-Based Diets and Finished with Corn or Byproduct-Based Diets. Iowa State University Animal Industry Report: 2864.
18. Stokes, R. S., M. L. Van Emon, D. D. Loy, and **S. L. Hansen**. 2015. Effects of increasing inclusion of algae meal on lamb total tract digestibility. Iowa State University Animal Industry Report: 3003.

19. Russell, J. R., and **S. L. Hansen**. 2015. Influence of Feed Efficiency Ranking on Diet Digestibility and Performance of Beef Steers. Iowa State University Animal Industry Report:2960.
20. Lundy, E. L., D. D. Loy, and **S. L. Hansen**. 2015. Influence of Distillers Grains from a Cellulosic Ethanol Process Utilizing Corn Kernel Fiber on Nutrient Digestibility of Lambs and Steer Feedlot Performance. Iowa State University Animal Industry Report: 2951.
21. Dahlke, G. D.D. Loy, **S. L. Hansen**, S. Clark, M. Van Emon, and C. A. Clark. 2015. Effect of Calcium Hydroxide Treatment on Switch Grass. Iowa State University Animal Industry Report: 2943.
22. Clark, C. A., G. Dahlke, D. Maxwell, D.D. Loy, S. Clark, M. Van Emon, and **S. L. Hansen**. 2015. Comparison of Untreated Mature Switchgrass and Cornstalks as Roughage in Beef Cattle Feedlot Diets. Iowa State University Animal Industry Report: 2953.
23. Genter-Schroeder, O. N., C. Clark, and **S. L. Hansen**. 2015. Effect of Trace Mineral Injection and Optaflexx on Growth Performance and Carcass Characteristics of Finishing Cattle. Iowa State University Animal Industry Report: 2961.
24. Lundy, E. L., B. E. Doran, E. Vermeer, D. D. Loy, and **S. L. Hansen**. 2015. Influence of Corn Particle Size on Steer Performance and Carcass Characteristics When Fed Diets with Moderate Inclusions of Wet Distillers Grains plus Solubles. Iowa State University Animal Industry Report: 2959.
25. Russell, J., E. Lundy, **S. L. Hansen**. 2016. Growth and Carcass Characteristics of Feed Efficiency Classified Cattle Fed Corn or Roughage-Based Diets and Finished with Corn or Byproduct-Based Diets. Iowa State University Animal Industry Report.
26. Genter-Schroeder, O. and **S. L. Hansen**. 2016. Effect of zinc amino-acid complex and Optaflexx feeding duration on growth performance and carcass characteristics of finishing cattle. Iowa State University Animal Industry Report.
27. Stokes, R. S., D. D. Loy, and **S. L. Hansen**. 2016. Effects of increased inclusion of algae meal on finishing steer performance and carcass characteristics. Iowa State University Animal Industry Report.
28. Niedermayer, E., O. Genter-Schroeder, **S. L. Hansen**. 2016. Effect of a Trace Mineral Injection on Growth Performance of Natural Beef Feedlot Steers. Iowa State University Animal Industry Report.
29. Niedermayer, E., O. Genter-Schroeder, D. Loy, **S. L. Hansen**. 2017. Effect of varying trace mineral supplementation of steers with or without hormone implants on growth and carcass characteristics. Iowa State University Animal Industry Report.
30. Deters, E. R. Stokes O. Genter-Schroeder, **S. L. Hansen**. 2017. Effects of Original XPC on Newly Weaned Beef Steer Growth Performance and Antioxidant Defense. Iowa State University Animal Industry Report.
31. Deters, E. R. Stokes O. Genter-Schroeder, **S. L. Hansen**. 2017. Effects of Original XPC on Newly Weaned Beef Steer Nutrient Digestibility and Response to a Vaccination Challenge. Iowa State University Animal Industry Report.

32. Carmichael, R., O. Genter-Schroeder, **S. L. Hansen**. 2017. The Influence of Supplemental Zinc and Ractopamine Hydrochloride on Mineral and Nitrogen Retention of Beef Steers. Iowa State University Animal Industry Report.
33. Hartman, S., O. Genter-Schroeder, **S. L. Hansen**. 2017. Comparison of trace mineral repletion strategies in beef cattle to overcome a high antagonist diet. Iowa State University Animal Industry Report.
34. VanValin, K , Genter-Schroeder, O, **Hansen, S**. 2019. Relative Bioavailability of Supplemental Cu Sources as Determined in Growing Steers Fed a High Antagonist Diet, Animal Industry Report.

