

# Guillermo Ortiz-Colón

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- EDUCATION**
- Ph.D.**      **Michigan State University, East Lansing**  
**Animal Science**, May, 2006  
Specialization: **Growth Physiology -Ruminant Nutrition**  
Dissertation: "Investigation of adipogenic differences between bovine intramuscular and subcutaneous preadipocytes"
- M.S.**      **University of Puerto Rico, Mayagüez,**  
**Animal Science**, December 2001  
Specialization: **Ruminant Nutrition**  
Thesis: "Supplementation of young bulls grazing tropical grasses with two nitrogen sources"
- B.S.**      **University of Puerto Rico, Mayagüez**  
**Animal Science**, May 1997

## CERTIFICATIONS

**Certified through examination as a *Professional Animal Scientist* (P.A.S.) by the American Registry of Professional Animal Scientists (ARPAS), Campaign, IL, United States**

**Certification # 91837**

**Area of Specialization: Dairy Cattle Nutrition-August 13, 2015**

**Area of Specialization: Dairy Cattle-October 22, 2013**

**Certification as Dairy F.A.R.M. Evaluator**

**Second Party Evaluator Training, National Milk Producers Federation  
Pennsylvania, United States, March 22, 2015**

**Pennsylvania, United States, April, 2013**

## **CERTIFICATIONS (CONT.)**

**Certification in Dairy Herd Improvement Record Analysis**  
Department of Animal Science, Penn State University, May 2010

**Certification in Teaching of College Science**  
College of Natural Science, Michigan State University, May 2005

## **PROFESSIONAL EXPERIENCE**

**University of Puerto Rico, Mayagüez, PR**

**Leader of the Dairy Cattle and Forages Research Area of the  
Agriculture Experimental Station**

(October 2012-Present)

Leader of the experimental station research initiative focusing in sustainable milk production in the tropics through genetic selection, nutritional strategies, and maximizing forage utilization.

**Leader of the Agriculture, Marketing and Natural Resources  
Program of the Agriculture Extension Service**

(August 2013-August 2014)

Leader of the agriculture extension program emphasizing food security through education efforts in sustainable agriculture, consumer education, and environmental stewardship awareness.

**Assistant Professor/Dairy Extension Specialist**

(October 2007-Present)

Extension program emphasizes the enhancement of sustainability and profitability of milk production in the tropics. Research focus in ruminant nutrition with the goal to improve heifer growth and improve milk efficiency.

**Research Associate (August 2006-June 2007)**

Conducted research in the area of muscle biology utilizing Western blots and densitometry to study the expression of musculoskeletal proteins. Performed and trained undergraduates and graduate students in the chemical analysis of muscle to determine hydroxyproline concentration, myofibril fragmentation index and triacylglyceride content. In addition, trained undergraduates and graduate students, as well as faculty members, on protein separation techniques (electrophoresis).

## **PROFESSIONAL EXPERIENCE**

### **Michigan State University, East Lansing, MI**

#### **Graduate Research Assistant (January 2001-May 2006)**

Exhaustive use of biotechnology techniques to research bovine adipose tissue development. Northern blots, Western blots, densitometry, and immunocytochemistry were used to study gene and protein expression during adipogenesis *in vitro*. In addition, enzymatic analyzes, immunoassays, and specific lipid staining were also used to characterize adipogenesis. Microarray analysis, involving cDNA synthesis, probe labeling, and data analysis, was utilized to determine the effects of glucocorticoids on bovine adipogenesis. Trained graduate students in Western blot technique.

#### **Research Intern (May 2000-August 2000)**

Performed research in the utilization of bioelectrical impedance analysis to determine the body composition of beef and dairy cattle. Responsible for developing a more practical method to utilize a bioelectrical impedance analyzer during common husbandry practices, while minimizing discomfort to the animal.

### **University of Puerto Rico, Mayagüez, PR**

#### **Graduate Research Assistant (August 1997-December 2000)**

Performed research in the area of ruminant nutrition evaluating the effects of supplementing nitrogen to cattle. Fieldwork included mixing and delivery of supplements, sampling of supplements, determining amount of supplement consumed, and weighing of animals. Laboratory analysis included determining supplements and forage content of neutral detergent fiber, acid detergent fiber, total nitrogen and *in vitro* digestibility. Responsible for managing undergraduate students and personnel from the agricultural experimental station.

### **U.S.D.A.-Forest Service, Hot Springs, SD**

#### **Grassland Agronomist (June 1999-August 1999)**

Assisted in the implementation of various surveying methods designed to determine the ecological condition of pastures. Research included the evaluation of grasslands biodiversity, production capacity, and soil condition. Surveying results were used to provide recommendations to cattle producers on how to improve their grassland management in order to enhance ruminant production and the ecological condition of the grassland. Helped with surveys designed to evaluate the population of various endangered species, and evaluated the condition of the



**TEACHING  
EXPERIENCE**

**University of Puerto Rico, Mayagüez, PR**  
**Department of Animal Science, College of Agricultural  
Science**

**Advance Dairy Herd Management**

(January 2012-Present)

Lecturer in graduate level course. Developed and delivered course materials and designed evaluation criteria. Focus of the course is how to analyze published research and develop original research to improve the Dairy Herd Milk Production Efficiency, Reproductive Status, and Mammary Gland Health. Topics such as dairy herd nutrition, reproduction and health management are covered in the course.

**Dairy Herd Improvement Program Records Analysis**

(January 2010-Present)

Lecturer in sub-graduate advance level course. Developed and delivered course materials and designed evaluation criteria. Focus of the course is how to use records to evaluate Dairy Herd Milk Production Efficiency, Reproductive Status, and Mammary Gland Health. Topics such as dairy herd nutrition, reproduction and health management are also reviewed within the context of the course.

**Animal Physiology**

(August 2008-May 2009)

Lecturer in sub-graduate advance level course. Developed and delivered course materials and designed evaluation criteria. Taught students the process of grant writing and effective oral communication in the sciences. Various topics covered in this course include embryonic growth, myogenesis, adipose tissue development, bone development, nutrition, muscle biology, and endocrinology.

**Growth and Developmental Biology**

(January 2007-May 2007)

Lecturer in graduate level course, planning and co-teaching lectures. Develop and deliver course materials and design evaluation criteria. In addition, responsible for teaching students the process of grant writing and effective oral communication in the sciences. Various topics covered in this course include embryonic growth, myogenesis, adipose tissue development, nutrition influence on growth, and hormonal regulation of growth. The use of biotechnologies, like gene therapy, to alter development and growth in mammals is also studied in the course.

## **Agrostology and Forage Utilization**

(January 2000-May 2000; August 2000-December 2000)

Performed as a teaching associate, planned and co-taught lectures, developed and delivered course material, designed and evaluated exams, and graded the grass specimen collections of students. In addition, determined content, developed and improved teaching materials, and taught the entirety of the course laboratory, which covered taxonomic classification of tropical grasses, their agronomic characteristics, and potential utilization in ruminant nutrition.

## **Introduction to Animal Sciences**

(August 1999-December 1999; August 1997-May 1998)

Determined content, developed and improved teaching materials, designed and corrected exams and taught the entirety of the course laboratory. Developed departmental laboratory final exam.

## **University of Puerto Rico, Mayagüez, PR**

### **Swine Production**

(January 1999-May 1999)

Laboratory instruction in the fundamental concepts of nutrition, growth, reproduction, health, and welfare in swine production.

### **Beef Production Management**

(August 1998-December 1998)

Laboratory instruction in the fundamental concepts of nutrition, growth, reproduction, health, and welfare in beef cattle production.

## **Veterinary Technology Program, College of Medical Sciences, San Juan, P.R.**

### **Dairy Herd Management**

(August 2010-Present)

Lecturer in undergraduate level course. Developed and delivered course materials and designed evaluation criteria. Focus of the course is how to analyze published research and develop original research to improve the Dairy Herd Milk Production Efficiency, Reproductive Status, and Mammary Gland Health. Topics such as dairy herd nutrition, reproduction and health management are covered in the course.

**TEACHING EXPERIENCE**     **Michigan State University, East Lansing, MI**  
**Department of Animal Science**

### **Muscle Biology and Meat Science**

(August 2004-December 2004)

Developed content and taught course section on animal source foods as related to human evolution, nutrition and disease. Utilized pre-class surveys, in class activities and problem-based teaching to promote student learning. Developed homework and grading rubrics for the assessment of students' understanding. In addition, responsible for assisting professor in test correction, and helping students with class material.

