

CURRICULUM VITAE

**GREGORY S. FRALEY, Ph.D.**  
**Professor**

**Personal Data:**

Date of Birth: April 24, 1966  
Place of Birth: Baltimore, MD  
Address: Biology Department  
Hope College  
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**Scholastic Record:**

Ph.D. 1992-98 Washington State University at Pullman (Ph.D. Neuroscience),  
Postnatal Development of the Spinal Nucleus of the  
Bulbocavernosus in the Mongolian Gerbil: Effects of Peripubertal  
Gonadal hormones on Anatomy, Androgen Receptor, and  
Neurotrophin Receptor Expression. Dissertation Major Advisor:  
Associate Professor Catherine Ulibarri, Center for Neurosciences

M.S. 1989-92 University of Maryland at College Park (Physiology/Emphasis on  
Neuroscience), Physiological Changes Within the Central  
Nervous System During Kinfe-cut or Biochemically Induced  
Sexual Precocity. Thesis Major Advisor: Professor Wayne J.  
Kuenzel

B.S. 1984-89 University of Maryland at College Park (Animal  
Science/Emphasis on Physiology)

**Postdoctoral Research:**

03/02-5/04 University of Washington, Department of Physiology and  
Biophysics and Department of Obstetrics and Gynecology;  
Postdoctoral Mentor: Professor Robert Steiner

- 06/1999-03/02 Washington State University, Department of VCAPP;  
Postdoctoral Mentor: Professor Sue Ritter
- 04/1998-1999 University of California at Los Angeles, Brain Research Institute;  
Postdoctoral Mentor: Professor Arthur P. Arnold

**Competitive Funds Acquired:**

- 2018 Hope College Capital Grant. Aviary Remodel. \$44,000.
- 2018 USDA-NIFA SEED Grant # 2018-67016-27616, "Bench top to table top: neural mechanisms of light perception to improve commercial lighting systems to increase fertility in Pekin ducks. \$150,000
- 2017 Hope College Capital Grant. PowerLab Equipment for teaching introductory and advanced physiology and for research. \$54,000.
- 2013 Co-PI: Introduction to Biology, New Core Course Development. HHMI (\$10,000.00).
- 2013 PI: To Feed or Breed: GnIH-3 Stimulates Food Intake in Rats. NIH-NIDDK (R15, \$240,269.00; DK096541-01A1).
- 2011 PI: *Analyses of Gait in Commercial Strains of Pekin Ducks*. Great Lakes Association New Directions Initiative (\$6,800).
- 2011 PI: *Resveratrol Reduces Cell Injury Caused by Surgery Mimicking Deep Brain Stimulation*. Campbell Foundation supplement (\$5, 500/year for 1 years).
- 2011 PI: *Resveratrol Reduces Cell Injury Caused by Surgery Mimicking Deep Brain Stimulation*. Campbell Foundation grant (\$25, 000/year for 2 years).
- 2010 PI: *Identification of nutraceuticals for reducing traumatic brain injury*. HHMI grant (\$12,500).
- 2010 PI: *A New Focus in Research: Investigating the Neurobiology of and Treatments for Neurodegenerative Disease*. Great Lakes College Association (\$15, 000)
- 2008 CO-PI: NSF REU site, Environmental Impacts on Biological Systems: From Molecules to Ecosystems. (\$250,835.00).

- 2008 HHMI Faculty Development Grant: Rehearsal vs. Performance: Salivary Cortisol Levels as a Physiological Response in Dancers (\$10,000)
- 2007 CO-PI: Supplement to MRI: Acquisition of Apotome/Fluorescence Microscope Imaging System for Enhanced Research in the Biological Sciences at Hope College (\$13, 715.00)
- 2007 HHMI Award for Development of Neuroscience Capstone Course. (\$10,000)
- 2006 NSF, MRI Award (CO- PI), *MRI: Acquisition of Apotome/Fluorescence Microscope Imaging System for Enhanced Research in the Biological Sciences at Hope College* (\$147, 642).
- 2004 NIDDK K01 Career Advancement Award, *Metabolic Control of Reproduction* (DK066238-01A1; \$336,450.00)
- 2000-2002 Poncin Research Foundation Postdoctoral Fellowship
- 1998-99 UCLA Brain Research Institute, Laboratory for Neuroendocrinology Postdoctoral Research Fellowship Institutional Award
- 1995-96 Washington State University Graduate School Travel Award
- 1994 Sigma Xi Grant-in-Aid of Research
- 1993-95 Poncin Research Foundation Scholarship
- 1993 Sigma Xi Grant-in-Aid Research
- 1991 C.S. Schaffner Award

**Professional Experience:**

**Purdue University**

2020 – current Terry and Sandra Tucker Endowed Chair of Poultry Research, Department of Animal Sciences, Associate Professor.