Articles in Non-Refereed Publications

Prior to joining faculty at Iowa State University

1. **Hansen, S. L.**, C. S. Whisnant, and J. W. Spears. 2006. Effect of Dietary Manganese on Growth, Reproduction, and Offspring of Beef Heifers. NCSU Department of Animal Science Annual Report.
2. **Hansen, S. L.**, C. S. Whisnant, K. E. Lloyd, and J. W. Spears. 2005. Effect of dietary manganese source and concentration on growth, reproductive performance, and manganese status of heifers. NCSU Department of Animal Science Annual Report.

Since joining faculty at Iowa State University

3. **S.L Hansen** and O.N. Genter. 2012. Injectable mineral as a risk management tool. Feedlot Magazine.

Extension Fact Sheets and Webinars

Since joining faculty at Iowa State University

1. Drewnoski, M., **S.L. Hansen**, D. Loy. 2011. Iowa Beef Center Extension Factsheet 46. How much distillers grains can I include in my feedlot diet? Available at: <http://www.iowabeefcenter.org/sulfur/IBC46.pdf>.
2. **Hansen, S.L.** 2011. Sulfur Research at Iowa State University. The Sulfur Webinar (cohosted by ISU and UNL Beef Extension Groups). Available at: <https://connect.extension.iastate.edu/p89831350>.
3. Drewnoski, M., D. Loy, and **S. Hansen**. 2014. Iowa Beef Center Extension Factsheet 200F. Ethanol Coproducts for Beef Cattle-Avoiding the Negative Effects of High Dietary Sulfur. Available at: <https://store.extension.iastate.edu/Product/Ethanol-Coproducts-for-Beef-Cattle-Avoiding-the-Negative-Effects-of-High-Dietary-Sulfur>.
4. **Hansen, S. L.** 2017. Feed efficiency research update. UNL, ISU Feedlot Roundtable Webinar.

Invited Scientific Presentations

Since joining faculty at Iowa State University

1. **Hansen, S.L.** 2009. Trace Mineral Absorption, Transport and Storage – State of the Art – Zn, Cu, Mn, Fe and Co. Zinpro. Eden Prairie, MN.
2. **Hansen, S.L.** 2010. Trace mineral interactions. CPC Commodities. Louisville, KY.
3. **Hansen, S.L.**, J.W. Spears and R.S. Fry. 2010. Using nutrigenomics to elucidate interrelationships in trace mineral metabolism. Joint Annual Meeting of Animal Science. Denver, CO.
4. **Hansen, S.L.** 2011. Use of injectable minerals in ruminant production systems, South Africa.
5. **Hansen, S. L.**, H-C. Liu, J.W. Spears. 2011. Influence of dietary iron concentration on metabolism of other trace minerals in pigs and cattle. 14th International meeting on Trace Elements in Man and Animals. Enshi, China.
6. **Hansen, S.L.** 2011. Dietary interactions affecting copper metabolism in ruminants. Proceedings of American College of Veterinary Internal Medicine. Denver, CO.
7. **Hansen, S.L.**, M.E. Drewnoski, J. Russell, and D. Loy. 2011. Iowa State University Research Update: Sulfur Research. Proceedings of Plains Nutrition Council Spring Conference. San Antonio, TX.
8. **Hansen, S.L.** 2011. What's New in Feedlot Research? Michigan State University Beef Feeders Short course Meeting Series. Ontario, Canada.
9. **Hansen, S.L.** 2011. What's New in Feedlot Research? Michigan State University Beef Feeders Short course Meeting Series. Bowling Green, OH.
10. **Hansen, S.L.** 2011. What's New in Feedlot Research? Michigan State University Beef Feeders Short course Meeting Series. East Lansing, MI.
11. **Hansen, S. L.** and M. E. Drewnoski. 2012. Mitigation of hydrogen sulfide production in cattle fed high distillers grains diets. Distillers Grains Technology Council Symposium, St. Louis, MO.
12. **Hansen, S. L.**, D. J. Pogge and S. M. Lonergan. 2012. Effects of vitamin C on meat quality in high S diets. Reciprocal Meats Conference. Fargo, ND.
13. **Hansen, S. L.** 2012. Impact of trace mineral status on feeder cattle performance. Academy of Veterinary Consultants. Denver, CO.
14. Fry, R. S., J. W. Spears, M. S. Ashwell, and **S. L. Hansen**. 2013. Exploring cellular trace mineral metabolism in bovine and porcine tissues. Joint Annual Meeting of Animal Science. Indianapolis, IN.
15. **Hansen, S. L.** 2013. Practical trace element nutrition. Invited presentation. Proceedings of the Australian Veterinary Association Annual Conferences, Cairns, Australia.
16. **Hansen, S. L.** 2013. Interactions among trace elements. Invited presentation. Proceedings of the Australian Veterinary Association Annual Conferences, Cairns, Australia.
17. **Hansen, S. L.** 2013. Use of injectable minerals in ruminant production systems, Australia.
18. **Hansen, S.L.** 2014. Use of injectable minerals in ruminant production systems, South Africa.