### **Growth and Musculoskeletal Biology**

(January 2004-May 2004)

Designed and developed course content and taught section on lipid metabolism and adipose tissue development. Also responsible for assisting professor in test correction and helping students with class material.

### **Beef Production Management**

(January 2003-May 2003)

Responsible for laboratory instruction in the fundamentals of ruminant nutrition, diet formulation, nutrient management, and basic business administration.

## **PUBLICATIONS**

### **Peer reviewed journal articles**

**G. Ortiz-Colón**, S. J. Fain, Isabel K. Parés, Jaime Curbelo-Rodríguez, Esbal Jiménez-Cabán, Melvin Pagán-Morales, and William A. Gould. 2018. **Assessing climate vulnerabilities and adaptive strategies for resilient beef and dairy operations in the tropics.** Climatic Change (2018) 146:47–58 <https://doi.org/10.1007/s10584-017-2110-1>

L. López-Soberal, **G. Ortiz-Colón**, Melvin Pagán-Morales, Esbal Jiménez-Cabán. 2015. **Use of larval migration inhibition assay for the evaluation of anthelmintic resistance in dairy heifers in Puerto Rico.** Journal of Agriculture of the University of Puerto Rico.99 (2):117-124.

A. Guzmán-Rivera, Jiménez-Cabán, E., Sánchez-Rodríguez, H. L., Curbelo-Rodríguez, J. E., and Ortiz-Colón, G. (2015). **Prevalence of subclinical endometritis in dairy cattle of Puerto Rico.** *Journal of Agriculture of the University of Puerto Rico*, 99(2): 125-134.

G. Ortiz-Colón, A. C. Grant, M. E. Doumit, and D. D. Buskirk. 2009. **Bovine intramuscular, subcutaneous, and perirenal stromal-vascular cells express similar glucocorticoid receptor isoforms, but exhibit different adipogenic capacity.** *J. Anim. Sci.* 87:1913–1920.

Doumit, M.E. D.D. Buskirk, A. C. Grant, and G. Ortiz-Colón. 2009. **Comparison of Intramuscular and Subcutaneous Preadipocytes.** Proceedings of the 62<sup>nd</sup> Annual Reciprocal Meat Conference of the American Meat Science Association. 62:1-3.

A.C. Grant, G. Ortiz-Colón, M. E. Doumit, R. J. Tempelman, and D. D. Buskirk. 2008. **Differentiation of bovine intramuscular and subcutaneous stromal vascular cells exposed to dexamethasone and troglitazone.** *J. Anim. Sci.* 86:2531–2538.

A.C. Grant, G. Ortiz-Colón, M. E. Doumit, and D. D. Buskirk. 2008. **Optimization of in vitro conditions for bovine subcutaneous and intramuscular preadipocyte differentiation.** *J. Anim. Sci.* 86:73-82.

## Books Chapters

Ortiz-Colón, G., A. Casas, M. Argüelles, P. F. Randel and T. Ruíz. 2015. La ganadería en Puerto Rico. Pages 589-598 in *La Ganadería en América Latina y el Caribe: alternativas para la producción competitiva, sustentable e incluyente de alimentos de origen animal.*

R. Nuñez- Domínguez, R. Valverde-Ramírez, & S. Fernández-Rivera, O. Araujo-Febres, M. García-Winder, T.E. Díaz-Muñoz, and I. L. Montejo-Sierra, ed. 1<sup>st</sup> ed. Biblioteca Básica de Agricultura: Fundación Colegio de Postgraduados en Ciencias Agrícolas Colegio de Postgraduados Universidad Autónoma Chapingo Asociación Latinoamericana de Producción Animal (ALPA); Organización de las Naciones Unidas para la Alimentación y la Agricultura (FAO); and Instituto Interamericano de Cooperación para la Agricultura (IICA).

<https://www.researchgate.net/publication/292762537> *La Ganaderia en America Latina y el Caribe*

## Peer reviewed abstracts

Navedo-Guzmán\*, C. G. Ríos-Solís, A. P. Ramos-Ahmad, P. N. Marrero-Torres, I. M. Lorenzo-Lorenzo, M. Rodríguez-Alvarado, A.P. Rodríguez-Asencio, J. E. Curbelo-Rodríguez, and **G. Ortiz-Colón**. 2017. **Effect of an accelerated growth feeding protocol on the weight gain of Holstein calves under tropical conditions**. J. Dairy Sci. Vol. 100, Suppl. 2:34.

De León-Torres, Stefanie Y., Guillermo Ortiz-Colón, Wandaliz Torres-García, Wilfredo Robles, y Samuel Prieto. 2016. Current practices in dairy calves management in the dairy farms of Puerto Rico. Proceedings of the Annual Meeting of the Puerto Rican Society of Agricultural Sciences. 40:36.

**Guillermo Ortiz-Colón**, Stefanie Y De Leon Torres, Wandaliz Torres-García, Wilfredo Robles, y Samuel Prieto. 2016. Current practices in dairy cattle management in the Dairy Farms of Puerto Rico. Proceedings of the Annual Meeting of the Puerto Rican Society of Agricultural Sciences. 40:9.

K. Espino-Mercado, C. Castillo-Caballero, J. Curbelo-Rodríguez and **G. Ortiz-Colón**. 2015. **Effects of direct fed microbials, microbial fermentation products and digestive enzymes on body weight and calving interval in dairy cows under tropical conditions**. Arch. Latinoam. Prod. Anim. Vol. 21. Supl.1: 931.

K. Espino- Mercado, C. Castillo-Caballero, J. Curbelo-Rodríguez, and **G. Ortiz-Colón**. 2015. **Evaluation of the effects of direct-fed microbials, microbial fermentation products, and digestive enzymes on milk yield and milk components in dairy cattle in the tropics**. J. Anim. Sci. Vol. 93, Suppl. s3/J. Dairy Sci. Vol. 98, Suppl. 2:149.

A. Almeida-Montenegro, H. L. Sánchez-Rodríguez, **G. Ortiz-Colón**. and J. Curbelo-Rodríguez. 2014. **Use of infrared red thermography as a tool in the detection of mastitis**. Proceedings of the Annual Meeting of the Puerto Rican Society of Agricultural Sciences. 38:8.

K. Espino- Mercado, C. Castillo-Caballero, J. Curbelo-Rodríguez, and **G. Ortiz-Colón**. 2014. **Evaluation of the effects of direct-fed microbials, microbial fermentation products, and digestive enzymes on milk yield in dairy cattle**. Proceedings of the Annual Meeting of the Puerto Rican Society of Agricultural Sciences. 38:11.

J.M. Patiño-Chaparro, M. Pagán-Morales, **G. Ortiz-Colón** and E. Jiménez-Cabán. 2014. Association between genetic variation in the Follicle Stimulating Hormone Receptor (**FSHR**) Promoter and economic important traits in Holstein Cows genotypically

characterized as Slick or Wild type hair type. Proceedings of the Annual Meeting of the Puerto Rican Society of Agricultural Sciences. 38:12.

C. Castillo-Caballero, K. Espino- Mercado, A. Almeida-Montenegro, J. Curbelo-Rodríguez, and **G. Ortiz-Colón**. 2014. **Evaluation of the effects of direct-fed microbials, microbial fermentation products, and digestive enzymes on the urea and beta-hydroxybutyrate in milk**. Proceedings of the Annual Meeting of the Puerto Rican Society of Agricultural Sciences. 38:43.

A. Guzmán-Rivera, Jiménez-Cabán, E., Sánchez-Rodríguez, H. L., Curbelo-Rodríguez, J. E., and **Ortiz-Colón, G.** 2015. Prevalence of subclinical endometritis in dairy cattle of Puerto Rico. Proceedings of the Annual Meeting of the Puerto Rican Society of Agricultural Sciences. 38:46.

L. López-Soberal, C. L. González-Berríos, I. Rivera, **G. Ortiz-Colón**, E. Jiménez, M. Pagán. 2014. **Evaluation of molecular markers presumably associated with resistance to parasitic nematodes in Senepo x Charolais heifers**. Proceedings of the Annual Meeting of the Puerto Rican Society of Agricultural Sciences. 38:50.

