

Gordon K. Murdoch

CURRICULUM VITAE

DATE: August, 2018

RANK OR TITLE: Associate Professor, Physiology

DEPARTMENT: Animal & Veterinary Science, Moscow, Idaho.

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CITIZENSHIP: Canadian, US Permanent Resident (EB1)

DATE OF TENURE at University of Idaho: Tenure and Promotion July 2012

EDUCATION BEYOND HIGH SCHOOL:

2004	University of Alberta, Edmonton, AB, Canada	Ph.D., Animal Physiology <i>Thesis: Relative mRNA abundance in bovine tissues related to energy metabolism.</i>
1997	University of Alberta, Edmonton, AB, Canada	M.Sc., Physiology (Medicine) <i>Thesis: Modulation of cyclic nucleotides by tyrphostins.</i>
1994	University of Alberta, Edmonton, AB, Canada	B.Sc., Honours Physiology <i>Honours Thesis: Plasma binding proteins origins and roles.</i>
1990	University of Alberta, Edmonton, AB, Canada	B.Sc., Spec. Microbiology
1985	University of Victoria, Victoria, BC, Canada	no degree, Chemistry major

ACADEMIC EXPERIENCE:

Teaching, Extension and Research Appointments: (Positions since Bachelor's degree)

2012-present	Associate Professor, Animal Physiology, Animal & Veterinary Science, University of Idaho
2006–2012	Assistant Professor, Animal Physiology, Animal & Veterinary Science, University of Idaho
2004–2006 (20%)	Research Associate, Ruminant Physiology, (Dr. R. J. Christopherson) Department of Agricultural, Food and Nutritional Sciences, University of Alberta.
2004–2006 (80%)	Post-doctoral fellow, Swine Reproductive Physiology & Molecular Biology, (Dr. W.T. Dixon & Dr. G. Foxcroft), Department of Agricultural, Food and Nutritional Sciences, University of Alberta.
1999–2004	Research Associate/ PhD student, Ruminant Physiology, (Dr. R. J. Christopherson) Department of Agricultural, Food and Nutritional Sciences, University of Alberta.
2001	Sessional Lecturer, Animal Science 310, Department of Agricultural, Food and Nutritional Science, University of Alberta.

SCHOLARSHIP ACCOMPLISHMENTS:

Refereed Publications: (Calculated H-index excluding self-citations = 929 citations/54 manuscripts=17.2)

Publications average per year during U Idaho tenure (since 2007) = 42 manuscripts/11yrs= 3.8/yr. (Since Promotion and tenure in 2012) 21 (1 pending) manuscripts/6 yrs = 3.5/yr.

1. Rabijit Dutta, Tao Xing, **Gordon K. Murdoch** Comparison of flow and gas washout characteristics between PCV and HFPV in healthy and formalin fixed ex vivo porcine lungs. *Physiological Measurements* (Accepted provisionally Aug 13, 2018)
2. N. Hezarjaribi, R. Dutta, T. Xing, **G.K. Murdoch** and Hassan Ghasemzadeh Monitoring Lung Mechanics during Mechanical Ventilation using Machine Learning Approach. (2018) *Refereed Proceedings of Engineering in Medicine and Biology* July, 2018
3. R. Dutta, T. Xing, C. Swanson, J. Heltborg, **G. K. Murdoch** Comparison of flow and gas washout characteristics between pressure control and high frequency percussive ventilation using a test lung. *Physiological Measurement* Physiol Meas. 2018 Mar 15; 39 (3):035001. doi: 10.1088/1361-6579/aaaaa2 ORCID: <http://orcid.org/0000-0003-1889-0825>.
4. M.J. Colle, J.A. Nasados, J.M. Rogers, D.M. Kerby, M.M. Colle, J.B. Van Buren, R.P. Richard, **G.K. Murdoch**, C.J. Williams, M.E. Doumit, Strategies to improve beef tenderness by activating calpain-2 earlier postmortem. (2017) *Meat Science* doi: 10.1016/j.meatsci.2017.08.008
5. K. J. Thornton, K.C. Chapalamadugu, E. M. Eldredge and **G.K. Murdoch** Analysis of Longissimus thoracis protein expression associated with variation in carcass quality grade and marbling of beef cattle raised in the Pacific northwestern United States. (2017) *Journal of Agricultural and Food Chemistry* January 24 DOI 10.1021/acs.jafc.6b02795
6. B. M. Murdoch, **G. K. Murdoch**, S. Greenwood, S. McKay Nutritional Influence on Epigenetic Marks and Effect on Livestock Production. (2016) *Frontiers in Genetics: nutrigenomics*. September 27, doi: 10.3389/fgene.2016.00182

7. A. Villasante, M. Powell, **G.K. Murdoch**, K. Overturf, J. Wacyk, R. Hardy effect of anthocyanidins on myogenic differentiation in induced and non-induced myoblasts from rainbow trout (*Oncorhynchus mykiss*). (2016) *Comp Biochem Physiol B Biochem Mol Biol*. Mar 10; 196-197:102-108. doi: 10.1016/j.cbpb.2016.03.004. [
8. A. Villasante, M. Powell, K. Moutou, **G.K. Murdoch**, K. Overturf, J. Wacyk, R. Hardy Effects of anthocyanidins on myogenic differentiation and antioxidant defense in primary myogenic cells isolated from rainbow trout (*Oncorhynchus mykiss*) (2016) *Aquaculture* 454 81-89
9. B.M. Murdoch and **G.K. Murdoch** Genetics of Prion Disease in Cattle (2015) *Bioinformatics and Biology Insights* 9(S1) 1-9
10. K.C. Chapalamadugu, B.M. Murdoch, B.D. Robison, R.A. Hill, **G.K. Murdoch** *Oncorhynchus mykiss* pax7 sequence variations with comparative analyses against other teleost species. (2015) *Springer-plus* 4: 263 DOI 10.1186/s40064-015-1030-7
11. K.J. Thornton, R.P. Richard, M.J. Colle, M.E. Doumit, M.J. de Veth, C.W. Hunt, **G.K. Murdoch** Effects of dietary potato by-product and rumen-protected histidine on animal performance and color stability of beef. (2015) *Meat Science* 107: 64–74
12. K.C. Chapalamadugu, C.A. VandeVoort, M. Settles, B.D. Robison and **G.K. Murdoch** Maternal Bisphenol A exposure impacts the fetal heart transcriptome. (2014) *PLoS One* 9(2): e89096. doi:10.1371/journal.pone.0089096. A
13. C.M. Welch, K.J. Thornton, **G.K. Murdoch**, K.C. Chapalamadugu, C.S. Schneider, J.K. Ahola, J.B. Hall, W.J. Price, and R.A. Hill Identification of IGF-1 serum concentration, potential candidate genes, and fiber type composition associated with variation in residual feed intake of progeny from Red Angus sires divergent for maintenance energy EPD. (2013) *Journal of Animal Science* 2013.91:5626–5636 doi:10.2527/jas2013-6609
14. M.J. Benner, M.L. Settles, **G.K. Murdoch**, R.W. Hardy, B.D. Robison Sex specific transcriptional responses of the zebrafish (*Danio rerio*) brain selenoproteome to acute sodium selenite supplementation. (2013) *Physiological Genomics* doi: 10.1152
15. S. Acharya, A. Peters, A. Norton, **G.K. Murdoch**, R.A Hill Change in Nox4 expression is accompanied by changes in myogenic marker expression in differentiating C2C12 myoblasts. (2013) *Pflügers Archive - European Journal of Physiology* 465:1181–1196.
16. C. Welch, J. Ahola, J. Hall, **G.K. Murdoch**, D Crews, M. Doumit, L. Davis, W. Price R.A. Hill Relationships among performance, residual feed intake, and product quality of progeny from Red Angus sires divergent for maintenance energy EPD requirements. (2012) *J. Anim. Sci.* 90:5107-5184.
17. M. Oswald, R. Drew, **G.K. Murdoch**, B.D. Robison Is behavioral variation along the bold-shy continuum associated with variation in the stress axis in zebrafish? (2012) *Physiol. Biochem. Zool.* 85(6): 718-728
18. K. J. Thornton, C.M. Welch, L.C. Davis, M.E. Doumit, R.A. Hill, **G.K. Murdoch** Bovine sire selection based upon maintenance energy impacts muscle fiber type and meat color of F1 progeny. (2012) *J. Anim. Sci.* 90: 1617-1627..
19. E. B. Rosenblum, T. J. Poorten, M. Settles and **G. K. Murdoch** Only skin deep: shared genetic response to the deadly chytrid fungus in susceptible frog species. (2012) *Molecular Ecology* “From the Cover” article 21(13): 3110-3120.
20. P. Cheguru, K.C. Chapalamadugu, M.E. Doumit, **G.K. Murdoch**, R.A. Hill Adipocyte differentiation-specific gene transcriptional response to C18 unsaturated fatty acids plus insulin. (2012) *Pflugers Archive-European J. Physiology* Volume 463, Issue 3, Page 429-447.
21. K.J.B. Martins, M. St-Louis, **G.K. Murdoch**, I. MacLean, W.T. Dixon, P. McDonald, C.T. Putman, R.N. Michel Nitric Oxide Synthase Inhibition Prevents Activity-Induced Calcineurin-NFATc1 Signalling and Fast-to-Slow Skeletal Muscle Fibre Type Conversions. (2012) *J. Physiol.* 590, 1427-1442.
22. B.M. Murdoch, **G.K. Murdoch**, M. Settles, S.D. McKay; J.L. Williams; S.S. Moore Genome-wide Scan Identifies Loci Associated with Classical BSE Occurrence. (2011) *PLoS one*; 6(11):e26819..
23. D.C. Julien, S. Behnke, G. Wang, **G.K. Murdoch**, R.A. Hill Utilization of monoclonal antibody-targeted nanomaterials in the treatment of cancer. (2011) *mABs* 3:5, 1-12..
24. K.J.B. Martins, I. MacLean, **G.K. Murdoch**, W.T. Dixon, C.T. Putman Nitric oxide synthase inhibition delays low-frequency stimulation-induced satellite cell activation in rat fast-twitch muscle. (2011) *Applied Physiology, Nutrition, and Metabolism* 36: (6) 996-1000, 10.1139/h11-091
25. J.B. Ewaschuk, **G.K. Murdoch**, I.R. Johnson, K.L. Madsen, C.J. Field Glutamine supplementation improves intestinal barrier function in a weaned piglet model of E. coli infection. (2011) *British Journal of Nutrition* Sep;106 (6):870-7
26. D.C. Julien, A. Giri, M. Papasani, **G.K. Murdoch**, P. Hrdlicka, R.A. Hill Anti-K-ras siRNA to treat Pancreatic Cancer. (2010) *NSTI-Nanotech* 3: 401-404.
27. J.R. Krentz, M. Gallo, K.B. Martins, **G. Murdoch**, W.T. Dixon, D. Syrotuik, C.T. Putman The effects of creatine and chronic low frequency stimulation on muscle fiber cross-sectional area. (2010) *Medicine and Science in Sports*

