

Dr. Daniel C. Rule, Professor
Curriculum Vitae
September, 2018

EDUCATION:

	<u>Date</u>	<u>Degree</u>	<u>Institution</u>
1.	1977	B.S.	University of California, Davis
2.	1980	M.S.	Washington State University
3.	1984	Ph.D.	Iowa State University

PROFESSIONAL ADVANCEMENT:

	<u>Date</u>	<u>Rank</u>	<u>Institution</u>
1.	1980	Grad. Asst.	Washington State University
2.	1984	Grad. Asst.	Iowa State University
3.	1984-86	Research Assoc.	Texas A&M, and U.S. Meat Animal Research Center, at Clay Center, NE
4.	1986-87	Research Assoc.	University of Colorado Health Sciences Center
5.	1987-93	Asst. Prof.	University of Wyoming
6.	1993-1999	Assoc. Prof.	University of Wyoming
7.	1999-present	Professor	University of Wyoming

TEACHING PROGRAM:

Food Chemistry (FDSC 4720/5720)
Domestic Animal Metabolism (ANSC 2010)
Companion Animal Nutrition (ANSC 2035)
First Seminar (ANSC 1101)

HONORS AND AWARDS:

- 1999. Outstanding Advisor, UW College of Agriculture, selected by the Ag. Council.
- 2000. Outstanding teacher, UW College of Agriculture, selected by the Ag. Council.
- 2007. 'Top Prof' award, UW Cap and Gown Chapter of Mortar Board.
- 2008. 'Top Prof' award, UW Cap and Gown Chapter of Mortar Board.
- 2011. Distinguished Teacher Award, Western Section, American Society of Animal Science.
- 2012. Outstanding Educator Award, University of Wyoming, College of Agriculture.
- 2015. Special Distinguished Service Award, Western Section, American Society of Animal Science for 20 plus years of service with the Academic Quadrathlon.
- 2016. Lawrence Meeboer Agricultural Classroom Teaching Award.

RESEARCH SPECIALIZATION:

Lipid Analysis; Lipid Biochemistry; Nutritional Biochemistry of Ruminants;

RESEARCH ACTIVITIES:

Research program includes:

Dietary effects on fatty acid composition of grass-fed beef.

Lipid supplementation strategies for grazing beef cattle.

Lipid compositional analyses using colorimetric and chromatographic techniques.

Investigations on regulation of adipocyte lipid turnover, with emphasis on de novo lipogenesis, lipolysis, glycerolipid biosynthesis and lipoprotein lipase in ruminants.

Ruminal and intestinal digestion, and absorption of lipids in ruminants.

PUBLICATIONS (In Chronological Order):

1980s:

- Rule, D.C., D.C. Beitz, G. de Boer, R.R. Lyle, A.H. Trenkle, and J.W. Young. 1985. Changes in hormone and metabolite concentrations in plasma of steers during a prolonged fast. *J. Anim. Sci.* 61:868-875.
- Rule, D.C., F.C. Parrish, and D.C. Beitz. 1986. Effect of dietary extruded soybeans on steer growth and on sensory characteristics and lipid composition of rib steaks. *Nutr. Rep. Int.* 33:285-298.
- Rule, D.C., R.L. Preston, R.M. Koes, and W.E. McReynolds. 1986. Feeding value of sprouted wheat (*Triticum aestivum*) for beef cattle finishing diets. *Anim. Feed. Sci. Technol.* 15:113-121.
- Rule, D.C. and D.C. Beitz. 1986. Fatty acids of adipose tissue, plasma, muscle and duodenal ingesta of steers fed extruded soybeans. *J. Amer. Oil Chem. Soc.* 63:1429-1436.
- Rule, D.C., L.A. Woollett, L.S. Walsh, and D.C. Beitz. 1986. Effect of dietary extruded soybeans on lipid metabolism in adipose tissue and concentrations of lipids in blood plasma during growth of beef steers. *Nutr. Rep. Int.* 34:271-285.
- Rule, D.C., D.C. Beitz, and R.L. Hood. 1987. A note of the effect of adipocyte size on in vitro lipogenesis from acetate and lactate in subcutaneous adipose tissue of large- and small-frame beef steers at 6 months of age. *Anim. Prod.* 44:454-456.
- Rule, D.C., R.N. Arnold, E.J. Hentges, and D.C. Beitz. 1986. Evaluation of urea dilution as a technique for estimating body composition in beef steers in vivo: validation of published equations and comparison with chemical composition. *J. Anim. Sci.* 63:1935-1948.
- Diersen-Schade, D.A., G.L. Baldner-Shank, D.C. Rule, M.J. Richard, D.C. Beitz, and N.L. Jacobson. 1988. Lipogenesis in young pigs fed restricted or liberal amounts of beef, soy or conventional diets. *Nutr. Rep. Int.* 37:1009-1020.
- Mersmann, H.J., C.Y. Hu, W.G. Pond, D.C. Rule, J.E. Novakofski, and S.B. Smith. 1987. Growth and adipose tissue metabolism in young pigs fed cimaterol with adequate or low dietary protein. *J. Anim. Sci.* 64:1384-1394.
- St. John, L.C., D.C. Rule, D.A. Knabe, H.J. Mersmann, and S.B. Smith. 1987. Fatty acid binding protein activity in tissues from pigs fed diets containing 0% and 20% high-oleate oil. *J. Nutr.* 117:2021-2026.
- Rule, D.C., S.B. Smith, and H.J. Mersmann. 1987. Effects of adrenergic agonists and insulin on porcine adipose tissue metabolism in vitro. *J. Anim. Sci.* 65:136-149.