**Sichuan Agricultural University**

2018-current Adjunct Faculty Animal Nutrition and Feed Science

## **Hope College**

- January 2015 Promoted: Professor
- July 2008 Tenured and promoted: Associate Professor
- July 2004 Assistant Professor

## **American Pre-Veterinary Medical Association**

2010 – current Elected Member, Advisory Board of Trustees

## **Midwest Poultry Consortium, Center of Excellence**

2012 - current Avian Physiology, AnSci 503, University of Wisconsin,  
Madison, WI (May Term)

## **University of Washington School of Medicine**

Spring 2002 Guest lecturer, PBIO 509/Neubeh541, Behavioral  
Neuroendocrinology

## **Washington State University, College of Veterinary Medicine**

- 1992-93 Research Assistant: WSU-VCAPP
- Spring, 1995 Teaching Assistant: ZOOL 353 (Physiology); Overall evaluation  
rating = 4.6 on a 1 to 5 scale (Average for Zoology Department =  
4.3)
- Spring, 1996 Teaching Assistant: ZOOL 353 (Physiology); Overall evaluation  
rating = 4.6 on a 1 to 5 scale (Average for Zoology Department =  
4.3)
- Spring 1996 Teaching Assistant: Van 403 (Exotic & Avian Gross Anatomy)
- Spring 1996 Teaching Assistant: Van 513 (Veterinary Neuroscience)
- Fall 1996 Teaching Assistant: Van 401 (Veterinary Gross Anatomy);  
Overall evaluation rating = 4.56 on a 1 to 5 scale
- Spring 1997 Teaching Assistant: Van 403 (Veterinary Exotic and Avian Gross  
Anatomy)
- Fall 1997 Teaching Assistant: Van 511P (Veterinary Gross Anatomy)
- Spring 1998 Teaching Assistant: ZOOL 353 (Physiology)
- Fall 1999 Instructor: Van 511P (Small Animal Veterinary Gross Anatomy)
- Spring 2000 Instructor: Van 512P (Large Animal Veterinary Gross Anatomy)
- Fall 2000 Instructor: Van 511P (Small Animal Gross Anatomy; Evaluation =

4.21, scale 1-5)

**University of Maryland at College Park**

1988 - 1992 Teaching Assistant for Comparative Anatomy, Genetics, and Physiology in the Animal Science and Poultry Science Programs.

**Scientific Organizations:**

1989-PRESENT American Association for the Advancement of Science  
1989- PRESENT Poultry Science Association  
1989-93 Phi Sigma Delta, Maryland Chapter  
1989-93 Sigma Xi, Maryland Chapter  
1989-PRESENT Society for the Study of Ingestive Behavior (SSIB)  
1992-PRESENT Society for Neuroscience  
1998-2010 Society for Behavioral Neuroendocrinology  
2002-PRESENT Endocrine Society & American Diabetes Assoc.  
2004- PRESENT Council for Undergraduate Research

**Honors and Awards:**

2018 Nominated, "Pullet-zer Prize for Excellence in Teaching"  
2017 "Pullet-zer Prize for Excellence in Teaching" MPC-COE  
2015 Duck Researcher of the Year, Biennial presentation, Poultry Science Association Annual Conference  
2015 Fraley Research Team awarded: Appreciation of Significant contributions towards Duck Research and production in the poultry industry.  
2012 "Teller" for Poultry Science Association Annual Business Meeting  
2012 Elected Member, National Advisory Board for the American Pre-Veterinary Medical Association  
2008-2010 Awards Committee Member, Society for Behavioral Neuroendocrinology  
2006-2012 Member, Organization Committee for West MI Regional Undergraduate Scientific Research Symposium