19. **Hansen, S. L.** and O. N. Genther. 2014. The economic value of trace mineral supplementation to the farmer and veterinarian. Invited presentation. Proceedings of the South African Veterinary Association Livestock Health and Production Group, Kruger National Park, South Africa.
20. **Hansen, S. L.** and O. N. Genther. 2014. Interactions Between trace minerals and production practices in beef cattle. 15th International meeting on Trace Elements in Man and Animals. Orlando, FL.
21. **Hansen, S. L.** 2015. Improving trace mineral status of ruminants, New Zealand.
22. **Hansen, S. L.** 2016. Invited: Impact of calf mineral status for newly received feedlot cattle. Saskatchewan Forage and Beef Symposium. Saskatoon, Canada.
23. **Hansen, S. L.** 2016. Invited: Effects of diet digestibility on feed efficiency and impact of diet type and feeding phase on repeatability of feed efficiency phenotype. Beef Improvement Federation Conference. Manhattan, KS.
24. **Hansen, S. L.**, M. S. Kerley, and J. R. Russell. 2017. Invited: Impact of diet type on repeatability of feed efficiency in beef cattle. Midwest ASAS Meeting. Omaha, NE.
25. **Hansen, S. L.** 2017. Trace mineral nutrition in beef feedlot cattle. Phibro Pre-Symposium. Plains Nutrition Council. San Antonio, Texas.
26. **Hansen, S. L.** 2017. Early Career Award Speaker: Interactions between trace minerals and growth promoting practices in beef cattle. National ASAS Meeting. Baltimore, MD.
27. **Hansen, S. L.** 2017. Trace minerals and growth promoting practices in beef cattle. The XX Feed yard nutrition symposium. Nuevo Leon, Mexico.
28. **Hansen, S. L.** 2018. Update on mineral nutrition in the feedlot. Husker Nutrition Conference. Mead, NE.
29. **Hansen, S. L.** 2018. Roles of minerals in net energy. 50th Anniversary of the California Net Energy System Symposium. UC-Davis, CA.
30. **Hansen, S. L.** 2018. PLF in the Feedlot-Where are we going? Precision Livestock Farming Workshop. Ames, Iowa.
31. **Hansen, S. L.** 2019. Interactions between minerals and anabolic implants. Dept of Animal Science Seminar Series. Oct. Utah State University. Logan, UT.

Research Accomplishments

Student Awards and Recognitions

Student	Time	Award or Recognition
Erin Richter	2010	Fontenot Travel Scholarship-American Society of Animal Science
Danielle Pogge	2011	Travel Fellowship-14 th Annual Trace Elements in Man and Animals Meeting
Sara Morine	2011	First place-Undergraduate Poster-Midwest Animal Science Meeting
Olivia Genther	2011-2014	Miller Fellowship for Recruitment of Excellent Students
Danielle Pogge	2012	US Distillers Grains Council Scholarship and Poster Award

Olivia Genter	2012	Fontenot Travel Scholarship-American Society of Animal Science
Danielle Pogge	2013	College of Agriculture and Life Sciences Research Excellence Award
Danielle Pogge	2013	Burroughs Superior Graduate Student Fellowship
Olivia Genter	2013-2014	Burroughs Superior Graduate Student Fellowship
Erika Lundy	2013	Beef Improvement Federation Travel Scholarship
Olivia Genter	2014	College of Agriculture and Life Sciences Research Excellence Award
Olivia Genter	2014	Second place-Oral Ph.D. paper-Midwest Animal Science Meeting
Erika Lundy	2014	US Distillers Grains Council Scholarship and Poster Award
Erika Lundy	2014	Fontenot Travel Scholarship-American Society of Animal Science
Olivia Genter	2014-2016	NIFA Post Doctoral Fellowship Grant (S. Hansen as Mentor) \$149,998
Olivia Genter- Schroeder	2015	ASAS Young Scholars-Midwest Meeting
Jason Russell	2015	First place-Oral Ph.D. paper-Midwest Animal Science Meeting
Rebecca Stokes	2015	First place-M.S. poster competition-Midwest Animal Science Meeting
Jason Russell	2015	College of Agriculture and Life Sciences Research Excellence Award
Jason Russell	2016	Second place-Ph.D. poster competition-Midwest Animal Science Meeting
Chris Blank	2016	College of Agriculture and Life Sciences Teaching Excellence Award
Erin Deters	2017	Fontenot Travel Scholarship-American Society of Animal Science
Elizabeth Messersmith	2018	Graduate Collage Teaching Excellence Award
Trey Jackson	2019	University Graduate College Teaching Excellence Award