- Rule, D.C., S.B. Smith, and H.J. Mersmann. 1988. Glycerolipid biosynthesis in swine adipose tissue in vitro. I. Assay conditions for homogenates. *J. Anim. Sci.* 66:1656-1664.
- Rule, D.C., S.B. Smith and H.J. Mersmann. 1988. Glycerolipid biosynthesis in swine adipose tissue in vitro. II. Synthesis by various types of cellular preparations. *J. Anim. Sci.* 66:1665-1675.
- Rule, D.C., S.B. Smith and H.J. Mersmann. 1989. Glycerolipid biosynthesis in porcine adipose tissue in vitro. Effect of adiposity and depot site. *J. Anim. Sci.* 67:364-370.
- Rule, D.C., W.H. Wu, J.R. Busboom, F.C. Hinds and C.J. Kercher. 1989. Dietary canola seeds alter the fatty acid composition of bovine subcutaneous adipose tissue. *Nutr. Rep. Int.* 39:781-786.
- Preston, R.L., S.J. Bartle and D.C. Rule. 1989. Effect of whole cottonseeds in cattle finishing diets on growth efficiency and body fat composition. *Asian-Australasian J. Anim. Sci.* 2:505-506.

1990s

- Raynolds, M.V., P.D. Awald, D.F. Gordon, A. Gutierrez-Hartman, D.C. Rule, W.M. Wood and R.H. Eckel. 1990. Lipoprotein lipase gene expression in rat adipocytes is regulated by isoproterenol and insulin through different mechanisms. *Mol. Endocrin.* 4:1416-1422.
- Mazhar, A., J.R. Busboom, R.A. Field, D.C. Rule, T. Heald, W.C. Russell and R.J. McCormick. 1990. Functional characteristics, fatty acid composition and palatability of bacon from pigs fed canola. *J. Fd. Sci.* 55:575-576.
- Rule, D.C., D.W. Koch, R.R. Jones and C.J. Kercher. 1991. Brassica and sugar beet forages for lambs - growth performance of lambs and composition of forage and dock-fat fatty acid. *J. Prod. Agric.* 4:29-33.
- Busboom, J.R., D.C. Rule, D. Colin, A. Mazhar and T. Heald. 1991. Effects of dietary canola on growth and lipid composition in adipose tissue and muscle of swine. *J. Anim. Sci.* 69:1101-1108.
- Wu, W.H., D.C. Rule, J.R. Busboom, R.A. Field and B. Ray. 1991. Starter culture and time/temperature of storage influence on quality of fermented mutton sausage. *J. Food Sci.* 56:916-919.

