

ALAN L. GRANT
April 2009

VITA

Born May 8, 1962 in Watertown, NY; graduated (valedictorian) Thousand Islands High School, 1980; B.S. in Animal Science, 1984, Cornell University; M.S. in Animal Science, 1987, Michigan State University (J.W. Thomas, major professor); Ph.D. in Animal Science, 1990, Michigan State University (W.G. Bergen, major professor); Assistant Professor, Animal Sciences, Purdue University, 1990-1995; Associate Professor, Animal Sciences, Purdue University, 1995-1999; Professor, Animal Sciences, Purdue University, 1999-Present; Interim Department Head, Animal Sciences, Purdue University, 2001-2002; Department Head, Animal Sciences, Purdue University, 2002-Present. Married 1985 to Brenda Murdie; one child (Andrew) born 1999.

GENERAL INFORMATION

a. Academic Appointments:

1) Assistant Professor	1990-1995	Purdue University
2) Associate Professor	1995-1999	Purdue University
3) Visiting Scientist/Sabbatical	1997	Medical Res. Council, London, UK
4) Professor	1999- Present	Purdue University
5) Interim Department Head	2001-2002	Animal Sciences, Purdue University
6) Department Head	2002- Present	Animal Sciences, Purdue University

b. Education:

1) B.S.	Cornell University, 1984	Animal Science
2) M.S.	Michigan State University, 1987	Animal Science
3) Ph.D.	Michigan State University, 1990	Animal Science

c. Awards and honors:

- 1) Professional Career:
 - i) University Faculty Scholar, Purdue University, 2001-2006.
 - ii) Teaching for Tomorrow Award (an enrichment program for recognizing and fostering teaching), Purdue University, 1997-1998.
 - iii) Department of Animal Sciences Outstanding Teaching Awards, Purdue University, 1997 and 1999.
 - iv) Department of Animal Sciences Outstanding Counselor Award, Purdue University, 2001.
 - v) ESCOP/ACOP Leadership Development Course, 1998-1999.
 - vi) Department of Animal Sciences Outstanding Graduate Student Educator Award, Purdue University, 2003 and 2006.
- 2) Graduate Awards:
 - i) Eli Lilly Co. Travel Grants, 1989 and 1990.
 - ii) American Society of Animal Science, Graduate Student Invitational Paper Competition Award, 1st Runner-Up, 1989.
 - iii) Sigma Xi Scientific Research Society Graduate Student Meritorious Research Award, Michigan State University, 1989.

- 3) Undergraduate:
 - i) Dairy Farm Management Fellows' Program, Cornell University, 1983-1984.
 - ii) Farm Credit Fellows' Program, Cornell University, 1983-1984.
 - iii) Summer Research Internship, Agway Research Farms, Tully, NY, 1983.
 - iv) Alpha Gamma Rho Fraternity Scholarship, Cornell University, 1983.
 - v) The New York Farmer's Scholarship, Cornell University, 1982 and 1983.
 - vi) National 4-H Congress, Chicago, IL, 1980.
 - vii) DeKalb Ag Research 4-H Scholarship, 1980.
 - viii) National Bank of Northern NY Agriculture Scholarship, 1980.
 - ix) New York Regents Scholarship, 1980.
 - x) Bausch and Lomb Science Award, 1980.

d. Past and Current Memberships in Academic, Professional and Scholarly Societies:

- 1) American Society of Animal Science
- 2) American Meat Science Association
- 3) The Endocrine Society
- 4) Sigma Xi Scientific Research Society
- 5) Gamma Sigma Delta National Honor Society of Agriculture
- 6) Council for Agricultural Science and Technology (CAST)
- 7) American Association for the Advancement of Science (AAAS)

ADMINISTRATIVE EXPERIENCE AND RESPONSIBILITIES

Department Head (2002-Present) and Interim Department Head (2001-2002), Department of Animal Sciences, Purdue University.

The Head is responsible for leading a dynamic department consisting of 35 tenure-track faculty members, 5 adjunct faculty members, nearly 600 undergraduate students, 65 graduate students, 34 professional staff, and 53 clerical & service staff members. The Animal Sciences undergraduate program is the largest in the College of Agriculture. The total departmental budget is approximately \$12 million, including about \$3.7 million of extramural funding, and includes the off-campus Animal Sciences Research and Education Center (livestock and poultry operations with 2,400 acres land).

Recent capital projects in the Department have included a \$2.3 million swine environmental research building, \$600,000 Ossabaw swine facility, major investments in manure management systems at our Research and Education Center, and several research laboratory renovations on campus.

Strategic planning has been on-going in the department and has resulted in significant growth of our signature program areas in a) Animal Well-Being, b) Growth and Developmental Biology, and c) Sustainable and Efficient Production and Management Systems. Strategic planning has involved input from industry and commodity stakeholder groups and from the department's external advisory board. Since 2001, fourteen new faculty members have been recruited into new positions and two USDA-ARS research scientists have become adjunct faculty members. There has been significant growth in the basic fundamental research program which has led to growth of extramural funding from NIH and USDA.

By virtue of the position, the Head interacts with administrative leaders in other departments and units on campus, with commodity group leaders (major livestock and poultry groups and the corn and soybean groups), and with the State Department of Agriculture. A number of initiatives supported by the Head have involved other universities (domestic and international), industry firms, commodity groups and associations, and

government agencies. Numerous presentations have also been delivered to these diverse audiences.

RESEARCH

The focus of the research program has been the study of animal growth that leads to strategies for increasing the efficiency of lean meat production and utilization. Studies have involved identification and characterization of cellular and molecular mechanisms regulating protein accretion in skeletal muscle. The research program has also included studies directed at understanding the relationship between muscle development and meat quality. *In vivo* studies have utilized cattle, swine, and mice, whereas *in vitro* model systems have included cultured cells derived from pigs and rodents.

1. Research Publications:

a. Refereed Papers:

- 1) Nocek, J.E. and A.L. Grant. 1987. Characterization of *in situ* nitrogen and fiber digestion and bacterial nitrogen contamination of haycrop forages preserved at different dry matters. *J. Anim. Sci.* 64:552-564.
- 2) Blaze, C.A., R.E. Holland, and A.L. Grant. 1988. Gas exchange during xylazine-ketamine anesthesia in neonatal calves. *Vet. Surgery* 17:155-159.
- 3) Grant, A.L., R.E. Holland, J.W. Thomas, K.J. King, and J.S. Liesman. 1989. Effects of dietary amines on the small intestine of calves fed soybean protein. *J. Nutr.* 119:1034-1041 (M.S. thesis research).
- 4) Grant, A.L., J.W. Thomas, K.J. King, and J.S. Liesman. 1990. Effects of dietary amines on small intestinal variables in neonatal pigs fed soy protein isolate. *J. Anim. Sci.* 68:363-371 (M.S. thesis research).
- 5) Grant, A.L., W.G. Helferich, R.A. Merkel, and W.G. Bergen. 1990. Effects of phenethanolamines and propranolol on the proliferation of cultured chick breast muscle satellite cells. *J. Anim. Sci.* 68:652-658 (Ph.D. research).
- 6) King, K.J., J.T. Huber, M.S. Sadik, W.G. Bergen, A.L. Grant, and V.L. King. 1990. Influence of dietary protein sources on the amino acid profiles available for digestion and metabolism in lactating cows. *J. Dairy Sci.* 73:3208-3216.
- 7) Bergen, W.G., T.M. Byrem, and A.L. Grant. 1991. Ensiling characteristics of whole-crop small grain harvested at milk and dough stages. *J. Anim. Sci.* 69:1766-1774.
- 8) Grant, A.L., W.G. Helferich, S.A. Kramer, R.A. Merkel, and W.G. Bergen. 1991. Administration of growth hormone to pigs alters the relative amount of insulin-like growth factor-I mRNA in liver and skeletal muscle. *J. Endocrinol.* 130:331-338 (Ph.D. thesis research).
- 9) King, K.J., V.L. King, A.L. Grant, B.D. Grieve, and W.G. Bergen. 1991. An assessment of absorbable lysine in lactating cows. *J. Dairy Sci.* 74:2530-2539.
- 10) Griffin, M.E., P.B. Brown, and A.L. Grant. 1992. The dietary lysine requirement of juvenile hybrid striped bass. *J. Nutr.* 122:1332-1337.
- 11) Skjaerlund, D.M., A.L. Grant, W.G. Helferich, W.G. Bergen, and R.A. Merkel. 1993. Determination of the relative abundance of skeletal muscle alpha actin mRNA in muscle of livestock species. *J. Anim. Sci.* 71:393-399.
- 12) Steinmetz, R.W., A.L. Grant, and P.V. Malven. 1993. Transcription of prolactin gene in milk secretory cells of the rat mammary gland. *J. Endocrinol.* 136:271-276.
- 13) Kramer, S.A., W.G. Bergen, A.L. Grant, and R.A. Merkel. 1993. Fatty acid profiles, lipogenesis, and lipolysis in lipid depots in finishing pigs treated with recombinant porcine somatotropin. *J. Anim. Sci.* 71:2066-2072.
- 14) Grant, A.L., D.M. Skjaerlund, W.G. Helferich, D.B. Anderson, W.G. Bergen,