- and Exercise- MED SCI SPORT EXERCISE 01/2010; 42.
28. E.B. Rosenblum, T.J. Poorten, M. Settles, **G.K. Murdoch**, J. Robert, N. Maddox, M.B. Eisen Genome-wide Transcriptional Response of *Silurana (Xenopus) tropicalis* to infection with the Deadly Chytrid Fungus. (2009) *PLoS ONE* 4(8): e6494
 29. K.C. Chapalamadugu, B.D. Robison, R.E. Drew, M.S. Powell, R.A. Hill, J.J. Amberg, K.J. Rodnick, R.W. Hardy, M.L. Hill, **G.K. Murdoch** Dietary carbohydrate level affects transcription factor expression that regulates skeletal muscle myogenesis in rainbow trout. (2009) *Comparative Biochemistry and Physiology, Part B* 153 66–72.
 30. J.D. Allen, J.K. Ahola, M. Chahine, J.I. Szasz, C.W. Hunt, C.S. Schneider, **G.K. Murdoch** and R.A. Hill Effect of pre-harvest feeding and ractopamine hydrochloride supplementation on growth performance, carcass characteristics, and end product quality in market dairy cows. (2009) *J. Anim. Sci.* 87:2400-2408. .
 31. K.J. Martins, **G.K. Murdoch**, Y. Shu, R.L. Harris, M. Gallo, W.T. Dixon, G.R. Foxcroft, T. Gordon, and C.T. Putman Satellite cell ablation attenuates short-term Fast-to-slow fibre type transformations in rat fast-twitch skeletal muscle. (2009) *Pflugers Archive-European J. Physiology.* 458: 325-335.
 32. S. Novak, H.S. Moore, F. Paradis, **G.K. Murdoch**, M.K. Dyck, W.T. Dixon, G.R. Foxcroft Temporal candidate gene expression patterns in the sow placenta during early gestation and the effect of maternal L-arginine supplementation. *Soc. Reprod. Fertil. Suppl.* (2009); 66:201-2.
 33. F. Paradis, S. Novak, **G.K. Murdoch**, M.K. Dyck, W.T. Dixon and G.R. Foxcroft Temporal regulation of BMP2, BMP6, BMP15, GDF9, BMPRI A, BMPRI B, BMPRII and TGFBR1 mRNA expression in the oocyte, granulosa and theca cells of developing preovulatory follicles in the pig. (2009) *Reproduction* 138:1–18.
 34. J.L. Ellis, E. Kebreab, N.E. Odongo, K. Beauchemin, S. McGinn, J.D. Nkrumah, S.S. Moore, R.J. Christopherson, **G.K. Murdoch**, B.W. McBride, E.K. Okine and J. France Modeling methane production from beef cattle using linear and non-linear approaches. (2009) *J. Anim. Sci.* 87:1334-1345. .
 35. W. Sauer, M. Cervantes, J. Yanez, B. Araiza, **G.K. Murdoch**, A. Morales, and R.T. Zijlstra Effect of dietary inclusion of benzoic acid on mineral balance in growing pigs. (2009) *Livestock Science* 122: 162–168.
 36. R.E. Drew, K.J. Rodnick, M. Settles, J. Wacyk, E. Churchill, M.S. Powell, R.W. Hardy, **G.K. Murdoch**, R.A. Hill and B.D. Robison Effect of starvation on the transcriptomes of the brain and liver in adult female zebrafish. (2008) *Physiological Genomics* 35: 283-295..
 37. B.M. Sorensen, E.C. Kazala, **G.K. Murdoch**, A.F. Keating, C. Cruz-Hernandez, J. Wegner, J.J. Kennelly, E.O. Okine, and R.J. Weselake Effect of CLA and other C18 unsaturated fatty acids on DGAT in Bovine Milk Fat Biosynthetic Systems. (2008) *Lipids*, 43:903-912.
 38. Y. Shi, G Xu, T. Warrington, **G.K. Murdoch**, E. C. Kazala, C. Snyder, R. Weselake Microspore-derived cell suspension cultures of oilseed rape as a useful system for examining the effect of abiotic stress on gene expression. (2008) *Plant Cell, Tissue & Organ culture.* 92,131-139.
 39. W-Y Tse, S. Town, **G.K. Murdoch**, S. Novak, M. Dyck, C.T. Putman, G. Foxcroft, W. Dixon. Uterine crowding in sow affects litter sex ratio, placental development and embryonic myogenin expression in early gestation. (2008) *Reproduction, Fertility and Development.* 20, 497-504.
 40. B.D. Robison, R.E. Drew, **G.K. Murdoch**, M. Powell, K. J. Rodnick, M. Settles, D. Stone, E. Churchill, R.A. Hill, M. R. Papanani, S. S. Lewis, and R.W. Hardy Sexual dimorphism in hepatic gene expression and the response to dietary carbohydrate manipulation in the zebrafish (*Danio rerio*). (2008) *Comp Bioch Physiol Part D3* 141-154
 41. **G.K. Murdoch**, W.T. Dixon, J. Moibi, B. Li, M. Vinsky, R.J Christopherson Cardiac muscle UCP-3 expression in relation to nutrient intake and beef cattle metabolism. (2007) *Proceedings of the International Symposium on Energy and Protein Metabolism and Nutrition.* Vol 111.
 42. M.D. Vinsky, **G.K. Murdoch**, W.T. Dixon, M.K. Dyck, G. Foxcroft Altered Epigenetic variance in surviving litters from nutritionally restricted lactating primiparous sows. (2007) *Reproduction, Fertility and Development.* Vol. 19 No. 3 Pages 430 – 435.
 43. **G.K. Murdoch**, E.K. Okine, and R.J. Christopherson Metabolic modifiers in animal nutrition-potential benefits and risks. Biology of Nutrition in Growing Animals- (2006) *Chapter 5 Metabolic Modifiers in Animal Nutrition. Published by Elsevier Press*, Editors; Perzynowski, Zabielski, Mosenthin, Zentek and Zebrowska. .pp 135-178.
 44. A. Jafari, D.G.V. Emmanuel, J.A. Bell, R.J. Christopherson, **G.K. Murdoch**, J. Woodward, C.J. Field, and B.N. Ametaj Parenteral Administration of Glutamine Modulates Acute Phase Response in Post-parturient Dairy Cows. (2006) *J. Dairy Science*, 89: 4660-4668.
 45. **G.K. Murdoch**, W.T. Dixon, E.K. Okine and R.J. Christopherson Bovine tissue mRNA abundance related to acute cold exposure and acute feed restriction. (2005) *Can. J. Anim. Sci.* 85: 157-164.
 46. P.D. Chilibeck, V.J. Harber, G. Bell, A.C. Cegielski, **G.K. Murdoch**, and I. MacLean The effect of overfeeding during growth on muscle characteristics: A pig model. (2005) *J. of Eating and Weight Disorders.* Studies on anorexia, bulimia, and obesity. 10 (1): 13-18..

47. **G.K. Murdoch**, E.K. Okine, W.T. Dixon, J.D. Nkrumah, J.A. Basarab and R.J. Christopherson, "Growth" in; Dijkstra, J., Forbes, J.M., and France, J. (Editors) "*Quantitative Aspects of Ruminant Digestion and Metabolism, 2nd Edition*" (2005) C.A.B.I. Publishing Wallingford, U.K. pp 489-521
48. C.T Putman, W.T Dixon, J. Pearcey, I. Maclean, M.J. Jendral, **G.K. Murdoch** and D. Pette Effects of Chronic Low-Frequency Stimulation on Uncoupling Protein-3 Expression in Rat Fast-Twitch Skeletal Muscle. (2004) *Am. J. Physiol. Reg. Integ. Comp Physiol.* 287: R1419-R1426.
49. B. Zimmermann, G. Diebold, J. Galbraith, W. Whitmore, M. Okamoto, J.B. Robinson, B.A. Young, **G.K. Murdoch**, R. Mosenthin, and R.J. Christopherson Effect of aminophylline on metabolic and thermoregulatory response during hypothermia associated cold exposure in lambs. (2003) *Can J. Anim. Sci.*, 83:739-748.
50. C.T. Putman, M. Kirisci, J. Pearcey, I.M. MacLean, **G.K. Murdoch**, W.T Dixon, and D. Pette AMPK Activation Increases UCP-3 Expression and Mitochondrial Enzyme Activities in Rat Muscle without Fibre Type Transition. (2003).*J. Physiol.* 551 (pt 1): 169-178.
51. P.D. Chilibeck, G. Bell, J. Jeon, C.B. Weiss, **G. Murdoch**, I. MacLean, E. Ryan, R. Burnham Functional electrical stimulation exercise increases GLUT-1 and GLUT-4 in paralyzed skeletal muscle. (1999) *Metabolism* Nov;48 (11):1409-13. .
52. I.M. MacLean, B.M. Murdoch, **G.K. Murdoch**, J.J. Kennelly, G.J. Bell The effect of SLS2 spaceflight on glucose transporters 1 and 4 in rat gastrocnemius muscle (1999) *MED SCI SPORT EXERCISE* 01/1999; 31
53. V. J. Harber, P.D. Chilibeck, G. Bell, I. MacLean, **G. Murdoch**, A. Cegielski Effect of dietary restriction on enzymes of major metabolic pathways in pubertal gilts. (1999) *MED SCI SPORT EXERCISE* 01/1999; 31
54. A.K. Ho, R. Wiest, T. Ogiwara, **G. Murdoch**, C.L. Chik Potentiation of agonist-stimulated cyclic AMP accumulation by tyrosine kinase inhibitors in rat pinealocytes. (1995) *Journal of Neurochemistry* 65(4): 1597-1603 P
55. T. Ogiwara, **G. Murdoch**, C.L. Chik, A.K. Ho Tyrosine kinase inhibitors enhance cGMP production in rat pinealocytes. (1995) *Biochem Biophys Res Commun* 207(3): 994-1002

ABSTRACTS

Peer Reviewed/Evaluated:

1. N. Hezarjaribi, R. Dutta, H. Ghasemzadeh, T. Xing, and **G. K. Murdoch**. Monitoring Lung Mechanics during Mechanical Ventilation using Machine Learning Approach. *40th International Engineering in Medicine and Biology Conference*, July, 2018, Hawaii, USA.
2. A. M. Colacchio, B. M. Murdoch, K. C. Salove, K. M. Davenport, M. E. Doumit, A. O'Connell and **G. K. Murdoch** Targeted Gene Evaluation for Association with Heifer Maturity Grading based upon Skeletal Ossification 2018 ASAS-CSAS Joint Annual Meeting July 8-13, Vancouver BC, Canada.
3. F.A. Arend, M. E. Doumit, **G. K. Murdoch**, and G. E. Chibisa Product quality in finishing cattle fed a high amount of grape pomace. 2018 ASAS-CSAS Joint Annual Meeting July 8-13, Vancouver BC, Canada.
4. C.A. Myers, Z. Carlson, **G.K. Murdoch**, and G. E. Chibisa Effects of pre-transport administration of Meloxicam on indicators of protein metabolism in transported 4-day old Jersey calves. 2018 ASAS-CSAS Joint Annual Meeting July 8-13, Vancouver BC, Canada.
5. S. Theodossiou, N. Schiele, C. Majors, X. Chen, E Tipton, **G.K. Murdoch**, G Portirniche, B. Tanner, S. Suriya, M. Mortizavi, B Martin. Quantification of Ovine Pia Arachnoid Complex Biomechanical Properties and Morphology Conference: Biomedical Engineering Society May 2018
6. C.L Majors, N. Schiele, **G.K. Murdoch**, X. Chen, E Tipton, G Portirniche, B. Tanner, S. Suriya, M. Mortizavi, B Martin Ex Vivo Quantification of Ovine Pia Arachnoid Complex Biomechanical Properties and Morphology UI STEM symposium, April 2018
7. L. C. Armbruster J. A. Luckenbach, W. T. Fairgrieve, M. S. Powell, R. B. Johnson, W. W. Dickhoff, **G. K. Murdoch** First assessment: Regulation of red muscle growth in Sablefish (*Anoploma fimbria*) during grow out phase of aquaculture. Northwest Fisheries Science Symposium 6th Annual March 27-28, 2018.
8. L. C. Armbruster, J. A. Luckenbach, W. T. Fairgrieve, M. S. Powell, R. B. Johnson, W. W. Dickhoff, **G. K. Murdoch** Regulation of Muscle Growth in Sablefish During Grow Out. Aquaculture America 2018. Las Vegas, NV February 20-22, 2018.
9. F.A. Arend., M. E. Doumit, **G. K. Murdoch**, and G. E. Chibisa Effects of feeding grape pomace in finishing cattle diets on production performance, carcass characteristics and product quality. Pacific Northwest Animal Nutrition Conference Boise, ID January 2018
10. B. N. Sandberg, C. W. Hunt, M. E. Doumit, R. Richard and **G. K. Murdoch** Effects of Rumen Protected-Histidine Supplementation Dose on Finishing Beef Cattle. accepted in the Meat Science and Muscle Biology section at the 2017 ASAS-CSAS Annual Meeting, Baltimore MD
11. B. N. Sandberg, C.W. Hunt, M. E. Doumit, R. Richard and **G. K. Murdoch** RP-Histidine in finishing cattle Pacific