- DiMarco, N.M., D.C. Rule, G.B. Whitehurst and D.C. Beitz. 1991. Effect of indomethacin, epinephrine, prostaglandin E₂ and insulin on lipolysis in bovine adipose tissue in vitro. *Int. J. Biochem.* 23:1231-1235.
- Field, R.A., R.J. McCormick, D.C. Rule and S.N. Bugren. 1992. Composition of washed mechanically separated and hand boned beef. *J. Muscle Fd.* 3:203-216.
- Rule, D.C., J.H. Thornton, A.D. McGilland and D.C. Beitz. 1992. Effect of adipose tissue site, animal size, and fasting on lipolysis in bovine adipose tissue in vitro. *Int. J. Biochem.* 24:789-793.
- Rule, D.C. 1992. Comparison of glycerolipid biosynthesis in homogenates from human, ovine, bovine and rat adipose tissue in vitro. *Comp. Biochem. Physiol.* 103B:93-100.
- Bouyekhf, M., D.C. Rule and C.Y. Hu. 1992. Glycerolipid biosynthesis in adipose tissue of the bovine during growth. *Comp. Biochem. Physiol.* 103B:101-104.
- Field, R.A., D.C. Rule and M.L. Riley. 1992. Characteristics of fat from heavy lambs fed a 90% corn diet or alfalfa pellets. *SID Res. J.* 8:77-80.
- Bouyekhf, M., D.C. Rule and C.Y. Hu. 1993. Effect of catecholamines on lipolysis and esterification in vitro in adipose tissue of sheep fed low and high energy diets. *J. Nutr. Biochem.* 4:80-85.
- Rule, D.C. 1993. Effects of fluoride on the ATP requirement for glycerolipid biosynthesis in adipose tissue of four mammalian species. *Comp. Biochem. Physiol.* 104B:469-473.
- McCormick, R.J., S. Bugren, R.A. Field, D.C. Rule and J.R. Busboom. 1993. Surimi-like products from mutton. *J. Food Sci.* 58:497-500.
- Bonsell, T.D., M.K. Andersen and D.C. Rule. 1993. Effect of cooking oil type on final cholesterol content and fatty acid composition of ground beef. *J. Food Qual.* 16:383-391.
- King, M.F., B.L. Hamilton, M.A. Matthews, D.C. Rule and R.A. Field. 1993. Isolation and identification of volatiles and condensable material in raw beef with supercritical carbon dioxide extraction. *J. Agric. Food Chem.* 41:1974-1981
- Rule, D.C. 1993. Effects of fluoride on the ATP requirement for glycerolipid biosynthesis in adipose tissue of four mammalian species. *Comp. Biochem. Physiol.* 104B:469-473.
- Mani, P., M.L. Liebman and D.C. Rule. 1994. Effects of dietary stearate and oleate on plasma and tissue lipids in rats. *Plant Food Human Nutr.* 45:203-212.

- Rule, D.C., J.R. Busboom, and C.J. Kercher. 1994. Effect of dietary canola on fatty acid composition of bovine adipose tissue, muscle, kidney, and liver. *J. Anim. Sci.* 72: 2735-2744.
- King, M.F., M.A. Matthews, D.C. Rule, and R.A. Field. 1995. Effect of beef packaging method on volatile compounds developed by oven roasting or microwave cooking. *J. Agric. Food Chem.* 43:773-778.
- Olsen, Q.R., D.C. Rule, R.A. Field, G.D. Snowder, and C.Y. Hu. 1995. Dietary chromium picolinate does not influence growth or carcass composition in growing and finishing lambs. *SID Sheep and Goat Res J.* 12:22-24.
- Rule, D.C., M.K. Andersen, L.A. Swain, S.J. Ficek, and D.P. Thomas. 1996. Frozen storage of ovine and rat tissues adversely affects lipoprotein lipase activity. *J. Nutr. Biochem.* 7:577-581.
- Andersen, M.K., J. W. Bailey, C. Wilken, and D.C. Rule. 1996. Lipoprotein lipase and glyceophosphate acyltransferase in ovine tissues are influenced by growth and energy intake regimen. *J. Nutr. Biochem.* 7:610-616.
- Rule, D.C., M. Liebman, and Y.B. Liang. 1996. Impact of different dietary fatty acids on plasma and liver lipids is influenced by dietary cholesterol in rats. *J. Nutr. Biochem.* 7:142-149.
- Aimone, C.E., D.W. Sanson, M.L. Riley, and D.C. Rule. 1996. Performance and carcass components of lambs in negative energy balance fed soybean meal or fish meal. *Sheep and Goat Res. J.* 12:94-98.
- Rule, D.C., M.D. MacNeil, and R.E. Short. 1997. Influence of sire growth potential, time on feed, and growing-finishing strategy on cholesterol and fatty acids of the ground carcass and longissimus of beef steers. *J. Anim. Sci.* 75:1525-1533.
- Rule, D.C. 1997. Direct transesterification of total fatty acids of adipose tissue, and of freeze-dried muscle and liver with boron-trifluoride in methanol. *Meat Sci.* 46:23-32.
- Rule, D.C., and R.J. McCormick. 1998. Fatty acid composition and cholesterol concentration in tissues on white-tailed deer (*Odocoileus virginianus*) as influenced by lactation, age, and season of the year. *Comp. Biochem. Physiol. Comp. Biochem Physiol* 119:563-570.
- Whitney, M.B., B.W. Hess, J.E. Kaltenbach, H.J. Harlow, and D.C. Rule. 1998. Direct transesterification of lipids from feedstuffs and ruminal bacteria. *Can. J. Anim. Sci.* 79:247-249.