- 2003 Travel Award, Society for Behavioral Neuroendocrinology
- 2000-2002 Poncin Research Foundation Postdoctoral Fellowship Award
- 1998 Veterinary Gross Anatomy Teaching Award
- 1995-96 Washington State University Graduate School Travel Award
- 1994 Sigma Xi Grant-in-Aid of Research
- 1993-95 Poncin Research Foundation Scholarship
- 1993 Sigma Xi Grant-in-Aid Research
- 1992 East Coast Hatchery Association Award for Research Excellence
- 1991 C.S. Schaffner Award for Academic Achievement in the Poultry Sciences
- 1990 Sigma Xi Graduate Student Paper Competition: Awarded Membership
- 1988 Macintosh Corporation Award for Computer Aided Instruction: Educational Computer Programming Conference (EduCom 1988)

**Invited Presentations:**

- 2018 Animal Welfare Assessment Contest. Judge for duck welfare.
- 2018 Feed Restriction in the grow-out duck Part 2: Success and new challenges.
- 2017 Distribution of deep brain photoreceptors in the Pekin duck and a role for blue light-sensing melanopsin to maintain reproduction in the drake. Penn State University, College Station, PA.
- 2017 Effects of food restriction on growth and development in grow out Pekin ducks. Annual Duck Research Symposium, Maple Leaf Farms, Inc. Leesburg, IN.
- 2017 Lighting in poultry housing systems. Poultry Health Symposium. Michigan State University College of Veterinary Medicine. Lansing, MI.
- 2016 Pekin duck welfare in the poultry industry: do ducks need open water sources?? A role for basic neuroendocrinology and interdisciplinary research to improve poultry welfare. Ross University School of Veterinary

Medicine.

- 2016 Potential Therapeutic Value of Resveratrol for Cerebral damage following surgery or traumatic injury. Ross University School of Veterinary Medicine.
- 2016 Role of deep encephalic photoreceptors in gonadal recrudescence in a seasonal breeder, the Pekin duck. Ross Univ School of Vet Medicine.
- 2016 Neuropeptide Regulation of male-typical sexual behavior and erectile function. Ross University School of Veterinary Medicine.
- 2015 Role of galanin-like peptide in the regulation of male typical sex behavior and erectile function in sexually experienced male rats. European Neuropeptides Meeting, Aberdeen, Scotland.
- 2014 Poultry welfare and wellbeing as it pertains to the Pekin Duck. Ross University College of Veterinary Medicine. St. Kitts, West Indies.
- 2014 Photoneuroendocrine System of the Pekin Duck. Ross University College of Veterinary Medicine. St. Kitts, West Indies.
2013. Estradiol – GALP interactions in the female rat brain. Galanin Satellite Symposium, Society for Neuroscience Annual Meeting, San Diego, CA.
2013. Biological Bases for Poultry wellbeing in Pekin Ducks. Grand Valley State University, Department of Biological Sciences.
2012. Neuroprotective effects of a plant flavonoid, resveratrol. West Michigan Undergraduate Scientific Research Conference. Van Andel Research Institute.
2012. Descriptive analyses of the development of gait in Pekin ducks from hatch to market weight. Maple Leaf Farms, Inc. Annual Duck Research Symposium.
2011. *Deep Brain Stimulation: Key Safety Issues*. “Non-pharmacological approaches for the treatment of Parkinson’s disease.” Satellite Meeting, Society for Neuroscience Annual Meeting, Washington. D.C.
2011. Environmental Impacts on the Neural Regulation of Reproduction in the Pekin duck. Maple Leaf Farms, Inc. Annual Duck Research Symposium. Warsaw, IN.
2011. *Environmental Impacts on the Neural Regulation of Reproduction in the Pekin duck*. New York College of Osteopathic Medicine, Long Island, NY.
2011. *Brain, Fat and Sex: Neural Mechanisms that Integrate Nutrition and*

*Reproductive Function*. Biology Dept. Andrews University, South Have, MI.