Erin Deters	2019	NIFA Pre Doctoral Fellowship Grant (S. Hansen as Mentor) \$89,185
Gabby DiRusso	2019	Second place-Undergraduate oral competition-Midwest Animal Science Meeting
Erin Deters	2019	Plains Nutrition Council Poster Winner
Elizabeth Messersmith	2019	Plains Nutrition Council Poster Winner

Reviewing and Professional Service Activities in Research

Journal of Animal Science (The Official Journal of the American Society of Animal Science) - *Ad-Hoc Reviewer*: 2009-2013; 2017-present; *Editorial board member, reviewer*: 2013-2017. Review ~ 10 papers a year.

Translational Animal Science (new journal from ASAS)- Editorial board member starting in 2017.

The Journal of Dairy Science-*Ad-Hoc Reviewer*: 2013-present.

Meat Science-*Ad-Hoc Reviewer*: 2013-present.

Professional Animal Scientist (now Applied Animal Scientist)- *Ad-Hoc Reviewer*: 2014-present.

The Veterinary Journal, Journal of Zoo and Wildlife Medicine, others - *Ad-Hoc Reviewer*. (*Asked to review paper based on expertise in trace mineral metabolism*)

Outreach and Professional Practice

Since joining faculty at Iowa State University

Outreach to Iowa Stakeholders

1. **Hansen, S. L.** 2009. Consequences of Mineral Antagonisms. Iowa Beef Center Professional Development.
2. **Hansen, S. L.** 2010. Strategic Use of Starch to Improve Marbling of Cattle. ADM Research Update Meeting.
3. **Hansen, S. L.** 2010 Iowa State University Feedlot Research Update. NCCC-208 Regional Feedlot Committee Annual Meeting, Texas.
4. **Hansen, S. L.** 2010. Beef Feedlot Nutrition Research at Iowa State. Kemin Department of Animal Science Update.

5. **Hansen, S. L.** 2010. Beef Nutrition Research at Iowa State. Land O'Lakes Technical Service Update.
6. **Hansen, S. L.** 2010. Beef Feedlot Nutrition Research at Iowa State. Iowa Feed and Nutrition Seminar.
7. **Hansen, S. L.** 2010. Mineral Interactions and Recommendations. Iowa Beef Center Professional Development.
8. **Hansen, S. L.** 2011. Stink. Modern Marvels television show, filmed in fall 2011. **Interviewed as expert on ruminant digestion, describing how gases are produced as byproducts of rumen fermentation.
9. **Hansen, S. L.** 2011. Improving Feed Efficiency in Beef Cattle. The Iowa State University Beef Nutrition Research Showcase.
10. **Hansen, S. L.** 2011. Sulfur Research Update. Agribusiness Association of Iowa.
11. **Hansen, S. L.** 2011 Iowa State University Feedlot Research Update. NCCC-208 Regional Feedlot Committee Annual Meeting, South Dakota.
12. Drewnoski, M.E. and **S.L. Hansen.** 2011 Sulfur Research at Iowa State. Iowa Feed and Nutrition Seminar.
13. **Hansen, S. L.** 2011. What's New in Beef Feedlot Nutrition at ISU. Land O'Lakes Research Update. Ames, IA.
14. **Hansen, S. L.** 2012. Beef Cow Mineral Requirements and Forages. Iowa Beef Center Veterinarian Update. Chariton, IA.
15. **Hansen, S. L.** 2012. Managing High Sulfur Diets. Iowa Beef Center Beef and Basketball Meeting. Ames, IA.
16. **Hansen, S. L.** 2012. Managing High Sulfur Diets. Cargill Animal Nutrition Research Update. Ames, IA.
17. **Hansen, S. L.** 2012 Iowa State University Feedlot Research Update. NCCC-208 Regional Feedlot Committee Annual Meeting, Indiana.
18. **Hansen, S. L.** 2013. ISU feedlot research update-Sales force training, Purina Animal Nutrition.
19. **Hansen, S. L.** 2013. National Program for the Genetic Improvement of Feed Efficiency in Beef Cattle. Four State Beef Conference. Lewis, IA.
20. **Hansen, S. L.** 2013. Managing High Sulfur Diets. The Iowa State University Beef Nutrition Research Showcase.
21. **Hansen, S. L.** 2014. Beef Cattle Mineral Sources, Availability and Issues. Iowa Beef Center Field Staff Professional Development. Ames, IA.
22. **Hansen, S. L.** 2014. Iowa State University Feedlot Research Update. NCCC-208 Regional Feedlot Committee Annual Meeting, Ohio.
23. **Hansen, S. L.** 2014. Iowa State University Feed Efficiency Research Update. W-2010 Regional Feed Efficiency Committee Annual Meeting, Missouri.
24. **Hansen, S. L.** 2016. Iowa State University Feedlot Research Update. Land O'Lakes Feedlot Group. Council Bluffs, IA.
25. **Hansen, S. L.** 2017. Mineral Nutrition for Feedlot Cattle. Form A Feed. Larchwood, IA.
26. **Hansen, S. L.** 2019. Trace Minerals and Implants. Driftless Region Beef Conference. Dubuque, Iowa.

