

ANIMAL SCIENCES 2012 ANNUAL REPORT Prepared: July 2013

A. Department/Unit/College Goals and Priorities for the Past Year

- Improve visibility with students, stakeholders, and alumni
- Revamp the departmental web site
- Create an alumni newsletter
- Develop an onboarding process to more effectively integrate new employees into the department

Teaching Goals

- Prepare for accreditation visit for the Veterinary Technology Program
- Fill vacancy created by the promotion of Dr. David Buchanan

Research Goal

- Develop a more sustainable funding model for operation of the Advanced Imaging and Microscopy Laboratory

Extension Goal

- Develop more in-depth training opportunities for county Extension agents

B. Executive Summary of Accomplishments in Achieving the Goals and Priorities

The department was successful in achieving several of our 2012 goals over the past year. Visibility with students, stakeholders, and alumni was improved with the creation of a quarterly alumni newsletter (the first issue was produced at the end of 2012). The department also began a Facebook page which is used to inform alumni, students, and stakeholders about departmental news and upcoming events. The page has over 800 “likes.” The Moos, Ewes & More program attracted nearly 1,000 people in September, 2012. The department’s web site was revamped within the Ag CMS guidelines in 2012. A departmental onboarding process was developed to ensure new employees are equipped with the information they need to successfully begin their careers at NDSU. A new scholarship was developed (Paul Berg Scholarship) and funded through generous donations from alumni.

Teaching: The department’s Veterinary Technology Program will undergo an accreditation review in 2013. Program staff began preparing for the review in 2012. The program’s co-directors have responsibility for preparing the reports and other documentation required by the review team. A search was conducted and interviews held for the Genetic Improvement of Livestock faculty position. The Animal Sciences major underwent a major curriculum overhaul in 2011. Department faculty members continue to implement changes which were part of the curriculum revision. Students in the Animal Sciences major are now required to participate in a research or internship experience as part of the curriculum. Students returning from their internships give presentations in ANSC 150 (Orientation) in order to better acquaint the freshmen students with internship opportunities. Departmental faculty members Drs. Newman and Dahlen initiated a foreign travel course in which 19 students traveled to China for two weeks to learn about Chinese agricultural production systems. Department faculty members won the ASAS Fellow Award in Teaching (David Buchanan) and the NDSU Service Learning Award (Erika Berg).

Research/Scholarly/Creative Activities: Department faculty members received numerous grant awards from federal and state agencies, commodity groups, and industry partners. The NDSU Beef Cattle Research Complex was in its first full year of operation in 2012. Faculty members continue to develop data acquisition and sorting procedures which will allow more accurate and

useful handling of data generated by the feeding system. Robert Maddock won the American Meat Science Association Achievement Award.

Service/Extension/Outreach: Extension faculty in the department have developed additional in-depth training for county and area Extension personnel. In 2012, department faculty provided a two-day workshop related to livestock nutrition. The curriculum included classroom activities related to livestock nutrition, feeds and feeding, and ration balancing. Laboratory activities included farm visits and assignments related to the development of specific feeding recommendations for each producer. This improved the ability of Extension personnel to respond to commonly asked questions about livestock nutrition. This programming effort won a Program Excellence Award from the NDSU Extension Service.

In 2012, the department hired a tenure track specialist in the area of Livestock Stewardship. This position will work with the livestock industry on educational programs related to animal care and husbandry, stewardship, and management.

Service: In 2012, the department hosted the Reciprocal Meats Conference. This event serves as the annual meeting for the American Meat Science Association. Approximately 800 people attended the conference in Fargo. Departmental faculty and staff served as session organizers, hosts, and coordinated meeting logistics.

Dr. Kim Vonnahme served as a director-at-large for the American Society of Animal Sciences. Dr. Greg Lardy served as President-Elect of the American Society of Animal Sciences.

C. Department/Unit/College Goals and Priorities for the Coming Year

Overall Departmental Goals:

- Hold the first-ever NDSU Animal Sciences Alumni Reunion
- Hold a departmental retreat which focuses on planning for the future
- Form an alumni advisory board to assist with fundraising for support of the NDSU Judging Teams

Teaching Goals:

- Prepare for and successfully navigate the Veterinary Technology Program's Accreditation Review
- Develop a plan for effectively staffing our ANSC 150 and ANSC 189 courses

Research Goals:

- Implement the plan for improving the sustainability of the AIM Laboratory
- Continue to seek improvement in the internal grant submission and approval process

Extension Goals:

- Develop a needs assessment for county Extension staff related to livestock programming
- Develop additional programming materials which county staff can use for educational programs

	Total
Peer Reviewed Publications (published or accepted)	54
National or International Invited Presentations	9
Juried presentations/performances/exhibitions	0
Research Grants and Contracts (<i>number that are active</i>)	38
Cumulative Amount (<i>total value of active grants and contracts</i>):	\$8,747,664.00

2012 Animal Sciences Appendix

I. Listing of Active Grants and Contracts

Active Research Grants

Berg, E.L. Jeremiah Program and equine guided coaching. Community Project Award. July 2012. 1 year. \$10,000.
Berg, E.P. and K.A. Vonnahme. Use of young female gilts as a biomedical model of human females to determine if consumption of beef from cattle administered estrogenic growth promotants results in premature puberty. State Board of Agriculture Research and Education. \$8,916.
Berg, E.P. Comparison of red meat versus high carbohydrate diet as a means of preventing tissue-specific down-regulation of insulin receptors. State Board of Agriculture Research and Education. \$6,806.
Caton, J. Effects of maternal nutrition and rumen protected arginine supplementation on ewe and postnatal lamb performance.
Caton, J. Effects of VEGF gene therapy on fetal and postnatal outcomes. USDA NIFA-AFRI. \$150,000.
Crane, A., C. Schauer, and R. Redden. 2012. Effects of monensin and diet particle size on feedlot performance, carcass traits, and nutrient digestibility and incidence of coccidiosis in feedlot lambs. SBARE. \$8,007.
Dahlen, C.R. and B.W. Neville. Injectable vitamins in newborn beef calves. Stuart Products, Inc. \$1,000.
Dahlen, C.R. and J.C. Hadrich. The 2012 North Dakota beef industry survey; today, tomorrow, and into the future. North Dakota Corn Council, North Dakota Beef Commission, North Dakota Soybean Council. \$20,000.
Dahlen, C.R. C.L. Stoltenow, and J. Seeger. The NDSU PREGCard Project. Pfizer Animal Health. \$5,000.
Grazul-Bilska, A.T. Acquisition of laser microdissection and pressure catapulting system (LMPCS) for life sciences research and training. NSF-MRI-R2 program. \$433,329.
Grazul-Bilska, A.T. and D.A. Redmer. Role of nitric oxide (NO) system in ovarian function. USDA-AFRI 1/1/12-12/31/14. \$393,624.
Jackson, C., C.R. Dahlen, and R.R. Redden. Sheep estrous synchronization. SBARE. \$6,198.
Klein, S.I. and C.R. Dahlen. Alternate day feeding in gestating beef cows. North Dakota Corn Council. \$24,869.
Lepper, A.N., P.T. Berg, and E.P. Berg. Effects of post-mortem aging on sensory characteristics, color, and shelf-life stability in low marbling beef loins. National Cattleman's Beef Association. \$21,516.
Maddock Carlin, K. Influence of maternal nutrition on offspring muscle growth and carcass quality. USDA. \$11,635.
Maddock Carlin, K. Influence of temperature, pH, and oxidative stress on the inhibition of mucalpain by calpastatin. NDSU Development Foundation. 2012-2013. \$2,870.
Maddock Carlin, K. Relationship of working chute behavior of feedlot cattle to meat quality traits and muscle structure. SBARE.2011-2012. \$7,425.

Maddock, R.J., Renewal on the Standing Rock Reservation: Land, cattle, beef, and people. USDA-AFRI. \$4,987,395.
Newman, D. Novel feeding strategy to improve feed efficiency and decrease cost of production for market swine. Northern Canola Growers Association. \$7,250.
Newman, D. R.K. Miller, S. Moeller, C.C. Carr, and B. Delmore. National Pork Board retail benchmarking study. \$299,404.
O'Rourke, K., L. Reynolds, and C. Sun. Undernutrition in pregnancy and developmental programming of vascular function. NIH R03 grant. January 2010-December 2012. 3 years. \$100,000.
Park, C.S. Canola and human health. USDA-NIFA/Northern Canola Growers Association. 7/1/10-6/30/13. \$52,000.
Park, C.S. Lipotrope and epigenetics. NIH-NCI. 8/1/12-7/31/14. \$285,065.
Redden, R. A. Crane, J. Caton, L. Reynolds, and C. Schauer. Periconceptual supplementation to improve lamb production. SBARE. \$11,044.
Redden, R. and G. Stokka. Effects of vaccination for histophilus in feedlot lambs. Pfizer Animal Health. \$2,500.
Redden, R. I. Cannayen, and C. Schauer. Development of an image based wool quality testing system. American Sheep Industry Wool Council. \$22,000.
Reynolds, L.P. and A. Conley. Role of placental, fetal adrenal and fetal neural steroids in parturition and extra-uterine survival. UC Davis Bridging Funds, NDSU Bridging Funds. \$25,000.
Reynolds, L.P. and A.T. Grazul-Bilska. Expression and methylation status of genes regulating placental angiogenesis in normal, cloned, IVF and monoparental sheep fetuses. USDA. 2007-2012. \$315,000.
Reynolds, L.P. and J.S. Caton. Metabolites of 1-C metabolism and programming of fetal and offspring growth and development by maternal nutrition. NDSU Bridging Funds. \$25,000.
Stoltenow, C.L. B. Neville, and J. Seeger. Concurrent application of Nuplura, BRD Shield or One Shot to spring born beef calves in north central United States. Pfizer Animal Health. \$20,000.
Swanson, K. and M. Bauer. Influence of time of feed consumption on feed efficiency in backgrounding calves. SBARE Livestock. \$9,287.
Swanson, K. M. Bauer, C. Dahlen, and J. Caton. Factors influencing feed intake and efficiency in backgrounding calves fed medium-quality hay with or without increasing levels of supplementation. SBARE Livestock. \$11,100.
Swanson, K. M. Bauer, et al. Influence of feed processing and distiller's grains inclusion on finishing performance. North Dakota Corn Council. \$29,584.
Swanson, K., B. McBride, C. Fitzsimmons, and S. Miller. Influence of nutrition and RFI on cow energetic efficiency and fetal development. Beef Cattle Research Council and Ontario Cattlemen's Association. \$387,840.
Vonnahme, K. et al. Effects of gestational plane of nutrition and MP level on maternal and fetal outcomes. USDA. \$350,000.
Vonnahme, K., K. Maddock Carlin, and C. Schauer. Influence of metabolizable protein supplementation in isocaloric diets during late pregnancy on fetal ovine skeletal muscle. USDA NRI 2009-2012. \$350,000.

Vonnahme, K.A., K. Swanson, J. Caton, et al. Effects of realimentation after nutrient restriction during early to mid-gestation on umbilical blood flow in pregnant beef cows. Nutrient restriction and refeeding in cows and fetal development. USDA. \$320,000.
Wagner, S. The effect of banamine on standing and lying behavior after hoof trimming. Merck Animal Health. 1 year. \$27,000.

Other Funding Activities

Dahlen, C.R. Artificial insemination versus natural service: A systems comparison. Pfizer Animal Health. Estrous synchronization products. \$5,250 value.
Dahlen, C.R. Artificial insemination versus natural service: A systems comparison. Select Sires, Inc. Semen and AI supplies. \$7,000 value.
Dahlen, C.R. Poet Nutrition, Impact of breeding systems on steer backgrounding performance. Quality Liquid Feeds, Inc. Liquid supplement, tank, and pump. \$3,600 value.