2010. *Environmental Impacts on the Neural Regulation of Reproduction in the Pekin duck*. Maple Leaf Farms, Inc. Annual Duck Research Symposium. Warsaw, IN.
- 2009 \*Van Der Kolk, N., F.N. Madison, M. Mohr\*, N. Eberhard, B. Kofler and **G.S.Fraley**. 2009. Alarin is a neuromediator of energy metabolism. European Neuropeptides Meeting, Salzburg, Austria.
- 2009 *Mammalian RFRP-3: Regulator of GnRH or Feeding Systems?* Winter Conference on Brain Research, Copper Mountain, CO.
- 2008 *Brain, Fat and Sex: Neural Mechanisms that Integrate Nutrition and Reproductive Function*. Department of Pediatrics, University Hospital Salzburg, Paracelsus Medical University, Austria
- 2007 *Metabolic Control of Reproduction*, invited seminar, New York Institute of Technology, New York College of Medicine (NYCOM)
- 2006 **Han-Mo Koo Memorial Seminar Series** Van Andel Research Institute. "Food, Fat, Sex & Diabetes: How the Brain Mediates Metabolism and Reproduction."
- 2006 Endocrine Society Annual Meeting Plenary session, Endocrine Determinants of Sexual Behavior invited talk, "The Effects of Galanin-like Peptide (GALP) on Sexual Behavior in the Male."
- 2006 Keystone Symposium *Gut Hormones and Other Regulators of Appetite, Satiety and Energy Expenditure*, Mar 2 - 7, 2006, Santa Fe, New Mexico.
- 2006 LeHigh University invited seminar "Food, Fat, Sex & Diabetes: How the Brain Mediates Metabolism and Reproduction."
- 2005 University of Queratero, Queratero, Mexico. "The brain as an integrator of nutrition and reproduction: implications for diabetes and *anorexia*."

**Patents** (\*Denotes undergraduate students.)

2007. Lowry, D., D. O'Farrell, S. Tuinstra, R. Veldman, D. Daugherty, **G.S. Fraley**, \*K. Harrison, and \*M. Johnson. "Vertebrally Mounted Tissue Retractor and Method for Use in Spinal Surgery." U.S. Patent No. 60/976,331

**Manuscripts in Preparation:**

Huaiyong Zhang, Qiufeng Zeng, Xuemei Ding, Shiping Bai, Jianping Wang, Yue



- Xuan, Zhuowei Su, **G. S. Fraley**, Keying Zhang. 2020. Dietary administration of 25-hydroxycholecalciferol, a vitamin D<sub>3</sub> metabolite, increases tibial mass by suppression bone absorption in meat duck. *British Journal of Nutrition*. Under review.
- Chen, X, M. Lilburn, M. Turk, S. Mamduh, D. Karcher, M. Makagon, P. Wakenell S.M. Fraley, and **G. S. Fraley**. 2020. A review of housing, management, and best welfare practices for raising Pekin ducks in industry. *Poultry Science*. in preparation.
- C. Payne, L. Porter, H. Potter, and **G.S. Fraley**. 2020. GnIH stimulates feeding via growth hormone feedback on hypothalamic NPY in the adult male rat. *Endocrinology*. In preparation.