- Northwest Animal Nutrition Conference, January 2017, Richland, WA.
12. R. Dutta, S. Mei, T. Xing, and **G. K. Murdoch** Multi-scale Model Development of Interaction between Lung and Pulmonary Ventilation – CFD Model for Upper Airway. Center for Modeling Complex Interactions external advisory committee annual meeting,” April 12, 2017, Idaho Commons, University of Idaho
 13. R. Dutta, **G.K. Murdoch**, and T. Xing Multi-scale Model Development of Interaction between Lung and Pulmonary Ventilation - Experimental Validation. Center for Modeling Complex Interactions external advisory committee annual meeting,” April 12, 2017, Idaho Commons, University of Idaho
 14. K.J. Thornton, S. Tamm and **G.K. Murdoch** Myogenic regulatory factors are increased in bovine satellite cells by polyamines and their precursor amino acid ornithine Presentation at ASAS 2015 Orlando Florida, USA.
 15. K.J. Thornton, M. Colle, J.A. Macumber, M.E. Doumit, R. Richard, C.W. Hunt and **G.K. Murdoch** Growth, carcass traits and meat color stability in steers finished on a potato-based vs. a corn-based ration ASAS 2013 Indianapolis
 16. C.M. Welch, S.E. Speidel, W.J. Price, J.K. Ahola, J.B. Hall, **G.K. Murdoch**, D.H. Crews, Jr., C.S. Schneider, R.A. Hill Relationships between residual feed intake EPD and metabolic variables of progeny from Red Angus sires divergent for maintenance energy EPD ASAS 2013 Indianapolis
 17. J A. Macumber, K J. Thornton, M E. Doumit **G K. Murdoch** Interleukin 6 alters myogenic regulatory factors expression in cultured mammalian satellite cells Experimental Biology April 2013 Boston MA
 18. K. J. Thornton, K. C. Chapalamadugu, M. E. Doumit, and **G. K. Murdoch** Polyamines enhance satellite cell activation and expression of myogenic regulatory factors Experimental Biology April 2013 Boston MA
 19. S. Acharya, A. M. Peters, A. S. Norton, **G. K. Murdoch** and R.A. Hill NADPH oxidase 4-mediated ROS generation modulates C2C12 differentiation via ERK1/2 pathway Experimental Biology April 2013 Boston MA
 20. K J. Thornton, K C. Chapalamadugu, M E. Doumit, and **G K. Murdoch** Satellite cell expression of myogenic regulatory factors is altered when co-cultured with preadipocytes. Experimental Biology April 2012 San Diego.
 21. S. Acharya, A. M. Peters, A. S. Norton, **G. K. Murdoch** and R.A. Hill Changes in endogenous reactive oxygen species is accompanied by changes in myogenic differentiation marker expression in differentiating C2C12 myoblasts Experimental Biology April 2012 San Diego.
 22. C.M. Welch, J.K. Ahola, J.B. Hall, **G.K. Murdoch**, D.H. Crews, Jr., J.I. Szasz, L.C. Davis, M.E. Doumit, W.J. Price, L.D. Keenan, R.A. Hill. Performance, residual feed intake, and carcass quality of progeny from Red Angus sires divergent for maintenance energy EPD Annual meeting American Society of Animal Science 2012
 23. G.C. Soderquist, C.M. Welch, **G.K. Murdoch**, J.K. Ahola, J.B. Hall, C.S. Schneider, and R.A. Hill. 2011. Overview of IL-15/IL-15 α receptor and their role in muscle growth related to residual feed intake. University of Idaho Innovation Showcase. Moscow, ID.
 24. C.M. Welch, **G.K. Murdoch**, C.S. Schneider, K. Chapalamadugu, K.J. Thornton, M. McGee, J.K. Ahola, J.B. Hill and R.A. Hill Muscle Gene Expression Suggests Pathways of Nutrient Partitioning in low and high Residual Feed Intake Red Angus-sired Steers and Heifers PNWANC 2011 Portland, Oregon.
 25. W.T. Dixon, F. Paradis, J.A. Pasternak, S. Novak, J. Grant, **G.K. Murdoch**, M.K Dyck and G.R Foxcroft Temporal expression of angiogenic factors in granulosa and theca cells of developing porcine preovulatory follicles and the potential involvement of angiogenin in the luteinizing follicle. Society for the Study of Reproduction Annual Proceedings 2011 July/August Portland, Oregon.
 26. K. J. Thornton, K.C. Chapalamadugu, **G.K. Murdoch** Establishing a molecular fingerprint of High-versus low-quality beef cattle 2011 ASAS New Orleans, LA (Proceedings and oral presentation)
 27. C.M Welch, **G.K. Murdoch**, K. Chapalamadugu, K.J. Thornton, J.K. Ahola, J.B. Hill, and R.A. Hill Gene expression of Red Angus sired steers and heifers evaluated for residual feed intake 2011 ASAS New Orleans, LA (Proceedings and oral presentation)
 28. L.C. Davis, J.L. Owens, **G.K. Murdoch**, R.A. Hill, M.E. Doumit Specific Long-Chain Fatty Acids Preferentially Induce Differentiation of Bovine Intramuscular or Subcutaneous Preadipocytes Reciprocal Meats Conference Manhattan, Kansas June 19, 2011 - June 22, 2011
 29. K. C. Chapalamadugu, C. A. VandeVoort, P. A. Hunt, K. J. Thornton, **G.K. Murdoch** Impact of maternal BPA exposure on protein expression in the developing fetal heart of primates. CRB WSU/UI Retreat May 19, 2011 Pullman, WA
 30. K. J. Thornton, L. Davis, C. Welch, M. Doumit, R. Hill, C. Schneider, **G.K. Murdoch**. Muscle fiber type is altered by selection of sire for maintenance energy. PNAN, October 2010, Vancouver, BC, CA.
 31. J R. Krentz; M. Gallo, KJB Martins, **G.K. Murdoch**, WT Dixon, DG. Syrotuik, CT. Putman. The Effects of Creatine and Chronic Low Frequency Stimulation on Muscle Fiber Cross-Sectional Area. Medicine & Science in Sports Medicine, May 2010 42(5) p373.
 32. C.S. Schneider; M. Hill, C. Welch; L. Hill, ¹; R. Hill; **G.K. Murdoch**. Surgical Outcomes of Biceps femoris Muscle Biopsy in Cattle for the 2010 AABP Annual Conference in Albuquerque, New Mexico.

33. P. Cheguru, M. E. Doumit, **G.K. Murdoch**, and R. A. Hill Effect of fatty acids on adipocyte differentiation specific genes expression. 2010 ASAS, July 11-15 Denver, Colorado.
34. M. Powell, **G.K. Murdoch**, F. Barrows, R. Hardy Effects of High and low Phosphorus diets on bone and hepatic gene expression in Rainbow trout fry, fingerling and post juvenile stages. 2010 World Aquaculture Meeting, March 1-5th, San Diego, CA
35. K.C. Chapalamadugu, C. vandeVoort, M. Settles, B. Robison, P. Hunt, B.M. Murdoch and **G.K. Murdoch**. Consequences of Maternal BPA on the primate fetal muscle transcriptome. CRB Retreat, May 2010, Spokane WA.
36. K. J. Thornton, K.C. Chapalamadugu, and **G.K. Murdoch** Differentiation of myoblasts in the presence of adipoblasts, the effect on temporal expression of myogenic regulatory factors. CRB Retreat, May 2010, Spokane WA.
37. K.J.B. Martins, M. St-Louis, R.N. Michel, **G.K. Murdoch**, W.T. Dixon, I.M. Maclean, P. McDonald and C.T. Putman. Nitric oxide synthase inhibition prevents activity induced NFAT nuclear accumulation and skeletal muscle adaptation. Experimental Biology Symposium, Anaheim, CA April 24-28, 2010.
38. **G.K. Murdoch**, R. Soofi-Siawash, E. Okine, L. Goonewardene and R. J. Christopherson Subcutaneous or oral administration of liposome-encapsulated vasoactive intestinal peptide increases dietary intake in small ruminants. International Symposium of Ruminant Physiology, September 2009, Claremont-Ferrand, France.
39. **G.K. Murdoch** Effect of dietary carbohydrate on myogenic regulatory factor expression in rainbow trout and zebrafish AFS Annual meeting Aug 30-September 3, 2009 Nashville Tennessee.
40. K.C. Chapalamadugu, B. M. Murdoch, C. Lawson, J. Griswold, P. Hunt and **G.K. Murdoch** Maternal Exposure to Bisphenol A Alters Expression of Genes Associated with Carbohydrate Metabolism in Developing Fetal Cardiac Tissue. ORAL 42nd Annual Meeting of SSR held in Pittsburgh, Pennsylvania, July 18-22, 2009.
41. F. Paradis, J. Grant, **G. K. Murdoch**, M. K. Dyck, G. R. Foxcroft and W. T. Dixon Global Transcriptome Analysis of Porcine Oocyte, Granulosa, and Theca Cells to Identify Potential Secreted Factors and Receptors Involved in Cell-to-cell Interactions During Pre-Ovulatory Follicle Development 42nd Annual Meeting of SSR held in Pittsburgh, Pennsylvania, July 18-22, 2009
42. M. Hill, K. Chapalamadugu, C. Schneider, R. Hill, G. Gaylord, J. K. Ahola, C. Hunt, J. Szasz and **G.K. Murdoch** Effect of time of ractopamine feeding on growth, carcass characteristics, and muscle biology of steers. 2009 Joint ADSA@-CSAS-ASAS Meeting July 12-16, 2009, Montreal, Quebec, Canada
43. K.J.B Martins, P. McDonald, W.T. Dixon, **G.K. Murdoch**, and C.T. Putman Nitric Oxide: Immediate Satellite Cell Activator and key regulator of skeletal muscle adaptation to activity 2009 IBEC Conference Guelph Ontario, Canada
44. J. J. Amberg, **G.K. Murdoch**, B.D. Robison, M.S. Powell, K.J. Rodnick, R. A. Hill & R.W. Hardy Dietary Carbohydrate Level Affects Expression of Hepatic Glucose Transporters in Rainbow Trout (*Oncorhynchus mykiss*): Is Rainbow Trout GLUT2 Different From Mammalian GLUT2? 2009 WAS Seattle Washington
45. J. Wacyk, M. Powell, K. Rodnick, **G.K. Murdoch**, B. Robison, R. Hill and R. Hardy Dietary Carbohydrate level affects the expression of genes regulating the production of reductive power in Rainbow trout *Oncorhynchus mykiss* liver. 2009 Aquaculture America
46. M.S. Powell, **G.K. Murdoch**, F.T. Barrows, J.M. Wacyk, M.T. Casten, W.M. Sealey, D.A.J. Stone, R.W. Hardy Determining size Effects on Phosphorous uptake, growth and phosphorous metabolism in rainbow trout fry, fingerling and post juvenile stages 2009 Aquaculture America
47. W.T. Dixon, S. Novak, W-Y. Tse, S. Town, **G.K. Murdoch**, M. Dyck, C.T. Putman and G. Foxcroft Uterine Crowding in the Sow Affects Litter Sex Ratio, Placental Development and Embryonic Myogenin mRNA Expression in Early Gestation (presented at World Congress on Reproductive Biology Hawaii, 2008)
48. F. Paradis, S. Novak, **G.K. Murdoch**, M.K. Dyck, G. R. Foxcroft and W. T. Dixon Spatial and temporal regulation of BMPR1A, -1B, -2 and TGF β R1 mRNA expression in developing porcine ovarian follicles SSR 2008
49. Solange S. Lewis, Barrie D. Robison, Madison Powell, Kenneth Rodnick, Ronald Hardy, **G.K. Murdoch** and Rodney A. Hill 2008 Chronic dietary carbohydrate composition affects gene expression of some key regulators of metabolism and growth: a study using the zebrafish model (The Endocrine Society's 90th Annual Meeting, San Francisco)
50. M. S. Powell, **G.K. Murdoch**, J.M. Wacyk, M.T. Casten, W. M. Sealey, D.A.J. Stone and R.W. Hardy Determining size effects on phosphorus uptake, growth and phosphorus metabolism in rainbow trout fry, fingerling and post juvenile stages (WAS 2008 Busan, Korea)
51. J. Wacyk, M. Powell, K.Rodnick, **G.K Murdoch**, B. Robison, R. Hill and R. Hardy Dietary carbohydrate level affects expression of genes regulating the production of reductive power in rainbow trout *Oncorhynchus mykiss*, liver (WAS 2008 Busan, Korea)