Hatch Projects

Berg, E.P. Impacts of stress factors on performance, health, and well-being of farm animals.
Caton, J.S. Improving ruminant use of forages in sustainable production systems for the western U.S.
Caton, J.S. Nitrogen cycling, loading, and use efficiency in forage-based livestock production systems.
Dahlen, C. Improving beef cattle reproduction and nutritional management.
Grazul-Bilska, A. Enhancement of reproductive parameters in domestic livestock.
Grazul-Bilska, A.T. To determine (1) the role of the nitric oxide (NO) system in ovarian function in normal and compromised females, and (2) strategies to reverse compromised ovarian function.
Maddock Carlin, K. Molecular mechanisms regulating skeletal muscle growth and differentiation.
Newman, David. Swine production management to enhance animal welfare and value of U.S. Pork.
Park, C.S. Role of dietary methyl nutrients in epigenetic control of lactation.
Redden, R.R. Increasing efficiency of sheep production.
Schroeder, J.W. and M. Bauer. Metabolic relationships in supply of nutrients for lactating cows.
Swanson, K. Factors influencing efficiency of nutrient use in ruminants. ND01746, 0228036

New Grants Funded in 2012

Berg, E.L. Jeremiah Program and Equine Guided Coaching. NDSU President's Community Project Award. \$10,000. Begins April 5, 2012. 1 year.
Berg, E.L. Research presentation at Joint Annual Meetings of American Society of Animal Science. NDSU Provost travel and research fund. \$500. June 29, 2012. 1 year.
Berg, E.L., C. Hammer, S. Wagner, S. Ostby and T. Sonsthagen. Livestock dissection DVDs for courses and Extension activities. NDSU Instructional Development Grant. 2012. \$2,065. 1 year.

Berg, E.P. Comparison of red meat versus high carbohydrate diet as a means of preventing tissue-specific down-regulation of insulin receptors. North Dakota Beef Commission. \$6,816. 1 year.
Berg, E.P. Comparison of red meat versus high carbohydrate diet as a means of preventing tissue-specific down-regulation of insulin receptors. State Board of Agriculture Research and Education. \$6,816. 1 year.
Caton, J. Countering nutritional induced intrauterine growth restriction with VEGF gene therapy: Impacts on fetal developmental outcomes. USDA-AFRI. \$150,000. 2 years.
Crane, A., C. Schauer, and R. Redden. Effects of monensin and diet particle size on feedlot performance, carcass traits, and nutrient digestibility and incidence of coccidiosis in feedlot lambs. SBARE. \$8,007. 1 year.
Dahlen, C.R. and J.C. Hadrich. The 2012 North Dakota Beef industry survey; today, tomorrow, and into the future. North Dakota Corn Council. \$20,000. 2 years.
Dahlen, C.R. and J.C. Hadrich. The 2012 North Dakota beef industry survey; today, tomorrow, and into the future. North Dakota Beef Commission. \$10,000. 2 years.
Dahlen, C.R. and J.C. Hadrich. The 2012 North Dakota beef industry survey; today, tomorrow, and into the future. North Dakota Soybean Growers Association. \$3,500. 2 years.
Dahlen, C.R. Beyond the Bunk/Beef College Meeting. North Dakota Corn Council. \$1,000. 1 year.
Dahlen, C.R. Evaluating the sustainability of beef cattle breeding systems. Sustainable Agriculture Research and Education Grant Program, USDA NIFA. \$199,995. 3 years.
Dahlen, C.R. Evaluation the sustainability of beef cattle breeding systems. NDSU Animal Sciences Agricultural Experiment Station Graduate Research Assistantship. \$15,250. 2 years.
Dahlen, C.R., C.L. Stoltenow, and J. Seeger. The NDSU PREGCard project. Pfizer Animal Health. \$5,000. 1 year.
Grazul-Bilska, Anna. Acquisition of molecular biology equipment. The NDSU Development Foundation. \$4,800. 1 year.
Grazul-Bilska, Anna. Role of nitric oxide (NO) system in ovarian function. USDA CSREES/NRI. \$306,625 direct cost, (\$393,108 total cost), 2012-2015. Grant No 2011-67016-30174. 1/1/12-12/31/14.
Maddock Carlin, K. and R. Maddock. Influence of rate of temperature and pH decline on intramuscular beef tenderness variation in muscles in the round. ND SBARE. \$7,450. 8/1/13-7/31/14.
Maddock Carlin, K.R. and R.J. Maddock. Influence of rate of temperature and pH decline on intramuscular beef tenderness variation in muscles in the round. SBARE Animal Agriculture grant. Funded \$7945. 18 months.
Mostrom, M.S., C.L. Stoltenow, and C.R. Dahlen. Livestock water quality: Pilot survey. State Board of Research and Education. \$5,785. 1 year.
Newman, David. NDSU BBQ Boot Camp Program. North Dakota Beef Commission. \$10,000. 2012.
Newman, David. NDSU BBQ Boot Camp Program. North Dakota Pork Producers Association. \$1,500. 1 year.
Newman, David. Novel feeding strategy to improve feed efficiency and decrease cost of production for market swine. Northern Canola Growers Association. \$7,250. 1 year.
Park, C.S. Canola oil and offspring health: Synergistic effect with methyl nutrients. Northern

Canola Growers Association. \$53,280. 1 year.
Park, C.S. Maternal methyl diet and epigenetic imprint in offspring mammary carcinogenesis. NIH-NCI. \$285,065. 2 years.
Redden, R., D. Newman, and L. Warner. 2012. Expansion of lamb exposure at NDSU BBQ Boot Camp. North Dakota Lamb and Wool Producers Association and American Lamb Board. \$4,000. 1 year.
Redden, R., I. Cannayen, and C. Schauer. 2012. Development of an image based wool quality testing system. American Sheep Industry Wool Council. \$22,000. 2 years.
Renelt, T., J.W. Schroeder, C. Schwartau, A. Garcia, and M. Post. 2012. Agricultural Human Resource Management. North Central Risk Management Education Grants Program. \$84,814. 18 months.
Reynolds, L.P. Antigen retrieval/unmasking system. NDSU Development Foundation \$1,791. March 2012-February 2013. 1 year.
Reynolds, L.P. Reynolds centennial endowment fund application. \$1,791. 4/1/12-3/31/13.
Schmidt, R. and R. Redden. 2012. Utilizing cover crops for sheep. NCR-SARE. \$2,000. 1 year.
Simsek, S., A. Vegi, K. Swanson, B. Thornberg, and A. Scheaffer. Prebiotic benefits of ProBiotein. Agricultural Products Utilization Commission. \$45,000. 2012-2013. 1 year.
Stokka, G.L, L.L. Pederson, and C.R. Dahlen. Utilizing temperature data loggers to monitor temperature deviations in delivered and stored animal health vaccine shipments. National Cattlemen’s Beef Association. \$10,000. 1 year.
Stoltenow, C.L., M. Bauer, and C. Dahlen. Concurrent application of Nuplura, BRD Shield or One Shot to spring born beef calves in north central United States. Pfizer Animal Health. \$20,000. 1 year.
Swanson, K., M. Bauer, and C. Dahlen. Influence of corn processing and distiller’s grains inclusion for finishing cattle on feeding behavior, gain efficiency, greenhouse gas emission, and carcass quality. North Dakota Corn Council. \$26,136. 1 year.
Swanson, K.C. and M. Bauer. Influence of limit-feeding and time of feeding on feed efficiency in steers fed backgrounding diets. North Dakota State Board of Agriculture and Education, Livestock Program. \$9,287. 1 year.
Wagner, S. and C. Hammer. The effects of maternal nutrition during gestation on objective behavior measures of lamb vitality. \$5,940. 11/15/12-11/1/13.
Wagner, S. The effect of Banamine treatment on standing and lying behavior in dairy cows after hoof trimming. Merck. \$27,000. 7/18/12-12/31/13.

II. Publications and Presentations

1. Refereed Journal Articles

Refereed Journal Articles Published

Berg, E.L. 2012. The Equine Anatomy Project: student perceptions of a necropsy lab. North American Colleges and Teachers of Agriculture. 56:30-33.
--

Berg, E.L., D.L. McNamara, E.P. Berg, V.K. Ganjam, G. Rottinghaus, and D.H. Keisler. 2012. The effects of lipoic acid supplementation on blood glucose and insulin concentrations in pony mares. <i>Professional Animal Scientist</i> . 28:632-638.
Berg, E.L., D.L. McNamara, G.E. Rottinghaus, Y. Chen, E.P. Berg, V.K. Ganjam, and D.H. Keisler. 2012. The effects of lipoic acid supplementation on blood glucose and insulin concentrations in pony mares. <i>Prof. Anim. Sci.</i> 28:632-638.
Camacho, L.E., A.M Meyer, T.L Neville, C.J Hammer, D.A Redmer, L.P Reynolds, J.S. Caton, and K.A. Vonnahme. 2012. Neonatal hormone changes and growth in lambs born to dams receiving differing nutritional intakes and selenium supplementation during gestation. <i>Reproduction</i> . 144:23-35.
Camacho, L.E., A.M. Meyer, T.L. Neville, C.J. Hammer, D.A. Redmer, L.P. Reynolds, and K.A. Vonnahme. Neonatal hormone changes and growth in lambs born to dams receiving differing nutritional intakes and selenium supplementation during gestation. <i>Reproduction</i> . 2012. 114:23-35.
Cavinder, C.A., S.A. Burns, J.A. Coverdale, C.J. Hammer, G. Holub, and K. Hinrichs. Late gestational nutrition of the mare and potential effects on the endocrine profiles and adrenal function of the offspring. <i>Prof. Anim. Sci.</i> 2012. 28:344-350.
Cho, K., L. Mabasa, S. Bae, M.W. Walters, and C.S. Park. 2012. High methyl diet suppresses mammary carcinogenesis in female rat offspring. <i>Carcinogenesis</i> 33:1106-1112.
Dahlen, C.R., A. DiCostanzo, A.R. Spell, and G.C. Lamb. 2012. Use of embryo transfer 7 d after artificial insemination of transferring identical demi-embryos to increase twinning in beef cattle. <i>J. Anim. Sci.</i> 90:4823-4832.
Doelman, J., H. Cao, N.G. Purdie, J.J. M. Kim, K.C. Swanson, V.R. Osborne, J. Tey, A. Ali, Z. Feng, N.A. Karrow, J.P. Cant. 2012. Transcript profiling of the ruminant liver indicates a unique program of transcriptional regulation of ketogenic enzymes during food restriction. <i>Comp. Biochem. Physiol. Part D: Genom. Proteom.</i> 7:303-310.
Du, M., and K.M. Carlin. 2012. Meat Science and Muscle Biology Symposium: Extracellular matrix in skeletal muscle development and meat quality. <i>J. Anim. Sci.</i> 90: 924-925.
Einarsson, J.I., K.A. Vonnahme, and A.T. Grazul-Bilska. 2012. Barbed vs standard suture: effects on cellular composition and proliferation of the healing wound in the ovine uterus. <i>Acta Obstetrica et Gynecologica Scandinavica</i> . 91:613-619.
Grazul-Bilska A.T., E. Borowczyk, J.J. Bilski, L.P. Reynolds, D.A. Redmer, J.S. Caton and K.A. Vonnahme. Overfeeding and underfeeding have detrimental effects on oocyte quality measured by in vitro fertilization and early embryonic development in sheep. <i>Domest. Anim. Endocrinol.</i> 43: 289-298, 2012.
Grazul-Bilska, A.T., E. Borowczyk, J.J. Bilski, L.P. Reynolds, D.A. Redmer, J.S. Caton and K.A. Vonnahme. 2012. Overfeeding and underfeeding have detrimental effects on oocyte quality measured by in vitro fertilization and early embryonic development in sheep. <i>Domestic Animal Endocrinology</i> . 43:289-298.
Guelker, M.R., A.N. Haneklaus, J.C. Brooks, C.C. Carr, R.J. Delmore, D.B. Griffin, D.S. Hale, K.B. Harris, G.G. Mafi, D.D. Johnson, C.L. Lorenzen, R.J. Maddock, J.N. Martin, R.K. Miller, K.L. Nicholson, C.R. Raines, D.L. VanOverbeke, L. Vedral, B.E. Wasser, and J.W. Savell. 2012. National Beef Tenderness Survey – 2010: Warner-Bratzler shear-force values and sensory-panel ratings for beef from United States retail and foodservice establishments. <i>J. Anim. Sci.</i> 29:1078-1089.