**Publications** (\*Denotes undergraduate students, \*\*Denotes High school students):

- Bentley, A., L. Porter, N. Prihoda, L. Van Blois, B. Van Wyk, S.M. Fraley and **G.S. Fraley**. 2019. Feed restriction from days 5-14 of grow-out in Pekin ducks allows for target production and improved gait but may impact gut health. *Poultry Sci.* 99(1): 39-47.
- Yuan N, Wang JP, Ding XM, Bai SP, Zeng QF, Su ZW, Xuan Y, Peng HW, **Fraleley GS**, Zhang KY. 2019. Effects of supplementation with different rapeseed oil sources and levels on production performance, egg quality, and serum parameters in laying hens. *Poultry Sci.* Mar 27, ePub ahead of print.
- Van Blois\*, L., L. Porter\*, A. Bentley\*, H. Potter\*, B. Van Wyk\*, S.M. Fraley and **G.S. Fraley**. 2019. Feed Restriction in grow-out Pekin ducks during the first two weeks allows ducks to achieve market weight but with smaller breast yield. *J. Applied Poult Sci.* in press.
- L. Hang, K.Y. Zhang, G. S. Fraley, X.M. Ding, S.P. Bai, J.P. Wang, H.W. Peng, and Q.F. Zeng. 2019. A High Level Vitamin Premix Added to Diet That Contains Rapeseed Meal Prevents Liver and Thyroid Pathology and Increases Antioxidant Activity and Growth Rate in Meat Ducks. *Poultry Science*. Under review
- H. Y. Zhang, Q. F. Zeng, S. P. Bai, J. P. Wang, X. M. Ding, Y. Xuan, Z. W. Su, **G. S. Fraley**, and K. Y. Zhang. 2019. Study on the morphology and mineralization of the tibia in meat ducks from 1 to 56 days. *Poultry Science*. Under review.
- \*Porter, L., \*H. Potter, S.M. Fraley, and **G.S. Fraley**. 2018. Low light intensity in Pekin duck breeder barns has a greater impact on the fertility of drakes than hens. *Poultry Science* 97 (12): 4262-4171.
- \*Potter, H., \*A. Alenciks, \*K. Frazier and **G.S. Fraley**. 2018. Immunolesions of melanopsin expressing neurons in the premammillary nucleus attenuates reproduction in the Pekin drake (*Anser platyrhynchos domesticus*). *Gen Comp Endocrinol.* 256:16-22
- Sergeant\*, L, C. Rodriguez-Dimitrescu\*, C. C. Barney, and **G.S. Fraley**. 2017.

Injections of Galanin-Like Peptide Directly into the Nucleus of the Tractus Solitarius (NTS) Reduces Food Intake and Body Weight but Increases Metabolic Rate and Plasma Leptin. *Neuropeptides*. 62:37-43

- Fraley, G.S.** 2017. ICV galanin-like peptide stimulates non-contact erections but not touch-based erections in adult, sexually experienced male rats. *Neuropeptides Special Edition*. 64:69-73
- \*Haas, R., \*E. Alenciks, \*K. Frazier, and **G.S. Fraley**. 2017. The Maintenance of Reproductive Status in Pekin Drakes Requires Both Red and Blue Wavelengths of Light: Relationship to Opsin-Related Proteins in the Hypothalamus. *Poult Sci* 96(8):2908-2919
- Best, A.A., A.L. Porter\*, S.M. Fraley, **G.S. Fraley**. 2017. Characterization of Gut Microbiome Dynamics in Developing Pekin Ducks and Impact of Management System. *Frontiers in Microbiology*. 7: 2125.  
<https://doi.org/10.3389/fmicb.2016.02125>
- \*Schenk, A., \*A. Porter, \*E. Alenciks, \*K. Frazier, \*A. Meelker, S.M. Fraley, A. Best, and **G.S. Fraley**. 2016. Pekin ducks raised with water troughs show decreased body condition and increased mortality compared to ducks raised with pin-meter water lines. *Poultry Science* 95(4): 736-748.  
<http://ps.oxfordjournals.org/cgi/reprint/pev381?ijkey=eZqWe12MmtkghlG&keytype=ref>
- \*Campbell, C.L., \*S. Colton, \*R. Haas, \*M. Rice, \*A. Porter, \*A. Schenk, \*A. Meelker, S.M. Fraley, and **G.S. Fraley**. 2015. Effects of different wavelengths of light on the biology, behavior, and production of grow-out Pekin ducks. *Poultry Science*. 94(8): 1751-1757.
- \*Rice, M., \*A. Meelker, S.M. Fraley, and **G.S. Fraley**. 2014. Characterization and comparison of Pekin duck drinking and preening behaviors when housed on raised plastic flooring vs. pine litter flooring. *J Applied Poultry Research*. 23 (4): 735-741.
- \*Colton, S and **GS Fraley**. 2014. The Effects of Environmental Enrichment Devices on Feather Picking in Commercially housed Pekin ducks. *Poultry Science*. 93(9):2143-50.
- \*Campbell, CL, S. \*Colton, \*AL Porter, \*R Haas, \*E Gerometta, \*A Lindberg, SM Fraley, and **GS Fraley**. 2014. Descriptive Analyses of Gait Characteristics in Pekin Ducks from Hatch to Market Weight. *J Applied Poultry Research*. 23 (2): 146-155.
- Fraley SM, **Fraley GS**, Karcher DM, Makagon MM, Lilburn MS. 2013. Influence of plastic slatted floors compared with pine shaving litter on Pekin Duck condition during the summer months. *Poult Sci*. 92(7):1706-11.
- Karcher, DM, M. Makagon, **G.S. Fraley**, S. M. Fraley, and M. Lilburn. 2013. Influence of Raised Plastic (Slatted) Floors Compared to Pine Shaving Litter on Pekin Duck Condition. *Poultry Sci* 92(3):583-90.
- Fraley, GS**, E. Coombs\*, E. Gerometta\*, S. Colton\*, P.J. Sharp, Q. Li, and I.J. Clarke. 2013. Distribution and sequence of Gonadotropin-inhibitory hormone and its