M. Torres, W. Robles, **G. Ortiz-Colón** and S. Prieto-Pulido. 2014. **Use of GIS and GPS to document prevalence of weeds and improved forage species in dairies**. Proceedings of the Annual Meeting of the Puerto Rican Society of Agricultural Sciences. 38:53.

M.Y. Berríos-Rivera, W. Robles, Julia M. O'Hallorans-Castillo and **G. Ortiz-Colón**. 2014. Biomass productivity of *Paspalum fasciculatum*. Proceedings of the Annual Meeting of the Puerto Rican Society of Agricultural Sciences. 38:54.

W. Robles, S. Prieto-Pulido, **G. Ortiz-Colón**, A. Almeida-Montenegro, G. Santiago and M. Torres. 2013. **Prevalence of weeds and improved forage species in highly productive and inefficient dairies**. Proceedings of the Annual Meeting of the Puerto Rican Society of Agricultural Sciences. 37:70.

N. Acevedo-Guzmán, R. López-López, A. Almeida-Montenegro, S. Prieto-Pulido and **G. Ortiz-Colón**. 2013. Characterization of colostrum quality in Holstein, Jersey, and Brown Swiss dairy cows under tropical conditions. Proceedings of the Annual Meeting of the Puerto Rican Society of Agricultural Sciences. 37:42.

L. López, E. Jiménez, M. Pagán and **G. Ortiz-Colón**. 2013. **Evaluation of molecular markers presumably associated with resistance to parasitic nematodes in dairy heifers**. Proceedings of the Annual Meeting of the Puerto Rican Society of Agricultural Sciences. 37:41.

M. Pagán, L. Emmanuelli, I. Rivera, E. Jiménez, D. Vélez, and G. Ortiz-Colón. 2013. **Association between IgE single nucleotide polymorphisms and parasite resistance in Senepol × Charolais crossbred heifers.** J. Anim. Sci. Vol. 91, E-Suppl. 2/J. Dairy Sci. Vol. 96, E-Suppl. 1:535.

J.M. Patiño-Chaparro, M. Pagán-Morales, E. Jiménez-Cabán, and G. Ortiz-Colón. 2012. **Genomic evaluation of economic important traits in “Slick Hair” Holstein dairy cows.** Proceedings of the Annual Meeting of the Puerto Rican Society of Agricultural Sciences. 36:11.

G. Ortiz-Colón, J.M. Patiño-Chaparro, M. Pagán-Morales, E. Jiménez-Cabán, C. Rodríguez-Sallaberry and J. Curbelo-Rodríguez. 2013. **Comparison of productivity parameters between Holstein, Jersey, and Brown Swiss dairy cows under tropical conditions.** Proceedings of the Annual Meeting of the Puerto Rican Society of Agricultural Sciences. 36:10.

L. López-Soberal, A. Ruíz-Lugo, Á. González-Sanabria, M. Pagán, and G. Ortiz-Colón. 2012. **Prevalence of nematodes eggs of the genus Cooperia, Ostertagia, and Haemonchus, before and after treatment of dairy heifers with commercial anthelmintics in commercial dairy farms in Puerto Rico.** J. Anim. Sci. Vol. 90, Suppl. 3/J. Dairy Sci. Vol. 95, Suppl. 2: 257-258.

Aníbal Ruiz-Lugo, López L., A., Pagán, M., y Ortiz-Colón, G. 2011. **Evaluation of the presumptive resistance of parasitic nematodes to comercial antihelmintics in Puerto Rico.** Arch. Latinoam. Prod. Anim. Vol. 19. Supl.1: 931.

Laura Emmanuelli, Ileana Rivera, Melvin Pagan, Esbal Jimenez, Guillermo Ortiz-Colón. 2011. **Genotypic and amino acid combinations resulting from single nucleotide polymorphisms identified at bovine IgE.** Arch. Latinoam. Prod. Anim. Vol. 19. Supl. 1: 259.

Ortiz-Colón G., José Manuel Huerta-Jiménez, Esbal Jiménez-Cabán; y Melvin Pagán-Morales. 2011. **Attitudes and Knowledge of High School Students about the Department of Animal Industry of the University of Puerto Rico at Mayagüez.** J. Anim. Sci. Vol. 89, E-Suppl. 1/J. Dairy Sci. Vol. 94, E-Suppl. 1: 775.

Ortiz-Colón G., J. M. Huerta-Jiménez, L. del Valle-Mercado, M. Pagán-Morales, and E. Jiménez-Cabán. 2011. **Academic preferences of freshman college students in the Department of Animal Industry of the University of Puerto Rico at Mayagüez.** J. Anim. Sci. Vol. 89, E-Suppl. 1/J. Dairy Sci. Vol. 94, E-Suppl. 1: 409-410.

**Ortiz-Colón, G., Huerta-Jiménez, J.M., E. Jiménez; y M. Pagán. 2010. Promoting student recruitment into the Animal Science Department through informative conferences at High Schools in Puerto Rico.** Proceedings of the Annual Meeting of the Puerto Rican Society of Agricultural Sciences. 35:6.

L. del Valle-Mercado, A.Casas, D. Cianzio, M. Pagan, and **G. Ortiz-Colón** 2010. **Myofibril fragmentation index of the longissimus muscle of Senepol and Charolais crossbred bulls.** J. Anim. Sci. Vol. 88, E-Suppl. 2: 362-363.

**Ortiz Colón G.,** J.M. Cardona, G. Carmenaty, E. Martínez, D. Marrero, D. M. Rivera, M. Pagán, A. Rivera, D. Cianzio y A. Casas. 2009. **Effects of a strategic supplementation in the deposition of intramuscular and subcutaneous fat of young bulls, on a grass fed system based on tropical grasses in Puerto Rico.** Proceedings of the Annual Meeting of the Puerto Rican Society of Agricultural Sciences. 34:12.

**Ortiz-Colón, G. 2009. Summary of investigations of adipogenic differences between bovine intramuscular and subcutaneous stromal-vascular cells.** Arch. Latinoam. Prod. Anim. 17 (Supl 1):106-110.

Rivera-Mujica, I., A. González, M. Pagán, and **G. Ortiz-Colón.** 2009. **Effect of anthelmintics over the fecal egg counts of gastrointestinal nematodes in beef heifers in Puerto Rico.** Proceedings of the Annual Meeting of the Puerto Rican Society of Agricultural Sciences. 34:8.

Rivera-Mujica, I., A. González, M. Pagán, and **G. Ortiz-Colón.** 2009. **Effect of anthelmintics over the fecal egg counts of gastrointestinal nematodes in replacement heifers in two dairies in Puerto Rico.** Arch. Latinoam. Prod. Anim. 17 (Supl 1):414-419.

Casas , A.A., D. Cianzio, A. Rivera, M. Pagán and **G. Ortiz-Colón.** 2009. **Nutritional Value of the Beef produced in Puerto Rico: 1-Strategies to compete in the 21 century.** Arch. Latinoam. Prod. Anim. 17 (Supl 1):39.

**Ortiz-Colón, G.,** D. Cianzio, and A. Casas, 2007. **Supplementation with two sources of nitrogen to young bulls grazing tropical grasses.** Proceedings of the Annual Meeting of the Puerto Rican Society of Agricultural Sciences. 32:4. (Abstract)

**Ortiz-Colón, G.,** D. Marrero, E. Martínez, M. Rivera, A. Casas, D. Cianzio, y M. Pagán. 2007. **Effects of a strategic supplementation in the deposition of intramuscular and subcutaneous fat of young bulls, on a grass fed system based on tropical grasses in Puerto Rico.** Arch. Latinoam. Prod. Anim. 15 (Supl 1):447. (Abstract)

**Ortiz-Colón, G.,** J. Bosques, D. Marrero, E. Martínez, M. Rivera, A. Casas, D. Cianzio, y M. Pagán. 2007. **Association of single nucleotide polymorphisms at the**

**phosphodiesterase 1B (PDE1B) gene locus with percentage of body fat of yearling bulls raised on pasture.** . Arch. Latinoam. Prod. Anim. 15 (Supl 1):447. (Abstract)

**Ortiz-Colón, G., J. Bosques, M. Pagán, E. Casas, A. Casas, and D. Cianzio, 2006. Association of single nucleotide polymorphisms at the phosphodiesterase 1B (PDE1B) gene locus with the percentage of intramuscular fat in beef cattle from Puerto Rico.** Proceedings of the Annual Meeting of the Puerto Rican Society of Agricultural Sciences. 31:32. (Abstract).