52. J. J. Amberg, **G.K. Murdoch**, B. D. Robison, M. S. Powell, K. J. Rodnick, R. A. Hill and R. W. Hardy. Dietary carbohydrate level affects expression of the intestinal nutrient transporters and amino acid catabolism in rainbow trout (*Oncorhynchus mykiss*). 2008 (Aquaculture America, Colorado Springs)
53. J. Wacyk, M. Powell, K. Rodnick, **G.K. Murdoch**, B. Robison, R. Hill and R. Hardy. Increasing levels of dietary carbohydrates are able to differentially modify the expression levels of transaminases in rainbow trout *Oncorhynchus mykiss*, liver. (WAS 2008)
54. J. J. Amberg, **G.K. Murdoch**, B.D. Robison, M.S. Powell, K. J. Rodnick, R. A. Hill and R.W. Hardy. Dietary Carbohydrate level affects expression of hepatic glucose transporters in rainbow triut (*oncorhynchus mykiss*): Is rainbow trout glut2 different from mammalian glut2? (Presented at World Aquaculture meeting)
55. **G.K. Murdoch**, H. Klooster, B.T Li, J. Moibi, J. Galbraith, R. Mosenthin & R.J. Christopherson Effects of diet, feeding level and environment on digestion and energy metabolism in beef steers. (Lithuania, October 2007)
56. M.S. Powell, B.D. Robison, R.E. Drew, D.A. Stone, **G.K. Murdoch**, K.J. Rodnick, R.A. Hill, and R.W. Hardy Hepatic Gene Expression and growth among Rainbow Trout *Oncorhynchus mykiss* in response to Carbohydrate manipulation of the diet. Aquaculture America 2007
57. B.D. Robison, R.E. Drew, M.Powell, D. Stone, **G.K. Murdoch**, M. Settles, E. Churchill, K. Rodnick, R. Hill, and R. Hardy. Sex specific effects of chronic dietary carbohydrate manipulation on hepatic gene expression in the zebrafish (*Danio rerio*). (Plant and Animal Genome 2008)
58. Powell, M.S., Wacyk J., Plant, K., Stone, D.A.J., Rodnick K.J., Robison, B.D., Drew, R.E., **Murdoch G.K.**, Hill, R.A., and Hardy, R.W. Expression of glycolytic and gluconeogenic enzymes show intraspecific variation among selected and non-selected strains of rainbow trout fed high levels of dietary carbohydrate (International Congress for Biology of Fish 2008)
59. **G. K. Murdoch** , H. Klooster, B.T Li, J. Moibi, J. Galbraith, R. Mosenthin & R.J. Christopherson Effects of diet, feeding level and environment on digestion and energy metabolism in beef steers. *Canadian Society of Animal Science 2007*
60. W.T. Dixon, G. R. Foxcroft, W-Y. Tse, S. C. Town, M. D. A. Vinsky, **G. Murdoch**, S. Novak and C.T. Putman Pre-natal programming of post-natal development in swine. Proceedings of Embryonic and Fetal Nutrition. May/June 2006 Ravello, Italy
61. **G.K. Murdoch**, M. Vinsky, N.J. Turchinsky, P. Zimmerman, M.K. Dyck, G. R. Foxcroft and W. T. Dixon Transcriptome Analyses, mining genes pertinent to swine performance traits. Minisymposia: Myogenesis, Edmonton, Alberta, Canada. July 2005
62. V. Jafari, D.G. Emmanuel, J.A. Bell, R.J. Christopherson, **G.K. Murdoch**, J. Woodward, C.J. Field, and B.N. Ametaj Parenteral Administration of Glutamine Modulates Acute Phase Response in Postparturient Dairy Cows. Joint Annual Meeting of ADSA, ASAS, and CSAS, Cincinnati, Ohio, USA July, 2005.
63. **G.K. Murdoch**, M. Tavernini, I. R. Johnson, R.O. Ball, K.L. Madsen, S. Goruk, and C.J. Field Feeding glutamine to weaning piglets influences the gastrointestinal response to an E. coli challenge. Banff Pork Seminar, Banff, Alberta, Canada. January 2005.
64. J.A. Woodward, C.J. Field, S.D. Goruk, J. Bell **G.K. Murdoch**, J.R. Thompson, M.A.G van Keyserlingk and R.J. Christopherson Effects of glutamine supplementation and proliferation in peripheral blood supply of the transition dairy cow. Pacific Northwest Nutrition Conference. Seattle, USA. Oct 2004.
65. **G.K. Murdoch**, W.T. Dixon, and R.J. Christopherson UCP-2 mRNA in bovine tissues, relationship with breed and metabolic parameters. C.S.A.S. 2004.
66. J. Moibi, **G.K. Murdoch**, B.T. Li, H. Klooster, W.T. Dixon, E.K. Okine, and R.J. Christopherson Methane production by beef steers as affected by feeding level, breed type and diet. C.S.A.S. 2004.
67. **G.K. Murdoch** Gene expression pinpoints top feed efficient cattle- Wide variation between individual animals. In; Advances in Beef Research- Canada Alberta Beef Industry Development Fund Symposium, November, 2004. Calgary, Alberta.

Other: (reports, proceedings, papers, citations and references, performances)

1. Sequence Pax-7 rainbow trout Genbank 2012, Accession JQ303314: *Oncorhynchus mykiss* paired box protein 7 alpha variant 4 (pax7) mRNA, complete cds, alternatively spliced submitted by: Chapalamdugu, K.C., Murdoch, B.M., Robison, B.D., Hill, R.A. and **Murdoch, G.K.**
2. GenBank Sequence submission Accession JQ303320: *Oncorhynchus mykiss* paired box protein 7 beta variant 6 (pax7) mRNA, complete cds, alternatively spliced submitted by: Chapalamdugu, K.C., Murdoch, B.M., Robison, B.D., Hill, R.A. and **Murdoch, G.K.**
3. Programs & People University of Idaho, winter 2011, Mom's exposure to plastic byproduct may impact fetal heart development. PP 6 by Mary Ann Reese

4. Line Rider, Idaho Cattle Association, September 2010 feeder Issue Want more beef?-Practical use of β -agonists to improve muscle growth in young beef cattle. **G.K. Murdoch**
5. K. Chapalamadugu, B.D. Robison, R.E. Drew, M. Dinning, J. Amberg, M. Powell, K.J. Rodnick, R.A. Hill, R.W. Hardy and **G.K. Murdoch**. Carbohydrates Influence Myogenic and Adipogenic Gene Expression in White Skeletal Muscle of Rainbow Trout (Final NSF EPSCoR Idaho Annual Meeting, May 2008, Moscow, ID)
6. Matt Racine, **G.K. Murdoch** and Barrie Robison. The effects of exercise training on swim performance and performance-related gene expression in zebrafish (*Danio rerio*). INBRE 2008 Boise Idaho
7. Sequences from a bovine mixed muscle cDNA library were submitted to and accepted by Genbank and dbEST databases. The reference numbers are as follows: Genbank_Accn BE900044 – BE900091 and dbEST_ID 6212381 - 6212428. The sequences were submitted in September 2000 by: Moore, S.S., Li, C., Fu, A., Kneeland, J., Meng, Y., **G.K. Murdoch**, Dixon, W., & Christopherson, B.
8. Sequences from a bovine mixed adipose cDNA library were submitted to and accepted by Genbank and dbEST databases. The reference numbers are as follows: Genbank_Accn BE900044 – BE900091 and dbEST ID 6212381 – 6212428. The sequences were submitted in September 2000 by: Moore, S.S, Li, C., Fu, A., Kneeland, J., Meng, Y., **G.K. Murdoch**, Dixon, W., and Christopherson, B.

Refereed/Adjudicated (currently submitted and under review):

1. M.E. Doumit, Christopher Williams, Ronald Richard, Michael Colle, Matthew Colle, William Loucks, **Gordon Murdoch** Effect of ascorbic acid and rosemary extract on quality characteristics and sensory perception of extended aged beef. (submitted to Meat Science, R1 version re-submitted July 2018)

Other manuscripts in late stages of preparation, included only as an indices of manuscripts intended to be submitted in 2018 for review.

1. K.J. Thornton, K.C. Chapalamadugu, **G.K. Murdoch** Transcriptomic comparison of the *longissimus* of high quality vs. lower quality beef cattle raised in the pacific northwestern US
2. Lisa C. Armbruster, J. Adam Luckenbach, William T. Fairgrieve, Edward S. Hayman, Madison S. Powell, Ronald B. Johnson, Walton W. Dickhoff, **Gordon K. Murdoch** Myogenic and anabolic gene expression in sablefish (*Anoplopoma fimbria*) white skeletal muscle during grow out (Target Journal PLoS)
3. B.N. Sandberg, C.W. Hunt, ME Doumit, **GK Murdoch** Supplementation of RP-Histidine in finishing beef cattle; effects on flavor, color and color stability.

Professional Meeting Papers, Workshops:

1. W.T. Dixon, G. R. Foxcroft, W-Y. Tse, S. C. Town, M. D. A. Vinsky, **G. Murdoch**, S. Novak and C.T. Putman Prenatal programming of post-natal development in swine. Session 2 Workshop: Embryonic and Fetal Nutrition. May/June 2006 Ravello, Italy.
2. **Murdoch, G.** and Christopherson, R.J. Gene expression and energy homeostasis. Proceedings of the 16th International Symposium on Energy Metabolism. EAAP, May 2003.
3. **Murdoch, G.K.**, Dixon, W, Mathison, G.W., Baracos, V.E., Okine, E., Moibi, J.A, Li, B and Christopherson, R.J. A Molecular Approach: Understanding the variability in Energy Expenditure of Cattle. Proceedings of the 15th International Symposium on Energy Metabolism. EAAP 103: 301-304, 2000.