potential role as a molecular link between feeding and reproductive systems in the Pekin duck (*Anas platyrhynchos domestica*).  
**Gen Comp endocrinol** 184:103-10.

**Fraley GS**, \*Leathley E, \*Lundy N, \*\*Chheng E, \*King I, Kofler B. 2013. Effects of alarin on food intake, body weight and luteinizing hormone secretion in male mice. *Neuropeptides*. 46(2): 99-104.

**Fraley GS**, E. Leathley\*, A. Nickols\*, E. Gerometta\*, E. Coombs\*, S. Colton\*, S. Gallemore\*, A. Lindberg\*, and B. Kofler. 2013. Alarin 6-25Cys antagonizes alarin-specific effects on food intake and luteinizing hormone secretion. *Neuropeptides* 47(1):37-41.

\*Constant JP, **Fraley GS**, Forbes E, Hallas BH, Leheste JR, Torres G. 2012 . Resveratrol protects neurons from cannulae implantation injury: Implications for deep brain stimulation. *Neuroscience*. Jul 13. 222: 333-42.

\*Mohr MA, \*Leathley E, **Fraley GS**. 2012. Hypothalamic Galanin-like Peptide (GALP) Rescues the Onset of Puberty in Food-Restricted Weanling Rats. *J Neuroendocrinol*. 24(11): 1412-22.

Clarke IJ, Smith JT, Henry BA, Oldfield BJ, Stefanidis A, Millar RP, Sari IP, Chng K, Fabre-Nys C, Caraty A, Ang BT, Chan L, **Fraley GS**. 2012. Gonadotropin Inhibitory Hormone Is a Hypothalamic Peptide That Provides a Molecular Switch between Reproduction and Feeding. *Neuroendocrinology*. 95(4):305-16.

Babu B, \*Lee M, \*Lee L, \*Strobel R, \*Brockway O, \*Nickols A, Sjöholm R, \*Tzou S, Chavda S, Desta D, **Fraley GS**, \*Siegfried A, \*Pennington W, \*Hartley RM, \*Westbrook C, \*Mooberry SL, \*Kiakos K, \*Hartley JA, Lee M. 2011. Acetyl analogs of combretastatin A-4: synthesis and biological studies. *Bioorg Med Chem*. 19(7): 2359-67.

\*Lee M, \*Brockway O, \*Dandavati A, \*Tzou S, \*Sjöholm R, \*Nickols A, Babu B, Chavda S, Satam V, \*Hartley RM, \*Westbrook C, \*Mooberry SL, **Fraley GS**, Lee M. 2011. Design and synthesis of novel enhanced water soluble Hydroxyethyl analogs of combretastatin A-4. *Bioorg Med Chem Lett*. 21(7): 2087-91.

Lawrence CB, **Fraley GS**. 2011. Galanin-like peptide: neural regulator of energy homeostasis and reproduction. *EXS.*;102:263-80. Review. PubMed PMID: 21299074.

Lawrence C, **Fraley GS**. 2011. Galanin-like peptide (GALP) is a hypothalamic regulator of energy homeostasis and reproduction. *Front Neuroendocrinol*. Jan;32(1): 1-9.