Harris, E.K., E.P. Berg, E.L. Berg, and K.A. Vonnahme. 2012. Effect of maternal activity during gestation on maternal behavior, fetal growth, umbilical blood flow and farrowing characteristics in pigs. <i>Journal of Animal Science</i> . doi: 10.2527/jas.2012-5769.
Holligan, S., J. Wang, J.P. Cant, and K.C. Swanson. 2013. A mass spectrometry-based proteomics approach to detect tissue-wide adaptive changes associated with increased α -amylase activity in domestic cattle (<i>Bos taurus</i>). <i>Comp. Biochem. Phys. D</i> . 8:65-71.
Ilse B.R., M.R. O’Neil, G.P. Lardy, L.P. Reynolds, and K.A. Vonnahme. 2012. Impacts of linseed meal and estradiol - 17 β on cellularity, angiogenic factor mRNA expression, and vascularity of the uterus in ovariectomized ewes. <i>Canadian J Anim. Sci.</i> 92:297-306.
Ilse, B.R., V.L. Anderson, D.S. Buchanan, K.G. Odde, G.P. Lardy, and K.A. Vonnahme. 2012. Short communication: Growth and attainment of puberty in calves from cows supplemented with linseed meal during gestation and early lactation. <i>Canadian J. Anim. Sciences</i> . 92:443-447.
Lainesse, C., R. Gehring, K. Pasloske, G. Smith, S. Soback, S. Wagner, S., and T. Whittem. 2012. Challenges associated with the demonstration of bioequivalence of intramammary products in ruminants. <i>J. Veterinary Pharmacology and Therapeutics</i> , 35(s1) 65-79, April 2012.
Lemley, C.O., A.M. Meyer, L.E. Camacho, T.L. Neville, D.J. Newman, J.S. Caton, and K.A. Vonnahme. 2012. Melatonin supplementation alters uteroplacental hemodynamics and fetal development in an ovine model of intrauterine growth restriction (IUGR). <i>Am. J. Physiol. Regul. Integr. Comp. Physiol.</i> 302:R454-467.
Mabasa, L., K. Cho, S. Bae, D.M. Walsh, and C.S. Park. 2012. Lipotropes (Methyl Nutrients) inhibit growth of feline lymphoma. <i>In Vitro. Res. Vet. Sci.</i> 93:259-263.
Maddock Carlin, K.R., V.L. Anderson, D.M. Larson, B.R. Ilse, R.J. Maddock, M.L. Bauer, and G.P. Lardy. 2013. Effects of increasing field pea (<i>Pisum sativum</i>) level in high-concentrate diets on meat tenderness and sensory taste panel attributes in finishing steers and heifers. <i>Prof. Anim. Sci.</i> 29:33-38.
Medrano-Galarza, C., J. Gibbons, S. Wagner, A.M. de Passillé, and J. Rushen. 2012. Behavioral changes in dairy cows with mastitis. <i>J. Dairy Sci.</i> , 95(12) 6994–7002.
Meyer, A.M., J.J. Reed, T.L. Neville, J.B. Taylor, L.P. Reynolds, D.A. Redmer, K.A. Vonnahme, and J.S. Caton. 2012. Effects of nutritional plane and selenium supply during gestation on visceral organ mass and indices of intestinal growth and vascularity in primiparous ewes at parturition and during early lactation. <i>J. Anim. Sci.</i> 90:2733-2749.
Rahman, S., M.S. Borhan, M.S., and K. Swanson. 2013. Greenhouse gas emissions from beef cattle pen surfaces in North Dakota. <i>Envir. Tech.</i> DOI:10.1080/09593330.2012.743598.
Redmer, D.A., J.S. Luther, J S. Milne, R.P. Aitken, M.L. Johnson , P.P. Borowicz, L.P. Reynolds, J.S. Caton and J.M. Wallace. 2012. Decreasing maternal nutrient intake during the final third of pregnancy in previously overnourished adolescent sheep: Effects on maternal nutrient partitioning, feto-placental outcomes. <i>Placenta</i> 33:114-121.
Reynolds L.P., and J.S. Caton. 2012. Role of the pre- and post-natal environment in developmental programming of health and productivity. Invited review. <i>Molecular and Cellular Endocrinology</i> , Special Issue ‘Environment, Epigenetics and Reproduction,’ MK Skinner (ed.). <i>Mol. Cell Endocrinol.</i> 354:54-59.

Rodgers, J.C., S.L. Bird, J.E. Larson, N. Dilorenzo, C.R. Dahlen, A. DiCostanzo, and G.C. Lamb. 2012. An economic evaluation of estrous synchronization and timed artificial insemination in suckled beef cows. <i>J. Anim. Sci.</i> 90:4055-4062.
Salim, H., K.M. Wood, M.K. Abo-Ismael, P.L. McEwen, I.B. Mandell, S.P. Miller, J.P. Cant, and K.C. Swanson. 2012. Influence of feeding increasing levels of dry corn distillers grains plus solubles in whole corn grain-based finishing diets on total tract digestion, nutrient balance, and excretion in beef steers. <i>J. Anim. Sci.</i> 90:4441-4448.
Soto-Navarro, S.A., A.M. Encinias, M.L. Bauer, G.P. Lardy, and J.S. Caton. 2012. Feeding value of field pea as a protein source in forage based-diets fed to beef cattle. <i>J Anim. Sci.</i> 90:585-591.
Sun, X, K.J. Chen, K.R. Maddock-Carlin, V.L. Anderson, A.N. Lepper, C.A. Schwartz, W.A. Keller, B.R. Ilse, J.D. Magolski, and E.P. Berg. 2012. Predicting beef tenderness using color and multispectral image texture features. <i>Meat Sci.</i> 92:386-393.
Vonnahme, K.A. 2012. How the maternal environment impacts fetal and placental development: implications for livestock production. Invited Review. <i>Animal Reproduction.</i> 9:789-797.
Wang, H., J. Zhao, Y. Huang, X. Yan, A.M. Meyer, M. Du, K.A. Vonnahme, L.P. Reynolds, J.S. Caton, and M.J. Zhu. 2012. Effects of maternal plane of nutrition and elevated dietary selenium in first parity ewe on inflammatory response in the ovine neonatal gut. <i>J. Anim. Sci.</i> 90:325-333.
Wiesak, T., A.T. Grazul-Bilska, M. Wikarczuk, J.S. Schinfeld, L.I. Barmat, A. Lee, and S.G. Somkuti. Prognosis for clinical pregnancy and birth after transferring embryos derived from a cohort of incompletely mature oocytes at retrieval time. <i>Reprod. Biol.</i> 12: 219-229, 2012.
Zimmerman, L.C., T.C. Schroeder, K.C. Dhuyvetter, K.C. Olson, G.L. Stokka, J.T. Seeger, and D.M. Grotelueschen. The Effect of Value-Added Management on Calf Prices at Superior Livestock Auction Video Markets. <i>Journal of Agricultural and Resource.</i> April 2012, Vol. 37, No. 1 pp 128-143.

Refereed Journal Articles Accepted

Awda, B.J., S.P. Miller, Y.R. Montanholi, G. Vander Voort, T. Caldwell, M.M. Buhr, and K.C. Swanson. 2013. The relationship between feed efficiency traits and fertility in young beef bulls. <i>Can. J. Anim. Sci.</i> Accepted.
Dyer, N; K.B. Register, D. Miskimmins, and T.K. Newell. Necrotic pharyngitis associated with <i>Mycoplasma bovis</i> infections in American bison (<i>Bison bison</i>); In press; <i>Journal of Veterinary Diagnostic Investigation.</i>
Grant, J.K., P.L. Steichen, C.L. Wright, K.A. Vonnahme, M.L. Bauer, J.S. Jennings, and G.A. Perry. Influence of nitrogen and sulfur intake on bovine uterine pH throughout the luteal phase. <i>Journal of Animal Science.</i>
Grazul-Bilska, A.T., M.L. Johnson, P.P. Borowicz, L. Baranko, D.A. Redmer, and L.P. Reynolds. Placental development during early pregnancy in sheep: Effects of embryo origin on fetal and placental growth, and global methylation. <i>Theriogenology.</i>
Harris, E.K., E.P. Berg, E.K. Berg, and K.A. Vonnahme. Effect of maternal activity during gestation on maternal behavior, fetal growth, umbilical blood flow, and farrowing characteristics in pigs. <i>Journal of Animal Science.</i>

Johnson, G.D., H. B. Goosey, M. G. Rolston, W. L. Miller, D. G. Hokit, R. R. Redden, and R.J. Kott. 2013. Evaluation of mosquito responses to pyrethroid insecticides topically applied to sheep. JAMCA. In press.
Lemley, C.O., L.E. Camacho, A.M. Meyer, M. Kapphahn, J.S. Caton, and K.A. Vonnahme. 2013. Dietary melatonin supplementation alters fetal amino acids consumption during intrauterine growth restriction in ewes. Animal. Accepted with revision
Maddock Carlin, K.R., V.L. Anderson, D.M. Larson, B.R. Ilse, R.J. Maddock, M.L. Bauer, and G.P. Lardy. 2013. Effects of increasing field pea (<i>Pisum sativum</i>) level in high-concentrate diets on meat tenderness and sensory taste panel attributes in finishing steers and heifers. Prof. Anim. Sci. 29:33-38.
Magolski, J.D, D.S. Buchanan, K.R. Maddock-Carlin, V.L. Anderson, and E.P. Berg, 2012. Relationship between genetic evaluation technologies and phenotypic observations on meat quality and tenderness. Accepted with revisions Meat Sci.
Magolski, J.D, E.P. Berg, N.L. Hall, V.L. Anderson, W.A. Keller, T.M. Jeske, and K.R. Maddock Carlin. 2012. Evaluation of feedlot cattle working chute environment relative to temperament, tenderness, and postmortem proteolysis. Meat Science. Accepted with revision.
Meyer, A.M., T.L. Neville, J.J. Reed, J.B. Taylor, L.P. Reynolds, D.A. Redmer, C.J. Hammer, K.A. Vonnahme, and J S. Caton. 2013. Maternal nutritional plane and selenium supply during gestation impacts visceral organ mass and intestinal growth and vascularity of neonatal lamb offspring. J. Anim. Sci. 91. Accepted pending revisions.
Montanholi, Y., A. Fontoura, K. Swanson, B. Coomber, S. Yamashiro, and S. Miller. 2013. Small intestine histomorphometry of beef cattle with divergent feed efficiency. Acta Vet. Scand. Accepted.
Neville, T.L, A.M. Meyer, A. Reyaz, D.A. Redmer, P.P. Borowicz, L.P. Reynolds, J.S. Caton, and K.A. Vonnahme. Effects of dietary selenium and nutritional plane during gestation on mammary gland growth, cellular proliferation, and vascularity in ewe lambs. Journal of Animal Science Biotechnology. Accepted with revision.
Neville, T.L. A.M. Meyer, A. Reyaz, P.P. Borowicz, D.A. Redmer, L.P. Reynolds, J.S. Caton and K. A. Vonnahme. 2013. Mammary gland growth and vascularity at parturition and during lactation in primiparous ewes fed differing levels of selenium and nutritional plane during gestation. Journal of Animal Science and Biotechnology. Accepted.
Reynolds, L.P., K.A. Vonnahme, C.O. Lemley, D.A. Redmer, A.T. Grazul-Bilska, P.P. Borowicz, and J.S. Caton. 2013. Maternal stress and placental vascular function and remodeling. Curr. Vascul. and Phar. Review. In press.
Schroeder, J.W., W.L. Keller, and D.B. Carlson. 2013. Canola or sunflower seed fed to lactating dairy cows increases conjugated linoleic acid in milk fat. IJAS. In press.
Vonnahme, K.A., C.O. Lemley, P. Shukla, and S.T. O'Rourke. Placental programming: How the maternal environment can impact placental function. Journal of Animal Science. In press.