**Ortiz-Colón, G., A.C. Grant, M.E. Doumit and D.D. Buskirk, 2006. Differences in adipogenesis between bovine intramuscular and subcutaneous preadipocytes are not related to expression of PPAR $\gamma$ 2 or secretion of PGI $_2$ .** J. Anim. Sci. 84 (Suppl. 1.):28. (Abstract).

**Ortiz-Colón, G., A.C. Grant, M.E. Doumit and D.D. Buskirk, 2006. The adipogenic enzymatic activity of bovine intramuscular, perirenal, and subcutaneous cultured preadipocytes differs, and increases in all depots following exposure to dexamethasone.** J. Anim. Sci. 84 (Suppl. 1.):144. (Abstract)

**Ortiz-Colón, G. 2006. Investigation of adipogenic differences between bovine intramuscular and subcutaneous preadipocytes.** Ph.D. Dissertation. Department of Animal Science. Michigan State University, East Lansing, M.I.

**Ortiz-Colón, G., A.C. Grant, M.E. Doumit and D.D. Buskirk, 2004. Dexamethasone downregulates glucocorticoid receptor expression in cultured bovine preadipocytes.** J. Anim. Sci. 82 (Suppl. 1.):421. (Abstract).

**Ortiz-Colón, G., A.C. Grant, M.E. Doumit and D.D. Buskirk, 2004. Clonal efficiency and adipogenic capacity of preadipocytes isolated from bovine intramuscular, perirenal and subcutaneous adipose tissue.** J. Anim. Sci. 82(Suppl. 2.):53. (Abstract).

**Ortiz-Colón, G. 2003. Effects of a supplementation with two sources of nitrogen on the weight gain of young bulls grazing tropical grasses.** 2003. M.S. Thesis. Department of Animal Science. University of Puerto Rico, Mayagüez, P.R.

**Grant, A.C., Ortiz-Colón, G., M.E. Doumit, and D.D. Buskirk. 2004. A method for the isolation, culture and cloning of bovine preadipocytes.** J. Anim. Sci. 82(Suppl. 2.): 53. (Abstract).

## **Agriculture Extension Bulletins**

Ruíz, M. and **G. Ortiz-Colón**. 2018. El Huracán María y su efecto sobre la industria lechera de Puerto Rico. *Sea del Oeste*. (Cooperative Extension Publication of the University of Puerto Rico at Mayagüez). 13:43-51.

**Ortiz-Colón, G.** 2017. Estado de la Industria Lechera de Puerto Rico en el 2017. *Sea del Oeste*. (Cooperative Extension Publication of the University of Puerto Rico at Mayagüez). 11: 59-65.

**Ortiz-Colón, G.** 2017. La importancia de la vaca pelona. *Sea del Oeste*. (Cooperative Extension Publication of the University of Puerto Rico at Mayagüez). 10: 11.

**Ortiz-Colón, G.** 2017. Disminuyendo la huella de carbono de la Industria Lechera. *Sea del Oeste*. (Cooperative Extension Publication of the University of Puerto Rico at Mayagüez). 9: 69-73.

**Ortiz-Colón, G.** 2016. Crianza de Becerras Parte II: Fuentes de estrés en la becerria y su efecto en la salud. *Sea del Oeste*. (Cooperative Extension Publication of the University of Puerto Rico at Mayagüez). 8: 73-75.

**Ortiz-Colón, G.** 2016. ¿Tienen un rol los alimentos derivados de animales en la salud y el bienestar humano?. *Sea del Oeste*. (Cooperative Extension Publication of the University of Puerto Rico at Mayagüez). 7: 46-48.

**Ortiz-Colón, G.** 2016. El Registro Americano de Científicos en Ciencia Animal (ARPAS). *Sea del Oeste*. (Cooperative Extension Publication of the University of Puerto Rico at Mayagüez). 6:34.

**Ortiz-Colón, G.** 2016. Crianza de becerrias: Parte I. *Sea del Oeste*. (Cooperative Extension Publication of the University of Puerto Rico at Mayagüez). 6:35-37.

**Ortiz-Colón, G. and E. Más.** 2016. Influencia de los pastos en el cambio climático *Sea del Oeste*. (Cooperative Extension Publication of the University of Puerto Rico at Mayagüez). 6:41-42.

**Ortiz-Colón, G.** 2015. Importance of the Latin American Association of Animal Scientists. [La Asociación Latinoamericana de Producción Animal]. *Sea del Oeste*. (Cooperative Extension Publication of the University of Puerto Rico at Mayagüez). 5:35-39.

**Ortiz-Colón, G.** 2015. Should humans drink milk? [¿Deben tomar leche bovina los humanos?]. *Sea del Oeste*. (Cooperative Extension Publication of the University of Puerto Rico at Mayagüez). 2:18-19.

**Ortiz-Colón, G.** 2010. Importance of the Dairy Heard Improvement Association Records System for the progress of the Dairy industry of Puerto Rico. Agriculture Extension Service Leaflet. (<https://docs.google.com/fileview?id=0B-FFiMIWwDG>).

**Ortiz-Colón, G.** 2007. **Improving the quality of our beef: Intramuscular fat content of young bulls supplemented strategically on a grass fed system.** *La res informativa* (Beef Cattle Group Newsletter), a publication of the College of Agricultural Sciences, University of Puerto Rico, Mayagüez Campus, intended for Beef Producers in Puerto Rico. Vol. 10 (3 and 4): 1-4.

Rodríguez-Carías, Abner A., Elide Valencia-Chin, and **G. Ortiz-Colón.** **Meat goats.** 2007. *Ruminantia*, a publication of the Faculty of Agricultural Sciences, University of Puerto Rico, Mayagüez Campus, intended for Producers of Small Ruminants in Puerto Rico. Vol 3 (1):1-4.

**Ortiz-Colón, G., Culture of animal cells.** 2007. *Plant Science, Animal Production, and Molecular Biology*, a publication of the Faculty of Agricultural Sciences, University of Puerto Rico, Mayagüez Campus, intended for Students of Agricultural Vocational Schools of Puerto Rico. Vol 1 (3<sup>rd</sup> year):37-42.

## **PATENT**

**Use of ibuprofen to enhance intramuscular fat in livestock.**

Invention disclosure number 06-132, Office of Intellectual Property, Michigan State University, East Lansing, MI

## **GRANT PROPOSALS**

### **Funded**

**Preparing Hispanic students for internship positions in dairy science through experiential learning and English enhancement** Submitted in March 2016 to the USDA-Hispanic Service Institutions Education Grant Program (Budget: \$213,000.00 for 4 years).

**Evaluation of the feed efficiency, growth performance, and reproductive characteristics of "Slick and "Wild type" Holsteins bulls.** Submitted in August 2016 to the U.P.R. Agriculture Experimental Station Special Problems Program (Budget: \$25,000.00 for 4 year).

**Establishment of Cell Cultures from Mammary Epithelial Cells Isolated From Heat Tolerant Holsteins.** Submitted in August 2016 to the U.P.R. Agriculture Experimental Station Special Problems Program (*Budget: \$5,000.00 for 1 year*).

**Evaluation of the feed efficiency of “Slick” Holsteins, “Wild type” Holsteins and “Hair-clipped wild type” Holsteins when fed diets base on Maralfalfa (Pennisetum purpureum x Pennisetum glaucum).** Submitted in May 2016 to the FIDTA (Financiamiento para Investigación y Desarrollo Tecnología Agrícola) . (*Budget: \$60,000.00 for 2 years*).

**Determination of the prevalent management practices in the dairy herds of Puerto Rico.** Submitted in August 2011 to the FIDTA (*Financiamiento para Investigación y Desarrollo Tecnología Agrícola*) . (*Budget: \$60,000.00 for 2 years*).

**Detection of anthelmintic resistance in nematodes infecting dairy heifers and evaluation of molecular markers presumably associated with nematode parasite resistance in dairy heifers.** Submitted in March 2010 to the USDA Tropical Subtropical Agricultural Research-Caribbean Sector. (*Budget: \$120,000.00 for 2 years*).

**Detection of anthelmintic resistance in nematodes infecting dairy heifers and evaluation of molecular markers presumably associated with nematode parasite resistance in dairy heifers.** Submitted for renewal in May 2009 to the U.P.R. Agriculture Experimental Station Special Problems Program (*Budget: \$3,000.00 for 1 year*).