TEACHING: Areas of Specialization: Physiology, Anatomy, Molecular Biology, Metabolism

Courses Taught:

1. AVS 567 2015, 2017 (4 Credit) Advanced Physiology (20 Graduate students, 5 senior undergraduate students)
2. AVS 371 2014, 2015, 2016, 2017, 2018 (3 Credit) Anatomy & Physiology of Domestic Mammals (avg. 89 students)
3. AVS 373 2014, 2015, 2016, 2017, 2018 (1 Credit) Anatomy & Physiology of Domestic Mammals Laboratory (avg. 38 students)
4. AVS 504 (521) 2015, 2016, 2017 (3 Credit) Graduate Teaching Practicum
5. AVS 504 2014 (3 Credit) Growth and Development of Mammalian Tissue (8 graduate students)
6. AVS 567 2013 Advanced Physiology (12 graduate students)
7. BIOL 474 2013-2018 Lectures in Developmental Biology; muscle development (45 students)
8. AVS 273 Anatomy and Physiology laboratory Fall 2009-2013 (66 students)
9. AVS 474 Senior Beef Seminar University of Idaho, Guest lecture, Growth promoters and implants (30 students)
10. AVS 504 Advanced Physiology University of Idaho, Spring 2011 (9 students)

11. BCB 501 2010-2011 Co-coordinator Biotechnology and Computational Biology Seminar series (200 participants)
12. AVS 411/511 Guest Lecture Ruminant Nutrition Spring, 2009-2011 (24-27 students)
13. AVS 501 University of Idaho Spring, 2009,2015-2018 “Tools and design of an effective oral presentation” (15 students)
14. AVS 504 Current Understanding of Developmental myogenesis in vertebrates (2 students)
15. AVS 502 Myogenesis and writing a Federal grant proposal (1 student)
16. AVS 271 Physiology and Anatomy University of Idaho Fall 2009-2013 (62, 85, 88, 125, 117 students)
17. AVS 363 Meat Science & Animal Products University of Idaho Spring 2008 & Spring 2009 (24 & 34 students)
18. AVS 463 Advanced Meat Science & Animal Products University of Idaho Spring 2008 (1 student)
19. AnSci 391 Lipid Biochemistry (3 lectures for Dr. W.T. Dixon). University of Alberta Winter 2006 (65 students)
20. AnSci 391 Biochemistry Guest Lecture Regulation of Cellular protein and amino acid metabolism. University of Alberta Winter 2005.
21. AnSci 310, (Complete Lecture and Laboratory) Physiology, University of Alberta, Fall 2001.

Students Advised:

Current Graduate Students/Post-Docs:

1. Dr. Rabijit Dutta, Post-Doctoral Fellowship, Industry Funded cross-appointed (51% Mechanical Eng. 49% AVS) 2016-2018
2. Stephen Tamm MS student- Major Professor
3. Antonetta Colacchio MS student Major Professor
4. Avani Gouru MS student Major Professor
5. Breann Sandberg PhD student Major Professor

Completed Graduate degree as Major Professor:

1. Madison Hill (completed May 2010, MS), currently working as a veterinary assistant
2. Dr. Kalyan Chapalamadugu PhD (completed May 2012) Currently a Research Assistant Professor in cardiovascular physiology at the University of South Florida
3. Dr. Kara Jean Thornton (completed May 2013) Completed USDA post-doctoral fellowship in muscle physiology at the University of Minnesota under mentorship of Dr. William Dayton, currently a Research and Teaching Faculty Assistant Professor at Utah State University.
4. Breann Sandberg MS student, (completed May 2017) currently employed at Johnson Research, Parma, Idaho
5. Lisa Chandler-Armbruster MS student (completed August 2017) currently employed at NOAA, Seattle, WA.

Graduate Student Committee member:

1. John David Griner (WSU- Major Professor: Dr. M. Du)
2. Carl Jacob Rogers (WSU-Major Professor: Dr. M. Du)
3. Sarah Brooker (Major Professor: Dr. M. McGuire)
4. Pamela Holman (Major Professor: Dr. J. Falk)
5. Patrick Blaufuss (Major Professor: Dr. M. Powell)
6. Jim Vineyard (Major Professor: Dr. G. Chibisa)
7. Sally Mei (Major Professor: Dr. T. Xing- Engineering)

Completed Graduate students for whom I served on graduate committee:

1. Dr. Madhusudhan Papasani (completed 2008 PhD)
2. Dr. Jon Amberg (completed 2008 PhD)
3. Christopher (Dan) Julien (completed June 2010 MS)
4. Dr. Pallavi Cheguru (completed June 2011 PhD)
5. Lauren Davis (completed December 2011 MS)
6. Dr. Katherine M. Hunt (completed June 2012 PhD)
7. Dr. Guankui Wang (completed June 2012 PhD)
8. Dr. Suresh Acharya (completed June 2013 PhD)
9. Dr. Maia Benner (completed July 2013 PhD)
10. Dr. Cassie Welch (completed January 2014 PhD)
11. Dr. Marcus M^cGee (completed May 2014 PhD)
12. Dr. Alejandro Villasante (completed Nov 2015 PhD)
13. William Loucks (completed August 2016 MS)

14. Dr. Michael Colle (completed December 2016 PhD)
15. Dr. Sun Chi (completed Dec 2017 PhD Neuroscience/Neurobiology)
16. Kacie Salove (completed July 2018 MS)
17. Dana McCurdy (completed July 2018 MS)

Undergraduate Students:

42 undergraduate advisees-current, **3** Hoist Students summer research 2007, **1** INBRE student co-hosted with Barrie Robison, summer research 2008, **19** University of Idaho work-study students, 2008-2016, **2** NSF-PFI undergraduate research students **1** International visiting scholar (Hsiu-Han (Sandy) Hung-Taiwan), **1** undergraduate student athlete (Megan Venlos), **13** undergraduate students currently or recently working in my program (Shelby Maris, Nathaniel Caires, Kayla Blum, Sam Faulkner, Heather Burgess, Cody Browning, Maggie Reynolds, Jodi Kaschmitter, Zach Reynolds, Darryl Kerby, Jessica Russell, Ryan Kindall, Alysha O'Connell, Claire Majors, Elena Tipton).

Courses Developed:

1. AVS 363 Animal Products 2008 & 2009
2. AVS 463 Advanced Animal Products 2008
3. AVS 271 Physiology and Anatomy 2009, 2010-2013
4. AVS 273 Domestic Animal Physiology and Anatomy Lab 2012
5. AVS 502 Federal grant writing 2013, myogenesis student Kara Thornton submitted this amended grant to USDA-NIFA and received funding 2018
6. AVS 504 Current Understanding of Developmental myogenesis in vertebrates
7. AVS 504 Graduate level Advanced Physiology Spring 2011
8. AVS 273 Domestic Animal Anatomy Laboratory 2011
9. AVS 567 Advanced Physiology 2011, 2013, 2015, 2017
10. AVS 504 Growth and Development of tissues in livestock 2014, 2016
11. AVS 371 Physiology & Anatomy 2014
12. AVS 373 Anatomy Laboratory 2014
13. AVS 504 (521) Graduate Teaching Practicum 2015, 2016, 2017
14. AVS 504 Systemic Physiology for Animal Science Graduate students 2018

Faculty Advisor for Extracurricular clubs:

1. University of Idaho Polo club 2011-Fall 2016
2. University of Idaho Pre-veterinary medicine club 2013-current
3. University of Idaho Club Lacrosse Men's Team 2013-current
4. University of Idaho Rodeo Club 2015-current

Non-credit Classes, Workshops, Seminars, Invited Lectures, etc.:

Invited Lectures

1. Invited Oral Presentation: Computational and Experimental Investigations of Interactions between Lung and Pulmonary Ventilation University of Idaho and Percussionaire Corporation Collaborative research meeting", December 21, 2017, ME conference room, University of Idaho Rabijit Dutta, Tao Xing, Sally Mei and Gordon Murdoch
2. Institute for Bioinformatics and Evolutionary Studies (IBEST) Thunder Thursday Talk April 06, 2017. Towards Multiscale Modeling of Lung for Developing Next-Generation Mechanical Ventilators R. Dutta, T Xing, S. Mei and G.K. Murdoch
3. Invited presentation of Research Proposal May 2017 Idaho Beef Council
4. Invited Seminar: Alternate career paths for AVS pre-vet majors Jan 2016 (Invited by CALS pre-vet club)
5. Invited Seminar: Current research at UI –AVS Lincoln county Livestock School November 2015 (Invitation extended by County agent Carmen Willmore)
6. Invited presentation Teagasc-Grange, Ireland May 2016
7. Invited: AVS representative for Farm Bureau CALS Faculty Professor Debate November 12, 2015.
8. Invited: March 2015 Montana State University, Department of Animal and Range Science
9. Invited Seminar: Muscle Physiology Research, approaches to enhance the sustainability of the US production system. Montana State University October 2014,- Invitation conferred by Drs. Glenn Duff (Interim Dean) and Patrick Hatfield (Interim Department Head)
10. NMREEC, Research Seminar to Idaho Stakeholders. September 18, 2014, Salmon, ID- Invitation conferred by Dr. John Hall

11. NMREEC, Use of GrowSafe feed intake monitoring system to evaluate dietary feed conversion efficiency in cattle and identify physiological systems contributing to variation in efficiency. August 2014, Salmon, ID- Invitation conferred by Drs. John Hall, John Foltz and Mark McGuire.
12. Western College of Idaho, “Animal Science research relating to muscle physiology in Beef cattle” September 18th. 2013-Invitation conferred by Dr. Steve Lysne
13. Idaho Beef Council, Presentation of Research Annual Board Meeting June 13, 2013. Invitation conferred by Traci Bracco Executive Director of the Idaho Beef Council.
14. Idaho Beef Council, Presentation of Research Annual Board Meeting June 14, 2012. Invitation conferred by Traci Bracco Executive Director of the Idaho Beef Council.
15. Invited Seminar University of Idaho Pre-veterinary Medicine Club April 19, 2012. Invitation conferred by Eric Eldredge.
16. Invited Lecture -Washington State Muscle Biology Pullman, WA March 7, 2012. Invitation conferred by Buel D. Rogers.
17. Invitation to present at 4th Annual Congress of Regenerative Medicine & Stem Cell-Skeletal muscle stem cells, Beijing China, October 2011. *Declined due to conflict with Fall teaching*
18. Mid-year Idaho Cattle Association Convention, 2011 Jackpot, Nevada Beef Check-off muscle research and growth promoters. Invitation conferred by Wyatt Prescott.
19. Ag-Seminar Beef School 2011 Sandpoint, Idaho. “Positive Trait Genetic Markers in Beef Cattle”.
20. North Idaho Cattle Association Annual meeting 2010 Sandpoint, Idaho.
21. NIEHS-Annual BPA convention, invited attendance and presentation to the Gene expression and Cardiac muscle working groups. September 2010 Raleigh, North Carolina.
22. American Fisheries Society 2009 Annual Meeting, August 30-September 3, Nashville Tennessee. “Effect of dietary carbohydrate on myogenic regulatory factor expression in rainbow trout and zebrafish.” Invitation conferred by Dr. Ken Overturf.
23. Center of Reproductive Biology WSU/UI Annual Retreat May 2009 Orofino, Idaho. “Bisphenol A: Potential impacts on the developmental biology of striated muscle” Invitation conferred by Dr. Terry Hasshold.
24. Lewiston Area Beef School February 10th, 2009 “The latest in muscle fibre research and its impact on muscle growth and quality in cattle” Invitation conferred by Dr. Jim Church.
25. Oral Presentation. International Symposium on Energy and Protein Metabolism and Nutrition. Nutrition and Mitochondrial Function. 9/9/2007, Vichy, France. “Cardiac muscle UCP-3 expression in relation to nutrient intake and beef cattle metabolism.” Invitation conferred by Dr. Francois Hocquette.