Vonnahme, K.A., T.L. Neville, L.A. Lekatz, L.P. Reynolds, C.J. Hammer, D.A. Redmer, and J.S. Caton. 2013. Thyroid hormones and cortisol concentrations in offspring are influenced by maternal supranutritional selenium and nutritional plane in sheep. <i>Nutrition and Metabolic Insights</i> . Accepted.
Yunusova, R., T.L. Neville, K.A. Vonnahme, C.J. Hammer, J.J. Reed, J.B. Taylor, D.A. Redmer, L.P. Reynolds, and J.S. Caton. 2013. Impacts of maternal selenium supply and nutritional plane on visceral tissues and intestinal biology in offspring. <i>J. Anim. Sci.</i> 91. Accepted.

2. Abstracts

Abstracts Published

Abo-Ismael, M. K., G. Vander Voort, E. J. Squires, K. C. Swanson, J. Thomson, B. Karisa, G. Plastow, S. Moore, and S. P. Miller. 2012. Identification of single nucleotide polymorphisms for feed efficiency and performance in crossbred beef cattle. <i>J. Anim. Sci.</i> 90(Suppl. 3):453.
Awda, B.J., K.M. Wood, L. Trouten-Radford, B.W. McBride, S.P. Miller, I.B. Mandell, C.J. Fitzsimmons, and K.C. Swanson. 2012. The influence of feed intake on hepatic oxygen consumption, citrate synthase activity and protein concentration in pregnant beef cows. <i>J. Anim. Sci.</i> 90(Suppl. 2):122.
Awda, B.J., S.P. Miller, Y.R. Montanholi, G. Vander Voort, T. Caldwell, M.M. Buhr, and K.C. Swanson. 2012. The relationship between feed efficiency traits and fertility in young beef bulls. <i>J. Anim. Sci.</i> 90(Suppl. 3):372.
Bae, S., K. Cho, L. Mabasa, M.W. Walters, and C.S. Park. 2012. Effect of maternal methyl diet on epigenetic changes and mammary carcinogenesis in offspring. <i>FASEB J.</i> 26:1023.10.
Bae, S., K. Cho, L. Mabasa, M.W. Walters, and C.S. Park. 2012. Maternal high-methyl diet alters DNA methylation in mammary tissues of female rat offspring. <i>Mol. Biol. Cell.</i> 23:750.
Berg, E.L. 2012. Research in equine assisted activities and therapies. Presented at the American Society of Animal Science National Meetings, Phoenix, AZ. Invited.
Berg, E.L., A.M. Meyer and L.A. Lekatz. 2012. The Graduate Experience Program: an opportunity for undergraduates to explore graduate study. Presented at the American Society of Animal Science National Meetings, Phoenix, AZ.
Borowicz P.P., L.P. Reynolds, D.A. Redmer, and A.T. Grazul-Bilska. 2012. Vascularization in ovine utero-placental tissues during early pregnancy: Effects of assisted reproductive technology (ART). <i>J. Anim. Sci.</i> 90 (Suppl. 3):49, abstr. M126. PDF
Borowicz, P.P., L.P. Reynolds, D.A. Redmer, and A.T. Grazul-Bilska. Vascularization in ovine utero-placental tissues during early pregnancy: Effects of assisted reproductive technology (ART). Annual meeting of the American Society of Animal Sciences, Phoenix, AZ, 2012.
Camacho, L.E., C.O. Lemley, A.M. Meyer, D.M. Hallford, and K.A. Vonnahme. 2012. Uteroplacental steroid flux in an ovine maternal nutrient restriction model during melatonin supplementation. <i>Journal of Animal Science</i> 90 E-suppl.2:
Camacho, L.E., C.O. Lemley, K.C. Swanson, and K.A. Vonnahme. 2012. Maternal diet restriction in beef cows alters fetal cardiovascular hemodynamics and fetal placental development during early pregnancy. <i>J. Anim. Sci.</i> 90(Suppl. 3):151.

Camacho, L.E., C.O. Lemley, T.J. Swanson, K.C. Swanson, and K.A. Vonnahme. 2012. Maternal diet restriction effects on fetal organ weights in beef cows during early pregnancy. <i>J. Anim. Sci.</i> 90(Suppl. 3):324.
Chapel, N.M., R.D. Yunusova, R.P. Aitken, J.S. Milne, D.J. Carr, P.P. Borowicz, A.L. David, J.M. Wallace, and J.S. Caton. 2012. Influence of maternal nutrition and prenatal adenovirus-VEGF gene therapy on fetal visceral tissues and crypt cell proliferation at d 130 of gestation. <i>J. Anim. Sci.</i> 90: Suppl. 3(Abstr.):623.
Doscher, F.E., A.M. Meyer, M.J. Ellison, K.M. Cammack, and K.C. Swanson. 2012. The relationship between feed efficiency and pancreatic α -amylase and trypsin activity in growing lambs. <i>J. Anim. Sci.</i> 90(Suppl. 3):370.
Fitzsimmons, C., K. Wood, F. Paradis, B. McBride, S. Miller, I. Mandell, and K. Swanson. 2012. Maternal diet interactions with fetal sex in beef cattle. <i>J. Anim. Sci.</i> 90(Suppl. 3):51.
Goulart, R.S., L.G. Nussio, K. Hongyu, A.V. Pires, J.L.P. Daniel, K.C. Swanson, and C.R. Dahlen. 2012. Effect of fiber source on ruminal mat consistency in diets for Nellore steers. <i>J. Anim. Sci.</i> 90(Suppl. 2):126.
Goulart, R.S., L.G. Nussio, K. Hongyu, A.V. Pires, R.C. Amaral, K.C. Swanson, and C.R. Dahlen. 2012. Adjusted intake based on forage particle length of forage and nonforage fiber sources in diets for Nellore Steers. <i>J. Anim. Sci.</i> 90(Suppl. 2):127.
Grazul-Bilska, A.T., D.A. Redmer, P.P. Borowicz, and L.P. Reynolds. Placental development during early pregnancy in sheep: Effects of assisted reproductive technology on fetal and placental growth. Annual meeting of the Society for the Study of Reproduction, College City, PA, August, 2012.
Grazul-Bilska, A.T., E. Borowczyk, J.J. Bilski, D.A. Redmer, L.P. Reynolds, J.S. Caton and K.A. Vonnahme. Diet before and during the peri-conceptual period: Effects on oocyte quality and early embryonic development in sheep. NDSU Summer Research Forum entitled Dietary Factors and Long-term Consequences for Health. May 2012.
Grazul-Bilska, A.T., M.L. Johnson, P.P. Borowicz, D.A. Redmer and L.P. Reynolds. Markers of DNA methylation in ovine utero-placental tissues during early pregnancy. Effects of assisted reproductive technology (ART). International Embryo Transfer Society meeting, Phoenix, AZ, January 2012. <i>Reprod Fertil. Develop.</i> 2012; 24:154 (Abstr. 84).
Hanson, E., K.N. Winsco, J.A. Coverdale, C.J. Hammer, and A.N. Wolford. Influence of maternal plane of nutrition and arginine supplementation on mares and their foals: glucose and insulin dynamics. <i>J. Anim. Sci.</i> 2012. 90(3):465.
Jackson, C.G., T.L. Neville, V.G.R. Mercadante, K.M. Bischoff, G.C. Lamb, C.R. Dahlen, and R.R. Redden. 2012. Out-of-season reproductive performance of ewes synchronized to estrus with various 5-d protocols. <i>J. Anim. Sci.</i> 90(Suppl. 3):154.
Kaminski, S., K.A. Vonnahme, R. Yunusova, and A.T. Grazul-Bilska. optimization of immunohistochemical method to detect proliferating cells in porcine ovaries. NDSU Graduate Research and Art Forum. April 2012.
Klein, S.I., A.M. Meyer, Q.P. Larson, J.S. Caton, C.R. Dahlen. 2012. Effects of alternate day feeding of dried distiller's grains plus solubles on ruminal ammonia concentration, blood urea nitrogen, non-esterified fatty acids, and insulin-like growth factor one, in forage-fed steers. <i>J. Anim. Sci.</i> 90: Suppl. 3(Abstr.):340.
Klein, S.I., A.M. Meyer, Q.P. Larson, M.L. Bauer, J.S. Caton, and C.R. Dahlen. 2012. Effects of alternate day feeding of dried distillers grains plus solubles on intake, ruminal pH and VFA concentrations, and total-tract digestibility in forage-fed steers. <i>J. Anim. Sci.</i> 90:

Suppl. 2(Abstr.):9.
Klein, S.I., A.M. Meyer, Q.P. Larson, M.L. Bauer, J.S. Caton, and C.R. Dahlen. 2012. Effects of alternate day feeding of dried distillers grains plus solubles on intake, ruminal pH and VFA concentrations, and total tract digestibility in forage-fed steers. <i>J. Anim. Sci.</i> 90(Suppl. 2):9.
Klein, S.I., P.L. Steichen, A. Islas, R.S. Goulart, T.C. Gilbery, and C.R. Dahlen. 2012. Effects of alternate feeding of dried distillers grains plus solubles on performance and body composition in gestating forage-fed beef cow. <i>J. Anim. Sci.</i> 90 (Suppl. 3):713.
Klinkner, B.T., D.S. Buchanan, C.C. Carr, R.B.A. Dahlen, R.J. Delmore, K. Grimshaw, W.R. Henning, R.K. Miller, S.J. Moeller, H.N. Zerby, and D.J. Newman. Pork Quality: 2012 National Retail Benchmarking Study. 2013 ASAS Midwest Meetings. (Des Moines, IA)
Klinkner, B.T., R.L. Miller, R.B.A. Dahlen, J.W. Summerfield, J.E. Cannon, L. Bergamasco, and D.J. Newman. 2012. Use of Electroencephalogram (EEG) Technology to determine the state of market hog consciousness. <i>Meat Sci.</i> 93:1.
Kohler, J.D., W.W. Miller, J.L. Vest, J.M. Burke, M.A. Brown, K.R. Maddock Carlin, M.D. Hudson, and E.L. Walker. 2012. Effects of diet on carcass quality and consumer taste panel acceptance of intact or castrated hair lambs. <i>J. Anim. Sci.</i> 90, Suppl. 3:439.
Larson, Q.P., R. J. Maddock, P.L. Steichen, K.K. Karges, and B.W. Neville. Effects of distillers dried grains with solubles supplementation on yearling heifers grazing northern Great Plains rangeland on subsequent feedlot performance <i>J. Anim. Sci.</i> Vol. 63 2012.
Larson, Q.P., R.J. Maddock, K.K. Karges, and B.W. Neville. Effects of distillers dried grains with solubles supplementation on yearling heifers grazing northern Great Plains rangeland on carcass characteristics and meat quality <i>Proc. 2012 Recip. Meats Conf.</i>
Lein, M.A., C.O. Lemley, L.E. Camacho, A.M. Meyer, and K.A. Vonnahme. 2012. Uteroplacental uptake of glucose and fetal liver glycogen in adequately fed or nutrient restricted ewes supplemented with melatonin. <i>Journal of Animal Science</i> 90 E-suppl.2:
Lekatz, L.A., A. Reyaz, M.S. Sanem F. Yao, S.T. O'Rourke, C. Schwartz, M.L. Van Emon, C.S. Schauer, K.M. Carlin, C.O. Lemley, and K.A. Vonnahme. 2012. Influence of metabolizable protein supplementation during late gestation on vasoreactivity of maternal placental arteries in sheep. <i>J. Anim. Sci.</i> 90, Suppl. 3: 473.
Lemley, C.O., L.E. Camacho, A.M. Meyer, M. Kapphahn, J.S. Caton, and K.A. Vonnahme. 2012. Uteroplacental flux of amino acids (AA) in adequately fed or nutrient restricted ewes supplemented with melatonin. <i>J. Anim. Sci.</i> 90: Suppl. 2 (Abstr.):35.
Lemley, C.O., L.E. Camacho, and K.A. Vonnahme. 2012. Chronic uterine infusion of melatonin or melatonin receptor antagonist alters ovine placental efficiency and fetal blood flow during mid-gestation. <i>J. Anim. Sci.</i> 90(3): 472-473.
Lemley, C.O., L.E. Camacho, C.A. Zimprich, L.A. Lekatz, J.S. Caton, P. Shukla, S.T. O'Rourke, and K.A. Vonnahme. 2012. Maternal nutrition and dietary supplements that affect uteroplacental blood flow and fetal development. <i>J. Anim. Sci.</i> 90: Suppl. 2 (Abstr.):70.
Lepper-Bllie, A.N., E.P. Berg, B.R. Ilse, W. L. Keller, C.A. Schwartz, X. Sun, J.D. Magolski, V.L. Anderson, and K.R. Maddock-Carlin. 2012. Effect of various components of field peas on sensory panel ratings, cook loss, and Warner-Bratzler shear force of Piedmontese x Angus heifers. <i>Meat Sci.</i> 92:25.
Mabasa, L., K. Cho, S. Bae, M.W. Walters, and C.S. Park. 2012. Dietary canola oil and growth of implanted drug-resistant MCF-7 human breast cancer in Balb/c nude mice.

FASEB J. 26:1023.1.
Magolski J.D., K.A. Vonnahme, D.J. Newman, and E.P. Berg. 2012. Sow productivity can influence growth rate, efficiency, and performance of offspring. <i>J. Anim. Sci.</i> 90:(E-Suppl. 2): 94.
Magolski, J.D., G. Anderson, N. Shappel, K.A. Vonnahme, and E.P. Berg. 2012. Consumption of beef from cattle administered estrogenic growth promotants does not result in premature puberty and obesity using the swine model. In Proc. 58 th International Congress of Meat Science & Technology (Montreal, Canada). 58:D85.
Magolski, J.D., K.A. Vonnahme, D.J. Newman, and E.P. Berg. 2012. Sow productivity can influence growth rate, efficiency, and performance of offspring. <i>J. Anim. Sci.</i> 90: (e-Suppl. 2).
Meyer A.M., K.A. Vonnahme, D.A. Redmer, L.P. Reynolds, J.S. Caton. 2012. Maternal feed efficiency during gestation is correlated to offspring birth weight and girth in nutrient restricted and control-fed ewes. <i>J. Anim. Sci.</i> 90(Suppl. 3):324, abstr. T204. PDF
Meyer, A.M., K.C. Swanson, B.J. Awda, M. Kapphahn, R.D. Yunusova, L.E. Camacho, J.S. Caton, K.A. Vonnahme, and C.O. Lemley. 2012. Effects of nutrient restriction and melatonin supplementation during mid- to late gestation on ewe and fetal lamb small intestinal and hepatic in vitro oxygen (O ₂) consumption. <i>J. Anim. Sci.</i> 90: Suppl. 2 (Abstr.):70.
Meyer, A.M., D.A. Vonnahme, D.A. Redmer, L.P. Reynolds, and J.S. Caton. 2012. Maternal feed efficiency during gestation is correlated with offspring birth weight and girth in nutrient restricted and control-fed ewes. <i>J. Anim. Sci.</i> 90: Suppl. 3(Abstr.)324-325.
Meyer, A.M., K.M. Cammack, S.I. Paisley, P. Moriel, W.J. Means, M. Du, J.S. Caton, and B.W. Hess. 2012. Correlation of feed efficiency and small intestinal growth in finishing cattle born to dams fed varying levels of nutrients during early to mid-gestation. <i>J. Anim. Sci.</i> 90: Suppl. 2 (Abstr.):70.
Miller R.L., B.T. Klinkner, R.B.A. Dahlen, E.P. Berg, J.W. Summerfield, and D.J. Newman. 2012. Evaluation of a novel means to euthanize piglets. <i>Meat Sci.</i> 93:1.
Montanholi, Y.R., K.C. Swanson, R. Palme, G. Vander Voort, L.S. Haas, and S.P. Miller. 2012. Glucocorticoids as biomarkers for feed efficiency in cattle. Proceedings of the European Association of Animal Production 63 rd Annual Meeting, pp. 184.
Phelps, K.J., E.P. Berg, N.L. Hall, W.L. Keller, P.P. Borowicz, V.L. Anderson, C.A. Schwartz, B.R. Ilse, J.D. Magolski, and K.R. Maddock Carlin. 2012. Relationship of working chute behavior of feedlot cattle to meat quality traits and muscle structure. <i>J. Anim. Sci.</i> 90: (e-Suppl. 2).
Prezotto, L.D., L.E. Camacho, C.O. Lemley, J.S. Caton, K.A. Vonnahme, M. Kapphahn, M. Van Emon, R.S. Goulart, R. Yunusova, T. Swanson, and K.C. Swanson. 2012. Effects of nutrient restriction in beef cows during early gestation on maternal and fetal small intestinal and hepatic mass and in vitro oxygen (O ₂) consumption. <i>J. Anim. Sci.</i> 90: Suppl. 3(Abstr.):50-51.
Quinn, K.E., L.P. Reynolds, D.A. Redmer, P.P. Borowicz, A.T. Grazul-Bilska, and R.L. Ashley. The chemokine receptor CXCR4 and its ligand CXCL12 are activated during early pregnancy in sheep: Effects of assisted reproductive technologies (ART). Annual meeting of the Society for the Study of Reproduction, College City, PA, August, 2012.
Rahman, S., and K.C. Swanson. 2012. Greenhouse gas (GHG) emissions from beef cattle pen surfaces in North Dakota. American Society of Agricultural Engineers Annual Meeting.

Paper# 121338102.
Reyaz, A. E.K Harris, V.P. Singh, P.P. Borowicz, K.R. Maddock Carlin, J.D. Magolski, K.A. Vonnahme, and E.P. Berg. 2012. Effects of maternal activity, offspring sex, and birth weight on muscle fiber characteristics in newborn piglets. <i>J. Anim. Sci.</i> 90: (e-Suppl. 2).
Reyaz, A., F. Yao, M.S. Sane, L.E. Camacho, C.O. Lemley, K.C. Swanson, S.T. O'Rourke, and K.A. Vonnahme. 2012. Nutrient restriction during early pregnancy alters cotyledon arterial vascular reactivity in response to bradykinin in beef cows. Proceedings ADSA, AMPA, ASAS, CSAS, WSASAS Joint Annual Meeting. <i>J. Anim. Sci.</i> 90(Suppl. 3):323-324.
Reynolds L.P., M.L. Johnson, J.S. Haring, R.J. Ashley, P.P. Borowicz, D.A. Redmer, A.T. Grazul-Bilska. 2012. Expression of sex steroid receptors in ovine placental tissues during early pregnancy: Effects of assisted reproductive technologies (ART). <i>Biol. Reprod.</i> 86(1 Supplement):abstr. 380. PDF
Reynolds, L.P., M.L. Johnson, J.S. Haring, R.J. Ashley, P.P. Borowicz, D.A. Redmer, A.T. Grazul-Bilska. Expression of sex steroid receptors in ovine placental tissues during early pregnancy: effects of assisted reproductive technologies (ART). Annual meeting of the Society for the Study of Reproduction, College City, PA, August, 2012.
Reynolds, L.P., P.P. Borowicz, J. Haring, R. Ashley and A.T. Grazul-Bilska. Expression of sex steroid receptors in placental tissues during early pregnancy in sheep. Annual meeting of the American Society of Animal Sciences. Phoenix, AZ, 2012.
Reynolds, L.P., P.P. Borowicz, M.L. Johnson, J. Haring, R. Ashley, and A.T. Grazul-Bilska. Expression of sex steroid receptors in placental tissues during early pregnancy in sheep. <i>J Anim. Sci.</i> 2012, 90 (Suppl 3): 570.
Schneider M.J., S.J. Lupton, D.J. Smith, and D.J. Newman. Distribution of penicillin g residues among sow muscles. 2013 PITTCO Conference & Expo. (Philadelphia, PA).
Schwartz, C.A., C.O. Lemley, L.E. Camacho, K.R. Maddock Carlin, W.L. Keller, J.S. Caton, R.D. Yunusova, C.S. Schauer, and K.A. Vonnahme. 2012. Effects of metabolizable protein supplementation during late gestation in ewes on offspring growth and development. <i>J. Anim. Sci.</i> 90; Suppl. 3(Abstr):49.
Schwartz, C.A., K.R. Maddock-Carlin, C.O. Lemley, L.E. Camacho, W.L. Keller, J.S. Caton, R.D. Yunusova, C.S. Schauer, and K.A. Vonnahme. 2012. Effects of metabolizable protein during late gestation on ovine offspring growth and development. <i>J. Anim. Sci.</i> 90, Suppl.3: 48.
Steichen, P.L., B.W. Neville, S.I. Klein, R.L. Stuart, and C.R. Dahlen. 2012. Effects of injectable vitamin and selenium on serum vitamin and selenium concentrations and growth performance in beef calves. <i>J. Anim. Sci.</i> 90(Suppl. 2):93.
Steichen, P.L., S.I. Klein, Q.P. Larson, K.M. Bischoff, V.G.R. Mercadante, G.C. Lamb, C.S. Schauer, B.W. Neville, and C.R. Dahlen. 2012. Effects of natural service and artificial insemination breeding systems on pregnancy rates and days to conception. <i>J. Anim. Sci.</i> 90(Suppl. 3):152.
Sun, X., J.D. Magolski, K.R. Maddock-Carlin, V.L. Anderson, A.N. Lepper, C.A. Schwartz, B.R. Ilse, and E.P. Berg. 2012. Predicting beef tenderness using multispectral image texture features. <i>Meat Sci.</i> 92:7.
Sun, X., K.J. Chen, K.R. Maddock-Carlin, J.D. Magolski, C.A. Schwartz, W.L. Keller, E.P. Berg. 2012. Using postmortem proteolysis and image texture features to predict beef tenderness. 58 th ICoMST Proc.