2000s

- Kucuk, O., B. W. Hess, P. A. Ludden, and D. C. Rule. 2001. Effect of forage to concentrate ratio on ruminal digestion and duodenal flow of fatty acids in ewes. *J. Anim. Sci.* 79:2233-2240.
- Brokaw, L., B. W. Hess, and D. C. Rule. 2001. Supplemental soybean oil or corn for beef heifers grazing summer pasture: Effects on forage intake, ruminal fermentation, and site and extent of digestion. *J. Anim. Sci.* 79:2704-2712.
- Bolte, M. R., B. W. Hess, W. J. Means, G. E. Moss, and D. C. Rule. 2002. Feeding lambs high-oleate or high-linoleate safflower seeds differentially influences carcass fatty acid composition. *J. Anim. Sci.* 80: 609-616.
- Rule, D. C., K. S. Broughton, S. M. Shellito, and G. Maiorano. 2002. Comparison of muscle fatty acid profiles and cholesterol concentrations of bison, beef cattle, elk, and chicken. *J. Anim. Sci.* 80: 1202-1211.
- Rule, D.C., G. E. Moss, G. D. Snowder, and N. E. Cockett. 2002. Adipose tissue lipogenic enzyme activity, serum IGF-I, and IGF-binding proteins in the callipyge lamb. *Sheep and Goat Res. J.* 17:39-46.
- Alexander, B. M., B. W. Hess, D. L. Hixon, B. L. Garrett, D. C. Rule, M. McFarland, J. D. Bottger,, D. D. Sims, and G. E. Moss. 2002. Influence of prepartum fat supplementation on subsequent beef cow reproduction and calf performance. *Prof. Anim. Sci.* 18:351-357.
- Murrieta, C. M., B. W. Hess, and D. C. Rule. 2003. Comparison of acidic and alkaline catalysts for preparation of fatty acid methyl esters from ovine muscle with emphasis on conjugated linoleic acid. *Meat Sci.* 65:523-529.
- Simpkins, D.G., W. A. Hubert, C. M. del Rio, and D. C. Rule. 2003. Effects of swimming activity on relative weight and body composition of juvenile rainbow trout. *No. Amer. J. Fish. Manag.* 23:283-289.
- Simpkins, D.G., W.A. Hubert, C. M. del Rio, and D. C. Rule, 2003. Physiological responses of juvenile rainbow trout to fasting and swimming activity: effects on body composition and condition indices. *Trans. Amer. Fish. Soc.* 132:578-591.
- Simpkins, D. G., W. A. Hubert, C. Martinez del Rio, and D.C. Rule. 2003. Interacting effects of water temperature and swimming activity on body composition and mortality of fasted juvenile rainbow trout. *Can. J. of Zoo.* 81:1641-1649.
- Kucuk, O., B. W. Hess, P. A. Ludden, and D. C. Rule. 2003. Potential associative effects of increasing dietary forage in limit-fed ewes fed a 6% fat diet. *Sheep and Goat Res. J.* 18:25-33.