- and R.A. Merkel. 1993. Skeletal muscle growth and expression of skeletal muscle alpha actin mRNA and insulin-like growth factor-I mRNA in pigs during feeding and withdrawal of ractopamine. *J. Anim. Sci.* 71:3319-3326.
- 15) Liu, C.Y., A.L. Grant, K.H. Kim, and S.E. Mills. 1994. Porcine somatotropin decreases acetyl-CoA carboxylase gene expression in porcine adipose tissue. *Dom. Anim. Endocrinology* 11:125-132.
 - 16) Liu, C.Y., A.L. Grant, K.H. Kim, S.Q. Ji, D.L. Hancock, D.B. Anderson, and S.E. Mills. 1994. Limitations of ractopamine to affect adipose tissue metabolism in swine. *J. Anim. Sci.* 72:62-67.
 - 17) Chang, C.H., A.L. Grant, G.M. Strasburg, W.G. Bergen, R.A. Merkel, and W.G. Helferich. 1994. RNA transcription in porcine skeletal muscle nuclei during postnatal development. *Proc. Soc. Exp. Biol. Med.* 206:162-168.
 - 18) Demos, B.P., J.C. Forrest, A.L. Grant, M.D. Judge, and L.F. Chen. 1994. Simulating sensory and physical properties of beef in low-fat, low-sodium restructured steaks. *J. Muscle Foods* 5:407-418.
 - 19) Gerrard, D.E. and A.L. Grant. 1994. Insulin-like growth factor-II expression in developing skeletal muscle of double muscled and normal cattle. *Dom. Anim. Endocrinology* 11:339-347.
 - 20) Gerrard, D.E., A.L. Grant, D.B. Anderson, R.P. Lemenager, and M.D. Judge. 1995. *In-vivo* analysis of serum-borne growth factors in developing co-twinning fetuses. *J. Anim. Sci.* 73:1689-1693.
 - 21) Briley, G.P., J.M. Reecy, A.L. Grant, and C.A. Bidwell. 1995. Cloning and expression of the porcine myogenin gene. *Anim. Biotech.* 6:79-92.
 - 22) Schinckel, A.P., L.K. Clark, G. Stevenson, K.E. Knox, J. Nielson, A.L. Grant, D.L. Hancock, and J. Turek. 1995. Effects of antigenic challenge on growth and composition of segregated early-weaned pigs. *Swine Health Prod.* 3:228-234.
 - 23) Zabolotsky, D.A., L.F. Chen, J.A. Patterson, J.C. Forrest, H.M. Lin, and A.L. Grant. 1995. Supercritical carbon dioxide extraction of androstenedione and skatole from pork fat. *J. Food Sci.* 60:1006-1008.
 - 24) Dodson, M.V., D.C. McFarland, A.L. Grant, M.E. Doumit, and S.G. Velleman. 1996. Extrinsic regulation of domestic animal-derived satellite cells. *Dom. Anim. Endocrinology* 13:107-126.
 - 25) Reecy, J.M., C.A. Bidwell, G.P. Briley, and A.L. Grant. 1996. Structure and regulation of the porcine skeletal α -actin-encoding gene. *Gene* 180:23-28.
 - 26) Gerrard, D.E., C.S. Okamura, M.A. Ranalletta, and A.L. Grant. 1998. Developmental expression and location of IGF-I and IGF-II mRNA and protein in skeletal muscle. *J. Anim. Sci.* 76:1004-1011.
 - 27) Fligger, J.M., P.V. Malven, M.E. Doumit, R.A. Merkel, and A.L. Grant. 1998. Increases in insulin-like growth factor binding protein-2 accompany decreases in proliferation and differentiation when porcine muscle satellite cells undergo multiple passages. *J. Anim. Sci.* 76:2086-2093.
 - 28) Reecy, J.M., C.A. Bidwell, O.M. Andrisani, D.E. Gerrard, and A.L. Grant. 1998. Multiple regions of the porcine alpha-skeletal actin gene modulate muscle-specific expression in cell culture and directly injected skeletal muscle. *Anim. Biotech.* 9:101-120.
 - 29) Taylor-Roth, J.L., P.V. Malven, D.E. Gerrard, S.E. Mills, and A.L. Grant. 1998. Independent effects of food intake and insulin status on insulin-like growth factor-I in young pigs. *Comp. Biochem. Physiol. Pt. C* 120:357-363.
 - 30) Holck, J.T., A.P. Schinckel, J.L. Coleman, V.M. Wilt, C. Christensen, E.L. Thacker, M.E. Spurlock, A.L. Grant, M.K. Senn, and B.J. Thacker. 1998. Influence of environment on growth and composition of commercial finisher pigs and an evaluation of potential biomarkers. *Swine Health Prod.* 6:141-149.
 - 31) Diekman, M.A., A.B. Scheidt, A.L. Grant, D.T. Kelly, A.L. Sutton, T.G.

- Martin, and T.R. Cline. 1998. Effect of vaccination on health, growth, and pubertal status of gilts exposed to moderate ammonia concentrations in all-in-all-out versus continuous-flow systems. *Swine Health Prod.* 7:55-61.
- 32) Spurlock, M.E., M.A. Ranalletta, S.G. Cornelius, G.R. Frank, G.M. Willis, S. Ji, A.L. Grant, and C.A. Bidwell. 1998. Leptin expression in porcine adipose tissue is not increased by endotoxin but is reduced by growth hormone. *J. Interferon Cytokine Res.* 18:1051-1058.
- 33) Ice, A.D., A.L. Grant, L.K. Clark, T.R. Cline, M.E. Einstein, T.G. Martin, and M.A. Diekman. 1999. Health and growth performance of barrows reared in all-in/all-out or continuous flow facilities with or without a chlortetracycline feed additive. *Amer. J. Vet. Res.* 60:603-608.
- 34) Gerrard, D.E., C.S. Okamura, and A.L. Grant. 1999. Expression and location of IGF binding proteins-2, -4, and -5 in developing fetal tissues. *J. Anim. Sci.* 77:1431-1441.
- 35) Blanton, J.R., A.L. Grant, D.C. McFarland, J.P. Robinson, and C.A. Bidwell. 1999. Isolation of two populations of myoblasts from porcine skeletal muscle. *Muscle and Nerve* 22:43-50.
- 36) Grant, A.L. and D.E. Gerrard. 1998. Cellular and molecular approaches for altering muscle growth and development. *Can. J. Anim. Sci.* 78:493-502.
- 37) Wynveen, E.J., B.C. Bowker, A.L. Grant, B.P. Demos, and D.E. Gerrard. 1999. Effects of muscle pH and chilling on development of PSE-like turkey breast meat. *British Poul. Sci.* 40:253-256.
- 38) Bowker, B.C., E.J. Wynveen, A.L. Grant, and D.E. Gerrard. 1999. Effects of electrical stimulation on early postmortem muscle pH and temperature declines in pigs from different genetic lines and halothane genotypes. *Meat Sci.* 53:125-133.
- 39) Li, Y., M.F. Seifert, D.M. Ney, M. Grahn, A.L. Grant, K.G.D. Allen, and B.A. Watkins. 1999. Dietary conjugated linoleic acids alter serum IGF-I and IGF binding protein concentrations and reduce bone formation in rats fed (n-6) or (n-3) fatty acids. *J. Bone Min. Res.* 14:1153-1162.
- 40) Blanton, J.R., C.A. Bidwell, D.A. Sanders, C.M. Sharkey, D.C. McFarland, D.E. Gerrard, and A.L. Grant. 2000. Plasmid transfection and retroviral transduction of porcine muscle cells for cell-mediated gene transfer. *J. Anim. Sci.* 78:909-918.
- 41) Everett, R.S.R., D.E. Gerrard, and A.L. Grant. 2000. Factors affecting production of luciferase and epitope-tagged IGF-I in porcine muscle following DNA injection. *J. Endocrinol.* 166:255-263.
- 42) Reichel, C.L., A.L. Grant, R.S.R. Everett, C.A. Bidwell, and D.E. Gerrard. 2000. Epitope-tagged insulin-like growth factor-I expression in muscle. *Dom. Anim. Endocrinol.* 18:337-348.
- 43) Depreux, F.F.S., C.S. Okamura, D.R Swartz, A.L Grant, A.M. Brandstetter and D.E. Gerrard. 2000. Quantification of myosin heavy chain isoform content in porcine muscle using an enzyme-linked immunosorbent assay. *Meat Science* 56:261-269.
- 44) Bowker, B.C., A.L. Grant, J.C. Forrest, and D.E. Gerrard. 2000. Muscle biology and pork quality. *Proc. Am. Soc. Anim. Sci.*; available at: <http://www.asas.org/jas/symposia/proceedings>.
- 45) Blanton, J.R., J.P. Robinson, C.A. Bidwell, D.E. Gerrard, and A.L. Grant. 2000. Rapid purification of transfected porcine muscle cells. *Meth. Cell Sci.* 22:217-223.
- 46) Wynveen, E.J., B.C. Bowker, A.L. Grant, L. Henson, and D.E. Gerrard. 2001. Ability of early postmortem phosphate injection to inhibit PSE development. *J. Food Sci.* 66:886-891.
- 47) Depreux, F.F.S., A.L. Grant, and D.E. Gerrard. 2002. Influence of halothane

- genotype and body weight on myosin heavy chain composition in pig muscle as related to meat quality. *Livestock Prod. Sci.* 73:265-273.
- 48) Depreux, F.F.S., A.L. Grant, D.B. Anderson, and D.E. Gerrard. 2002. Paylean alters myosin heavy chain isoform content in pig muscle. *J. Anim. Sci.* 80:1888-1894.
 - 49) Eggert, J.M., F.F.S. Depreux, A.P. Schinckel, A.L. Grant, and D.E. Gerrard. 2002. Myosin heavy chain isoforms account for variation in pork quality. *Meat Science* 61:117-126.
 - 50) Hammelman, J.E., B.C. Bowker, A.L. Grant, J.C. Forrest, A.P. Schinckel, and D.E. Gerrard. 2003. Early postmortem electrical stimulation stimulates PSE pork development. *Meat Sci.* 63:69-77.
 - 51) Bowker, B.C., D.R. Swartz, A.L. Grant, and D.E. Gerrard. 2004. Method of isolation, rate of postmortem metabolism, and myosin heavy chain isoform composition influence ATPase activity of isolated porcine myofibrils. *Meat Sci.* 66(3) 743-752.
 - 52) Bowker, B.C., A.L. Grant, D.R. Swartz and D.E. Gerrard. 2004. Myosin heavy chain isoforms influence myofibrillar ATPase activity under simulated postmortem pH, calcium, and temperature conditions. *Meat Sci.* 67(1):139-147.
 - 53) Bowker, B.C., C. Botrel, D. R. Swartz, A. L. Grant, and D. E. Gerrard. 2004. Influence of myosin heavy chain isoform expression and postmortem metabolism on the ATPase activity of muscle fibers. *Meat Sci.* 68(4):587-594.
 - 54) Bowker, B.C., D. R. Swartz, A. L. Grant, and D. E. Gerrard. 2005. Myosin heavy chain isoform composition influences the susceptibility of actin-activated S1 ATPase and myofibrillar ATPase to pH inactivation. *Meat Sci.* 71(2):342-350.
 - 55) Freese, L.G., C. Rehfeldt, R. Fuerbass, G. Kuhn, C.S. Okamura, K. Ender, A.L. Grant, and D.E. Gerrard. 2005. Exogenous somatotropin alters IGF axis in porcine endometrium and placenta. *Dom. Anim. Endocrinol.* 29:457-475.
 - 56) Copenhafer, T.L., B.T. Richert, A.P. Schinckel, A.L. Grant, and D.E. Gerrard. 2006. Augmented postmortem glycolysis does not occur early postmortem in AMPK gamma 3-mutated porcine muscle of halothane positive pigs. *Meat Sci.* 73(4):590-599.
 - 57) Selby, T.L., A. Berzins, D.E. Gerrard, C.M. Corvalan, A.L. Grant, and R.H. Linton. 2006. Microbial heat resistance of *Listeria monocytogenes* and the impact on ready-to-eat meat quality after post-package pasteurization. *Meat Sci.* 74(3):425-434.
 - 58) Guo, Q., B.T. Richert, J.R. Burgess, D.M. Webel, D.E. Orr, M. Blair, A.L. Grant, and D.E. Gerrard. 2006. Effect of dietary vitamin E supplementation and feeding period on pork quality. *J. Anim. Sci.* 84:3071-3078.
 - 59) Guo, Q., B.T. Richert, J.R. Burgess, D.M. Webel, D.E. Orr, M. Blair, G.E. Fitzner, D.D. Hall, A.L. Grant, and D.E. Gerrard. 2006. Effects of dietary vitamin E and fat supplementation on pork quality. *J. Anim. Sci.* 84:3089-3099.
 - 60) Eggert, J.M., A.L. Grant, and A.P. Schinckel. 2007. Factors affecting fat distribution in pork carcasses. *Prof. Anim. Sci.* 23:42-53.
 - 61) Gunawan, A.M., S.K. Park, J.M. Pleitner, L. Feliciano, A.L. Grant, and D.E. Gerrard. 2007. Contractile protein content reflects myosin heavy-chain isoform gene expression. *J. Anim. Sci.* 85:1247-1256.
 - 62) Gunawan, A.M., B.T. Richert, A.P. Schinckel, A.L. Grant, and D.E. Gerrard. 2007. Ractopamine induces differential gene expression in porcine skeletal