- \*Van Der Kolk N, Madison FN, \*Mohr M, Eberhard N, Kofler B, **Fraley GS**. 2010. Alarin stimulates food intake in male rats and LH secretion in castrated male rats. *Neuropeptides*. Aug;44(4):333-40.
- Saldanha CJ, Walters BJ, **Fraley GS**. 2010. Neurons that co-localize aromatase and kisspeptin-like immunoreactivity may regulate the HPG axis of the Mallard drake (*Anas platyrhynchos*). *Gen Comp Endocrinol*. 166(3): 606-13.
- Fraley GS**, Steiner RA, Lent KL, Brenowitz EA. 2010. Seasonal changes in Androgen receptor mRNA in the brain of the white-crowned sparrow. *Gen Comp Endocrinol*. 166(1): 66-71.
- \*Taylor A, Madison FN, **Fraley GS**. 2009. Galanin-like peptide stimulates feeding and sexual behavior via dopaminergic fibers within the medial preoptic area of adult male rats. *J Chem Neuroanat*. 37(2): 105-11.
- Dungan Lemko HM, Clifton DK, Steiner RA, **Fraley GS**. 2008. Altered response to metabolic challenges in mice with genetically targeted deletions of galanin like peptide. *Am J Physiol Endocrinol Metab*. 295(3): E605-12.
- \*Johnson MA, **Fraley GS**. Rat RFRP-3 alters hypothalamic GHRH expression and growth hormone secretion but does not affect KiSS-1 gene expression or the onset of puberty in male rats. *Neuroendocrinology*. 2008;88(4): 305-15.
- \*Rich N, Reyes P, \*\*Reap L, \*\*Goswami R, **Fraley GS**. 2007. Sex differences in the effect of prepubertal GALP infusion on growth, metabolism and LH secretion. *Physiol Behav*. Dec 5;92(5):814-23.
- Todd BJ, **Fraley GS**, Peck AC, Schwartz GJ, Etgen AM. 2007. Central insulin like growth factor 1 receptors play distinct roles in the control of reproduction, food intake, and body weight in female rats. *Biol Reprod*. Sep;77(3):492-503.
- \*Johnson MA, Tsutsui K, **Fraley GS**. 2007. Rat RFamide-related peptide-3 stimulates GH secretion, inhibits LH secretion, and has variable effects on sex behavior in the adult male rat. *Horm Behav*. Jan;51(1):171-80.
- Fraley GS**. 2006. Immunolesions of glucoresponsive projections to the arcuate nucleus alter glucoprivic-induced alterations in food intake, luteinizing hormone secretion, and GALP mRNA, but not sex behavior in adult male rats. *Neuroendocrinology*. 83(2): 97-105.
- Thomas PS Jr, **Fraley GS**, Damian V, Woodke LB, Zapata F, Sopher BL, Plymate SR, La Spada AR. 2006. Loss of endogenous androgen receptor protein accelerates motor neuron degeneration and accentuates androgen insensitivity in a mouse model of X-linked spinal and bulbar muscular atrophy. *Hum Mol Genet*. 15(14): 2225-38.

- \*Stoyanovitch AG, \*Johnson MA, Clifton DK, Steiner RA, **Fraley GS**. 2005. Galanin-like peptide rescues reproductive function in the diabetic rat. *Diabetes*. 54(8): 2471-6.
- Kauffman AS, Buenzle J, **Fraley GS**, Rissman EF. 2005. Effects of galanin-like peptide (GALP) on locomotion, reproduction, and body weight in female and male mice. *Horm Behav*. 48(2): 141-51.
- Irwig MS, **Fraley GS**, Smith JT, Acohido BV, Popa SM, Cunningham MJ, Gottsch ML, Clifton DK, Steiner RA. 2004. Kisspeptin activation of Gonadotropin releasing hormone neurons and regulation of KiSS-1 mRNA in the male rat. *Neuroendocrinology*. 80(4): 264-72.
- Fraley GS**, \*\*Thomas-Smith SE, \*Acohido BV, Steiner RA, Clifton DK. 2004. Stimulation of sexual behavior in the male rat by galanin-like peptide. *Horm Behav*. 46(5): 551-7.
- Fraley GS**, \*Scarlett JM, Shimada I, \*Teklemichael DN, \*Acohido BV, Clifton DK, Steiner RA. 2004. Effects of diabetes and insulin on the expression of galanin like peptide in the hypothalamus of the rat. *Diabetes*. 53(5): 1237-42.
- Hansen KR, Krasnow SM, \*Nolan MA, **Fraley GS**, \*Baumgartner JW, Clifton DK, Steiner RA. 2003. Activation of the sympathetic nervous system by galanin like peptide--a possible link between leptin and metabolism. *Endocrinology*. 144(11): 4709-17.
- Fraley GS**, Shimada I, \*Baumgartner JW, Clifton DK, Steiner RA. 2003. Differential patterns of Fos induction in the hypothalamus of the rat following central injections of galanin-like peptide and galanin. *Endocrinology*. 144(4): 1143-6.
- Krasnow SM, **Fraley GS**, \*Schuh SM, \*Baumgartner JW, Clifton DK, Steiner RA. 2003. A role for galanin-like peptide in the integration of feeding, body weight regulation, and reproduction in the mouse. *Endocrinology*. 144(3): 813-22.
- Fraley GS**, Ritter S. 2003. Immunolesion of norepinephrine and epinephrine afferents to medial hypothalamus alters basal and 2-deoxy-D-glucose induced neuropeptide Y and agouti gene-related protein messenger ribonucleic acid expression in the arcuate nucleus. *Endocrinology*. 144(1): 75-83.
- Fraley GS**, Ulibarri CM. 2002. Long-term castration effects motoneuron size but not number in the spinal nucleus of the bulbocavernosus in the adult male Mongolian gerbil. *Brain Res*. 953(1-2): 265-71.