- Simpkins, D. G., W. A. Hubert, C. Martinez del Rio, and D.C. Rule. 2004. Constraints of body size and swimming activity on the ability of juvenile rainbow trout to endure periods without food. *J. of Fish Biol.* 65:530-544.
- Simpkins, D. G., W. A. Hubert, C. Martinez del Rio, and D.C. Rule. 2004. Factors affecting swimming performance of fasted rainbow trout with implications of exhaustive exercise on overwinter mortality. *J. Freshwat. Ecol.* 19:657-666.
- Kucuk, O., B. W. Hess, and D. C. Rule. 2004. Soybean oil supplementation of a high-concentrate diet does not affect site and extent of organic matter, starch, neutral detergent fiber, or nitrogen digestion, but influences both ruminal metabolism and intestinal flow of fatty acids in limit-fed lambs. *J. Anim. Sci.* 82: 2985-2994.
- Scholljegerdes, E. J., B. W. Hess, G. E. Moss, D. L. Hixon, and D. C. Rule. 2004. Influence of supplemental cracked high-linoleate or high-oleate safflower seeds on site and extent of digestion in beef cattle. *J. Anim. Sci.* 82:3577-3588.
- Nayigihugu, V., F. S. D'Angieri, C. M. Murrieta, D. C. Rule, and B. W. Hess. 2005. Fatty acid composition of flame-broiled beef longissimus muscle. *J. Food, Agric. Envir.* 3:39-42.
- Lake, S. L., E. J. Scholljegerdes, R. L. Atkinson, v. Nayigihugu, L. I. Pailsley, D. C. Rule, G. E. Moss, T. J. Robinson, and B. W. Hess. 2005. Body condition score at parturition and postpartum supplemental fat effects on cow and calf performance. *J. Anim. Sci.* 83:2908-2917.
- Baublits, R. T., A. H. Brown, F. W. Pohlman, D. C. Rule, Z. B. Johnson, D. O. Onks, C. M. Murrieta, C. J. Richards, H. D. Loveday, B. A. Sandelin, and R. B. Pugh. 2006. Fatty acid and sensory characteristics of beef from three biological types of cattle grazing cool-season forages supplemented with soyhulls. *Meat Science* 72:100-107.
- Baublits, R. T., Pohlman, F. W., Brown, A. H., Jr., Rule, D. C., Johnson, Z. B., Onks, D. O., Murrieta, C. M., Sandelin, B. A., Richards, C. J., Loveday, H. D. Pugh, R. B. 2006. Comparison of fatty acid and sensory profiles of beef from forage-fed cattle retain United States Department of Agriculture Choice and Select beef. *J. Mus. Foods.* 17:311-329.
- Atkinson, R. L., E. J. Scholljegerdes, S. L. Lake, V. Nayigihugu, B. W. Hess, and D. C. Rule. 2006. Site and extent of digestion and duodenal and ileal flow of total and esterified fatty acids in sheep fed a high-concentrate diet supplemented with high-linoleate safflower oil. *J. Anim. Sci.* 84:387-396.
- Lake, S. L., E. J. Scholljegerdes, V. Nayigihugu, C. M. Murrieta, R. L. Atkinson, D. C. Rule, T. J. Robinson, and B. W. Hess. 2006. Effects of body condition score at parturition and postpartum supplemental fat on adipose tissue lipogenic activity of lactating beef cows. *J. Anim. Sci.* 84:397-404.