- muscles. *J. Anim. Sci.* 85:2115-2124.
- 63) Shi, H., C. Zeng, A. Ricome, K.M. Hannon, A.L. Grant, and D.E. Gerrard. 2007. Extracellular signal-regulated kinase pathway is differentially involved in beta-agonist-induced hypertrophy in slow and fast muscles. *American Journal of Physiology - Cell Physiology* 292(5):C1681-9.
 - 64) Shi, H., J.M. Scheffler, J.M. Pleitner, C. Zeng, S. Park, K.M. Hannon, A.L. Grant, and D.E. Gerrard. 2008. Modulation of skeletal muscle fiber type by mitogen-activated protein kinase signaling. *FASEB J.* 22:2990-3000.
 - 65) Park, S., T.L. Scheffler, A.M. Gunawan, H. Shi, C. Zeng, K.M. Hannon, A.L. Grant, and D.E. Gerrard. 2009. Chronic elevated calcium blocks AMPK-induced GLUT-4 expression in skeletal muscle. *American Journal of Physiology – Cell Physiology* 296(1):C106-115.
 - 66) Park, S., A.M. Gunawan, T.L. Scheffler, A.L. Grant, and D.E. Gerrard. 2009. Myosin heavy chain isoform content and energy metabolism can be uncoupled in pig skeletal muscle. *J. Anim. Sci.* 87(2):522-531.

b. Research Abstracts:

- 1) Nocek, J.E., A.L. Grant, and J.E. English. 1984. Characterization of in situ fiber digestion of forages stored at different dry matters. *J. Dairy Sci.* 67(Suppl. 1):248.
- 2) Grant, A.L., J.W. Thomas, K.J. King, and C.A. Rotz. 1985. Propionic acid as a preservative in high moisture alfalfa hay. *J. Dairy Sci.* 68(Suppl. 1):153.
- 3) King, K.J., J.W. Thomas, and A.L. Grant. 1985. Fermentation characteristics of inoculated haylage and corn silage. *J. Dairy Sci.* 68(Suppl. 1):151.
- 4) Nocek, J.E. and A.L. Grant. 1985. Influence of bacterial nitrogen contamination on in situ nitrogen digestion of forages stored at different dry matters. *Proc. Rumen Function Conf.* 18:27.
- 5) O'Neil, K.A., J.W. Thomas, A.L. Grant, and J.S. Liesman. 1986. Effect of microbial inocula and sucrose on fermentation of alfalfa haylage. *J. Anim. Sci.* 63(Suppl. 1):286.
- 6) Grant, A.L., J.W. Thomas, R.S. Emery, and J.S. Liesman. 1986. Comparative efficacy of three forms of magnesium oxide for early lactation. *J. Anim. Sci.* 63(Suppl. 1):405.
- 7) Grant, A.L., J.W. Thomas, R.S. Emery, K.J. King, and J.S. Liesman. 1987. Small intestinal parameters in piglets fed an all-milk protein milk replacer or a special soy protein concentrate replacer supplemented with amines. *J. Anim. Sci.* 65(Suppl. 1):293.
- 8) Grant, A.L., R.E. Holland, J.W. Thomas, R.S. Emery, K.J. King, and J.S. Liesman. 1987. The use of dietary amines to improve milk replacers containing soybean protein. *J. Dairy Sci.* 70(Suppl. 1):144.
- 9) Fish, S.F., A.L. Grant, and R.A. Patton. 1988. Effect of ammoniation on the viability of lactobacilli in corn silage. *J. Anim. Sci.* 66(Suppl. 1):167.
- 10) King, K.J., J.T. Huber, M.S. Sadik, W.G. Bergen, A.L. Grant, and V.L. King. 1988. Influence of protein sources fed to lactating cows on the amino acids available for digestion and metabolism. *J. Dairy Sci.* 71(Suppl. 1):159.
- 11) King, K.J., W.G. Bergen, N.K. Ames, A. L. Grant, and B.D. Grieve. 1988. Lysine adequacy of the lactating dairy cow. *J. Anim. Sci.* 66(Suppl. 1):484.
- 12) Skjaerlund, D.M., W.G. Helferich, A.L. Grant, W.G. Bergen, and R.A. Merkel. 1989. Effect of ractopamine treatment and subsequent withdrawal on porcine skeletal muscle alpha actin mRNA abundance. *Proc. Rec. Meat Conf.* 42:54.
- 13) Skjaerlund, D.M., W.G. Helferich, A.L. Grant, W.G. Bergen, and R.A. Merkel. 1989. Developmental changes in porcine skeletal muscle alpha actin mRNA abundance in pig heart and pig skeletal muscle. *J. Anim. Sci.*

- 67(Suppl. 1):188.
- 14) Skjaerlund, D.M., W.G. Helferich, A.L. Grant, W.G. Bergen, and R.A. Merkel. 1989. Characterization of a full length human skeletal muscle alpha actin cDNA for use in meat animal species. *J. Anim. Sci.* 67(Suppl. 1):188.
 - 15) Grant, A.L., R.A. Merkel, and W.G. Bergen. 1989. Effects of beta adrenergic agonists and antagonists on proliferation of muscle satellite cells isolated from neonatal pigs. *J. Anim. Sci.* 67(Suppl. 1):192.
 - 16) Grant, A.L., W.G. Helferich, R.A. Merkel and W.G. Bergen. 1989. Proliferation of chick breast muscle satellite cells cultured with beta adrenergic agonists. *J. Anim. Sci.* 67(Suppl. 2):74.
 - 17) Chang, C.H., W.G. Helferich, A.L. Grant, A. Veit, R.A. Merkel, and W.G. Bergen. 1989. Specificity of the goose and rat fatty acid synthetase cDNA to RNA isolated from porcine adipose tissue. *J. Anim. Sci.* 67(Suppl. 1):208.
 - 18) Anderson, P.T., W.G. Helferich, R.A. Merkel, A.L. Grant, and W.G. Bergen. 1990. The effect of beta adrenergic agonists on protein synthesis and degradation in L6 myoblasts. *Fed. Amer. Soc. Exp. Biol. J.* 4:A505.
 - 19) Chang, C.H., W.G. Helferich, A.L. Grant, R.A. Merkel, and W.G. Bergen. 1990. Transcription assay development with nuclei isolated from pig skeletal muscle. *Fed. Amer. Soc. Exp. Biol. J.* 4:A384.
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 - 82) Grant, A.L. 2005. Production of IGF-I and its effects on muscle development. *J. Anim. Sci.* 83(Suppl. 2):86.
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- c. Theses:
- 1) Grant, A.L. 1987. Small Intestinal Variables in Young Piglets and Preruminant Calves Fed Milk Protein, Soybean Protein, or Soybean Protein Plus Putrescine or Ethylamine. M.S. Thesis, Michigan State Univ., E. Lansing.
 - 2) Grant, A.L. 1990. Utilization of Solution Hybridization to Examine Differential Effects of Growth Hormone and Ractopamine on the Relative Abundance of IGF-I mRNA in Liver and Skeletal Muscle of Pigs. Ph.D. Thesis, Michigan State Univ., E. Lansing.
- d. Research Reports:
- 1) Grant, A.L. and J.W. Thomas. 1987. Improving milk replacers containing soybean proteins with dietary amines. *Farm Sciences Rep. #487*, Swine Res. Rep., Mich. State Univ.
 - 2) Grant, A.L., W.G. Helferich, and D.B. Jump. 1989. Extraction of RNA from porcine adipose tissue. *N. Central Reg. Hatch Proj. Publ.*
 - 3) Grant, A.L., R.A. Merkel, and W.G. Bergen. 1990. Effects of beta adrenergic agonists on cell proliferation in porcine primary muscle satellite cell cultures. *Farm Sciences Rep. #502*, Swine Res. Rep., Mich. State Univ.
 - 4) Schinckel, A.P., J.C. Forrest, S.E. Mills, A.L. Grant, and T.S. Stewart. 1991. Cooperative swine lean growth project. *Swine Day Rep.*, Purdue University.
 - 5) Grant, A.L., W.G. Helferich, S.A. Kramer, R.A. Merkel, and W.G. Bergen. 1992. Administration of growth hormone to pigs alters the relative amount of insulin-like growth factor mRNA in liver and skeletal muscle. *Farm Sciences Rep. #520*, Swine Res. Rep., Mich. State Univ.
 - 6) Kramer, S.A., A.L. Grant, W.G. Bergen, and R.A. Merkel. 1992. The effect of recombinant porcine somatotropin on nucleic acid concentration of liver and muscle and fatty acid profiles of muscle and adipose tissue in finishing pigs. *Farm Sciences Rep. #520*, Swine Res. Rep., Mich. State Univ.
 - 7) Gerrard, D.E., K.H. Thrasher, A.L. Grant, R.P. Lemenager, and M.D. Judge. 1991. Fetal development of muscle tissue in double-musclled and normal cattle. *Beef/Dairy Day Report*, Purdue University.
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- 9) Thrasher, K.H., J.M. Fligger, S.E. Mills, and A.L. Grant. 1992. Insulin binding in muscle cell cultures treated with a repartitioning agent. Swine Day Rep., Purdue Univ.
 - 10) Grant, A.L., J.L. Taylor, J.M. Fligger, and A.P. Schinckel. 1992. Regulation of muscle growth and development by growth factors. Swine Day Rep., Purdue Univ.
 - 11) Zabolotsky, D.A., L.F. Chen, and A.L. Grant. 1993. Measurement of boar taint in pork carcasses. Swine Day Rep., Purdue Univ.
 - 12) Zabolotsky, D.A., J.A. Patterson, J.C. Forrest, L.F. Chen, and A.L. Grant. 1993. Supercritical fluid extraction for boar taint measurement. Meat Focus International 11:494-495.
 - 13) Taylor, J.L., J.W. Leininger, A.P. Schinckel, and A.L. Grant. 1993. Muscle protein metabolism in genotypes of swine with different lean growth rates. Swine Day Rep., Purdue Univ.
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 - 17) Schinckel, A.P., L.K. Clark, A.L. Grant, P.V. Malven, M. McComb, G.G. Stevenson, and J.J. Turek. 1996. Evaluation of the effects of immune system activation versus disease on pig growth. Swine Day Rep., Purdue Univ.
 - 18) Eggert, J.M., E.B. Sheiss, A.P. Schinckel, J.C. Forrest, A.L. Grant, S.E. Mills, and B.A. Watkins. 1996. Effects of genotype, sex, slaughter weight, and dietary fat on pig growth, carcass composition, and pork quality. Swine Day Rep., Purdue Univ.
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 - 20) Frank, J.W., B.T. Richert, A.P. Schinckel, B.A. Belstra, M. Ellis, and A.L. Grant. 1997. Effects of environment, genotype, sex, and antibiotic treatment on pig growth, carcass characteristics, and pork quality. Swine Day Rep., Purdue Univ.
 - 21) Ice, A.D., A.L. Grant, L.K. Clark, T.R. Cline, M.E. Einstein, and M.A. Diekman. 1997. Health and lean growth performance of barrows reared in all-in, all-out or continuous flow facilities with or without antibiotic. Swine Day Rep., Purdue Univ.
 - 22) Eggert, J.M., E.J. Farrand, S.E. Mills, A.P. Schinckel, J.C. Forrest, A.L. Grant, and B.A. Watkins. 1998. Effects of supplementing with soybean oil and finishing with beef tallow on pork quality and carcass composition. Swine Day Rep., Purdue Univ.
 - 23) Eggert, J.M., E.J. Farrand, S.E. Mills, A.P. Schinckel, J.C. Forrest, A.L. Grant, and B.A. Watkins. 1998. Effects of feeding poultry fat and finishing with beef tallow on pork quality and carcass composition. Swine Day Rep., Purdue Univ.
- e. Textbooks and Book Chapters:
- 1) Grant, A.L. and W.G. Helferich. 1991. Chapter 1: An overview of growth. pp. 1-16. In: Advances in Meat Research, Vol. 7 - Growth Regulation in Farm Animals. A.M. Pearson and T.R. Dutson (Eds.). Elsevier Applied Press, London, 1991.