Outreach on Campus

1. Officially recognized by the Iowa Beef Center as a resource for problem solving in beef mineral nutrition by beef extension field staff and veterinary diagnostic staff.
2. ISU Block and Bridle – Beef Interest Group. 2010. Beef Nutrition-Minerals. Invited talk (Approx. 100 students in attendance)
3. ISU Block and Bridle – Beef Interest Group. 2011. Beef Nutrition Research Opportunities at Iowa State. Invited talk (Approx. 100 students in attendance)

Youth Outreach

1. Station Coordination at World Food Prize Youth Institute at Iowa State University (2012-2014)
2. Station Coordination at Youth 4-H Beef Roundup at Iowa State University (2009-2014)

Institutional Service

Departmental Level

1. Member of the Chuckwagon Breakfast committee, 2009-2018
2. Member of the Graduation Breakfast committee, 2009-2018
3. Member of the Scholarship Committee, 2010-2015
4. Member of the Academic Quadrathlon Committee, 2010-present; co-chair 2018
5. Member of the Seminar Committee, 2010-present
6. Faculty Advisor for Collegiate Beef Team, 2010-present
 - a. Faculty supervisor for several trips to beef producers in Midwest
7. Faculty Advisor for Block and Bridle Little North American Showmanship Contest-2011
8. Faculty Advisor for Block and Bridle Social Committee, 2011-2012
9. Member of the search committee for the Undergraduate Teaching Coordinator (J. Sterle), 2011
10. Member of the search committee for the Adjunct Instructor/Lecturer Position (H. Jennings and C. Jackson), 2012
11. Member of the search committee for Cow calf specialist (P. Gunn), 2012
12. Faculty mentor for Christen Jackson, 2012-present
13. Member of the Study Abroad Committee, 2013-present
14. Member of the search committee for Department Chair, 2013-2015 (D. Beermann)
15. Faculty Advisor for Block and Bridle Blood Drive, 2014
16. Helped students start new club, and serve as inaugural faculty advisor for Animal Nutrition and Behavior Club, 2014-present
17. Member of the Kildee Animal Facility Committee- 2015-present
18. Member of the search committee for Dairy Extension Specialist (H. Ramirez), 2015
19. Member of the search committee for Ruminant Nutritionist (R. Appuhamy), 2016
20. Faculty mentor for Ranga Appuhamy, 2017-present
21. Co-chair of search committee for Cow-Calf Specialist (K. Lippolis), 2017/2018

22. Member of search committee for Department Chair, 2019

Interdepartmental Level-Toxicology

1. Member of the search committee for a faculty member in Toxicology in the College of Veterinary Medicine (W. Rumbeiha and H. Coetzee), 2011
2. Serve as committee member for 2 Ph.D. students in Toxicology

Interdepartmental Level- Graduate Program in Nutritional Sciences

1. Member of Modern Views of Nutrition Seminar Committee, 2010-2015

College Level

1. Member of College of Agriculture and Life Sciences Scholarship Committee, 2013-2015, Chair, 2016-present
2. College of Agriculture and Life Sciences Honors Committee, Chair, 2017-present