- Lake, S. L., E. J. Scholljegerdes, D. M. Hallford, G. E. Moss, D. C. Rule, and B. W. Hess. 2006. Effects of body condition score at parturition and postpartum supplemental fat on metabolite and hormone concentrations of beef cows and their suckling calves. *J. Anim. Sci.* 84: 1038-1047.
- Lake, S. L., E. J. Scholljegerdes, W. T. Small, E. L. Belden, S. I. Paisley, D. C. Rule, and B. W. Hess. 2006. Immune response and serum immunoglobulin G concentrations in beef calves suckling cows of differing body condition score at parturition and supplemented with high-linoleate or high-oleate safflower seeds. *J. Anim. Sci.* 84: 997-1003.
- Lake, S. L., E. J. Scholljegerdes, T. R. Weston, D. C. Rule, and B. W. Hess. 2006. Postpartum supplemental fat, but not maternal body condition score at parturition, affects plasma and adipose tissue fatty acid profiles of suckling beef calves. *J. Anim. Sci.* 84: 1811-1819.
- Murrieta, C. M., B. W. Hess, E. J. Scholljegerdes, T. E. Engle, K. L. Hossner, G. E. Moss, and D. C. Rule. 2006. Evaluation of milk somatic cells as a source of mRNA for study of lipogenesis in the mammary gland of lactating beef cows supplemented with dietary high-linoleate safflower seeds. *J. Anim. Sci.* 84: 2399-2405.
- Hutchison, S., E. B. Kegley, J. K. Apple, T. J. Wistuba, M. E. Dikeman, and D. C. Rule. 2006. Effects of adding poultry fat in the finishing diet of steers on performance, carcass characteristics, sensory traits, and fatty acid profiles. *J. Anim. Sci.* 84:2426-2435.
- Lake, S. L., T. R. Weston, E. J. Scholljegerdes, C. M. Murrieta, B. M. Alexander, D. C. Rule, G. E. Moss, and B. W. Hess. 2007. Effects of postpartum dietary fat and body condition score at parturition on plasma, adipose tissue, and milk fatty acid composition of lactating beef cows. *J. Anim. Sci.* 85:717-730.
- Scholljegerdes, E. J., S. L. Lake, T. R. Weston, D. C. Rule, G. E. Moss, T. E. Nett, and B. W. Hess. 2007. Fatty acid composition of plasma, medial basal hypothalamus, and uterine tissue in primiparous beef cows fed high-linoleate safflower seeds. *J. Anim. Sci.* 85:1555-1564.
- Wistuba, T. J., E. B. Kegley, J. K. Apple, and D. C. Rule. 2007. Feeding feedlot steers fish oil alters the fatty acid composition of adipose and muscle tissue. *Meat Sci.* 77:196-203.
- Alexander, L. J., M. D. MacNeil, T. W. Geary, W. M. Snelling, D. C. Rule, and J. A. Scanga. 2007. Quantitative trait loci with additive effects on palatability and fatty acid composition of meat in a Wagyu-Limousin F₂ population. *Anim. Gen.* 38:506-513.
- Kucuk, O., B. W. Hess, and D. C. Rule. 2008. Fatty acid compositions of mixed ruminal microbes isolated from sheep supplemented with soybean oil. *Res. Vet. Sci.* 84:215-224.

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- Jiang, Z., J. J. Michal, D. J. Tobey, T. F. Daniels, D. C. Rule, and M. D. MacNeil. 2008. Significant associations of stearoyl-CoA desaturase (SCD1) gene with fat deposition and composition in skeletal muscle. *Int. J. Biol. Sci.* 4:345-351.
- Moutsioulis, A. A., D. C. Rule, C. M. Murrieta, D. E. Bauman, A. L. Lock, D. Barbano, and G. B. Carey. 2008. Human breast milk enrichment in conjugated linoleic acid after consumption of a conjugated linoleic acid-rich food product: a pilot study. *Nutr. Res.* 28:437-442.
- Weston, T. R., J. D. Derner, C. M. Murrieta, D. C. Rule, and B. W. Hess. 2008. Comparison of catalysts for direct transesterification of fatty acids in freeze-dried forage samples. *Crop Sci.* 48:1636-1641.
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- Xue, J., C. M. Murrieta, D. C. Rule, and K. W. Miller. 2008. Exogenous and L-rhamnose-derived 1,2-propanediol are metabolized via a pduD-dependent pathway in *Listeria innocua*. *Applied Environ. Microbiol.* 74:7073-7079.
- Hess, B. W., G. E. Moss, and D. C. Rule. 2008. A decade of developments in the area of fat supplementation research with beef cattle and sheep. *J. Anim. Sci.* 86:E188-204E.
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Ludden, P. A., O. Kucuk, D. C. Rule, and B. W. Hess. 2009. Growth and carcass fatty acid composition of beef steers fed soybean oil for increasing duration before slaughter. *Meat Sci.* 82:185-192.

Broughton, K. S., D. C. Rule, Y. Ye, X. Zhang, M. Driscoll, and B. W. Culver. 2009. Dietary omega-3 fatty acids differentially influence ova release and ovarian cyclooxygenase-1 and cyclooxygenase-2 expression in rats. *Nutr. Res.* 29:197-205.

2010s

Murrieta, C.M., B. W. Hess, S. L. Lake, E. J. Scholljegerdes, and D. C. Rule. 2010. Body condition score and day of lactation regulate fatty acid metabolism in milk somatic cells and adipose tissue of beef cow. *Livestock Sci.* 131:65-72.

Broughton, K. S., E. Handrich, and D. C. Rule. 2011. Prostaglandin E₂ production in mice is reduced by consumption of range-fed sources of red meat. *Nutr. Res.* 31:907-914.