- 2) Grant, A.L. and D.E. Gerrard. 1998. Molecular and cellular aspects of muscle growth. pp. 58-69. In: Proc. Symp. on Animal Growth: Basic Aspects, Theory and Practice for the Future. J.W. Blum, T. Elsasser, and P. Guilloteau (Eds.). ISBN number 3-9521067-0-4.
- 3) Gerrard, D.E. and A.L. Grant. 2003. Principles of Animal Growth and Development; 264 pages; ISBN 0-7872-9147-1. Revised printing, 2006; 284 pages; ISBN: 978-0-7575-2986-3; Kendall/Hunt Publishing Co., IA.
- 4) Scheffler, J.M., D.E. Gerrard, S. Kuang, and A.L. Grant. 2008. Achievements of research in the field of animal growth and development. pp. 67-76. In: Animal Production and Animal Science Worldwide, World Association for Animal Production Book of the Year 2007, Vol. 4. A. Rosati, A. Tewolde, and C. Mosconi (Eds.). ISBN: 978-90-8686-068-5. Wageningen Academic Publishers, The Netherlands.

2. Invited Research Lectures:

a. State

- 1) Expression of IGF-I in liver and skeletal muscle of pigs with different lean growth genotypes. 1990. Presented to Indiana Pork Producer's Association Research - Education Committee, Indianapolis, IN.
- 2) Involvement of IGFs and binding proteins in chondrocyte growth and development. 1990. Presented at Multipurpose Arthritis Center, Indiana Univ.
- 3) Role of growth factors in regulation of skeletal muscle growth. 1990. Presented to Swine Lean Growth Purdue Cooperative Research Project Cooperators, Purdue Univ.
- 4) Role of IGFs and binding proteins in regulation of skeletal muscle growth. 1991. Presented at Pittman-Moore Visit, School of Agriculture and Veterinary Medicine Program, Purdue Univ.
- 5) Effects of isolated rearing practices on lean growth and metabolism in pigs. 1991. Presented to Indiana Pork Producer's Association Research - Education Committee, Indianapolis, IN.
- 6) Overview of muscle growth biology research in Purdue Animal Sciences. 1992. Presented to Countrymark Coop., Inc., Purdue Univ.
- 7) Regulation of swine lean growth. 1993. Presented to National Pork Board, Purdue Univ.
- 8) Overview of muscle growth biology research in Purdue Animal Sciences. 1993. Presented to Undersecretary of European and External Trade Policy, Ministry of Agriculture, Fisheries and Food, U.K., Purdue Univ.
- 9) Mediation of muscle growth by insulin-like growth factors in meat animals. 1993. Presented at Interdepartmental Nutrition Program Seminar Series, Purdue Univ.
- 10) Growth biology research in Purdue Animal Sciences. 1995. Presented to the Dean's Advisory Council, School of Agriculture, Purdue Univ.
- 11) Manipulation of growth in meat animals. 1995. Presented to Maple Leaf Farms Management Team, Purdue Univ.
- 12) Mechanisms of skeletal muscle growth to alter swine lean growth. 1996. Presented to Hubbard Feeds Group, Purdue Univ.
- 13) Muscle growth research. 1999. Departmental Seminar Series, Dept. Anim. Sci., Purdue Univ.
- 14) Gene transfer for studying muscle growth. 2000. Gene Therapy and Vaccine Technologies at Purdue University Workshop, Purdue Research Foundation, Sponsored Program Development, Purdue Univ.

b. National

- 1) Distribution of fat deposition in pigs. 1996. Presented to National Pork

- Producers Council, Des Moines, IA.
- 2) Engineering muscle cells with porcine genes. 1997. Presented to National Pork Producers Council, Des Moines, IA.
 - 3) Regulation of muscle development in meat animals. 1998. Presented to Pfizer, Inc., Terre Haute, IN.
 - 4) Relationship between muscle development and pork quality. 1999. Presented to National Pork Producers Quality Solutions Program Annual Meeting hosted by Purdue Univ.
 - 5) Regulation of satellite cells during muscle development. 2001. Presented to Department of Animal and Dairy Science Department, Auburn University, Auburn, AL.
 - 6) Muscle satellite cell research in meat animals. 2002. Presented at symposium entitled 'Current Topics in Satellite Cell Research' at the 35th Annual Meeting of the Midwestern Section of the American Society of Animal Science and American Dairy Science Association, Des Moines, IA.
 - 7) Production of IGF-I and its effects on muscle development. 2005. Presented at the 'Muscle Physiology' symposium at the 38th Annual Meeting of the Midwestern Section of the American Society of Animal Science and American Dairy Science Association, Des Moines, IA.

c. International

- 1) Paracrine interactions among porcine fibroblasts and myoblasts. 1997. Presented to Muscle Cell Biology Group, Medical Research Council, Royal Postgraduate Medical School, Hammersmith Hospital, London, UK.
- 2) Regulation of muscle growth in pigs. 1997. Presented to Department of Anatomy and Developmental Biology, Royal Free Hospital School of Medicine, Univ. of London, London, UK.
- 3) Direct DNA injection into muscle of pigs for studying muscle growth. 1998. Presented to Department of Anatomy and Developmental Biology, Royal Free Hospital School of Medicine, Univ. of London, U.K.
- 4) Molecular and cellular aspects of muscle growth. 1998. Presented at Symposium on Animal Growth: Basic Aspects, Theory and Practice for the Future, August 20-22, 1998, University of Berne, Switzerland.

3. Other Evidence of Creative Excellence:

- a. Organized a Purdue Animal Sciences Growth Biology Journal Club for faculty and graduate students with research interests in the animal growth/developmental biology areas.
- b. Dr. Grant and Dr. Gerrard contracted with Kendall/Hunt Publishing Co. to write a textbook "Principles of Animal Growth and Development."
- c. Served as a mentor for MARC/AIM (Minority Access to Research Careers/Access Internally for Minorities) Summer Research Program:
 - 1) Tabatha Jones, Prairie View A&M, 1993.
 - 2) Chenise Pinckney, Shaw Univ., 1996.
- d. Served as a mentor for NSF Young Scholars Program:
 - 1) Tewanna Perry, South Bend, IN, 1995.
 - 2) Melissa Thieme, Decatur, IN, 1996.
- e. Served as a project director for a McCutcheon High School student (Kim Brookbank) who participated in the Purdue Science and Engineering Fair, 1993.
- f. Served as a project co-director for a Jefferson High School student (Lauren Eller) who participated in the Purdue Science and Engineering Fair, 2000.

4. Graduate Research Involvement:

- a. Completed Theses (Major Advisor):

- 1) Jason Fligger, M.S., 1994, Production of IGFs by muscle cells.
- 2) Jody Taylor, M.S., 1994, IGF-I Production in streptozotocin-diabetic swine.
- 3) James Reecy, Ph.D., 1996, Functional analysis of the porcine α -skeletal actin gene, (Recipient of the 1995 Featherston Award - Outstanding Graduate Student of Animal Sciences, Purdue Univ.)
- 4) Mollie McComb (Ranalletta), M.S., 1997, Effects of environment, genotype, and antibiotics on growth and immune system variables in pigs.
- 5) John Blanton, Ph.D., 1998, Characterization and genetic transformation of porcine muscle cells for ex-vivo cell-mediated gene transfer (Co-advisor with C.A. Bidwell).
- 6) Ruth Everett, 1999, Engineering recombinant protein synthesis in muscle, Ph.D. (Recipient of 1996 Outstanding Graduate Student Teaching Award in Animal Sciences, Purdue Univ.).
- 7) Arnaldo Torres, M.S. (non-thesis), 1999, Specialization in physiology.
- 8) Suzanna Post, M.S., 2000, A porcine model for muscle ablation and compensatory growth.
- 9) Jennifer K. Cline Armstrong, M.S., 2001, Muscle-derived IGF-I increases postnatal growth in mice (Co-advisor with D.E. Gerrard).
- 10) Matthew Spires, M.S., 2001, Effect of genotype on the development of pork quality (Co-advisor with D.E. Gerrard).
- 11) Qinghai Guo, Ph.D., 2006, Control of postmortem energy metabolism (Co-advisor with D.E. Gerrard).
- 12) Caiyun Zeng, Ph.D., 2008, Growth factor regulation of muscle development, (Co-advised with D.E. Gerrard).

c. Advisory Committee Member:

Name	Degree	Major Professor	Dept.	Year
Steinmetz, R.	M.S.	Malven, P.V.	ANSC	1991
Demos, B.P.	M.S.	Forrest, J.C.	ANSC	1992
Gomide, L.	Ph.D.	Judge, M.D.	FS	1992
Thrasher, K.	M.S.	Judge, M.D.	ANSC	1992
Liu, C.Y.	Ph.D.	Mills, S.E.	ANSC	1992
Ji, S.Q.	Ph.D.	Judge, M.D.	ANSC	1992
Lin, R.S.	Ph.D.	Forrest, J.C.	ANSC	1993
Chen, W.	Ph.D.	Forrest, J.C.	ANSC	1993
Fleming, M.	M.S.	Hancock, D.L.	ANSC	1994
Reber, J.M.	Ph.D.	Spacie, A.	FNR	1994
Chavis, C.S.	M.S.	Hancock, D.L.	ANSC	1994
Griffin, M.E.	Ph.D.	Brown, P.B.	FNR	1994
Sun, W.L.	Ph.D.	Hancock, D.L.	ANSC	1994
Spear, J.L.	M.S.	Allrich, R.D.	ANSC	1994
Hu, Y.H.	M.S.	Lowney, P.	F&N	1995
Shen, C.L.	Ph.D.	Watkins, B.A.	FS	1995
Shively, K.S.	M.S.	Hancock, D.L.	ANSC	1995*
Ebert, P.J.	M.S.	Hancock, D.L.	ANSC	1995*
Berg, E.P.	Ph.D.	Forrest, J.C.	ANSC	1996
Wu, L.	M.S.	Collodi, P.	ANSC	1996
Farrand, E.	M.S.	Schinckel, A.P.	ANSC	1996*