**Fraley GS**, Ulibarri C. 2002. Development of androgen receptor and p75(NTR) mRNAs and peptides in the lumbar spinal cord of the gerbil. *Brain Res Dev Brain Res*.137(2): 101-14.

**Fraley GS**, Dinh TT, Ritter S. 2002. Immunotoxic catecholamine lesions attenuate 2DG-induced increase of AGRP mRNA. *Peptides*. Jun;23(6):1093-9.

**Fraley GS**. 2002. Immunolesion of hindbrain catecholaminergic projections to the medial hypothalamus attenuates penile reflexive erections and alters hypothalamic peptide mRNA. *J Neuroendocrinol*. 14(5): 345-8.

Horowitz JM, Vernace VA, Myers J, Stachowiak MK, Hanlon DW, **Fraley GS**, Torres G. 2001. Immunodetection of Parkin protein in vertebrate and invertebrate brains: a comparative study using specific antibodies. *J Chem Neuroanat*. 21(1): 75-93.

**Fraley GS**, Ulibarri C. 2001. Sexual dimorphism in the number and size of SNB motoneurons: delayed development during normal ontogeny. *Brain Res Dev Brain Res*.126(1): 57-64.

**Fraley GS**, Kuenzel WJ. 1993. Immunocytochemical and histochemical analyses of gonadotrophin releasing hormone, tyrosine hydroxylase, and cytochrome oxidase reactivity within the hypothalamus of chicks showing early sexual maturation. *Histochemistry*. 99(3): 221-9.

**Fraley GS**, Kuenzel WJ. 1993. Precocious puberty in chicks (*Gallus domesticus*) induced by central injections of neuropeptide Y. *Life Sci*. 52(20): 1649-56.

### **Invited Reviews and Book Chapters**

**Fraley, G.S.** (Chair), M. Lilburn, M. Turk, S. Mamduh, X. Chen, D. Karcher, M. Makagon, P. Wakenell and S.M. Fraley. 2017-18. Waterfowl Chapter. In: *Guide for the Care and Use of Agricultural Animals in Research and Teaching (Ag Guide)*. FASS new edition in production.

Lawrence C, Fraley GS. 2011. Galanin-like peptide (GALP) is a hypothalamic regulator of energy homeostasis and reproduction. *Front Neuroendocrinol*. 102:263-80.

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- \*Porter, L., \*Hannah Potter, \*Luke Van Blois, \*Emily Gregory, \*Grace Ditzenberger, \*Murphy Stadelmaier, Zach Tucker, Dan Shafer, Mike Turk, and **Gregory Fraley**. 2017. Partial feed restriction in Pekin duck grow-out has minimal effect on overall production rates and may reduce lameness. Poultry Science Association Annual Meeting. Orlando, FL. Management and Production: Oral #255.
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- Fraley, G.S. 2015. Icv galanin-like peptide stimulates non-contact erections but not penile reflexes in adult, sexually experienced male rats. European Neuropeptides Annual Meeting. Aberdeen, Scotland.
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