N. M. Long, N.M., D. C. Rule, M. J. Zh, P.W. Nathanielsz and S. P. Ford. 2012. Maternal obesity upregulates fatty acid and glucose transporters and increases expression of enzymes mediating fatty acid biosynthesis in fetal adipose tissue depots. *J. Anim. Sci.*90:2201-2210.

McDaniel, J., W. Askew, D. Bennett, J. Mihalopoulos, S. Anantharaman, A. S. Fjeldstad, D. C. Rule, N. M. Nanjee, R. A. Harris, and R. S. Richardson. 2013. Bison meat has a lower atherogenic risk than beef in healthy men. *Nutr. Res.* 33:293-302.

Long, N., D. C. Rule, N. Tuersunjiang, P. Nathanielsz, and S. P. Ford. 2015. Maternal obesity in sheep increases fatty acid synthesis, upregulates nutrient transporters, and increases adiposity in adult male offspring after a feeding challenge. *PLOS ONE* | DOI 10.1371/journal.pone.0122152. 4-2015.

Kern, R.J., A.K. Lindholm-Perry, H.C. Freetly, L.A. Kuehn, D.C. Rule, and P.A. Ludden. 2016. Rumen papillae morphology of beef steers relative to gain and feed intake and the association of volatile fatty acids with *kallikrein* gene expression. *Livestock Sci.* 187:24-30.

Islam, A. M. , A. Obour, D. Rule, M. Bandara, S. Acharya. 2017. Forage and seed production potential, nutritive value, and fatty acid profile of Fenugreek. *Crop Sci.* 57:1-9.

Ellison, M. J., G. Conant, W. R. Lamberson, R. R. Cockrum, K. J. Austin, D. C. Rule, and K. M. Cammack. 2017. Diet and feed efficiency status affect rumen microbial profiles in sheep. *Small Ruminant Research* (in press):
<http://dx.doi.org/10.1016/j.smallrumres.2017.08.009>

Giri, S., D. C. Rule, and M. E. Dillon. 2018. Fatty acid composition in native bees: associations with thermal and feeding ecology. *Comparative Biochemistry and Physiology-A*. (In press, MS28111).

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Book Chapters

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LEADERSHIP ACTIVITIES AND EXPERIENCES:

Block and Bridle Club Advisor: 1994-1997; 2002-2010. This activity requires providing leadership responsibilities to some of our best students. Block and Bridle Club has been an activity that allows individuals to develop leadership skills beyond scholarship.

Academic Quadrathlon, faculty advisor: 1990-2016. This activity has involved providing guidance to undergraduate student members of the Block and Bridle Club who plan and execute this four-event academic contest. Forward thinking, leg work, budgeting, and organization are the areas I try to emphasize when advising these students.

Chairman , Academic Quadrathlon Committee for Western Section, American Society of Animal Science,: 1995-1998; 2002-2014. This activity involves taking responsibility for planning, communicating, and executing the Western regional Academic Quadrathlon.

Institutional Animal Care and Use Committee: 1996-2014. This activity required review of every animal research protocol submitted for institutional approval.

Chairman, Institutional Animal Care and Use Committee,: 2000-2014. In addition to reviewing each animal research protocol, responsibilities include contributing to organizing meetings, signatory on all animal research protocols for approval, advisor for any researcher in need of guidance on protocol preparation, intervening in conflicts arising as a result of non-compliance issues, contribute to development of protocol format, attending relevant conferences and workshops focused on IACUC.

Tenure and Promotion Committee: representative for the Department of Animal Science: This activity requires review of each College of Agriculture faculty and academic professional packet submitted for re-appointment of non-tenured faculty (tenure-track), tenure, and promotion of tenure-track faculty.

Faculty Senator: 1994-1996. This activity required attending faculty senate meetings as representative of the Animal Science Department.

College of Agriculture, Ag. Ambassadors Advisor: 1998-2001. The “Ag Ambassadors” are a group of undergraduate students who are involved in student recruitment, as well as representing the university College of Agriculture at many of the functions that occur during the year. These students are among the best with respect to scholarship and extracurricular service.

EDITORIAL SERVICE

Editorial Board, Journal of Animal Science: 1994-2000.

Ad hoc reviewer for the following journals: Journal of Animal Science
Journal of Nutritional Biochemistry
Comparative Biochemistry and Physiology
Journal of Agricultural and Food Chemistry
Society for Experimental Biology and Medicine
Journal of Food Science
Meat Science
Lipids