Leininger, J.	M.S.	Gerrard, D.E.	ANSC	1997
Reichel, C.	M.S.	Gerrard, D.E.	ANSC	1997
Sheiss, E.	M.S.	Forrest, J.C.	ANSC	1998
Greenfield, R.	M.S.	Donkin, S.S.	ANSC	1998
McGinn, L.	M.S.	Gerrard, D.E.	ANSC	1998
Liang, W.	Ph.D.	Mills, S.E.	ANSC	1998
Li, Y	Ph.D.	Watkins, B.A.	FS	1999
Eggert, J.	Ph.D.	Schinckel, A.P.	ANSC	1999
Frank, J.	M.S.	Richert, B.T.	ANSC	1999
Wynveen, E.	M.S.	Gerrard, D.E.	ANSC	1999
Hammelman, J.	M.S.	Gerrard, D.E.	ANSC	2000
Gandhi, A.	M.S.	Krisher, R.	ANSC	2000
Depreux, F.	Ph.D.	Gerrard, D.E.	ANSC	2000
Gilmer, S.	M.S.	Donkin, S.S.	ANSC	2000*
Mitchell, P.	M.S.	Hannon, K.	BMS	2001
Bormann, C.	M.S.	Krisher, R.	ANSC	2001
Swain, J.	M.S.	Krisher, R.	ANSC	2001
Zhao, Q.	Ph.D.	Collodi, P.	ANSC	2001
Stroble, K.	M.S.	Krisher, R.	ANSC	2002
Selby, T.	M.S.	Gerrard & Linton	ANSC/FS	2002
Weber, T.E.	Ph.D.	Spurlock, M.E.	ANSC	2003
Al-Zghoul, M.B.	Ph.D.	Hannon, K.	BMS	2003
Bowker, B.	Ph.D.	Gerrard, D.E.	ANSC	2003
McDaneld, T.	Ph.D.	Moody, D.	ANSC	2004
Dilger, A.C.	M.S.	Gerrard, D.E.	ANSC	2004
Copenhafer, T.L.	M.S.	Gerrard, D.E.	ANSC	2005
Gunawan, A.	M.S.	Gerrard, D.E.	ANSC	2006
Weaver, A.	Ph.D.	Gerrard, D.E.	ANSC	2007
Hao, S.	Ph.D.	Gerrard, D.E.	ANSC	2007
Park, S.	Ph.D.	Gerrard, D.E.	ANSC	2008

*denotes students that left the university before completing degree requirements.

d. Involvement with the post-doctorate research program:

Dmitry A. Zabolotsky, postdoctoral student from M.V. Lomonosov Institute of Fine Chemical Technology, Dept. of Chemistry and Technology of Fine Organic Compounds, Moscow, Russia; Project: Utilization of boars for pork production/measurement of boar taint, 1992-1993 (A.L. Grant, Project Director).

6. Research grants

a. Approved and Funded:

- 1) American Diabetes Association, Indiana Affiliate -\$14,843, Regulation of insulin response in muscle, 1990 (Co-PI with S.E. Mills).
- 2) Indiana Pork Producers Association - \$5,000, Expression of IGF-I in liver and skeletal muscle of pigs with different lean growth genotypes, 1990 (PI).
- 3) Indiana Pork Producers Association - \$3,000, Reduced fat growth in genetically altered swine. Cloning and regulation of porcine acetyl-CoA carboxylase, 1990 (Co-PI with S.E. Mills, C.Y. Liu, and K.H. Kim).

- 4) AES Assistantship, Purdue University. - \$24,000, Expression of IGF-I and IGF-binding proteins in liver and skeletal muscle of pigs with different lean growth genotypes, 1991-1993 (PI).
- 5) National Pork Producers Council - \$8,784, Reduced fat growth in genetically altered swine. Cloning and regulation of porcine acetyl-CoA carboxylase, 1991 (Co-PI with S.E. Mills, C.Y. Liu, and K.H. Kim).
- 6) American Diabetes Association, Indiana Affiliate - \$15,000, IGF-I production in streptozotocin-diabetic swine, 1991 (Co-PI with S.E. Mills).
- 7) Hoechst-Roussel Agri-Vet Company - \$10,000, Influence of ruminally protected soybean meal on growth and metabolism of steers implanted with estradiol and trenbolone acetate, 1992 (Co-Investigator with D.L. Hancock, PI).
- 8) Undergraduate Research Grant Program, Purdue - \$500, Alpha-actin gene expression in pigs selected for different lean growth rates, 1992 (PI).
- 9) Central Soya Co., Inc. - \$10,300, Influence of ruminally protected soybean meal on growth and metabolism of steers implanted with estradiol and trenbolone acetate, 1992 (Co-Investigator with D.L. Hancock, PI).
- 10) Indiana Pork Producer's Association - \$5,000, Effects of isolated rearing practices on lean growth and metabolism in pigs, 1992 (Co-PI with A.P. Schinckel).
- 11) Purdue Research Foundation - \$20,150, IGF-I production in streptozotocin-diabetic swine, 1992-1993 (PI).
- 12) Purdue/MUCIA International Travel Grant - \$485, Collaborative study in France to study localization of genes that regulate muscle development in cattle, 1992 (PI).
- 13) National Pork Producers Council - \$12,150, Reduced fat growth in genetically altered swine, cloning and regulation of porcine acetyl-CoA carboxylase, 1992 (Co-Investigator with S.E. Mills, PI).
- 14) Indiana Value-Added Grants Program - \$36,372, Utilization of boars for pork production, 1992-1993 (PI).
- 15) National Pork Producers Council - \$13,800, Utilization of boars for pork production, 1992-1993 (PI).
- 16) American Diabetes Association, Indiana Affiliate - \$14,000, Engineering of insulin synthesis and secretion in muscle cells, 1993-1994 (PI).
- 17) Undergraduate Research Grant Program, Purdue - \$1,000, Muscle protein gene expression in swine, 1993-1994 (PI).
- 18) Indiana Pork Producers Association - \$5,000, Identification of processes that regulate muscle protein deposition in swine, 1993-1994 (PI).
- 19) Purdue Research Foundation - \$20,400, Engineering of insulin synthesis and secretion in muscle cells, 1994-1995 (PI).
- 20) Indiana Pork Producers Association - \$4,200, Molecular and biochemical determinants of genetic variation for growth, 1994 (Co-PI with S.E. Mills).
- 21) Indiana Pork Producers Association - \$5,300, Use of a system to study production of growth factors by aging muscle satellite cells, 1994 (PI).
- 22) Indiana Pork Producers Association - \$4,500, Reproduction and lean growth of gilts reared in all-in/all-out environment of moderate concentrations of ammonia, 1994 (Co-Investigator with M.A. Diekman, PI).
- 23) Crossroads - \$40,000, Effects of medicated early weaning practices on lean growth rate, feed intake and carcass merit, 1994-1995 (Co-PI with L.K. Clark, A.P. Schinckel, and D.L. Hancock).
- 24) Indiana Pork Producers Association - \$5,000, Effects of medicated early weaning practices on lean growth rate, feed intake, and carcass merit, 1994 (Co-PI with L.K. Clark, A.P. Schinckel, and D.L. Hancock).
- 25) National Live Stock and Meat Board - \$42,341, Fat distribution in pork

- carcasses from pigs with different patterns of lipid metabolism, 1994-95 (Co-PI with S.E. Mills, A.P. Schinckel, and B.A. Watkins).
- 26) National Pork Producers Council - \$16,000, Engineering muscle cells with porcine genes, 1995-96 (Co-PI with C.A. Bidwell).
 - 27) Purina Mills - \$28,488, Interaction of the endocrine and immune systems in regulation of swine lean growth, 1995-97 (PI).
 - 28) Smith Kline Beecham Animal Health/Pfizer - \$34,797, An evaluation of vaccination and health status on growth performance in pigs, 1995 (Co-PI with A.P. Schinckel, L.K. Clark, J. Turek and A.B. Scheidt).
 - 29) Purdue Research Foundation, Travel Grant - \$960, Poster presentation "Regulation of porcine alpha-actin gene expression" at 2nd Dummerstorf Muscle Workshop, Rostock, Germany, May 1995.
 - 30) Indiana Pork Producers Association - \$4,000, Development of novel porcine genes for influencing muscle growth, 1995-96 (Co-PI with C.A. Bidwell).
 - 31) Indiana Pork Producers Association - \$5,000, Intramuscular injection of DNA for production and systemic delivery of growth hormone, 1995-96 (Co-PI with C.A. Bidwell).
 - 32) Fats and Proteins Research Foundation, Inc. - \$40,430, Identification of factors affecting quality of fat and lean in pig carcasses, 1996 (Co-PI with S.E. Mills, J.C. Forrest, A.P. Schinckel, and B.A. Watkins).
 - 33) USDA, NRICGP - \$120,000, Myoblast-mediated gene transfer with fluorescent tagged porcine myoblasts, 1995-97 (Co-PI with C.A. Bidwell).
 - 34) USDA, NRICGP - \$115,842, Importance of fat in optimizing skeletal mass by modulating PGE and IGF, 1996-1997 (Co-PI with B.A. Watkins).
 - 35) National Pork Producers Council - \$17,000, Engineering muscle cells with porcine genes, 1996-1997 (Co-PI with C.A. Bidwell).
 - 36) Indiana Pork Producers Association - \$5,000, Engineering muscle cells with porcine genes, 1996-1997 (Co-PI with C.A. Bidwell).
 - 37) Indiana Pork Producers Association - \$15,892, Effects of segregated early weaning-three site management on the pork quality of pigs with either high or average genetic potential for lean growth, 1996-1998 (Co-Investigator with A.P. Schinckel, J. C. Forrest; PI, B.T. Richert).
 - 38) Pfizer - \$22,562, Carcass value determination of pigs with different experimental treatments, 1996-1997 (Co-PI with A.P. Schinckel).
 - 39) Undergraduate Research Grant Program, Purdue - \$1,000, Injection of DNA for delivery of recombinant protein, 1996-1997 (PI).
 - 40) Global Initiative Grants Program, Purdue - \$2,500, Development of gene transfer technology for improving animal health and production, 1997 (PI).
 - 41) Purdue Research Foundation - \$23,332, Implantation of porcine fibroblasts and muscle cells for studying muscle development, 1997 (PI).
 - 42) National Pork Producers Council - \$18,000, Evaluation of genotype, therapeutic antibiotic and health management effects, and interactions on lean growth rate, 1997-1998 (Co-PI with A.P. Schinckel, B.T. Richert, L.K. Clark, and J.J. Turek).
 - 43) National Pork Producers Council - \$18,000, An innovative approach for studying muscle development in pigs, 1997-1998 (Co-PI with D.E. Gerrard and C.A. Bidwell).
 - 44) Indiana Pork Producers Association - \$5,000, Protein functionality and pork quality, 1997-1998 (Co-PI with D.E. Gerrard and S.S. Nielsen).
 - 45) Pfizer - \$49,730, Carcass value determination of pigs with different experimental treatments, 1997 (Co-PI with A.P. Schinckel).
 - 46) Newsham - \$10,000, Evaluation of sire genotype, therapeutic antibiotic and health management effects on lean growth and carcass composition, 1997 (Co-PI with A.P. Schinckel, B.T. Richert, L.K. Clark, and J.J. Turek).