**Promoting Student Recruitment and Retention in the Animal Science Discipline by Enhancing Molecular Biology Scientific Instrumentation for Teaching** Submitted in July 2008 to the USDA-Hispanic Service Institutions Education Grant Program (*Budget: \$250,000.00 for 3 years*).

**Detection of anthelmintic resistance in nematodes infecting dairy heifers and evaluation of molecular markers presumably associated with nematode parasite resistance in dairy heifers.** Submitted for renewal in May 2008 to the U.P.R. Agriculture Experimental Station Special Problems Program (*Budget: \$3,000.00 for 1 year*).

**Not funded**

**Evaluation of molecular markers presumably associated with mastitis resistance in dairy cattle and genetic typing of mastitis causing bacteria.** Submitted in March and November 2008 to the USDA Tropical Subtropical Agricultural Research-Caribbean Sector. (*Budget: \$150,000 for 3 years; Not funded*).

**Minority postdoctoral research fellowship and supporting activities. G. Ortiz-Colón and M. Pagán-Morales.** Submitted in November 2006 to the National Science Foundation. (*Budget: \$120,000 for 2 years; Not funded*).

**Mutation analysis of the peroxisome proliferators activated receptor gamma two (PPAR $\gamma$ 2) in lean and obese Puerto Rican subjects.** G. Ortiz-Colón and M. Pagán-Morales. Submitted in December 2006 to the National Institute of Health-Seed Money. (*Budget: \$7,000 for 1 year; Not funded*).

**Adipogenic characteristics of intramuscular and subcutaneous preadipocytes isolated from Senepol bulls presenting polymorphisms in the phosphodiesterase 1B gene locus.** G. Ortiz-Colón, M. Pagán-Morales and Américo Casas. Submitted in September 2006 to the USDA Tropical Subtropical Agricultural Research-Caribbean Sector. (*Budget: \$150,000 for 3 years; Not funded*).

## PRESENTATIONS

### Conferences

**“Challenges Facing the Dairy Industry of Puerto Rico in the 21st Century”.** Ortiz-Colón, G. 66<sup>th</sup> Southern Pasture & Forage Crop Improvement Conference. San Juan, Puerto Rico, June 6, 2012.

**“Comparison of Myofibrillar Fragmentation Index between Senepol and Charolais Crossbred Bulls.** Ortiz-Colón, G. 34<sup>th</sup> of the Senepol Breeders Association. Rincon, Puerto Rico, June 25, 2010.

**“Effects of a strategic supplementation in the deposition of intramuscular and subcutaneous fat of young bulls, on a grass fed system based on tropical grasses in Puerto Rico”.** Ortiz Colón G., J.M. Cardona, G. Carmenaty, E. Martínez, D. Marrero, D. M. Rivera, M. Pagán, A. Rivera, D. Cianzio y A. Casas. 2009. Puerto Rican Society of Agricultural Sciences Annual Meeting. San Juan, Puerto Rico, November 2009.

**“Summary of investigations of adipogenic differences between bovine intramuscular and subcutaneous stromal-vascular cells”.** Ortiz-Colón, G. Latin-American association of Animal Production Bi-annual Meeting. San Juan, Puerto Rico, October 2010.

**“Supplementation with two sources of nitrogen to young bulls grazing tropical grasses,”** Ortiz-Colón, G., A. Casas, and D. Cianzio. Puerto Rican Society of Agricultural Sciences Annual Meeting. Cataño, Puerto Rico, November 2007.

**“Effects of a strategic supplementation in the deposition of intramuscular and subcutaneous fat of young bulls, on a grass fed system based on tropical grasses in Puerto Rico”,** Ortiz-Colón, G., D. Marrero, E. Martínez, M. Rivera, A. Casas, D. Cianzio, y M. Pagán. Latin-American association of Animal Production Bi-annual Meeting. (Poster) Cusco, Perú, October 2007.

**“Association of single nucleotide polymorphisms at the phosphodiesterase 1B (PDE1B) gene locus with percentage of body fat of yearling bulls raised on pasture,”** Ortiz-Colón, G., J. Bosques, D. Marrero, E. Martínez, M. Rivera, A. Casas, D. Cianzio, y M. Pagán. Latin-American association of Animal Production Bi-annual Meeting. (Poster) Cusco, Perú, October 2007.

**“Association of single nucleotide polymorphisms at the phosphodiesterase 1B (PDE1B) gene locus with the percentage of intramuscular fat in beef cattle from Puerto Rico,”** Ortiz-Colón, G., J. Bosques, M. Pagán, E. Casas, A. Casas, and D. Cianzio. Puerto Rican Society of Agricultural Sciences Annual Meeting. (Poster). Guayanilla, Puerto Rico, November 2006.

**“Differences in adipogenesis between bovine intramuscular and subcutaneous preadipocytes are not related to expression of PPAR $\gamma$ <sub>2</sub> or secretion of PGI<sub>2</sub>,”** Ortiz-Colón, G., A.C. Grant, M.E. Doumit and D.D. Buskirk. Amer. Soc. Anim. Sci. National Meeting. (Poster) Minneapolis, Minnesota, July 2006.

**“The adipogenic enzymatic activity of bovine intramuscular, perirenal, and subcutaneous cultured preadipocytes differs, and increases in all depots following exposure to dexamethasone,”** Ortiz-Colón, G., A.C. Grant, M.E. Doumit and D.D. Buskirk. Amer. Soc. Anim. Sci. National Meeting. Minneapolis, Minnesota, July 2006.

**“Dexamethasone downregulates glucocorticoid receptor expression in cultured bovine preadipocytes,”** Ortiz-Colón, G., A.C. Grant, M.E. Doumit and D.D. Buskirk, 2004. Amer. Soc. Anim. Sci. National Meeting. St. Louis, Missouri, August 2004.

**“Clonal efficiency and adipogenic capacity of preadipocytes isolated from bovine intramuscular, perirenal and subcutaneous adipose tissue,”** Ortiz-Colón, G., A.C.

Grant, M.E. Doumit and D.D. Buskirk. Amer. Soc. Anim. Sci. Midwest Sec. (Poster), Des Moines, Iowa, March 2004.

**“A method for the isolation, culture and cloning of bovine preadipocytes,”** Grant, A.C., **Ortiz-Colón, G.**, M.E. Doumit, and D.D. Buskirk. 2004. Amer. Soc. Anim. Sci. Midwest Sec. (Poster), Des Moines, Iowa, March 2004.

## Seminars

**“Impact of Hurricane María on the Dairy Industry of Puerto Rico”** Seminar offered at the Conversation with the National Climate Hub Leadership Meeting hosted by the USDA Caribbean Climate Hub in San Juan, Puerto Rico during the week of January 29 to February 2, 2018.

**“Impact of Hurricane María on the Dairy Industry of Puerto Rico”** Seminar offered at the Panel of Agriculture and Nutrition after Hurricane María hosted by the Community Development & Planning Program of the International Development, Community & Environment Dept. (IDCE) of Clark University, Worcester, MA, October 28, 2017.

**“Dairy Replacement Management: From Weaning to Breeding & “Auditing the Health Status of Dairy Calves”**. Seminar and practicum offered to the personnel of the Dairy Herd Research Station, Lajas, Puerto Rico, December 12, 2013.

**“Role of urban gardening on the food security of Puerto Rico”**. Seminar offered to the Agriculture Extension Agents of Puerto Rico, San Juan, Puerto Rico, November 6, 2013 and San Germán, Puerto Rico, November 7, 2013.

**“Harvesting the Milk Crop: Proper Machine Milking Routine”**. Seminar Offered at Tai South Farm to the Pentecostal Church of Juana Diaz, Saturday, June 29, 2013

**“Challenges Facing the Dairy Industry of Puerto Rico in the 21st Century”**. Annual Report offered at the Annual Meeting of the Dairy Herd Improvement Association of Puerto Ric. Camuy, Puerto Rico, Junio 27, 2013

**“Potential Contribution of Maralfalfa (Pennisetum purpureum x Pennisetum glaucum) in Tropical Dairy Cattle Production”** Seminar offered during the University of Puerto Rico Agriculture Experimental Station Forage Field Day, Isabela, Puerto Rico, Junio 20, 2013.

**“Dairy Herd Improvement Program: Using Data to Evaluate Dairy Herd Management”**  
Invited talk to the Association of Dairy Producers of the Northern Region of Puerto Rico, Camuy, Puerto Rico, Junio 19, 2013.