Sun, X., K.R. Maddock Carlin, V.L. Anderson, A.N. Lepper, C.A. Schwartz, W.L. Keller, B.R. Ilse, J.D. Magolski, and E.P. Berg. 2012. Predicting beef tenderness using multispectral image texture features. <i>J. Anim. Sci.</i> , Vol. 90.
Swanson, K.C., A.M. Meyer, C.O. Lemley, J.S. Caton, and K.A. Vonnahme. 2012. Influence of nutrient restriction and melatonin supplementation of pregnant ewes on maternal and fetal pancreatic α -amylase and trypsin activity. <i>J. Anim. Sci.</i> 90: Suppl. 2 (Abstr.):123.
Van Emon, M.L., K.A. Vonnahme, P.T. Berg, K.R. Maddock Carlin, and C.S. Schauer. 2012. Effect of metabolizable protein supplementation to ewes during late gestation on wether offspring performance, carcass characteristics, and nitrogen balance. <i>J. Anim. Sci.</i> 90, Suppl. 3:140.
Van Emon, M.L., K.A. Vonnahme, P.T. Berg, K.R. Maddock Carlin, and C.S. Schauer. 2012. Effect of metabolizable protein supplementation to ewes during late gestation on wether offspring feedlot performance and carcass characteristics. <i>Meat Sci.</i> 92:5.
Van Emon, M.L., K.A. Vonnahme, P.T. Berg, R.R. Redden, M.M. Thompson, J.D. Kirsch, and C.S. Schauer. 2012. Influence of the level of dried distillers grains with solubles on feedlot performance, carcass characteristics, serum testosterone concentrations, and semen quality of growing rams. <i>J. Anim. Sci.</i> 90(3): 149.
Wilmoth, T.A., E.K. Harris, E.P. Berg, M.E. Wilson, and K.A. Vonnahme. 2012. Relationship of placental and endometrial vascularity and muscle characteristics of fetal pigs. <i>J. Anim. Sci.</i> 90: (e-Suppl. 2).
Winsco, K.N., J.A. Coverdale, C.J. Hammer, K.L. Gehl, A.E. Hanson, J.L. Lucia, and A.N. Wolford. Influence of maternal plane of nutrition and arginine supplementation on mares and their foals: foaling parameters. <i>J. Anim. Sci.</i> 2012. 90(3):549.
Winsco, K.N., J.A. Coverdale, T.A. Wickersham, C.J. Hammer, and J.L. Lucia. Influence of maternal plane of nutrition and arginine supplementation on mares and their foals: determination of voluntary dry matter intake of mares during late pregnancy. <i>J. Anim. Sci.</i> 2012. 90(3):413.
Wood, K.M., C.J. Fitzsimmons, S.P. Miller, B.W. McBride, and K.C. Swanson. 2012. The effect of limiting feed intake on concentration of proteins associated with energy balance in the pregnant beef cow. <i>J. Anim. Sci.</i> 90(Suppl. 3):679.
Zimprich, C.A., L.E. Camacho, M.L. Bauer, and K.A. Vonnahme. 2012. Protein supplementation during the last third of pregnancy increases uterine blood flow in the beef cow. <i>Journal of Animal Science</i> 90 E-suppl.2:

Abstracts Accepted

Camacho, L.E., C.O. Lemley, K.C. Swanson, and K.A. Vonnahme. Effects of maternal nutrient restriction followed by realimentation during early to mid-gestation on conceptus development in beef cows. American Society of Animal Science Midwest Meetings. Accepted.
Carlson, Z.E., A. Islas, R.S. Goulart, T. Gilbery, M.L. Bauer, and K.C. Swanson. Effect of corn processing and distiller's grains inclusion on intake, rumination, and resting time of finishing steers fed a high-concentrate diet. American Society of Animal Science Midwest Meetings. Accepted.

Doscher, F., C. Lemley, L. Camacho, P. Borowicz, J. Caton, A. Meyer, K. Vonnahme, and K. Swanson. 2013. Influence of nutrient restriction and melatonin supplementation of pregnant ewes on maternal and fetal pancreatic β -cell morphology. <i>J. Anim. Sci.</i> 91.
Doscher, F., C. Lemley, L. Camacho, P. Borowicz, J. Caton, A. Meyer, K. Vonnahme, and K. Swanson. Influence of nutrient restriction and melatonin supplementation of pregnant ewes on maternal and fetal pancreatic β -cell morphology. American Society of Animal Science Midwest Meetings. Accepted.
Doscher, F.E., E.A. Nere, R.D. Yunosova, L.E. Camacho, C.O. Lemley, L.D. Prezotto, K.A. Vonnahme, J.S. Caton, and K.C. Swanson. Effects of realimentation after nutrient restriction during early to mid-gestation on pancreatic digestive enzymes in beef cattle. International Symposium on Energy and Protein Metabolism and Nutrition. Accepted.
Doscher, F.E., L.D. Prezotto, S.I. Paisley, A.M. Meyer, and K.C. Swanson. 2013. Pancreatic enzyme activity in high and low efficiency steers. American Society of Animal Science Midwest Meetings. Accepted.
Eifert, A.W., M.E. Wilson, K.A. Vonnahme, P.P. Borowicz, D.A. Redmer, S. Dorsam, J. Haring, and C.O. Lemley. Effect of melatonin (MEL) or maternal nutrient restriction on cell proliferation in the ovine placenta. <i>J. Anim. Sci.</i>
Grazul-Bilska, A.T., E Berg, E Harris, S Kaminski, and KA Vonnahme. Maternal exercises may affect offspring reproductive system in pigs. 9 th International Conference on Pig Reproduction, Olsztyn, Poland, 8-12 June 2013.
Grazul-Bilska, A.T., M.L. Johnson, P.P. Borowicz, C. Bass, S. Kaminski, T. Cymbaluk, S. Dorsam, L.P. Reynolds, and D.A. In vivo L-arginine (Arg) and sildenafil citrate (SC) treatment: Effects on luteal function in non-pregnant sheep. 46 th Ann. Mtg. Soc. for the Study of Reprod., Montreal, July 2013. In press.
Islas, A., R.S. Goulart, T.C. Gilbery, M.L. Bauer, and K.C. Swanson. Influence of increasing supplementation of corn dried distiller's grains with solubles to growing steers fed medium-quality hay on growth performance, feeding behavior, and blood metabolites. American Society of Animal Science Midwest Meetings. Accepted.
Kaminski, S., A Grazul-Bilska, E Berg, and K Vonnahme. Impact of maternal exercise on ovarian development in the pig. ASAS Midwestern Section / ADSA Midwestern Branch Annual Meeting, Des Moines, IO, 2013.
Lekatz, L.A., A. Reyaz, M.S. Sane, F. Yao, S.T O'Rourke, C. Schwartz, M.L. Van Emon, C.S. Schauer, K.R. Maddock Carlin, C.O. Lemley, J.S. Haring, and K.A. Vonnahme. Effects of metabolizable protein during gelation on vasoreactivity in response to angiotensin II and mRNA expression of angiotensin receptors in cotyledonary arteries. <i>J. Anim. Sci.</i> Accepted.
Prezotto, L., F.E. Doscher, S.I. Paisley, K.C. Swanson, A.M. Meyer. 2013. Comparison of liver and jejunal mass and energy use between high and low efficiency steers. American Society of Animal Science Midwest Meetings. Accepted.
Prezotto, L.D., L.E. Camacho, C.O. Lemley, F.E. Doscher, J.S. Caton, K.A. Vonnahme, and K.C. Swanson. Effects of nutrient restriction in beef cows during early and midgestation on maternal and fetal liver and small intestinal mass and in vitro oxygen consumption. International Symposium on Energy and Protein Metabolism and Nutrition. Accepted.
Quinn, K.E., L.P. Reynolds, P.P. Borowicz, A.T. Grazul-Bilska, S.T. Dorsam, and R.L. Ashley. CXCL12 expression increases in sheep uterine and fetal tissues during early gestation. 46 th Ann. Mtg. Soc. for the Study of Reprod., Montreal, July 2013. In press.

Redmer, D.A., S.T. Dorsam, A.T. Grazul-Bilska, and P.P. Borowicz. A fluorescent staining technique for studying vascularity and angiogenesis in interdigitated maternal and fetal villi of sheep placenta. The FASEB conference, 2013.
Reyaz, A., M.S. Sane, F. Yao, L.E. Camacho, C.O. Lemley, J.S. Haring, K.C. Swanson, S.T. O'Rourke, and K.A. Vonnahme. 2013. Nutrient restriction during early and mid-gestation followed by realimentation alters caruncular arterial vasoreactivity in response to bradykinin in beef cows. American Society of Animal Science Midwest Meetings. Accepted.
Reynolds, L.P., H.S. Haring, P.P. Borowicz, and A.T. Grazul-Bilska. Expression of genes associated with embryonic diapause in ovine placental tissues during early pregnancy: Effects of assisted reproductive technologies (ART). 46 th Ann. Mtg. Soc. for the Study of Reprod., Montreal, July 2013. In press.
Sasanya, S.O., S. Olet, R. Littlefield, C.L. Stoltenow, and M/ Khaita, M. 2013 Spatial-temporal Distribution of the 2007 Melamine-associated Nephrotoxic Renal Failure Outbreak among Pets and Factors Associated with Pet Survival. Food Protection Trends. Accepted In Press.
Schwartz, C., K.A Vonnahme, C.S. Schauer, S.M. Lonergan, J.K. Grubbs, J.B. Schabb, W.W. Muhonen, W.L. Keller, and K.R. Maddock-Carlin. 2013. Proteomic analysis of fetal ovine skeletal muscle as influenced by maternal metabolizable protein supplementation in isocaloric diets during late pregnancy. J. Anim. Sci. Accepted.
Sorensen, K., K.R. Maddock-Carlin, N. Hayes, W. L. Keller, K. Phelps, C. Schwartz, R. J. Maddock, 2013. Carcass characteristics and beef tenderness differences in cattle qualified as kosher and non-kosher. J. Anim. Sci. Accepted.
Van Emon, M.L., C.S. Schauer, A.M. Meyer, K. Maddock Carlin, K.A. Vonnahme. 2013. Effects of maternal metabolizable protein supplementation during late gestation on wether offspring organ weights. J. Anim. Sci. Accepted.
Wood, K.M., C.J. Fitzsimmons, S.P. Miller, B.W. McBride, and K.C. Swanson. The effect of pregnancy on weight change, visceral organ mass and circulating serum metabolites in mature beef cows. International Symposium on Energy and Protein Metabolism and Nutrition. Accepted.

3. Proceedings Papers

Dahlen, C.R. 2012. Control of Estrus with Natural Service. In: Applied Reproductive Strategies in Beef Cattle. Sioux Falls, SD. pp 129-137.
Grazul-Bilska, A.T., P.P. Borowicz, D.A. Redmer, and L.P. Reynolds. 2012. Placental development during early pregnancy in sheep: Effects of assisted reproductive technology on placental growth. Hettinger Research Extension Center Sheep Research Report 53.
Guelker, M.R., A.N. Haneklaus, J.C. Brooks, C.C. Carr, R.J. Delmore, D.B. Griffin, D.S. Hale, K.B. Harris, G.G. Mafi, D.D. Johnson, C.L. Lorenzen, R.J. Maddock, J.N. Martin, R.K. Miller, K.L. Nicholson, C.R. Raines, D.L. VanOverbeke, L. Vedral, B.E. Wasser, and J.W. Savell. 2012. National Beef Tenderness Survey – 2010: Warner-Bratzler shear-force values and sensory-panel ratings for beef from United States retail and foodservice establishments. Proc. 2012 Int. Congress of Meat Science and Technology.