- 47) United Duroc Swine Registry - \$5,000, Effects of SEW three site management on the pork quality of lean European terminal cross and US-derived Duroc by Yorkshire-Landrace pigs, 1998 (Co-Investigator with B.T. Richert (PI), A.P. Schinckel, and J.C. Forrest).
 - 48) National Swine Registry - \$5,000, Effects of SEW three site management on the pork quality of lean European terminal cross and US-derived Duroc by Yorkshire-Landrace pigs, 1998 (Co-Investigator with B.T. Richert (PI), A.P. Schinckel, and J.C. Forrest).
 - 49) National Pork Producers Council - \$29,358, Effects of genotype and preslaughter handling on pork quality, 1998-1999 (Co-PI with D.E. Gerrard).
 - 50) National Pork Producers Council - \$29,100, Relationship between muscle development and pork quality, 1998-1999 (Co-PI with D.E. Gerrard and C.A. Bidwell).
 - 51) National Pork Producers Council - \$29,729, Effects of pH, Temperature, and muscle fiber type on postmortem metabolism, 1999-2000 (Co-PI with D.E. Gerrard and J.C. Forrest).
 - 52) National Pork Producers Council - \$36,157, Modeling postmortem physical and chemical changes in muscle to predict water holding capacity and color in fresh pork, 1999-2000 (Co-Investigator with J.C. Forrest, D.E. Gerrard and M. Morgan).
 - 53) Purdue Research Foundation - \$25,292, Regulation of muscle cell growth, 1999-2001 (PI).
 - 54) Undergraduate Research Grant Program, Purdue - \$1,000, Regulation of muscle growth, 1999-2000 (Co-PI with D. Gerrard).
 - 55) Indiana Office of the Commissioner of Agriculture - \$29,855, Development of on-farm technology for predicting pork quality, 1999-2000 (Co-PI with D.E. Gerrard).
 - 56) National Pork Producers Council - \$35,000, PSE development and detection, 2000-2001 (Co-PI with D.E. Gerrard, M.T. Morgan, and J.C. Forrest).
 - 57) USDA, NRICGP - \$120,000, Porcine muscle satellite cell recruitment, 2000-2002 (Co-PI with D.E. Gerrard).
 - 58) USDA, IFAFS - \$2,500,000, A cooperative partnership for small- to mid-sized beef producers in the Eastern cornbelt: Phase II, 2000. (multi-university, multi-investigator project, PI is R.P. Lemenager).
 - 59) Purdue Research Foundation - \$26,140, Muscle satellite cell recruitment, 2001-2003 (PI).
 - 60) USDA, NRICGP - \$170,000, Transformation of muscle to meat, 2001-2003 (Co-PI with D.E. Gerrard).
 - 61) University Faculty Scholars, Purdue University - \$50,000 over 5 years, 2001-2005.
 - 62) Indiana 21st Century Research and Technology Fund, State of Indiana – joint project with Indiana University School of Medicine – amount to Purdue was \$1,083,786 - Development of a Rodent Resource and Research Center and Program of Comparative Medicine, 2002-2004; role was as a Purdue co-investigator to renovate laboratory facilities and recruit new faculty that would contribute to comparative medicine.
 - 63) USDA, NRICGP - \$349,483, Molecular signatures defining satellite cell heterogeneity in muscle, 2008-2012 (Co-PI with S. Kuang, PI, and D.E. Gerrard).
- b. Gifts Received:
- 1) Dekalb Swine Breeders, Inc. - \$10,000, Fat distribution in pork carcasses, 1995-1996.
 - 2) Dekalb Swine Breeders, Inc. - Donation of 112 pigs (\$5,600 value) for

- studying fat distribution in pork carcasses, 1995-1996.
- 3) Purina Mills - \$3,200, Muscle growth research, 1996.
- 4) Newsham - \$17,476, gift in kind (feed, ultrasound, 85 gilts), 1997.

7. Evidence of Interdisciplinary Research Activity:

- a. Cooperative research with Dr. D.E. Gerrard since 1991. Involved with muscle biology/meat science research.
- b. Cooperative research in 1991-1992 with Dr. D. Beermann at Cornell University (Animal Science Department) to study the regulation of IGF-I and actin gene expression by growth hormone in pigs fed different amounts of crude protein.
- c. Cooperative research in 1990-1991 with Dr. W.G. Helferich at Michigan State University (Food Science and Human Nutrition Department) to study regulation of actin expression in skeletal muscle of pigs.
- d. Cooperation in 1992-1994 with Dr. R.A. Merkel and Dr. M.E. Doumit at Michigan State University (Food Science and Human Nutrition Department) to study IGF-I gene expression in cultured porcine muscle satellite cells.
- e. Cooperative research in 1990-1992 with Dr. P.V. Malven in the Department of Animal Sciences. Involved with quantitating prolactin mRNA in mammary tissue of lactating rats.
- f. Cooperative research in 1990-1992 with Kent Thrasher (M.S. graduate student; M.D. Judge, major advisor) in the Department of Animal Sciences. Involved with examining insulin receptor binding in muscle cell cultures.
- f. Cooperative research in 1990-1992 with Dr. S.E. Mills and C.Y. Liu (Ph.D. graduate student; S.E. Mills, major advisor) in the Department of Animal Sciences. Involved with studying the regulation of acetyl CoA, glucose transporter protein, and insulin receptor gene expression in porcine tissues.
- h. Cooperative research in 1995-1999 with Dr. B.A. Watkins in the Department of Food Science. Involved with examining production of IGF-I and its role in bone growth. Also examining use of trans-fatty acids as markers of fat deposition rates in various fat depots of pigs.
- i. Cooperative research in 1992-1999 with Dr. C.A. Bidwell involving identification of regulatory sequences in the porcine alpha-skeletal actin gene and establishing conditions for myoblast-mediated gene transfer.
- j. Cooperative research in 1990-1994 with Dr. P.B. Brown and M.E. Griffin (Ph.D. graduate student; P.B. Brown, major advisor) in the Department of Forestry and Natural Resources. Involved with determining amino acid requirements of hybrid striped bass.
- k. Cooperative research in 1995-1997 with Dr. M.E. Spurlock at Purina Mills in St. Louis, MO. Involved with studying interactions among the endocrine and immune systems in pigs.
- l. Cooperative research in 1994-1997 with Dr. J. Turek (Department of Basic Medical Sciences), Drs. A.P. Schinckel and M.A. Diekman (Department of Animal Sciences), and Dr. L.K. Clark (Department of Veterinary Clinical Sciences) involving segregated early weaning of pigs and involving all-in/all-out management of growing-finishing pigs. Specifically responsible for evaluating effects of management on lean growth, the endocrine system and the immune system.
- m. Cooperative research in 1991-1998 with J.C. Forrest (Department of Animal Sciences) involving early postmortem detection of meat quality and quantity in pork carcasses and primal cuts.
- n. Cooperative research initiated in 1997 with Professor G. Goldspink (Department of Anatomy and Developmental Biology, Royal Free Hospital School of Medicine, University of London, UK) involving direct DNA injection in pigs.
- o. Cooperative research in 1997-1998 with Professor T.A. Partridge (Muscle Cell Biology Group, Medical Research Council, London, UK) involving myoblast-

mediated gene transfer.

8. Other Evidence of National and International Recognition:

- a. Purdue representative to North Central Regional Project NC-1131 (formerly NC-131), entitled "Molecular mechanisms regulating skeletal muscle growth and differentiation," 1990-2005; Administrative advisor, 2005-Present.
- b. USDA, CSREES, NCA-6 Committee (2002-Present).
- c. External referee for Natural Sciences and Engineering Research Council of Canada (Ottawa) Grants Program, 1992.
- d. Participant in the European Association for Animal Production Working Group on Boar Production, Roskilde, Denmark, 1992.
- e. Panel Member for USDA, NRI Competitive Grants Program, Animal Growth, Development, and Nutrient Utilization Program, 2001 and 2002.
- f. Ad-hoc reviewer for USDA, NRI Competitive Grants Program:
 - 1) Animal Genome and Genetic Mechanisms (formerly Animal Molecular Genetics and Gene Mapping Program), 1993, 1994, 1997, 1998, 1999, 2000, 2001.
 - 2) Animal Growth, Development, and Nutrient Utilization Program, 1993, 1994, 1997, 1998, 1999, and 2000 (panel member in 2001 and 2002, see above).
 - 3) Sustaining Animal Health and Well-Being Program, 1994.
 - 4) Value-Added Products Research, 2001.
- g. Ad-hoc reviewer for US-Israel Binational Agricultural Research and Development Fund, 1998.
- h. American Society of Animal Science, Section Chairperson for Growth and Development Sessions, ASAS Annual Meetings, 1993, 1994; Member of Growth and Development Committee, 1992-95 (Chairperson, 1994-1995); Member of Growth & Development Awards Committee, 1996-97 and 2000-01; Member of Fellow Award Committee, 2003-04 and 2004-05; Member of the Morrison Award Committee, 2006-07.
- i. Midwestern Section of American Society of Animal Science, Member of Undergraduate Research Paper Competition Committee, 1996; Member of Student Career & Placement Committee, 2001-02; Member of Nominations Committee, 2005-06, 2006-07, 2007-08; Member of National Pork Board Swine Innovation Award Committee, 2005-06, 2006-07; Secretary-Treasurer, 2000-2003 (role included serving as overall program chair for MW ASAS/ADSA meetings); President-Elect, President, Past President, 2003-2006.
- j. Participant in 2nd Dummerstorf Muscle Workshop, Rostock, Germany, 1995.
- k. Session Chairperson for session titled 'Endogenous and Exogenous Regulators and Mediators of Growth: Perceived Challenges' at Symposium on Animal Growth: Basic Aspects, Theory and Practice for the Future, Berne, Switzerland, 1998.
- l. Ad-hoc reviewer for the following scientific journals:
 - 1) Basic and Applied Myology Journal
 - 2) Domestic Animal Endocrinology
 - 3) Journal of Muscle Research and Motility
 - 4) Gene: An International Journal on Genes and Genomes
 - 5) Livestock Production Science
 - 6) Journal of Nutritional Biochemistry
 - 7) Canadian Journal of Animal Science
 - 8) American Journal of Physiology
 - 9) Methods in Cell Science
 - 10) Journal of Animal Science
 - 11) Nutrition Research
 - 12) Journal of Endocrinology
- m. Ad-hoc reviewer for NSF Grants Program, 1996, 1999, 2001.

- n. Ad-hoc reviewer for The Wellcome Trust, Research Proposal Program, London, UK, 1999.
- o. Member of Editorial Board, Domestic Animal Endocrinology, 1997-1999.
- p. Received bestowed title of Honorary Senior Research Fellow, Department of Anatomy & Developmental Biology, Royal Free Hospital School of Medicine, University of London, London, UK, 1997.

9. Professional Improvement:

- a. Research Workshops and Leaves:
 - 1) Forums and Seminars for University People (FASUP), Supervisory Skills Series: Discipline, Purdue Univ., 1991.
 - 2) How to Succeed in Getting Research Support from Industry, Purdue Univ., 1991.
 - 3) NIH Workshop, Writing a Successful Grant Application, Purdue Univ., 1991.
 - 4) Molecular Biology Techniques and Marketing Strategies for the Future, Boehringer Mannheim Biochemicals Workshop, Indianapolis, IN, 1992.
 - 5) Development of In Situ Hybridization Techniques, 3 week visit to INRA in Theix, France to learn techniques in Dr. J. Robelin's laboratory.
 - 6) Endocrine Society Workshop, Introduction to Molecular & Cellular Research Course, Orlando, FL, 1994.
 - 7) Animal Growth Biology Workshop, American Society of Animal Science Biennial Growth Symposium, 1994.
 - 8) Muscle Growth Workshop, Food Animal Biotechnology Center, Univ. of Minnesota, 1996.
 - 9) Research Proposal Writing Workshop, Purdue Univ., 1996.
 - 10) Alternative Muscle Club Conference, Royal Veterinary College, London, UK, 1997.
 - 11) Sabbatical Leave, Visiting Fellow, Muscle Cell Biology Group (T.A. Partridge's laboratory), Medical Research Council, Royal Postgraduate Medical School, Hammersmith Hospital, London, UK, March 1, 1996-July 31, 1997.
 - 12) Postnatal Myogenesis Conference, Boston, MA, 1998.
 - 13) NIH Grantwriters Program, 1999-2000.
 - 14) Molecular Biology of Muscle Development and Disease Conference, Asilomar, Pacific Grove, CA, 2000.
 - 15) Skeletal Muscle Satellite Cell Conference, Tucson, Arizona, 2003.
 - 16) NIH Grantwriters Workshop, Purdue University, 2005.