**“Dairy Herd Improvement Program: Using the Record to Evaluate Dairy Herd Milk Production, Reproduction and Mammary Health”** Invited talk to Basic Dairy Management Course, Mayaguez, Puerto Rico, Mayo 8, 2013.

**“Formulating and Balancing Dairy Rations,”** Seminar offered to the Agriculture Extension Agents working in the area of dairy cattle management, Camuy, Puerto Rico, May 1, 2013.

**“The Dairy Industry of Puerto Rico: Challenges and Opportunities”**  
Seminar offered at the University of Puerto Rico Agriculture Experimental Station, San Juan, Puerto Rico, April 17, 2013.

**“Harvesting the Milk Crop: Proper Machine Milking Routine”.** Daily Seminar Offered at the Agriculture Fair: “Five days with our Land”; held at the University of Puerto Rico-Mayagüez Campus, March 12 to March 16, 2013.

**“Animal source foods in human evolution, nutrition, and health,”** Seminar offered to Elementary School students at W.A.L.K.S., Mayagüez Puerto Rico, December 7, 2012.

**“Calf and Heifer Nutrition Management in the Tropics,”** Seminar offered to the Agriculture Extension Agents working in the area of dairy cattle management, Camuy, Puerto Rico, December 6, 2012.

**“Importance of Forage Quality in Tropical Dairy Cattle Production”.** Invited talk to the Association of Dairy Producers of the Northwestern Region of Puerto Rico, San Sebastian, Puerto Rico, November 27, 2012.

**“Importance of Forage Quality in Tropical Dairy Cattle Production”.** Invited talk to the Association of Dairy Producers of the Eastern Region of Puerto Rico, Gurabo, Puerto Rico, November 21, 2012.

**“Dairy Nutrition Management in the Tropics,”** Invited Talk to the Mammary Physiology Graduate course, Department of Animal Science, University of Puerto Rico, Mayagüez Campus, November 16, 2012.

**“Research in adipose tissue development,”** Invited Talk to the Animal Breeding course, Department of Animal Science, University of Puerto Rico, Mayagüez Campus, October 23, 2012.

**“Potential Contribution of Corn and Sorghum Silage in Tropical Dairy Cattle Production”**  
Seminar offered during the University of Puerto Rico Agriculture Experimental Station Forage Field Day, Isabela, Puerto Rico, October 18, 2012.

**“Importance of Forage Quality in Tropical Dairy Cattle Production”**. Invited talk to the Association of Dairy Producers of the Western Region of Puerto Rico, Lajas, Puerto Rico, October 10, 2012.

**“Judging dairy Cattle”** Seminar and practicum offered to a group of *Future Farmers of America* Students that will represent Puerto Rico at the Dairy Cattle Judging Competition to be held at Indianapolis, Indiana, next October 2012. Seminar was offered at the Molecular Science Animal Laboratory, UPRM, Mayaguez, Puerto Rico, September 13 and 19; October 3, and 9, 2012.

**“Introduction to Tropical Dairy Herd Management”**. Invited talk to the Faculty and Student Body of the College of Agriculture and Veterinary Sciences of the Autonomous University of Santo Domingo, Engombe, Santo Domingo, Dominican Republic, September 28, 2012.

**“A plan to Overcome the Current Challenges of the Tropical Dairy Industry”**. Invited talk to the Association of Dairy Producers of the Dominican Republic, Bani, Peravia, Dominican Republic, September 27, 2012.

**“Dairy Herd Improvement Program: Using the Record to Evaluate Dairy Herd Milk Production Efficiency, Reproduction Efficiency, and Udder Health Status”** Invited talk to the Legal Division of the *Banco Popular de Puerto Rico*, Puerto Rico, May, 29 2012.

**“Getting Prepared to Compete in the Job Market”**. Invited talk offered to the Association of Animal Science Students of the Department of Animal Science at the University of Puerto Rico, Mayagüez, Puerto Rico, May 1<sup>st</sup>, 2012.

**“Harvesting the Milk Crop: Proper Machine Milking Routine”**. Daily Seminar Offered at the Agriculture Fair: “Five days with our Land”; held at the University of Puerto Rico- Mayagüez Campus, March 13 to March 17, 2012.

**“Introduction to Dairy Herd Management”**. Daily Seminar Offered at the Agriculture Fair: “Five days with our Land”; held at the University of Puerto Rico- Mayagüez Campus, March 13 to March 15, 2012.

**“Challenges Facing the Dairy Industry of Puerto Rico in the 21st Century”**. Ortiz-Colón, G. Annual Meeting of the Agriculture Experimental Station with the Dairy Industry Stakeholders of the Western Region of Puerto Rico. San Sebastian, Puerto Rico, March 8, 2012.

**“Climate Change Challenges for the Dairy Industry of Puerto Rico”**. Ortiz-Colón, G. Seminar offered to the Agriculture Extension Agents part of Northwestern Puerto Rico, Isabela, Puerto Rico, March 6, 2012.

**“Challenges Facing the Dairy Industry of Puerto Rico in the 21st Century”**. Ortiz-Colón, G. Annual Meeting of the Agriculture Experimental Station with the Dairy Industry Stakeholders of the Eastern Region of Puerto Rico. Gurabo, Puerto Rico, February 23, 2012.

**“Challenges Facing the Dairy Industry of Puerto Rico in the 21st Century”**. Ortiz-Colón, G. Annual Meeting of the Agriculture Experimental Station with the Dairy Industry Stakeholders of the Northern Region of Puerto Rico. Gurabo, Puerto Rico, February 9, 2012.

**“Interpretation and Use of Forage Quality Analysis”**. Invited talk to the Association of Dairy Producers of the Western Region of Puerto Rico, San Sebastian, Puerto Rico, December 14, 2011.

**“Dairy Replacement Management: From Weaning to Breeding”** Invited talk to the Entrepreneurship Center for Women in Puerto Rico’s Agriculture, Puerto Rico, December 9, 2011.

**“Workshop of how to Execute Forage Sampling for Quality Analysis and Subsequently Perform Interpretation and Use of Forage Quality Analysis”**. Invited talk to the Quality Forage Producers Group (*UCAR*) of Puerto Rico, Guánica, Puerto Rico, November 17, 2011.

**“Dairy Herd Improvement Program: Using the Record to Evaluate Dairy Herd Mammary Gland Health”** Invited talk to the Association of Dairy Producers of the Eastern Region of Puerto Rico, Gurabo, Puerto Rico, November 3, 2011.

**“Role of the Dairy Industry in the Strategic Plan to Assure Food Security in Puerto Rico upon Climate Change Challenges for Food Production”**. Ortiz-Colón, G. Seminar offered at the Symposium **“Agricultural Strategies to Guarantee Food Security in Puerto Rico upon Climate Change**. University of Puerto Rico, Mayagüez, Puerto Rico, October 19, 2011.

**“Management of the Dairy Cow During Transition”** Invited talk to the Association of Dairy Producers of the Western Region of Puerto Rico, San Sebastian, Puerto Rico, October 18, 2011.

**“Interpretation and Use of Forage Quality Analysis”**. Seminar offered to the Agriculture Extension Agents that work with Dairy Producers, Camuy, Puerto Rico, October 13, 2011.

**“Dairy Herd Improvement Program: Using the Record to Evaluate Dairy Herd Reproductive Efficiency”** Invited talk to the Association of Dairy Producers of the Eastern Region of Puerto Rico, Gurabo, Puerto Rico, October 6, 2011.

**“Interpretation and Use of Forage Quality Analysis”**. Invited talk to the Association of Dairy Producers of the North Region of Puerto Rico, Isabela, Puerto Rico, October 5, 2011.

**“Dairy Replacement Management: From Weaning to Breeding”** Invited talk to the Association of Dairy Producers of the Central Region of Puerto Rico, Morovis, Puerto Rico, September 28, 2011.

**“Dairy Herd Improvement Program: Using the Record to Evaluate Dairy Herd Mammary Gland Health”** Invited talk to the Association of Dairy Producers of the Central Region of Puerto Rico, Morovis, Puerto Rico, September 21, 2011.

**“Dairy Herd Improvement Program: Using the Record to Evaluate Dairy Herd Reproductive Efficiency”** Invited talk to the Association of Dairy Producers of the Central Region of Puerto Rico, Morovis, Puerto Rico, September 14, 2011.