Hayes, N.S., B Klinkner, R Miller, R.J. Maddock. Influence of pre-harvest stress and slaughter technique on beef quality: preliminary results. Proc. 2012 Int. Congress of Meat Science and Technology.
Jackson, C.G., T.L. Neville, V.R.G. Mercadante, K.M. Bischoff, G.C. Lamb, C.R. Dahlen, and R.R. Redden. 2012. Out-of-season reproductive performance of ewes synchronized to estrus with various 5 day protocols. Proc. West. Sec. Amer. Soc. Anim. Sci. 63:84-87.
Jackson, C.G., T.L. Neville, V.R.G. Mercadante, K.M. Bischoff, G.C. Lamb, C.R. Dahlen, and R.R. Redden. 2012. Out-of-season reproductive performance of ewes synchronized to estrus with various 5 day protocols. Proc. West. Sec. Amer. Soc. Anim. Sci. 63: 84-87.
Klinkner B.T., R.L. Miller, R.B.A. Dahlen, J.W. Summerfield, J.E. Cannon, L. Bergamasco, and D.J. Newman. 2012. Use of Electroencephalogram (EEG) Technology to Determine the State of Market Hog Consciousness. Proc. 58 th Int. Congr. Meat Sci. Technol. 58:43.
Larson, Q.P., R.J. Maddock, P.L. Steichen, K.K. Karges, and B.W. Neville. Effects of distillers dried grains with solubles supplementation on yearling heifers grazing northern Great Plains rangeland on subsequent feedlot performance. J. Anim. Sci. Vol. 63 2012.
Meyer, A.M., K.M. Cammack, K.J. Austin, J.M. Kern, M. Du, J.S. Caton and B.W. Hess. 2012. Correlation of feed intake and efficiency with small intestinal angiogenic factor and receptor expression in finishing cattle born to dams fed varying levels of nutrients during early to mid-gestation. Proc. West. Sec. Amer. Soc. Anim. Sci. 63:193-197.
Steichen, P.L., S.I. Klein, Q.P. Larson, K.M. Bischoff, V.G.R. Mercadante, G.C. Lamb, C.S. Schauer, B.W. Neville, and C.R. Dahlen. 2012. Effects of natural service and artificial insemination breeding systems on pregnancy rates and days to conception. Proc. West. Sec. Amer. Soc. Anim. Sci. 63:66-69.
Van Emon, M.L., K.A. Vonnahme, P.T. Berg, R.R. Redden, M.M. Thompson, J.D. Kirsch, and C.S. Schauer. 2012. Influence of the level of dried distillers grains with solubles on feedlot performance, carcass characteristics, serum testosterone concentrations, and semen quality of growing rams. 2012. Proc. West. Sec. Amer. Soc. Anim. Sci. 63: 20-24.
Van Emon, M.L., K.A. Vonnahme, P.T. Berg, R.R. Redden, M.M. Thompson, J.D. Kirsch, and C.S. Schauer. 2012. Influence of the level of dried distillers grains with solubles on feedlot performance, carcass characteristics, serum testosterone concentrations, and semen quality of growing rams. Western Section of American Society of Animal Science. 63:20-24.
Wagner, S. The case for the use of technicians proceedings. 2012. 45 th Annual Meeting of the American Association of Bovine Practitioners, Montreal, Quebec, Canada, September 21, 2012. Invited.
Wood, K.M., C.J. Fitzsimmons, S.P. Miller, I.B. Mandell, B.W. McBride, and K.C. Swanson. 2012. The effect of limiting feed intake on visceral organ mass and performance in the pregnant beef cow. Proceedings ADSA, AMPA, ASAS, CSAS, WSASAS Joint Annual Meeting. J. Anim. Sci. 90(Suppl. 3):516-517.
Zimprich, C.A., L.E. Camacho, M.L. Bauer, and K.A. Vonnahme. 2012. Protein supplementation during the last third of pregnancy increases uterine blood flow in the beef cow. Department of Animal Sciences, North Dakota State University. Midwest Section American Society of Animal Science. p. 92.

4. National or International Invited Presentations

Berg, E.L. 2012. Research in equine assisted activities and therapies. American Society of
--

Animal Science National Meetings, Phoenix, AZ. Invited.
Caton, Joel. 2012. Humboldt and Free University of Berlin and the Institut für Experimentelle Endokrinologie Charité Universitätsmedizin, Berlin, Germany (two separate lectures). Invited.
Caton, Joel. 2013, XVII Curso "Novos Enfoques na Producao e Reproducao de Bovinos" Uberlandia, MG, Brazil (two separate presentations). Invited.
Dyer, Neil. Lecture and laboratory instruction, School of Veterinary Medicine, Mongolian State University of Agriculture, Ulaanbataar, Mongolia, 9/29/12 – 10/13/12.
Grazul-Bilska, Anna. Diet before and during the periconceptual period: Effects on oocyte quality and early embryonic development in ruminants, Catalan Institution for Research and Advanced Studies (ICREA) of the Institute of Research in Agriculture and Technology (IRTA), Barcelona, Spain, July 2012.
Redden, Reid. American Sheep Industry Annual Convention, Phoenix, AZ.
Redden, Reid. Tri-State Wool Growers Convention, Jackson Hole, WY.
Reynolds, Larry. Innovation: Funding livestock research and outreach in the future. American Society of Animal Science, Shell Beach, CA. October 2012.
Reynolds, Larry. Significance of placental angiogenesis in compromised pregnancy. No Name Society, Lake Louise, Alberta, Canada, October 2012.

5. Books – None

6. Book Chapters

Lardy, G.P. and J.S. Caton. 2012. Crop Residues and Other Feed Resources: Inedible for Humans but Valuable for Animals. In: Animal Welfare in Animal Agriculture: Husbandry and Stewardship in Animal Production. Pond, Bazer, Rollin eds.; CRC Press.
Maddock, R.J. Meats – Beef and Pork Based. Food Processing: In: Principles and Applications, Second Edition. Wiley-Blackwell Publishers.
Meyer, A.M., J.S. Caton, B.W. Hess, S.P. Ford, and L.P. Reynolds. 2012. Epigenetics and Effects on the Neonate that May Impact Feed Efficiency. Pages 195-224. In: Feed Efficiency in the Beef Industry. R. Hill, ed. Wiley-Blackwell.
Ostby, S., Hammer, C.J., and Wagner, S.A. Preventive Health Programs. In: Clinical Textbook for Veterinary Technicians, 8 th Edition, Dennis McCurnin and Joanna Bassert, Editors, Elsevier, Saint Louis, Missouri, 2012. Invited.
Sonsthagen, T., Tighe, and Brown. Restraint and Handling. In: Mosby's Comprehensive Review for Veterinary Technicians, 4 th Edition, Chapter 9. In Press. Invited.

7. Research Reports

Anderson, V.L, K.R. Maddock-Carlin, B.R. Ilse. 2012. Effect of feeding field pea and field pea components in finishing diets on feedlot performance, carcass traits, tenderness and taste panel response from four different muscles in beef cattle. NDSU Beef Cattle and Range Report, pp. 30-34.
Camacho, L.E., C.O. Lemley, K.C. Swanson, and K.A. Vonnahme. 2012. Maternal diet restriction in beef cows alters fetal cardiovascular hemodynamics and fetal and placental development in early pregnancy. Western Section of American Society of Animal Sciences

63:62-65.
Doscher, F.E., E.A. Nere, R.D. Yunosova, L.E. Camacho, C.O. Lemley, K.A. Vonnahme, J.S. Caton, and K.C. Swanson. 2012. Effects of realimentation after nutrient restriction during early to late gestation on pancreatic digestive enzymes. North Dakota Beef Report: 4-7.
Islas, A., T.C. Gilbery, R.S. Goulart, M.L. Bauer and K.C. Swanson. 2012. Influence of supplementation of corn dried distiller's grains plus solubles to growing cattle fed medium-quality hay on growth performance and feeding behavior. North Dakota Beef Report, pp. 38-41.
Klein, S.I., A.M. Meyer, Q.P. Larson, M.L. Bauer, J.S. Caton and C.R. Dahlen. 2012. Effects of alternate-day feeding of dried distillers grains plus solubles on intake, ruminal pH and VFA concentrations, and total tract digestibility in forage-fed steers. North Dakota Beef Report, pp. 26-30.
Klein, S.I., A.M. Meyer, Q.P. Larson, M.L. Bauer, J.S. Caton, and C.R. Dahlen. 2012. Effects of alternate day feeding of dried distillers grains plus solubles on intake, ruminal pH and VFA concentrations, and total tract digestibility in forage-fed steers. North Dakota Beef Report, pp. 26-29.
Klein, S.I., P.L. Steichen, A. Islas, R.S. Goulart, T.C. Gilbery, and C.R. Dahlen. 2012. Effects of alternate feeding of dried distillers grains plus solubles on performance and body composition in gestating forage-fed beef cow. 2012 North Dakota Beef Report, pp. 7-9.
Maddock Carlin, K.R. Why do temperamental cattle have tougher meat? SBARE Animal Agriculture Grant Final Report.
Prezotto, L.D., L.E. Camacho, C.O. Lemley, J.S. Caton, K.A. Vonnahme, M. Kapphahn, M. Van Emon, R.S. Goulart, R.D. Yunosova, T. Swanson, and K.C. Swanson. 2012. Effects of nutrient restriction in beef cows during early and midgestation on maternal and fetal small-intestinal mass and in vitro oxygen consumption. North Dakota Beef Report, pp. 16-20.
Steichen, P.L., B.W. Neville, S.I. Klein, R.L. Stuart, and C.R. Dahlen. 2012. Effects of injectable vitamin and selenium on serum vitamin and selenium concentrations and growth performance in beef calves. North Dakota Beef Report, pp. 20-22.
Steichen, P.L., S.I. Klein, Q.P. Larson, K.M. Bischoff, V.G.R. Mercadante, G.C. Lamb, C.S. Schauer, B.W. Neville, and C.R. Dahlen. 2012. Effects of natural service and artificial insemination breeding systems on pregnancy rates and days to conception. North Dakota Beef Report, pp. 12-15.

8. Popular Press Articles

Berg, Eric. Organic vs "ordinary," advocates committed despite doubts in studies. Fargo Forum, She Says column. 11/17/12.
Berg, Eric. The power of protein. Fargo Forum, She Says column. 8/13/12.
Dahlen, Carl. Global Food Production Systems Study Abroad in China. The Spectrum. 1/25/12.
Dahlen, Carl. Heat stress in beef cattle – Its cold now but it will get hot again. Sidney Herald. 2/17/12.
Dahlen, Carl. Incorporating carcass ultrasound into beef operations. Mountrail County Reporter. 1/17/12.
Dahlen, Carl. Open Cows – Was it the mud, the heat, or something else? AgWeek. 4/16/12.