TEACHING

Dr. Grant has been an integral part of the Animal Sciences teaching effort in the areas of anatomy and performance (ANSC 201), growth, development and evaluation (ANSC 301), and contemporary issues (ANSC 481/483). Dr. Grant has also shared in the teaching of ANSC 393 (Animal Industry Travel Course), ANSC 551 (Muscle Chemistry, Ultrastructure and Physiology), and FS 610 (Advanced Food Chemistry: Food Proteins).

1. Courses taught:

- a. **ANSC 201 - Functional Anatomy and Animal Performance** - 3 credits - Elective. This class consisted of two 1-hour lectures and one 2-hour laboratory per week. There were 2 lab sections.

Spring 1992 (team taught - Russell/Grant) - 44 students. A.L. Grant gave lectures for 7 weeks and taught laboratories for 6 weeks out of the total 15

weeks.

Spring 1993 (team taught - Russell/Grant) - 42 students. A.L. Grant gave lectures for 7 weeks and taught laboratories for 6 weeks out of the total 15 weeks.

Spring 1994 (team taught - Russell/Grant) - 31 students. A.L. Grant gave lectures for 7 weeks and taught laboratories for 6 weeks out of the total 15 weeks.

Spring 1995 (team taught - Russell/Grant) - 63 students. A.L. Grant gave lectures for 7 weeks and taught laboratories for 6 weeks out of the total 15 weeks.

Spring 1996 (team taught - Grant/Fulmer/Gerrard/Albright) - 51 students. A.L. Grant gave lectures for 10 weeks and taught laboratories for 9 weeks.

Spring 1997 (team taught - Gerrard/Grant/Russell) - 70 students. A.L. Grant taught laboratories for 5 weeks.

Spring 1998 (team taught - Gerrard/Grant/Russell) - 50 students. A.L. Grant taught laboratories for 5 weeks.

Fall 1998 (team taught - Gerrard/Grant/Russell) - 28 students. A.L. Grant is teaching laboratories for 5 weeks.

Fall 1999 (Russell) - A.L. Grant assisted with laboratories for 2 weeks.

Fall 2000 (Russell) - A.L. Grant assisted with laboratories for 2 weeks.

- b. **ANSC 393 - Animal Industry Travel Course** - 1 credit - Elective. This is a classroom and travel course taken by undergraduates interested in studying animal production operations, agribusinesses, industry leaders and their philosophies in different geographical areas of the U.S.

Spring 1994 - (team taught - Grant/Lemenager/Hancock) - 40 students. The class studied agribusinesses in the Deep South region of the U.S

Spring 1995 (team taught - Grant/Lemenager/Hancock) - 43 students. The class studied animal agribusinesses in Missouri, Kansas, Colorado, Nebraska, and Iowa.

Spring 1998 (team taught - Grant/Russell/Sutton/Lemenager - 40 students. The class studied animal agribusinesses in Tennessee, Kentucky, North Carolina, South Carolina, Georgia, and Alabama.

- c. **ANSC 301 - Animal Growth, Development and Evaluation** - 4 credits - Elective. This class consists of two 1-hour lectures and two 2-hour laboratories per week. There were 2 lab sections. A compensatory growth experiment was added as part of the laboratory for this course in 1995 and was highly successful.

Fall 1994 - (team taught - Grant/Judge) - 63 students. A.L. Grant taught lecture and M.D. Judge taught laboratories.

Fall 1995 - (Grant) - 71 students.

Fall 1996 - (team taught - Grant/Gerrard) - 60 students.

Fall 1997 - (team taught - Grant/Gerrard/Forrest) - 60 students. The class became part of a distance-education project (described below). Course evaluations reflect reactions of students to experimental distance-education involving multiple instructors.

Fall 1998 - (team taught - Grant/Gerrard/Forrest) - 28 students. The class continued as part of a distance-education project.

Fall 1999 - (team taught - Grant/Gerrard) - 34 students. The class continued to be led as a distance-education course.

Fall 2000 - (team taught - Grant/Gerrard) - 43 students. The class continues to be led as a distance-education course.

Fall 2001, 2002, 2003, 2004, 2005, 2006, and 2007 – (team taught – Grant/Gerrard) – >40 students per semester; Grant provided lectures for 3 to 4 weeks of the semester.

Fall 2008 – (team taught – Grant/Gerrard/Claeys) – 31 students. Grant taught all lectures and one-third of all laboratory sessions. Gerrard and Claeys each taught one-third of laboratory sessions.

- d. **ANSC 481** – Contemporary Issues in Animal Sciences – 1 credit – Required. This class consists of three sections of a 1-hour class per week. The course was a Fall semester course through Fall 2007. In Fall 2008, it was split into two required courses: **ANSC 481** for 0.5 credit in fall semesters and **ANSC 483** for 0.5 credit in spring semesters.

2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008 – (team taught – Grant/Delks) – approximately 90 to 110 students per semester.

- e. **FS 610** - Advanced Food Chemistry:Food Proteins (Muscle Proteins Sections) - 3 credits - Elective. Dr. S.S. Nielsen (FS) was in charge of this class, but lecturing responsibility was shared by seven faculty members. A.L. Grant was responsible for giving four 1-hour lectures and one exam.

Spring 1991, 1993, 1995, 1997, 1999, 2001, 2003, 2005 – approximately 9-13 students per semester.

- f. **ANSC 551** - Muscle Chemistry, Ultrastructure and Physiology (team taught - Gerrard/Swartz/Grant) - 3 credits - Elective. In 1993, the course was team taught by Judge, Forrest, Grant, and Swartz. Grant gave 13 out of 42 lectures. Beginning in 1997, Dr. Gerrard was the lead instructor of this course and Grant provided lectures for two weeks. Dr. Swartz began teaching the course in Spring 2006. This course is taken by ANSC undergraduates and graduate students interested in muscle as a physiological tissue and as a food product.

Fall 1993 – 10 students.

Spring 1997 - 7 students.

Spring 1999 – 11 students.

Spring 2002 – 12 students.

2. Course and Curriculum Development:

- a. Drs. Grant and Russell began teaching ANSC 201 in 1992. Dr. Grant further developed the first 7 weeks of the course by increasing the amount of lecture material pertaining to functional anatomy of muscles, bones, ligaments, and tendons. Laboratories were coordinated so that the lecture material was applied during dissection laboratories. This course provided students with an excellent foundation for other courses such as ANSC 301 and 351.

- b. Dr. Grant implemented major revisions in the laboratory sections of ANSC 301 in the fall of 1995. A growth experiment using mice was incorporated and required students to perform research techniques, animal care, statistical analysis, and scientific writing. Because of this success, these changes were included in the 1996 laboratories. In 1997, Dr. Grant collaborated with Dr. Gerrard to include a pig compensatory growth experiment in the laboratory sections patterned after the previous mouse experiments. The format of the lecture portion of the course was modified so that it became the distance-education course of the project funded by the USDA Challenge Grant (see Grants for Teaching Program section below).

3. Experimentation in Teaching Methods and Techniques

Dr. Grant provided the leadership, with assistance from Drs. Gerrard and Forrest, on an international distance-education course that involved collaboration between Purdue University, the University of Wisconsin, University of Illinois, Iowa State University, and University of Missouri. This course addressed the problem of shrinking staff size at sister universities. This innovative approach allowed smaller universities as well as large ones to take advantage of the expertise at Purdue University and the other four major universities to offer a course in Meat Animal Growth, Composition and Evaluation. The course was offered at 13 sites (including one Canadian site) with a combined enrollment of 189 students. The course consisted of twenty 2-hour sessions. Nine lectures were live satellite sessions and eleven lectures were live audio-teleconference sessions. Nine of the 2-hour sessions were presented by the three Purdue collaborators. Dr. Grant made the following two presentations at national meetings describing the success of this course:

Grant, A.L., D.E. Gerrard, J.C. Forrest, T.R. Carr, D.F. Parrett, B.R. Skaar, F.C. Parrish, J.E. Williams, M.C. Lucy, A.J. Maurer, R.L. Russell, D.L. Thomas, C.C. Gibson, K.A. Reilly, and R.G. Kauffman. 1997. Collaborative teaching & learning meat-animal growth, development, & evaluation via distance education (Presented at USDA, Higher Education Programs Conference, College Park, MD, 1997).

Grant, A.L., D.E. Gerrard, J.C. Forrest, T.R. Carr, D.F. Parrett, B.R. Skaar, F.C. Parrish, J.E. Williams, M.C. Lucy, A.J. Maurer, R.L. Russell, D.L. Thomas, C.C. Gibson, K.A. Reilly, and R.G. Kauffman. 1998. Collaborative teaching & learning meat-animal growth, development, & evaluation via distance education. *J. Anim. Sci.* 76(Suppl 1):366(Abstr.); presented at 1998 Natl. Amer. Soc. Anim. Sci. Mtg.

The following teaching manuscript has been published:

Grant, A.L., D.E. Gerrard, C.C. Gibson, K.A. Reilly, and R.G. Kauffman. 2001. Collaborative teaching & learning meat-animal growth, development, & evaluation via distance education. *NACTA J.* 45:45-48

4. Other Activities Related to Teaching:

- a. Grants and Funding for Teaching Program:
 - 1) Purdue School of Agriculture - \$9,600, Undergraduate laboratory equipment funding, 1994 (Co-PI with J.C. Forrest and A.P. Schinckel).
 - 2) USDA, Higher Education Challenge Grants Program - \$108,000, Collaborative teaching and learning meat animal growth and evaluation via distance education, 1996-1998 (Purdue PI; Co-Investigator with Univ. of Wisconsin, Drs. R. Kauffman and C. Gibson, PIs). Purdue School of Agriculture and Dept of ANSC each have contributed an additional \$2,500 to this project.
 - 3) Purdue School of Agriculture - \$3,500, Undergraduate Research Experience Program, 1992, 1993-94, 1996-97, and 1999-2000.
 - 4) Purdue University - \$500, Teaching for Tomorrow Award, 1997.
 - 5) Purdue University - \$500, Department of Animal Sciences Outstanding Teacher Award, 1997.
 - 6) Purdue School of Agriculture - \$6,000, Undergraduate teaching equipment funding, 1998 (Co-PI with J.C. Forrest and D.E. Gerrard).
 - 7) Purdue University - \$51,000, Interactive linking of video and electronic sensors to the classroom, 1998 (Co-PI with J. Forrest, D. Gerrard, T. Stewart,

- and M. Morgan).
- 8) Purdue University - \$500, Department of Animal Sciences Outstanding Teacher Award, 1999.
 - 9) Committee on Institutional Cooperation, Learning Technology Seed Grant Program - \$2,943 (plus equal match from Purdue), Improving graduate education in animal sciences via collaborative teaching among universities, 1999-2000 (Co-PI with PR. Collodi, J.D. Armstrong, and Michigan State Univ.).
 - 10) Undergraduate Faculty Teaching Partnerships Project (sub-project from a USDA Challenge Grant at University of Illinois - \$5,000 to Purdue University, Increasing Freshmen Integration & Retention through Student-Led Animal Sciences Courses, 2006-2008 (Co-PI with M. Russell, R. Allrich, and B. Delks).
- b. Professional Improvement Workshops (teaching)
- 1) Using Multimedia Presentation Software in the Classroom, Teachers on Teaching Workshop, Center for Instructional Services, Purdue University, 1996.
 - 2) The Next Generation: Attitude and Approaches Toward Dramatic Learning, Teachers on Teaching Workshop, Center for Instructional Services, Purdue University, 1997.
 - 3) Developing Employability Skills within a Discipline Curriculum, Teachers on Teaching Workshop, Center for Instructional Services, Purdue University, 1997.
 - 4) Web Applications and Development for the Real-World Classroom, Teachers on Teaching Workshop, Center for Instructional Services, Purdue University, 1997.
 - 5) Teaching Workshop How to Match Lab Experiments, Center for Instructional Services, Purdue University, 1998.
 - 6) A Taste of Multimedia, 4-day workshop, Multimedia Instructional Media Center, Purdue University, 1998.
 - 7) Great Ideas for Recruiting Graduate Students, 1 day program presented by Graduate and Professional School Enrollment Management Corporation, Purdue University, 2000.
 - 8) Best Practices for Recruiting Graduate Students, half-day program, Purdue University, 2000.
- c. Number of undergraduate students counseled:

Dr. Grant usually counseled/advised 12 to 15 undergraduate students in any given semester until 2001, and then reduced to zero by 2004 due to administrative duties.