Honors and Awards:

1. Featured Scientist in “Western Innovator: Understanding cattle genes-researchers combine genetics, physiology to serve Idaho cattle industry” written by Brad Carlson Capital Press April 20th, 2018.
2. Nominee University of Idaho Annual Award for Teaching Excellence, 2017/ 2018
3. Graduate student Breann Sandberg 2nd place Pacific Northwest Animal Nutrition Conference graduate research competition.
4. 2015/2016 Nominee for University of Idaho’s Excellence in Teaching Award
5. Offered Endowed Chair position at Montana State University Department of Animal and Range Science (2015 Declined in order to remain with UI-AVS)
6. First place in the Farm bureau invited professor debate representing AVS November 12th, 2015 (other invited competitors: John Hammel (PSES), Jack Brown (PSES), Garth Taylor (AgEc).
7. 2015 North American Colleges and Teachers of Agriculture, Teaching Award of Merit
8. 2015 R.M. Wade Excellence in Teaching Award winner, CALS
9. 2015 AVS Outstanding Teaching Award
10. 2015 Nominee for College of Agricultural and Life Sciences (CALS); R.M. Wade Award for Teaching Excellence
11. 2014 Nominee ‘Award for Advising Excellence’, University of Idaho
12. 2013 College of Agricultural and Life Sciences (CALS), Outstanding Academic Advisor award recipient.
13. 2013 AVS Outstanding Academic Advisor award recipient.
14. **Top 3 most viewed manuscript** “*Nitric oxide synthase inhibition prevents activity-induced calcineurin - NFATc1 signalling and fast-to-slow skeletal muscle fibre type conversions* was one of the three most viewed papers from the 15 March 2012 issue of *The Journal of Physiology* on our Highwire website – <http://jp.physoc.org> during the first three months of its publication.”- Editor-in-chief David Paterson.
15. MS Student Jessica Macumber, selected recipient for Iddings Scholarship for Graduate Research 2012.
16. “For the Cover” Molecular Ecology-Selected manuscript “Only skin deep: shared genetic response to the deadly

- chytrid fungus in susceptible frog species” E.B. Rosenblum, T.J. Poorten, M. Settles and G.K. Murdoch *Rated as a Top 8 must read Article in Science and Medicine by Faculty 1000.*
17. Nominee for Donald Crawford Graduate Faculty Mentoring Award, 2011 Nominated and supported by 5 AVS PhD Graduate students.
 18. Nominee UI, CALS Outstanding Advisor Award, 2011 Nominated by Drs. John Foltz and Carl Hunt.
 19. **Top 16 most cited publication Jan-June 2010** K.C. Chapalamadugu, B.D. Robison, R.E. Drew, M.S. Powell, R.A. Hill, J.J. Amberg, K.J. Rodnick, R.W. Hardy, M.L. Hill, **G.K. Murdoch** Dietary carbohydrate level affects transcription factor expression that regulates skeletal muscle myogenesis in rainbow trout (2009) *Comparative Biochemistry and Physiology, Part B* 153 66–72.
 20. **Top cited article 2008-2010** B. Robison, R. Drew, **Gordon K. Murdoch**, M.S. Powell, K. Rodnick, M. Settles, D. Stone, E.J. Churchill, R. Hill, M. R Papasani, S. Lewis, R.W. Hardy. (2008) Sexual dimorphism in hepatic gene expression and response to dietary carbohydrate manipulation in the zebrafish. *Comparative Biochemistry and Physiology, Part D* 3:141-154.
 21. Recipient of largest single Idaho Beef Council funded grant (at the time): Comparing proteomes and transcriptomes from the longissimus dorsi of high quality versus lower quality beef. Idaho Beef Council Amount requested \$64,915. PI Gordon Murdoch 7/1/10-6/30/2011.
 22. First PI to obtain second consecutive year of funding from the private foundation; Environmental Health Science Innovation Fund- Passport Foundation Amount requested \$20,000. PI Gordon Murdoch 7/1/10-8/31/2011.
 23. Kara J. Thornton, PhD student- Major Professor- winner Gamma Sigma Delta 2011 Graduate Research Student of the Year (College level Award).
 24. Kara J. Thornton, PhD student -Major Professor- Third Place winner, Graduate Research, 2010 Pacific Northwest Nutrition Conference, Vancouver, B.C., Canada.
 25. Kalyan Chapalamadugu, PhD candidate- Major Professor- winner Gamma Sigma Delta 2009 Graduate Research Student of the Year (College level Award).
 26. ABI Runner-up Food/Animal Research Program- received \$1500 US travel award, 2007.
 27. Faculty International Conference Award, University of Alberta, 2000.
 28. Young International Scientist Award, European Association of Animal Physiology, 2000.

Grants and Contracts Awarded: Total Awarded Career = \$4,229,672 which is a career average of \$352,473/yr. Amount awarded since promotion in 2012 = \$754,224 which is an average of \$125,704/yr. not including gifts.

1. RP-histidine supplementation of beef cattle in the feedlot; increasing whole carcass commercial value PI Gordon Murdoch Idaho Beef Council FY 2018 (July 01,2017-June 30,2019) \$30,000 **Funded**
2. Investigating the Impact of Arachnoid Trabeculae on Brain Tissue Stresses in Sports-Related Traumatic Brain Injury (TBI)". PI Bryn Martin co-PI Nathan Schiele, Gabriel Portirniche and Gordon Murdoch INBRE-NIH 03/2017-03/2019 \$75,000/annum. **Funded**
3. Mary Turner Endowment Fund 2018 RFP Effects of beef carcass size on chilling rate, display color, pH, and tenderness on the top round subprimal. PI's Phil Bass and M. Colle, collaborators; R. Richard, J. Nasados and Gordon Murdoch \$4784 **Funded**
4. Comparison of Two Phasitron designs for IPV. PI's Tao Xing, Rabijit Dutta and Gordon Murdoch. Percussionaire: 03/2017-07/2017 \$12,183 **Funded**
5. Year two: Improving color, color stability and flavor of the top sirloin through dietary rumen protected histidine supplementation. PI Gordon Murdoch Idaho Beef Council \$33,863 July 2016- June 2017 **Funded**.
6. Solving the maturity grade problem through targeted gene analyses. Idaho Beef Council \$23,640 July 2016-June 2017 **Funded**
7. Multi-scale Model of Interaction between Lung and Pulmonary Ventilation PI Tao Xing (Engineering) co-PI Gordon Murdoch Center for Modeling Complex interactions (CMCI)-NIH: **\$108,975** May 2016- April 2017. **Funded**
8. Determination and practical application of egg quality measures towards reliable culture of high-value marine finfish species: Gordon Murdoch USDA-WRAC FY 2016-2019 **Extension Amount: \$66,960 Funded**
9. Improved muscle growth and post-harvest meat color through dietary rumen protected histidine supplementation in rapidly growing cattle. PI: Gordon Murdoch Idaho Beef Council (FY2016) Requested \$68,000, of which **\$40,000** was awarded. Received research gift from Balchem Corp to allow project to proceed as initially intended. **Funded**
10. Understanding changes in muscle stem cell growth with age and changing microenvironment? PI: Gordon Murdoch Idaho Beef Council FY2015 \$57,403 **Funded**

11. Determination and practical application of egg quality measures towards reliable culture of high-value marine finfish species. PI: Gordon Murdoch USDA-WRAC FY 2014-2017 Amount: \$75,000 **Funded**
12. Bovine muscle and fat cell co-culture; validating natural means of favorably influencing muscle PI: Gordon Murdoch Idaho Beef Council FY2014 Amount :\$69,212 **Funded**
13. Will feeding supplemental polyunsaturated fatty acids (PUFAs) to pre-ruminating calves preferentially stimulate development of marbling PI Matthew Doumit co-PI Gordon Murdoch Idaho Beef Council FY2014 Amount: \$26,951 **Funded**
14. Co-culture of bovine muscle cells and fat cells in an environment that better models animal muscle; how do these cells influence each other? Idaho Beef Council FY 2013 Amount Requested: \$53,699 **Funded**
15. IL-6: Potential Regulator of Sprouty1 in Skeletal Muscle-University of Idaho Student Grant Program (SGP) Committee 2012 Graduate Student Jessica Macumber PI co-PI G.K. Murdoch funded in the amount of \$3000.00.
16. Pre-harvest nutrition designed to improve livestock performance and product quality Idaho Beef Council 2012 PI: Gordon Murdoch \$48,160 **Funded**
17. Does arachidonic acid preferentially stimulate differentiation of bovine intramuscular preadipocytes via prostaglandin synthesis? Idaho Beef Council 2012 PI: Matthew Doumit co-PI G.K. Murdoch \$25,394 **Funded**
18. An improved *in vitro* model representing *in vivo* muscle stem cell development 2011 University of Idaho Student Research Grant Proposal \$3000 PI: Kara Thornton **Funded**
19. Effects of fetal bisphenol A exposure on oogenesis in primates (R01ES016770)-supplement for cardiac and skeletal muscle analyses 2010/11 NIEHS-supplement Total Direct \$26640 + Indirect cost \$11561 = \$38201.76 (**NIH funding**)
20. Impact of BPA on the developing hearts protein expression. Environmental Health Science Innovation Fund-Passport Foundation Amount requested \$20,000. PI Gordon Murdoch 7/1/10-8/31/2011 **Funded**
21. Comparing proteomes and transcriptomes from the longissimus dorsi of high quality versus low quality beef. Idaho Beef Council Amount requested \$64,915. PI Gordon Murdoch 7/1/10-6/30/2011 **Funded**
22. NSF-PFI- Development of a novel fish erythrocyte gene expression to measure environmental responses and predict overall physiological function Amount Requested \$599,996 PI's: R. W. Hardy, J. McIver, K.J. Rodnick, Co-PI's G. K. Murdoch, M. Powell, K. Cain 03/1/2010-02/29/2012. **Funded**
23. Effects of maternal BPA exposure in Rhesus monkeys on gene expression and metabolism in fetal cardiac and skeletal muscle" Environmental Health Science Innovation Fund- Passport Foundation Amount requested \$49,372. PI Gordon Murdoch 5/31/09-6/01/2010 **Funded**
24. Evaluating muscle glycogen storage capacity, meat color, and color stability in cattle genetically selected for efficiency EPD's Idaho Beef Council \$27,021. PI Gordon Murdoch **Funded**
25. Selenium homeostasis and anxiety RENEWAL COBRE/IBEST Amount requested \$40,000 PI Barrie Robison co-PI Gordon Murdoch 6/01/09-5/31/10 **Funded**
26. Laser-assisted micro-dissection of muscle satellite cells for gene expression analyses University of Idaho Seed Grant Amount requested \$12,000. PI Gordon Murdoch 7/01/09-6/31/2010 **Funded**
27. Determining size effects on phosphorus uptake, skeletal mineralization and phosphorus metabolism in rainbow trout WSU/UI USDA-CSREES Earmark Amount requested \$45,000 12/03/07-11/30/09 PI Madison Powell co-PI Gordon Murdoch **Funded**
28. Changing skeletal muscle characteristics in steers with a focus on end-product meat quality evaluation: the benefits of early versus late ractopamine supplementation. Idaho Beef Council. Amount Requested: \$38,418. PI: Gordon Murdoch. Other Collaborators: Jason Ahola, Chris Schneider, Rod Hill, **Funded** 9/1/2007 to 8/31/2009
29. Determining size effects on phosphorus uptake, skeletal mineralization and phosphorus metabolism in rainbow trout. USDA (United States Department of Agriculture). Submitted 11/2006. Amount Requested: \$10,000. PI: Madison S Powell. Co-PI's: Gordon Murdoch. **Funded**. Amount Funded: \$10,000. 12/3/2008 to 11/30/2009
30. Evaluating the effects of pre-harvest feeding duration on market dairy cow carcass characteristics, value, and end-product eating quality. National Cattle Beef Association. Submitted 11/2007. Amount Requested: \$54,801. PI: Jason Ahola. Other Collaborators: Carl W Hunt, Mireille Chahine, Rod Hill, Gordon Murdoch. **Funded**
31. NSF EPSCoR additional student support for Kalyan Chapalamadugu June 08-December 08. Amount requested \$12,625.20 + benefits. **Funded**
32. Selenium homeostasis and anxiety: the role of genotype Center of Biomedical Research Excellence (COBRE) grant in the amount of \$39,740 (direct costs) PI Barrie Robison, Co-PI Gordon Murdoch, June 1, 2008 to May 31, 2009 **Funded**