University Level

1. Honors Liaison for Department of Animal Science, 2011-2017
2. Member of review committee for Iowa State University Faculty Awards, College of Agriculture and Life Sciences Representative, 2012
3. Moderator for University Undergraduate Research Symposium, 2011
4. Invited to make opening remarks at Sixth Annual University Symposium on Undergraduate Research and Creative Expression, 2012
5. Invited to give Honors Alumni remarks at Honors Senior Convocation, 2014
6. Member of Transportation Advisory Council as CALS representative, 2016-present
7. VPR Representative for "Faces of Iowa State" portraits at Iowa State Fair, 2016
8. Faculty representative for interviews for OIPTT industry negotiator position, 2017
9. Inclusiveness facilitator training participant, 2 day workshop, 2017
10. University Honors Committee Member (CALS Rep), 2017-present
11. Research Day Committee, 2018-2019
12. University Honors Task Force Committee Member, 2018
13. Precision Livestock Farming (PLF) Workshop Committee, 2018
14. Precision Livestock Farming (PLF) Steering Committee, 2019

Regional Committee Service

1. NCCC-308: Nutrition and Management of Feedlot Cattle to Optimize Performance, Carcass Value and Environmental Compatibility- Secretary in 2015; Chair in 2016.
2. W2010: Integrated Approach to Enhance Efficiency of Feed Utilization in

Beef Production Systems- Secretary in 2016; Chair/President in 2017.

Teaching (30% of Appointment)

Undergraduate Advising at Iowa State University

Currently advise ~35 undergraduates in the Department of Animal Science. On average, I have advised between 8 and 12 new students each year.

Courses Taught – Iowa State University

Animal Science 419– “Advanced Animal Nutrition” 2 credits, offered each fall. ~60-70 students each semester. A senior level course with in-depth coverage of the processes of nutrient digestion and metabolism in both ruminant and non-ruminant animals.

Animal Science/NUTRS 520- “Digestive Physiology and Metabolism of Ruminants” 3 credits, offered alternate spring semesters. ~10-15 graduate students in Animal Science or NUTRS; This course covers aspects of ruminant physiology and nutrient digestion including rumen microbiology, protein, lipid, carbohydrate, vitamin and mineral metabolism.

Animal Science/NUTRS 618 – “Vitamin and Mineral Metabolism” – 2 credits, offered alternate spring semester, ~10-15 graduate students in ANS or NUTRS. Developed this course to meet the needs of advanced graduate students in ANS/NUTRS or related fields. This course covers the absorption, metabolism, excretion, function, and signs of deficiency and toxicity in humans in animals in relation to minerals and vitamins. It also includes preparation of a research proposal by the students

Animal Science 496B – “Beef Production Systems in the United States” 3 credits. To be offered alternate spring semesters. 9 students. Developed and led undergraduate students on a domestic travel course to expand student experiences in beef production in the U.S.

Animal Science 490A – “Independent Study in Animal Science” 3 credits. Multiple semesters. 1 junior in Animal Science. Directed an undergraduate student in an independent laboratory project in ruminant nutrition

Animal Science 490H – “Independent Study in Animal Science-Honors Capstone Project” 3 credits. Multiple semesters. Each time 1 junior or senior in Animal Science. Directed an undergraduate Honors student in an independent laboratory project in ruminant nutrition as a part of the student’s Honors Capstone Project

Scholarship of Teaching and Learning

Project LEA/RN (Fall 2010-Present)

Attended 2 day workshop on learner-centered classroom education in August, 2010 (Project LEA/RN; Learning Enhancement Action/Resource Network). Continued to participate in bi-monthly small group meetings since that time. The purpose of LEA/RN is to aid instructors in the development of new tools to help students focus on the *thinking* they do about their learning. The small group sessions provide a safe place to explore new teaching strategies and to hear

from other instructors about how they implemented critical thinking tools in the classroom to help students be more engaged and focused in the class.

Teaching Research (Fall, 2013) The purpose of this research was to determine if the number of opportunities for students to engage in critical thinking exercises like “turn to your partner” during a class period affects student retention of material, as assessed by a short quiz at the start of class in the subsequent period. Three different levels were tested in this work: 0, 1 or 2 turn to your partner discussions in a single class period. Our hypothesis was that increasing the number of activities in a single class period will increase student engagement and improve student performance, which was found to be true when material was difficult early in the semester (reported in abstract # 56).