Dahlen, Carl. Perspectives after China; experiences from students and organizers. Farm and Ranch Guide. 10/4/12.
Dahlen, Carl. Preliminary beef industry survey results. Farm and Ranch Guide. 9/27/12.
Dahlen, Carl. Technology at NDSU – INFocus on beef cattle. Inforum. 5/3/12
Dalen, Carl. Alternate day feeding to reduce forage use. Hay and Forage Grower. 12/14/12.
Lardy, Greg. 2012 draws to a close: Time to reflect. Tri State Livestock News. December 2012.
Lardy, Greg. Animal scientists respond to Yahoo’s “College Majors That Are Useless.” American Society of Animal Science press release. January 2012.
Lardy, Greg. Being prepared for drought is a part of life on the Northern Great Plains, scientist says. Fence Post, North Dakota Stockman Magazine. May 2012.
Lardy, Greg. Being prepared for drought is part of life on the northern Great Plains. Fence Post, North Dakota Stockman Magazine. May 2012.
Lardy, Greg. Byproducts 101: Understanding how four common byproducts are produced and why it impacts nutritional value. Midwest Forage Association Newsletter. May 2012.
Lardy, Greg. Challenges and opportunities abound. Tri State Livestock News. September 2012.
Lardy, Greg. Challenges and opportunities abound. Tri State Livestock News. September 2012.
Lardy, Greg. Creep feeding for genetic potential. Purina Land O’Lakes Checkpoint. Summer 2012.
Lardy, Greg. Drought and input cost inflation driving structural changes in the industry. Tri State Livestock News. November 2012.
Lardy, Greg. Early weaning lessons. Beef Magazine. July 2012.
Lardy, Greg. Early weaning. Beef Magazine. July 2012.
Lardy, Greg. Fine line for iodine. Working Ranch Magazine. June 2012.
Lardy, Greg. Grain processing affects byproduct nutritive value. Tri State Livestock News. April 2012.
Lardy, Greg. Grass tetany can be a concern in the spring. Midwest Forage Association Newsletter. May 2012.
Lardy, Greg. Ice in water tanks. Living the Country Life. October 2012.
Lardy, Greg. Industry dynamics in a new era. Tri State Livestock News. May 2012.
Lardy, Greg. Iodine deficiency. Working Ranch Magazine. June 2012.
Lardy, Greg. Lardy elected to national post. NDSU Ag Communications. July 2012.
Lardy, Greg. Managing feeding problems during drought and heat. Purina Land O’Lakes Cattlemen’s Advisor. Summer 2012.
Lardy, Greg. Planning for winter feeding needs. Tri State Livestock News. August 2012.
Lardy, Greg. Specialists provide advice on early weaning calves. Beef Daily.
Lardy, Greg. Stokka joins NDSU Animal Sciences Department. NDSU Ag Communications. July 2012
Lardy, Greg. Using drought stressed field crops as emergency forages. Tri State Livestock News. July 2012.
Maddock Carlin, Kasey. LFTB. AgWeek. September 2012.
Newman, David, Gestation Sow Housing. The Wall Street Journal. 8/6/12.
Newman, David. NDSU to hold BBQ Boot Camp in Williston. Williston Herald. 6/2/12.
Newman, David. New study targets pork quality. National Hog Farmer. 9/15/12.
Redden, Reid. Sheep on shares. Tri-State Livestock News. 5/16/12.

Redden, Reid. What happens at a Shearing School. Dickinson Press. 11/8/12.
Schroeder, J.W. 2012 Dairy Cow College dates set. Ag Comm news release. 1/18/12.
Schroeder, J.W. Canola possible forage crop for livestock. Ag Comm news release. 7/25/12.
Schroeder, J.W. Dairy efficiency. Ag Comm news release. 2/2/12.
Schroeder, J.W. Dairy Focus: Calves and cleanliness a vital health relationship. Ag Comm news release.
Schroeder, J.W. Dairy Focus: Calves and cleanliness a vital health relationship. Silobreaker.com. 10/17/12.
Schroeder, J.W. Dairy Focus: Celebrate dairy month. Ag Comm news release. 5/29/12.
Schroeder, J.W. Dairy Focus: Drought impacts feed costs and quality. Ag Comm news release. 7/16/12.
Schroeder, J.W. Dairy Focus: Help relieve cows' heat stress. Ag Comm news release. 6/19/12.
Schroeder, J.W. Dairy Focus: Improve low-quality forages. Ag Comm news release. 9/24/12.
Schroeder, J.W. Dairy Focus: Is the cost of feeding frequency worth it? Ag Comm news release. 3/6/12
Schroeder, J.W. Dairy Focus: Many factors affect corn silage price. Ag Comm news release. 8/22/12.
Schroeder, J.W. Dairy Focus: Plan for winter dairy udder health now. Ag Comm news release. 10/4/12.
Schroeder, J.W. Dairy Focus: Poor corn pollination affects quality. Ag Comm news release. 8/8/12.
Schroeder, J.W. Dairy Focus: Protecting hay more important than ever. Ag Comm news release. 9/6/12.
Schroeder, J.W. Dairy Focus: Reduce parasites with an integrated approach. Ag Comm news release. 7/5/12.
Schroeder, J.W. Effective tools help keep calves warm during first month of life. Prairie Star, Great Falls, MT. 12/4/12.
Schroeder, J.W. Effective tools help keep calves warm during first month of life. Prairie Star, Great Falls, MT. 12/4/12.
Schroeder, J.W. Farm safety includes a first aid kit. Ag Comm news release. 6/14/12.
Schroeder, J.W. Use caution with moldy feeds. KQLX radio. 4/17/12 and 4/23/12.
Stoltenow, Charlie. Be vigilant for anthrax. Ag Comm news release. 6/28/12.
Stoltenow, Charlie. Drought-stressed crops high in nitrate can poison cattle. Successful Farming. 10/19/12.
Stoltenow, Charlie. Protect cattle from heat stress. Ag Comm news release. 7/3/12.
Stoltenow, Charlie. Rabies poses risks to livestock, pets. Ag Comm news release. 7/25/12.
Stoltenow, Charlie. Rural veterinarians. Grand Forks Herald. 11/14/12.
Stoltenow, Charlie. Set calves up for immunization success. Agrilabs, www.agrilabs.com . 2/1/12.
Stoltenow, Charlie. Vaccinated and ready to go. Agrilabs www.agrilabs.com . 9/20/12.
Stoltenow, Charlie. West Nile is back. Ag Comm news release. 8/2/12.
Vonnahme, K.A. 2012. If mama ain't happy, ain't nobody happy: Why maternal nutrition can impact more than just her performance. September 2012. Fencepost Article. Stockman's Magazine. p. 38.

9. Reviewed Extension Publications

Anderson, V. and G. Lardy. Sunflower meal in beef cattle diets. AS-1623.
Anderson, V., B. Isle, C. Stoltenow, D. Burr, T. Schroeder, and T. Ingebretson. Winter management of feedlot cattle (Russian). AS-1546.
Anderson, V., G. Lardy, M. Bauer, K. Swanson, and S. Zwinger. Barley grain and forage for beef cattle. AS-1609.
Dahlen, C.R. and C.L. Stoltenow. Dealing with heat stress in beef cattle operations. AS-1615.
Lardy, G. and C. Stoltenow. Preparing for a successful calving season, management and health programs. AS-1207.
Redden, R. 2012. Feeding straw to livestock. Online Bulletin.
Redden, R. 2012. Understanding sheep estimated breeding values. AS-1621 revised.
Redden, R. and C.R. Dahlen. 2012. Ultrasound pregnancy detection in sheep. AS-1611.
Redden, R. and G. Lardy 2012. Feeding barley to sheep. EB-71.
Schroeder, J.W. By-products and regionally available alternative feedstuffs for dairy cattle. AS-1180 revised.
Schroeder, J.W. Corn gluten feed, composition, storage, handling, feeding and value. AS-1127 revised.
Schroeder, J.W. Detecting and correcting off-flavors in milk. AS-1083 revised.
Schroeder, J.W. Distillers grains for dairy cattle. AS-1241 revised.
Schroeder, J.W. Feeding and managing the transition dairy cow. AS-1203 revised.
Schroeder, J.W. Feeding for MCP to dairy cow nutrition affects milk composition. AS-1118 revised.
Schroeder, J.W. Interpreting forage analysis. AS-1080 revised.
Schroeder, J.W. Management options for maximizing dry-cow performance. AS-1357 revised.
Schroeder, J.W. Mastitis control programs: bovine mastitis and milking management. AS-1129 revised.
Schroeder, J.W. Mastitis control programs: milk quality evaluation tools for dairy farmers. AS-1131 revised.
Schroeder, J.W. Mastitis control programs: Proper milking techniques. AS-1126 revised.
Schroeder, J.W. Mastitis control programs: Troubleshooting a mastitis herd. AS-1128 revised.
Schroeder, J.W. Quality forage for maximum production and profit. AS-1117 revised.
Schroeder, J.W. Sampling feed for analysis. AS-1064 revised.
Schroeder, J.W. Strategies for fresh-cow management. AS-1358 revised.
Schroeder, J.W. Use of minerals in dairy cattle. AS-1271 revised.
Schroeder, J.W. Water needs and quality guidelines for dairy cattle. AS-1369 revised.
Stoltenow, C. and G. Lardy. Cyanide poisoning. V-1150.
Stoltenow, C., Dyer, N., Stokka G.L., West Nile Fever. V-1235.
Stoltenow, C., Dyer, N., Stokka, G.L. Campylobacteriosis. V-1211
Stoltenow, C., Dyer, N., Stokka, G.L., Cryptosporidiosis. V-1212.
Stoltenow, C., Dyer, N., Stokka, G.L., Giardiasis. V-1213.
Stoltenow, C., Dyer, N., Stokka, G.L., Leptospirosis. V-1315.
Stoltenow, C., Dyer, N., Stokka, G.L., Rabies. V-1220.
Stoltenow, C., Dyer, N., Stokka, G.L., Toxoplasmosis. V-1221.

Stoltenow, C., G. Lardy, and J. Schroeder. Johne's disease. V-1209.

10. Videos

Redden, R.R. Determine feed value. YouTube video for nutrition training. May 2012.
Dahlen, Carl. Backgrounding heifers: replacements or feeders? Extension educational video.
Dahlen, Carl. Backgrounding heifers: replacements or feeders? Extension educational video.
Dahlen, Carl. Pregnancy detection in beef cattle. Extension educational video.
Maddock, Rob. Meat Mythcrushers. American Meat Institute. Internet VIDEO.
Newman, David. Global ag awareness. American Meat Institute video/internet. 6/20/12.
Newman, David. NDSU BBQ Boot Camp and its impact on agriculture. American Meat Institute video/internet. 6/20/12.
Schroeder, J.W. YouTube video for agent inservice.
Stoltenow, Charlie. Livestock Nutrition video for agent inservice.

11. Webinars

Hammer, Carrie. Equine nutrition and physiology, Webinar. Farm Talk, KZLX radio.8/17/12.
Hammer, Carrie. Equine nutrition and physiology. Webinar. Agribest Feeds. 5/14/12.
Redden, R.R. Control of lamb loss. Webinar-archive. March 2012.
Redden, R.R. Ewe ration balancing. Webinar-archive. February 2012.
Redden, R.R. Finishing lamb. Webinar-archive. April 2012.
Redden, R.R. Internal parasite control in sheep. Webinar-archive. May 2012.
Redden, R.R. Sheep genetic selection program. Webinar-archive. January 2012.
Schroder, J.W. Dairy Focus: The gift of appreciation. Dairy Herd Management. Web site, RSS feeds. 12/07/12.
Schroeder, J.W. Dairy Focus: Shrink feed shrinkage. Dairy Herd Management. Web site, RSS feeds. 10/24/12.
Schroeder, J.W. Dairy Focus: The gift of appreciation. Dairy Herd Management Web site, RSS feeds. 12/7/12.

12. Software – None

13. Apps – None