33. Effects of Fatty Acids on Differentiation of Bovine Preadipocytes from Intramuscular and Subcutaneous Fat Depots Idaho Beef Council. Amount requested \$42,559 PI Matt Doumit Collaborators: Rodney A. Hill, Gordon K. Murdoch. **Funded**
34. GrowSafe Individual Feed and Water Intake System. Equipment Grant. NSF EPSCoR. (Hill, Ahola, Murdoch & Bohach). Amount Requested: \$166,300. **Funded**
35. Improving the Safety and Shelf Life of Agricultural Commodities Idaho Federal Appropriation Proposal. (Aston, McIlroy (PIs), Maki, Branen, Branen, Hill (co-PIs) and multiple investigators including Gordon K. Murdoch). 2008-2011, \$1,472,559 **Partially funded** (\$600,000 for one year)
36. Swine Reproductive Development Program. Alberta Livestock Industry Development Fund. Submitted 11/2006. Amount Requested: \$1,500,000. PI: George Foxcroft. Co-PI's: Walter Dixon, Michael Dyck. Other Collaborators: Gordon Murdoch. **Funded**. Amount Funded: \$1,500,000. 5/1/2007 to 6/30/2012
37. Determining size effects on phosphorus uptake, skeletal mineralization and phosphorus metabolism in rainbow trout. USDA (United States Department of Agriculture). Submitted 11/2006. Amount Requested: \$35,000. PI: Madison S Powell. Co-PI's: Gordon Murdoch. **Funded**. Amount Funded: \$35,000. 12/3/2007 to 11/30/2009
38. Cloning and Characteristics of Pax7 Gene Promoter. Student Research Grant G. Murdoch (Faculty advisor/mentor), Kalyan Chapalamadugu. **Funded**. Requested \$1500

Gifts/donations

1. Percussionaire Corporation, Post-doctoral support \$80,000 2017-2018
2. Percussionaire: \$183,000 Ventilators, work station, cash resources for supplies in support of respiratory trials.
3. Balchem- \$20,000 comprised of \$6,800 rumen protected histidine and \$13,200 gift for histidine project.
4. Zoetis- \$3,000 veterinary supplies for histidine project
5. Stimson Lumber (\$2,500 donation of wood chip bedding for histidine project)
6. Buell trucking (\$250 donation of delivery cost for donated wood chips)

Grants and Contracts Submitted Unfunded:

1. Acquisition of a High-resolution and Variable Property 3D Printer for Biophysics and Environmental Research” PI; T. Xing, co-PI; **G Murdoch** and 5 others **NSF-MRI** selected as internal candidate submission by UI Feb 05, 2018. Request \$350,000 **Unfunded but with strong scores**
2. Developing Tools to Optimize Fish Muscle Quality and Growth. NOAA Internal Competitive Aquaculture Funds FY 2018. Submitted December 01, 2017 Ronald Johnson and Lisa *Armbruster*. **Collaborating outside scientist: Gordon Murdoch Unfunded**
3. Influence of dry heat cooking method and degree of doneness on beef strip loin amino acid content, fatty acid profile, fat-soluble vitamin content, and nutrient composition PI's P. Bass & M Colle co-PI G Murdoch and P. Rezamand **FY 2018 National Cattlemen's Beef Association Request: \$59,100 Unfunded**
4. Mary Turner Endowment 2018 RFP Polyamines: Nutrients that promote muscle growth in beef cattle. PI: G Murdoch \$5000 **Unfunded**
5. Enhancing the value of the beef top sirloin butt (NAMI 184) through muscle specific fabrication into custom cuts, 2018, Product Quality RFP - National Cattlemen's Beef Association, P. Bass (PI), M.J. Colle, P. Rezamand, G. Murdoch; \$43,705. **Unfunded**
6. Influence of dry heat cooking method and degree of doneness on beef strip loin amino acid content, fatty acid profile, fat-soluble vitamin content, and nutrient composition, 2018, Product Quality RFP - National Cattlemen's Beef Association, M.J. Colle (PI), P. Bass (Co-PI), G. Murdoch, P. Rezamand; \$59,100 **Unfunded**
7. Developing Tools to Better Understand and Improve Sablefish Muscle Quality and Growth. NOAA FY 18 Saltonstall Kennedy Grant Program pre-proposal. October 4, 2017. Gordon Murdoch and Lisa Armbruster unfunded Request \$85,000*(NOAA scientists; Ron Johnson and Jon Lee were federal collaborators)
8. NIH-STTR Development of Next Generation Flow Ventilators to improve Treatment of Chronic Obstructive Pulmonary Disease Percussionaire Industry PI, Drs. Gordon Murdoch and Tao Xing co-PD UI \$101,200 **Unfunded**
9. Mary Turner Endowment 2017 RFP Undergraduate student applied research: Developing assays pertaining to deposition of antioxidants in muscle tissue from beef and sheep. \$3750 **Unfunded**
10. USDA-NIFA Finishing ration histidine supplementation to maximize growth, feed conversion, and beef quality. PI Gordon Murdoch \$459,318 **Unfunded**
11. NSF-STTR An Expert System for the Optimization of Pulmonary Ventilation. Collaboration with Industry partner; Percussionaire. PI G. Murdoch \$87,311 UI subcontract of \$197,000 total budget over two years **Unfunded**
12. Next Generation Intrapulmonary Percussive Ventilation Technique for Effective Duchenne Muscular Dystrophy Treatment Pre-application screening for the Fiscal Year 2015 (FY15) \$35000 proposal **Unfunded**

13. Murdoch G.K. Murdoch, B.M. Examining genetic contribution to advanced heifer maturity assessed at harvest. Idaho Beef Council FY 2016 \$36,360
14. Multiscale Computer Models for Understanding and Optimizing Pulmonary Ventilation (2014) IBEST Pilot Research Grant Program PI: Tao Xing, Co-PI Gordon Murdoch, Collaborator Loel Fenwick (Percussionaire). \$206,122 **Unfunded**
15. Improved muscle growth and post-harvest meat color through dietary rumen protected histidine supplementation in rapidly growing cattle. (2014) IBC- Gordon Murdoch \$72,179 **Unfunded**
16. Pre-harvest histidine supplementation of beef cattle; improving growth, antioxidant content and color stability of beef. GK Murdoch, ME Doumit, BM Murdoch R Richard 2014 USDA-NIFA \$498,270. **Unfunded**
17. NSF-STTR An Expert System for the Optimization of Pulmonary Ventilation. Collaboration with Industry partner; Percussionaire. PI G. Murdoch \$87, 311 UI subcontract of \$197,000 total budget over two years (**Industry partner failed to submit by deadline- unfunded**)
18. Idaho Cow-Calf Herds; A Genetic Resource for Understanding and Improving Reproduction and Calf Growth Efficiency in Varied Climates. B.M. Murdoch, J.B. Hall, B.J. Glaze and G.K. Murdoch. 2014 USDA \$149,768 **Unfunded**
19. BD Robison, GK Murdoch, P Hoehenloe 2013 NIH A zebrafish model for early cortisol effects on the brain and behavior. \$1,866,325.00 **Denied**
20. GK Murdoch, ME Doumit, BM Murdoch 2013 USDA-NIFA Improving beef cattle growth via a modified regimen of oral β -agonist administration. 2013 \$493,368.08 **Denied**
21. Idaho Potato Commission Enhancing the value of potatoes as a preferred ruminant feed through scientific evaluation of potato's intrinsic feeding value, and their effects on beef production, sustainability, economics and meat quality 2013 M. Drownoski, GK Murdoch ME Doumit, A Johnson \$28,951 **Denied**
22. Graduate Student: PI Kara Thornton co-PI G.K. Murdoch Amount Requested \$5,000 **Denied**
23. Improving growth of beef cattle through novel regimen of β -agonist administration, enhancing efficiency and carcass quality. USDA-NIFA PI: Gordon Murdoch co-PI's Matthew Doumit and Brenda Murdoch Amount requested \$498,210 **Denied**
24. Enhancing the healthful characteristics of beef through manipulation. Idaho Beef Council. Submitted 4/2007. Amount Requested: \$37,489. PI: Alexander Hristov. Other Collaborators: Jason Ahola, Carl W. Hunt, Gordon Murdoch. **Denied**
25. Improving the economics of salmonid enhancement through reduction of stress-induced mortality. Higher Education Research Council. Submitted 8/2007. Amount Requested: \$75,000. PI: Gordon Murdoch. Co-PI's: Barrie D. Robison, Ronald W. Hardy, Ken Rodnick, Madison S Powell. **Denied**
26. MRI: Acquisition of a high-throughput Illumina bead array station for the analyses of transcriptomics and genomics in populations of Idaho's keynote agriculture and aquaculture species, and the experimental models that represent them.". NOI NSF-MRI. Submitted 8/2007. Amount Requested: \$334,000. PI: Gordon Murdoch. Co-PI's: Barrie D. Robison, Madison S Powell, Ronald W. Hardy, Rod Hill. **Denied**
27. Developing a molecular assay for skeletal muscle fiber-typing. Student Research Grant G. Murdoch (Faculty advisor/mentor), Madison Dinning. **Denied**. Requested \$1500
28. Evaluating influence of vitamin A on marbling parameters in beef steers, in the context of altered expression of candidate genes and their respective proteins. National Cattle Beef Association Amount Requested: \$84,052 PI: Gordon K. Murdoch, Collaborators: Josh Szasz, Christopher Schneider, Jason K. Ahola, Ronald Richards, Carl W. Hunt, Rodney A. Hill, M. Doumit. **Denied**
29. IGERT for Applications of Bioactive Nanomaterials. National Science Foundation (PI's: Aston, Nagler, Stenkamp, Co-applicants Murdoch and 38 others). \$2,800,000 **Denied**
30. Improving the Safety and Shelf Life of Agricultural Commodities Idaho Federal Appropriation Proposal. (Aston, McIlroy (PIs), Maki, Branen, Branen, Hill (CoPIs) and multiple investigators including Gordon K. Murdoch). 2008-2011, \$1,472,559 **Denied**
31. Enhancing quality grade and tenderness simultaneously with production efficiency. PI R Hill, G. Murdoch (collaborator) NCBA 2008 Requested \$63,332. **Denied**
32. Evaluating candidate genes and their proteins, their modulation by vitamin A, and their over-all influence on marbling parameters in beef steers. PI Gordon Murdoch, NCBA 2008 Requested \$103,707 **Denied**
33. An HPLC to strengthen analytical opportunities in lactation and growth National Research Initiative Competitive Grants Program, USDA-CSREES Equipment: HPLC PI McGuire Co-applicants Gordon Murdoch, Pedram Rezamand \$30,000 **Denied**
34. Physiological regulation of myogenesis and adipogenesis. Amount requested \$100,000 PI: Gordon K. Murdoch USDA CSREES grant. **Denied**

35. Evaluating end-product meat quality in the context of existing genetic selection practices. Idaho Beef Council, Amount Requested \$32,739.65 PI Gordon K. Murdoch collaborators Matt Doumit, Rod Hill, Christopher Schneider, Jason Ahola. **Denied**
36. The Role of the Cow Herd in Optimizing Meat Quality and Efficiency Idaho beef Council Amount requested: Year 1 \$32,163, Year 2, \$55,225. PI RA Hill co-PI Gordon Murdoch , J. Ahola, J. Hall **Denied**
37. Physiological Regulation of bovine myogenesis and adipogenesis USDA/AFRI Seed Amount requested \$118,769 PI Gordon Murdoch **Denied**
38. Fine mapping and functional analysis of loci associated with Johne's disease USDA/AFRI -001030 Amount requested \$459,159 PI HL Neibergs co-PI's J. Taylor and Gordon Murdoch **Denied**
39. Evaluating influence of vitamin A on marbling parameters in beef steers, in the context of altered expression of candidate genes and their respective proteins. National Cattle Beef Association Amount Requested: \$84,052 PI: Gordon K. Murdoch, Collaborators: J. Szasz, C. Schneider, J. K. Ahola, R. Richard, C. W. Hunt, R. A. Hill, M. Doumit. **Denied**
40. IGERT for Applications of Bioactive Nanomaterials. National Science Foundation (PI's: Aston, Nagler, Stenkamp, **Co-applicants** Murdoch and 38 others). \$2,800,000 **Denied**
41. Idaho/INBRE Post-doctoral grant PI Gordon Murdoch Amount requested: One year Post-doctoral student annual stipend \$50000 **Denied**
42. Implications of Maternal Genetics in Optimizing Animal Efficiency towards Uniform End-Product Quality. PI RA Hill, co-PI GK Murdoch Idaho Beef Council (Amount requested: \$32445/yr one, \$55000/yr two total: \$87445 **Denied**
43. Global Integration of Feed Efficiency in Beef Cattle. PI RA Hill co-PI GK Murdoch and others AFRI Amount requested \$5,000,000 **Denied**