EXTENSION EDUCATION AND SERVICE

1. Leadership and Service to Industry Stakeholders:

- a. U.S. Pork Center of Excellence, Board member (representing Animal Science Departments, 2005-Present), Treasurer (2005-2007), Vice-Chair (2007-2008); Chair (2008-Present).
- b. Midwest Dairy Consortium, Governing Board Member (2007-Present).
- c. Indiana State Department of Agriculture, Certified Livestock Producer Program, Advisory Group Member (2007-2008).

- d. Indiana Livestock Alliance, original co-chair and then Purdue ex-officio member following incorporation (2003-2005); then changed to Indiana Livestock Roundtable (2006).
- e. Indiana State Animal Disease and Diagnostic Laboratory, Advisory Board Member (2002-Present).

2. Extension publications:

- a. Grant, A.L. and J.W. Thomas. 1986. Protein nutrition for dairy cows. Dairy Nutr. and Feeding Extension Shortcourse, Mich. State Univ.
- b. Grant, A.L., J.W. Thomas, and H.F. Bucholtz. 1986. How to feed for top milk production. Dairy Nutr. and Feeding Extension Shortcourse, Mich. State Univ.
- c. Thomas, J.W., and A.L. Grant. 1986. Rations for milking cows. Dairy Nutr. and Feeding Shortcourse, Mich. State Univ.
- d. Gerrard, D.E., J.C. Forrest, and A.L. Grant. 1998. Muscle fiber typing and meat quality. Pork Quality Summit Proceedings, National Pork Producers Council, Des Moines, IA.
- e. Gerrard, D.E., J.C. Forrest, and A.L. Grant. 2000. Potential mechanisms controlling PSE development. Pork Quality Summit Proceedings, National Pork Producers Council, Des Moines, IA.

3. Workshops, Presentations, and Other Educational Activities:

- a. Indiana State Fair, Purdue School of Agriculture Exhibit, "Animal Sciences Body Composition Evaluation Exhibit," 1990.
- b. Presentation to Congressional Staff, "High Technology Swine Production," Purdue University, 1991.
- c. Presentation to Indiana Pork Producers Association, Research - Education Committee, "Improving Efficiency of Lean Meat Production Through Biotechnology," Purdue University, 1991.
- d. Indiana Meat Packers Association Meats Contest Judge, Indianapolis, IN, 1991, 1993, 1994, 1995, 1996, 1998, 2000, 2001.
- e. Presentation to Assistant Secretary for Science and Education of USDA (Dr. Charles E. Hess), "Putting Lean Meat on the Table," Purdue University, 1991.
- f. Taught workshop to Indiana High School Agriculture Teachers, "Animal Growth Workshop," Purdue University, 1991.
- g. Presentation to Ag Ambassadors, "Overview of Purdue Animal Science Growth Biology Research Program", 1991.
- h. Beef Station Coordinator for Midwest American Society of Animal Science Quadrathlon Lab Practical, Iowa State University, 1992.
- i. Developed and Taught Project Future Class, "Express Yourself", Purdue University, 1992, 1993, 1994, 1998, and 1999.
- j. Presentation to Division of Meat and Poultry Veterinarians, District XII Meeting, "Overview of Purdue Meat Science/Animal Growth Research", Purdue University, 1992.
- k. Taught 4-H Round-Up Day Classes, "Growth Biology of Meat Animals", Purdue University, 1992, 1993, 1994, 1995.
- l. Purdue Animal Sciences Recruitment Meeting, Plymouth, IN, 1992.
- m. Purdue Swine Day Presentation, "Health and Lean Growth", Purdue University, 1993.
- n. Presentation to Congressional Staff, "Animal Sciences Research", Purdue University, 1994.
- o. Purdue School of Agriculture visit to Monsanto to discuss human resource issues,

- p. St. Louis, MO, 1994.
- p. Presentation to Argentina Swine/Pork Industry Delegation, "Biotechnology in the Swine Industry", Purdue University, 1995.
- q. Presentation to Murdock Elementary School, "Digestion and Anatomy", Lafayette, IN, 1995.
- r. Presentation to University of Guelph Travel Course, "Purdue Animal Science Travel Course Objectives and Experiences", Purdue University, 1996.
- s. Participated in Purdue Swine Program Retreat to discuss long-range planning for swine research, extension, and teaching at Purdue, 1996.
- t. Purdue Swine Day Workshop, "Meat Quality", Purdue University, 1996.
- u. Participated in CARET Roadshow for Purdue School of Agriculture, 1996.
- v. Presentation to participants of the National Outstanding Young Farmer group, Purdue University, 2000.
- w. Presentation to participants of Advanced Swine Management Training Workshop, "Muscle Growth and Meat Quality", 2000.

4. Administrative Service (does not include department head responsibilities after 2001):

- a. University:
 - 1) Sigma Xi, Purdue Chapter Vice President for Agriculture, 1996-2000.
 - 2) Sigma Xi, Purdue Chapter Graduate Student Poster Competition, Life Sciences Judge, 1996.
 - 3) Scholastic Delinquencies & Readmissions Committee, 1997-2000.
 - 4) Evaluation Committee for Purdue Reinvestment Proposal Program, 1999.
 - 5) Evaluator for Purdue Gerontology Program Pilot Grants in Biomedical Sciences and Engineering Program, 2000.
- b. College of Agriculture:
 - 1) PRF Proposal Review Committee, 1993.
 - 2) Selection Committee for Outstanding Sophomore in School of Agriculture, 1996.
 - 3) ARP Assistantship Proposal Review Committee, 1998 and Co-chair in 1999.
 - 4) Agenda and Policy Committee, 1997-2000.
 - 5) Ag Team Award Selection Committee, 2000-2002.
 - 6) ARP Faculty Orientation mentor, 1998, 1999.
 - 7) ARP Hatch Project Reviewer, 1991, 1999, 2000.
 - 8) Transgenic Food-Animal Policy Development Committee, 2004.
 - 9) Mission-Oriented Grants Reviewer, 2006, 2007, 2008.
- c. Department of Animal Sciences:
 - 1) Academic Quadrathlon, 1990-1998; Lab Practical Chairman, 1992; Meat Science Lab Practical Station, 1993, 1994, 1995, and 1997; Vice-Chair, 1995; Chairman, 1996; Public Presentation Chairman, 1998.
 - 2) Activities Committee, 1990-1991, 1993-1994.
 - 3) Departmental Seminar Committee, 1990-1991, 1993-1994; Chairman, 1991-1992.
 - 4) Meat Science and Muscle Biology Curriculum Committee, 1991.
 - 5) Physiology Curriculum Committee, 1991, 1992, 1993, 1996.

- 6) Search Committee for Vertebrate Developmental Biologist Position, 1991-1992.
- 7) Graduate Committee, 1992-1993, 1993-1994, 1997-1998, 1998-1999; Graduate Committee Chair, 1999 to 2001.
- 8) Undergraduate Curriculum (formerly 'Teaching') Committee, 1992-1993, 1993-1994, 1994-1995, 1995-1996, 1996-1997, 1997-1998.
- 9) A/P Promotions Committee, 1992-1993, 1993-1994.
- 10) PRF and AES Proposal Review Committee, 1992.
- 11) Space and Facilities Management Committee, 1991-1992, 1997-1998.
- 12) Purdue Pork Day, 1991, 1992, 1993, 1994, 1995.
- 13) IN State Fair Pork Day, 1993, 1994, 1995, 2000.
- 14) LOUJA Travel Awards Competition Committee, 1992.
- 15) Block and Bridle Club, Jr. Advisor, 1993-1994; Sr. Advisor, 1994-1995.
- 16) Search Committee for Meat Science Position, 1993-1994.
- 17) CSRS Review Steering Committee and Strategy Chairperson, 1994.
- 18) Retreat Planning, 1993.
- 19) Department Administrative Review Committee, 1995.
- 20) Search Committee for Department Head, 1996-1997.
- 21) Strategic Planning Steering Committee, 1997, 1998.
- 22) Undergraduate Scholarship Selection Committee, 1998.
- 23) Search Committee for Developmental Biologist/Reproductive Physiologist Position, 1998.
- 24) Search Committee for Molecular Quantitative Geneticist, 1999.
- 25) Search Committee for Internship Career Placement Coordinator, 1999.
- 26) Animal Sciences Long-Term Space Planning Meeting, 2000.
- 27) CSREES Review Planning Committee, 2001.
- 28) Search Committee for Director of the Animal Disease Diagnostic Laboratory, 2008.
- 29) Search Committee for Head of the Department of Agricultural Communications, 2009.

d. Other:

- 1) Alpha Gamma Rho Fraternity Faculty Advisor, 1996-1999.
- 2) Parish Council, Church of the Blessed Sacrament, 1998-1999.
- 3) Effective Father Workshop Chairman, Church of the Blessed Sacrament, 1999.

5. Other Professional Development Activities not listed above in Research, Teaching, Extension sections

- a. News Media Training Workshop, Purdue University, 2001.
- b. Media Training Workshop, Purdue University, 2002.
- c. University Development Training Workshop, 2002.
- d. Multicultural Diversity Workshop, Purdue University, 2003.
- e. National Conference: Multi-State Cooperation in Land Grant University Agricultural Programs, Chicago, IL, 2003.
- f. Regionalization Workshop: New Strategies in Research, Teaching, and Extension, Chicago, IL, 2003.

- g. Best Practices Workshop, Fundraising – The How-to-Guide for College/School/Unit Success, Purdue University, 2005.
- h. Spokesperson Media Training, 2005.
- i. Gender Forum, Purdue University, 2005.
- j. Logic Model Basics, Purdue University, 2005.
- k. Administrators Workshop, University of Nebraska, 2006.
- l. PCARET Leadership Conference, Washington, DC, 2007.
- m. The Chair’s Role in Fostering Departmental Collegiality, Purdue University, 2007.
- n. Rethinking Faculty Work: Creating a Culture of Respect, Purdue University, 2007.
- o. “Mindmapping” Workshop, Leading in a Time of Change: A Futurist’s Approach, Purdue University, 2008.
- p. Development Training for Deans and Department Heads, Purdue University, 2008.
- q. Collegiality: The Department Head’s Role in Fostering a Civil Department, Purdue University, 2009.
- r. “Clarity, Focus, Action” Coaching Workshop; Coaching Tools and Tactics to Move Forward, Indianapolis, IN, 2009.