**“Dairy Herd Improvement Program: Using the Record to Evaluate Dairy Herd Mammary Gland Health”** Invited talk to the Association of Dairy Producers of the Northern Region of Puerto Rico, Camuy, Puerto Rico, September 8, 2011.

**“Dairy Herd Improvement Program: Using the Record to Evaluate Dairy Herd Productive Efficiency”** Invited talk to the Association of Dairy Producers of the Central Region of Puerto Rico, Morovis, Puerto Rico, September 7, 2011.

**“Dairy Herd Improvement Program: Using the Record to Evaluate Dairy Herd Reproductive Efficiency”** Invited talk to the Association of Dairy Producers of the Northern Region of Puerto Rico, Camuy, Puerto Rico, September 1<sup>st</sup>, 2011.

**“Dairy Herd Improvement Program: Using the Record to Evaluate Dairy Herd Productive Efficiency”** Invited talk to the Association of Dairy Producers of the Northern Region of Puerto Rico, Camuy, Puerto Rico, Agosto 25, 2011.

**“Dairy Herd Improvement Program: Using the Record to Evaluate Dairy Herd Production Efficiency”** Invited talk to the Association of Dairy Producers of the Eastern Region of Puerto Rico, Gurabo, Puerto Rico, Mayo 26, 2011.

**“Dairy Herd Improvement Program: Using the Record to Evaluate Dairy Herd Reproductive Efficiency”** Invited talk to the Association of Dairy Producers of the Western Region of Puerto Rico, San Sebastian, Puerto Rico, February 25, 2011.

**“Dairy Replacement Health Management”** Invited talk to the Association of Dairy Producers of the Western Region of Puerto Rico, San Sebastian, Puerto Rico, December 14, 2010.

**“Dairy Herd Mastitis Management”** Invited talk to the Association of Dairy Producers of the Western Region of Puerto Rico, San Sebastian, Puerto Rico, November 18, 2010.

**“Dairy Herd Mastitis Management”** Invited talk to the Association of Dairy Producers of the Western Region of Puerto Rico, Isabela, Puerto Rico, November 4, 2010.

**“What is Animal Science and what careers opportunities it offers you”** Seminar offered to students of the Teresita Nazario Junior-High School, Guánica, Puerto Rico, October 13, 2010.

**“What is Animal Science and what careers opportunities it offers you”** Orientation offered to High School of Puerto Rico, during the event *Senior Explosion 2010*, San Juan, Puerto Rico, September 28 & 29, 2010.

**“What is Animal Science and what careers opportunities it offers you”** Seminar offered to students of the High School of the University of Puerto Rico, San Juan, Puerto Rico, September 27, 2010.

**“Dairy Herd Improvement Program: Using the Record to Evaluate Dairy Herd Milk Production Efficiency”** Invited talk to the Association of Dairy Producers of the North Region of Puerto Rico, Camuy, Puerto Rico, September 16, 2010.

**“What is Animal Science and what careers opportunities it offers you”** Seminar offered to School students of the Homeschooling Parent Association of Puerto Rico, Dorado, Puerto Rico, Agosto 6, 2010.

**“Judging Dairy Cattle”** Seminar and practicum offered to a group of *Future Farmers of America* Students that will represent Puerto Rico at the Dairy Cattle Judging Competition to be held at Indianapolis, Indiana, next October 2010. Seminar was offered at the Dairy Operation of Mr. Jorge Machado, Camuy, Puerto Rico, June, 26, 2010.

**“Dairy Herd Improvement Program: Using the Record to Evaluate Dairy Herd Milk Production Efficiency, Reproductive Status, and Mammary Gland Health”** Seminar Offered the Agriculture Agents Assigned to work with Dairy Producers, Arecibo, Puerto Rico, May 24, 2010.

**“Dairy Herd Improvement Program: Using the Record to Evaluate Dairy Herd Milk Production Efficiency”** Invited talk to the Association of Dairy Producers of the West Region of Puerto Rico, San Sebastián, Puerto Rico, May,19 2010.

**“Research Techniques in Animal Science”** Seminar offered to students of CROEM, Mayagüez Puerto Rico, at the Altamira Cattle Ranch, Cabo Rojo, Puerto Rico, May 3, 2010.

**“Dairy Replacement Management: From Weaning to Breeding”** Invited talk to the Association of Dairy Producers of the West Region of Puerto Rico, San Sebastián, Puerto Rico, April 14, 2010.

**“What is Animal Science and what careers opportunities it offers you”** Seminar offered to High School students at the School, Colegio la Merced,, San Juan, Puerto Rico, April 13, 2010.

**“What is Animal Science and what careers opportunities it offers you”** Seminar offered to High School students at the School, Pedro Falú, Río Grande, Puerto Rico, April 12, 2010.

**“What is Animal Science and what careers opportunities it offers you”** Seminar offered to High School students at the Vocational School, Antolín Santos, Comerío, Puerto Rico, April 6, 2010.

**“What is Animal Science and what careers opportunities it offers you”** Seminar offered to Middle School students from the San José Academy of Guaynabo, Puerto Rico, at the dairy facility, “Ceiba del Mar” Hatillo, Puerto Rico, March 26, 2010.

**“Dairy Replacement Management: From Birth to Breeding ”** Invited talk to the Association of Dairy Producers of the North Region of Puerto Rico, Florida, Puerto Rico, March 24, 2010.

**“Harvesting the Milk Crop: Proper Machine Milking Routine”**. Daily Seminar Offered at the Agriculture Fair: “Five days with our Land”; held at the University of Puerto Rico-Mayagüez Campus, March 16 to March 20, 2010.

**“What is Animal Science and what careers opportunities it offers you”** Seminar offered to Middle School students at W.A.L.K.S., Mayagüez Puerto Rico, March 10, 2010.

**“What is Animal Science and what careers opportunities it offers you”** Seminar offered to High school students at CROEM, Mayagüez Puerto Rico, March 1, 2010.

**“What is Animal Science and what careers opportunities it offers you”** Seminar offered to middle school students from Camuy at the Animal Biotechnology Laboratory of the Department of Animal Science at College of Agricultural Sciences, U.P.R.-Mayagüez Campus, February 10, 2010.

**“Dairy Replacement Management: From Birth to Weaning”** Invited talk to the Association of Dairy Producers of the West Region of Puerto Rico, San Sebastian, Puerto Rico, February 5, 2010.

**“Promoting Student Recruitment and Retention in the Animal Science Discipline by Enhancing Molecular Biology Scientific Instrumentation for Teaching”** Seminar offered to the Agriculture Extension Agents of the Arecibo Region, November 5, 2009; Mayagüez Region, November 6, 2009; Ponce Region, October 13, 2009; and the San Juan Region, October 8, 2009.

**“Effect of anthelmintics over the fecal egg counts of gastrointestinal nematodes in replacement heifers in two dairies in Puerto Rico”**. Seminar offered to the Agriculture Extension Agents part of the Dairy Health Program, Camuy, Puerto Rico, September 24, 2009

**“Dairy Replacement Management: Interactions between stress and the Immune System”** Invited talk to the Dairy Producers of the West Region of Puerto Rico, Agriculture Experimental Station, Isabela, Puerto Rico, March 12, 2008

**“Animal Source Foods in Human Nutrition and Health”** Invited talk to the INGL 3201: Basic English Course, UPRM, Mayagüez, Puerto Rico, February 2, 2009.

**“Introduction to biotechnology as a tool to improve animal production”** Invited talk to the *Association of Agricultural Scientists of Puerto Rico*, San Juan, Puerto Rico, August 2008

**“Why should we reduce the current limits for somatic cell counts and bacterial counts in fresh milk”** Seminar offered to Dairy farmers that do not meet the forthcoming quality standards for fresh milk in Puerto Rico, Regulatory Office of the Dairy Industry San Juan, Puerto Rico, April, 2008

**“Strategic Supplementation: An Alternative to improve the growth efficiency of dairy heifers”** Seminar offered to the Agriculture Extension Agents, 4H House, Camuy, Puerto Rico, March 2008

**“Strategic Supplementation: An Alternative to improve the efficiency of beef production in Puerto Rico”** Invited talk to the *Southwest Association of Beef Producers of Puerto Rico*, Altamira Cattle Ranch, Cabo Rojo, Puerto Rico, March 2008

**“Writing in Science: The literature review,”** Undergraduate Seminar course, Department of Animal Science, University of Puerto Rico, Mayagüez Campus, October, 2007.