Grants and Contracts Pending

1. Feedlot evaluation of RP-histidine supplementation in finishing phase Pending with Balchem and Johnson research **Request to supplement IBC funding ~ \$200,000.**
2. Multidisciplinary Graduate Training: Sustainable Beef Production - Effect of the Beef Cow Environment PI; M. Colle and J. Hall, co-PIs BEEF POD Faculty **USDA-National Needs Fellowship Grant, Request: \$300,000 Pending**
3. Internal Keck: Wireless fencing for cattle on range (Under development but selected for Stage 2 consideration by UI Research and Grants, July 2018)

SERVICE:

Major Committee Assignments:

1. Appointed AVS-Faculty mentor for Junior faculty; Dr. Gwinyai Chibisa (Assistant Professor, Beef Nutrition, 2017-current)
2. Appointed AVS-Faculty Mentor for Junior faculty; Dr. Michael Colle (Assistant Professor, Meat Science, 2017-current)
3. CALS & AVS Research Faculty Representative for Collaboration and Curriculum Development with BYU-Idaho, Rexburg, ID, May 3rd-5th, 2018
4. Chair CALS Safety committee 2017-current
5. Nancy M. Cummings Research Education and Extension Center (NMCREEC) Advisory committee Invitation by Superintendent and Director Dr. John Hall. 2017-current
6. AVS undergraduate curriculum committee 2017-current
7. Internal AVS Hatch Review; Dr. Philip Bass
8. Internal AVS Hatch Review Dr. Michael Colle
9. Peer Grant Review Panel- USDA-NIFA Animal Nutrition, Growth, and Lactation Program, September 2017
10. External Hatch review for Dr. Joseph Harrison (WSU) Project multi-investigator proposal June 2017
11. Search committee member University of Idaho, Animal & Veterinary Science Department Head 2017
12. Search committee member Meat scientist Assistant/Associate Professor 2017 resulting of two faculty hires, Drs. Colle and Bass
13. Search co-committee chair search with Dr. Benton Glaze Large Ruminant Veterinary Medicine Research Faculty Positions 2016-2017
14. Graduate Faculty Council Committee (Appointed August 2013 ongoing)
15. CALS Strategic Recruitment committee (Appointed June 2014-2015)
16. Search Committee member CNR Fish Physiology Position Hagerman: Hired Dr. Brian Small (January 2015)

17. Search Committee member CNR Fish Physiology Position Moscow Recommended Dr. Buentonello- failed negotiation (January 2015)
18. CALS Floor Marshal, University of Idaho Spring convocation 2013, 2014 and 2015, 2016
19. AVS Faculty search committee member for range Livestock position 2015/2016 Offer conferred and accepted by top recommended candidate: Dr. Melinda Ellison
20. Chair, Faculty Search committee for two Livestock Nutrition and Metabolism positions, offers conferred and accepted by Drs. Chibisa and Laarman. (2014-2015)
21. CALS Strategic Recruitment Committee
22. Appointed to the University of Idaho, Graduate Faculty Council Board (3 year term 2013-2016)
23. AVS Outstanding Student selection committee 2012-current.
24. External Scientific review Dr Kris Johnson's ARC grant 2013 as per request from Dr. Margaret Benson (WSU)
25. Promotion and Tenure Review Committee, Dr. Pedram Rezamand 2013
26. Internal USDA: Hatch Review Dr. John Hall 2013
27. Internal USDA: Hatch Review Dr. Mary Drewnoski 2013
28. Session Chair ASAS Annual Conference Growth and Development , Indianapolis 2013
29. Selection Committee AVS Faculty Beef Extension position 2012/2013
30. Dr. Pedram Rezamand Third year review committee (2011)
31. AVS Graduate Program committee 2011-present
32. NSF-IDBR panel member convened October 2011
33. National Steering committee 4th International Symposium on Energy and Protein Metabolism Scheduled for September 9th -12th, 2013, Sacramento, CA.
34. Served on UI Economic Development Faculty Focus Group on behalf of UI CALS (2011)
35. Erica Bree Rosenblum (UI- Biology)–External member of third year review committee (2011)
36. Tracy Davis Third year review committee (2010)
37. Christopher Schneider Promotion and Tenure committee (2010)
38. UI AVS representative at Tri-state Graduate Student Teaching meeting (2010)
39. Editorial Board Member Journal of Animal Science (5 year appointment 2009-2013)
40. External Hatch Review of Dr. Kris Johnsons' proposal (2009) Requested by Dr. Margret Benson Chair Animal Science (WSU)
41. Internal review Dr. Pedram Rezamand's AVS Hatch proposal (2009) Requested by Dr. Carl Hunt, Department Head AVS
42. Mark McGuire Promotion committee (2008)
43. CALS Safety committee AVS representative (2008-present)
44. Presentation to Idaho Beef Council Board of Directors, May 2008
45. Presentation to Faculty Advisory Board, Moscow, Idaho, 2008
46. EPSCoR-NSF Fish Physiology and Genomics Final Report, May 2008
47. Presentation and Tour to Idaho Cattle Association Summer 2008
48. Presentation and Tour to North Idaho Cattle Association Summer 2008
49. WSAS Abstract reviewer (2007) Hosted by UI- Animal and Veterinary Science

Professional and Scholarly Organizations

1. Faculty Member UI IBEST
2. Faculty Member UI CMCI
3. American Physiological Society (active current member)
4. Member International Society for Energetics and Protein 2013 Organizing committee
5. Member of the Multi-state Hatch Funded Project/Activity Number: NC1184 - Molecular Mechanisms Regulating Skeletal Muscle Growth and Differentiation
6. US National BPA Gene Expression research consortium member
7. US National BPA Reproduction and Development research consortium member
8. UI/WSU/UW Muscle Biology Research Group
9. American Society of Animal Science (active current member)
10. Society for the Study of Reproduction (2006-2015)
11. WSU/UI Center for Reproductive Biology (2006-2015)
12. Academic/Scientific Reviewer for UI Student Research Grant Proposals (\$5000) category. November, 2007

Ad-Hoc Reviewer (Journals& Grants)

1. Journal of Animal Science
2. PLoS One
3. Journal of Agricultural Chemistry and Food Chemistry
4. Domestic Animal Endocrinology
5. NSF-IDBR Equipment Grant
6. Canadian Journal of Animal Science
7. Animal
8. Reproduction, Fertility and Development
9. Aquaculture Research
10. American Journal of Physiology
11. Journal of Molecular Biology
12. Comparative Biochemistry and Physiology
13. Lipids
14. PLoS Genetics

PROFESSIONAL DEVELOPMENT: (workshops and seminars attended)

Teaching:

1. Attended 3rd annual Faculty Teaching & Advising symposium UI, October 13, 2006.
2. Attended ASAS Kansas City New Methods for teaching Animal Physiology Conference 2014
3. Attended ASAS Teaching Undergraduate Physiology seminar series ASAS 2017 Baltimore, Maryland
4. Attended ASAS Teaching Animal Science seminar ASAS 2018 Vancouver, BC, Canada

Scholarship:

1. Reporting Grant outcomes and Impact of Multistate Research projects Workshop October 19, 2017
2. University of Idaho Sharps disposal and Hazardous lab material training 2017
3. University of Idaho Safety and Security Awareness training 2017
4. University of Idaho Selection Hiring Success training 2016
5. University of Idaho Employment Legal landscape part 1 training 2016
6. University of Idaho Employment Legal landscape part 2 training 2016
7. University of Idaho Stewardship of resources training 2016
8. University of Idaho Performance evaluations training 2016
9. University of Idaho Mission and Goals training 2016
10. University of Idaho Performance management training 2016
11. Attended Joint annual ADSA-ASAS Symposium, Orlando, FL June 2015
12. Site visit, presentation and tour of Simplot, October 2015
13. Improved Grant Writing skills through utilization of CALS grant-writers review
14. Attended Professional Communication in the workplace seminar at UI in November 2015
15. Attended ASAS Annual Meeting, Kansas City, MO July, 2014
16. Attended ASAS Annual Meeting, Indianapolis, IN, July 8-12, 2013.
17. Attended ASAS Annual Meeting, Phoenix, AZ, July 15-19, 2012.
18. Attended ASAS Annual Meeting, New Orleans, LA, July 10-15, 2011.
19. Attended ICA Mid-year Conference, Jackpot Nevada June 2011.
20. Attended CRB WSU/UI Annual Meeting/conference, Pullman, WA May 2011.
21. Attended ARIADNE Gene Expression analyses training symposium, Hagerman, ID, June 2010.
22. Attended CRB WSU/UI Annual Meeting/conference, Spokane, WA May 2010.
23. Attended American Fisheries Society Conference, Nashville, TN, August 30-September 3, 2009.
24. Attended Joint ADSA-ASAS-CSAS Annual Meeting, in Montreal, Quebec, Canada, July 11-16, 2009.
25. Attended and chaired session at SSR Annual meeting, Pittsburgh, PA, USA, July 18-22, 2009.
26. Attended Annual WSU/UI CRB conference in Orofino, Idaho, May, 2009.
27. Active Participant in Next-generation Sequencing seminars, UI Moscow, ID, Fall 2008.
28. Traveled to Washington, DC, met with 4 NSF Program directors, April 2008.
29. University of Idaho Beef Faculty meeting, McCall, Idaho, June, 2008.
30. Annual American Society of Animal Science Conference, Indianapolis, Indiana, July 2008
31. AGRI-Beef Tour and meetings with Presidents: Moses Lake Performix Feed Mill (Dr. Tim Bodine), El Oro Cattle Feedlot (Dr. Dave Secrist) and Toppenish AB Foods Processing Plant (Dr. Bradley McDowell).
32. Attended INBRE August 4-6th 2008, conference in Boise Idaho.
33. Attended International Symposium of Energy and protein Metabolism, Vichy, France, September 2007.

34. Attended Annual Idaho Aquaculture Meeting, Twin Falls, Idaho, June 2007.
35. Attended Western Section of Animal Science Meeting, Moscow, Idaho June 2007.
36. University of Idaho Beef Faculty meeting, McCall, June, 2007.
37. Illumina Bead Array Express Seminar January 2007.
38. Attended Annual ICA Meeting Sun Valley, Idaho, November 15, 2006.

Professional References:

1. Dr. Carl W. Hunt, Professor Emeritus, Animal Nutrition and former Department Head
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Email: chunt@uidaho.edu
Mailing Address: University of Idaho
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2. Dr. Charles T. Putman, Associate Professor
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Mailing Address: University of Alberta
Faculty of Physical Education and Recreation and Neuroscience and Mental Health Institute Faculty of Medicine & Dentistry
Edmonton, Alberta, Canada T6G 2H9
3. Dr. Mark McGuire, Professor Physiology (Dairy) and Associate Dean of Research and Ag Station Director
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Graduate Student References:

1. Dr. Kara Thornton-Kurth, Assistant Professor, Nutritional Genomics & Growth Biology
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2. Breann Sandberg, MS Research Director Johnson Research
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3. Lisa Chandler-Armbruster, MS, NOAA Fisheries Research Division
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