**“Writing in Science: The literature review,”** Undergraduate Seminar course, Department of Animal Science, University of Puerto Rico, Mayagüez Campus, March 2007.

**“Research in adipose tissue development,”** Graduate Beef Cattle Production course, Department of Animal Science, University of Puerto Rico, Mayagüez Campus, November, 2006.

**“Writing in Science: The literature review,”** Undergraduate Seminar course, Department of Animal Science, University of Puerto Rico, Mayagüez Campus, September 2006.

**“Investigations of adipogenic differences between bovine intramuscular and subcutaneous preadipocytes,”** Dissertation Seminar, Department of Animal Science, Michigan State University, May 2006.

**“Investigations of the differences in adipogenic capacity among bovine preadipocytes isolated from distinct adipose depots,”** Muscle Biology and Meat Science Seminar, Department of Animal Science, Michigan State University, November 2005.

**“Influence of glucocorticoids in the differentiation process of bovine preadipocytes,”** Livestock and Environment Group Seminar, Department of Animal Science, University of Puerto Rico, Mayagüez Campus, August 2005.

**“Evaluation of intrinsic differences among bovine preadipocytes isolated from distinct adipose depots and their relation to adipogenesis,”** Department of Biology, University of Puerto Rico, Mayagüez Campus, July 2005.

**“Animal source foods in human evolution, nutrition, and health,”** Muscle Biology and Meat Science course, Department of Animal Science, Michigan State University, November 2004.

**“Glucocorticoids signal transduction: Genomic and non-genomic mechanisms,”** Animal Biotechnology course, Department of Animal Science, Michigan State University, March 2004.

**“Lipid metabolism in meat animals,”** Growth and Musculoskeletal Biology course, Department of Animal Science, Michigan State University, February 2004.

**“Simulation of the development of adipose tissue in beef cattle,”** Nutrition and Metabolism Seminar, Department of Animal Science, Michigan State University, October 2002.

**“Agriculture in Puerto Rico: Current status of the dairy and beef industry and future challenges,”** International Agriculture Seminar, Department of Animal Science, Michigan State University, March 2002.

**“Effects of utilizing two different nitrogen sources as a nutritional supplement for young bulls grazing tropical grasses,”** Thesis Seminar, Department of Animal Science, University of Puerto Rico, November 2001.

**“Potential of glucocorticoids to increase marbling in cattle,”** Nutrition and Metabolism Seminar, Department of Animal Science, Michigan State University, October 2001.

**“Understanding adipocyte differentiation to improve marbling in cattle,”** Beef Cattle Group Seminar, Department of Animal Science, Michigan State University, September 2001.

**“Effects of feeding crystalline amino acids mixtures over gut morphology and nitrogen balance in the pig,”** Protein Metabolism Seminar, Department of Animal Science, Michigan State University, April 2001.

**“Potential of selected tropical grasses to improve animal production in the humid tropics,”** Graduate Seminar, Department of Agronomy and Soil Sciences, University of Puerto Rico, October 2000.

**“Utilization of bioelectrical impedance analysis to estimate body composition in bovines,”** D.R.E.A.M.S. Program, The Graduate School, Michigan State University, August 2000.

**“Compensatory growth in beef cattle,”** Graduate Seminar, Department of Animal Science, University of Puerto Rico, November 1998.

**“Potential of copper supplementation to increase the efficiency of porcine production,”** Undergraduate Seminar, Department of Animal Science, University of Puerto Rico, May 1997.

## **PROFESSIONAL ASSOCIATIONS**

American Registry of Professional Animal Scientists (ARPAS)  
American Dairy Science Association  
National Science Teachers Association  
Puerto Rican Society of Agricultural Sciences (*Ex-Board of Directors*)  
Honor Society Gamma Sigma Delta (*Ex-Vice-President*)  
Association of Agricultural Scientists of Puerto Rico (*Ex-Board of Directors*)  
(License # 4703)  
Agriculture Extension Service Specialists’ Association

## **PROFESSIONAL DEVELOPMENT**

Attended seminars or courses offered by

## **Online and Continuing Education**

### **University of Illinois at Urbana-Champaign**

December, 2013: Dairy Ration Formulation and Balancing

May, 2013: Dairy Cattle Advance Nutrition

December, 2012: Dairy Management and Diagnostics

### **College of Agricultural Scientists of Puerto Rico**

November 2, 2007: History and current status of the Dairy Industry in  
Puerto Rico

October 5, 2007: Integrated pest management of the coffee berry borer  
(*Hypothenemus hampei*)

August, 17, 2007: Economic perspectives, certification requirements, and  
agronomic considerations of organic agriculture production

### **United States Department of Agriculture**

October 12, 2007: Principles of Grant and Proposal Preparation

October 11, 2007: Introduction to USDA Competitive Grant Program

### **Department of Crop Protection, University of Puerto Rico, Mayagüez Campus**

April 17, 19, 20, y 24 (2006): Bioinformatics

### **Center for Professional Enhancement, University of Puerto Rico, Mayagüez Campus**

December 11, 2013: *Kuali Coeus* training for principal investigators

December 6, 2013: How to improve the research culture at the University?

August 27, 2013: The Faculty Evaluation Process: How to obtain tenure

August 13, 2013: Getting Published in Peer Reviewed Journals

March 12, 2013: Strategies to successfully counsel Graduate Students

January 29, 2013: How to Manage your Time Effectively

April 23, 2009: Integrating Video and Audio in Teaching and Learning

March 26, 2009: Integrating Web 2.0 with Joomla

March 5, 2009: Creating online surveys with ININ Web Line

February 17, 2009: Becoming a Green Professor

February 5, 2009: What is open access and why is it important?

January 22, 2009: Creating Courses

January 15, 2009: Introduction to WebCT

May 29, 2008: CID 203-Accounting Issues

April 20, 2007: Introduction to Bioinformatics

November 9, 2006: Scientific writing for the general public  
October 26, 2006: Proposal Writing  
September 28, 2006: Assessment of writing in the sciences

### **Agricultural Experimental Station, University of Puerto Rico**

August 28, 2006: Grant Writing

### **Office of Faculty and Organizational Development, Michigan State University.**

April 7, 2005: Interdisciplinary teaching and assessment  
March 30, 2005: Assessing along the continuum of students' learning  
February 24, 2005: Helping students learn  
November 30, 2004: Evaluating teaching performance  
November 3, 2004: Teaching and evaluating oral communication skills  
October 29, 2004: Teaching critical thinking: Are you doing it?  
October 21, 2004: Promoting responsibility and integrity in research  
October 13, 2004: Problem-based learning and case controversies  
October 4, 2004: The course design process: The big picture  
September 23, 2004: The scholarship of teaching and learning  
March 2, 2004: Assessment of learning in large and small classes  
February 19, 2004: Promoting good citizenship in students

## **ACADEMIC & PROFFESIONAL SERVICE**

Member of the editorial board of the peer review journal *The Professional Animal Scientist*.  
(June 2017-Present).

Served as Recorder Judge of the Holstein Association of Puerto Rico Summer 2012, and 2013.

Served as Main Judge of the 4H Dairy Cattle Judging Competitions Summer 2010, 2011, 2012, and 2013

Mayagüez Region, Isabela, Puerto Rico  
Caguas Region, Gurabo, Puerto Rico  
Ponce Region, Lajas, Puerto Rico  
Arecibo Region, Hatillo, Puerto Rico  
Puerto Rico Championship, Camuy, Puerto Rico

Appointed to the Students' Selection Committee for Collaboration agreement between the College of Veterinary Medicine at Mississippi State University at the Animal Science Department at UPRM (Agosto 2012-Present)

Appointed to the Committee for Student Learning Assessment of the Animal Science Department (October 2007-Present)

Moderator of the conference "*Economic perspectives, certification requirements, and agronomic considerations of organic agriculture production*"; organized by the College of Agronomists of Puerto Rico, August 17, 2007

Collaborator in the "*Third Undergraduate Students Scientific Fair*", organized by the College of Agronomists of Puerto Rico, May 9, 2007

Internal reviewer for the Animal Science Department of manuscripts to be submitted for publication to the *Journal of Agriculture of the University of Puerto Rico*

Peer reviewer for the journal *Latin American Archives of Animal Production*

## REFERENCES

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