

# Sebastian I Arriola Apelo, Ph.D.

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## EDUCATION

INSTITUTION AND LOCATION	DEGREE	COMPLETION	FIELD OF STUDY
University of the Republic, Montevideo, Uruguay	BS	09/2003	Agricultural Engineering
Virginia Tech, Blacksburg, VA	MS	05/2009	Crop and Soil Environmental Sci.
Virginia Tech, Blacksburg, VA	PHD	05/2013	Animal Science-Dairy

## POSITIONS, HONORS AND RESEARCH SUPPORT

### Positions and Employment

- 2017- Assistant Professor in Metabolism. Department of Dairy Science, University of Wisconsin-Madison
- 2015-2017 American Diabetes Postdoctoral Research Fellow. Department of Medicine, University of Wisconsin-Madison. Supervisor, Dudley Lamming.
- 2014 - 2015 Post-doctoral Research Associate. Department of Medicine, University of Wisconsin-Madison. Supervisor, Dudley Lamming.
- 2013 - 2014 Post-doctoral Research Associate. Department of Dairy Science, Virginia Tech. Supervisor, Mark Hanigan.
- 2013 Applied Dairy Genetics - Teaching Assistant
- 2012 Analysis of Experiments on SAS - Teaching Assistant
- 2011 Dairy Enterprise Management - Teaching Assistant
- 2010 Animal Nutrition - Teaching Assistant
- 2009 Forage Crop Ecology - Teaching Assistant
- 2009 - 2013 Graduate mentor of three undergraduate J. L. Pratt fellowships.
- 2009 - 2013 Graduate mentor of four undergraduate Capstone Animal Science Department projects.
- 2003 Feedstuff evaluation - Lecturer. Department of Nutrition, University of the Republic, School of Agronomy, Uruguay.

### Other Experience and Professional Memberships

- 2010 - Member, American Dairy Science Association
- 2014 - 2015 Member, American Heart Association
- 2015 - Member, American Diabetes Association
- 2016 - Member, International Society on Aging and Disease
- 2013 - Ad-Hoc Manuscript Reviewer for 8 international journals: Aging Cell, Physiological Genomics, BMC Systems Biology, Plos One, Animal, Journal of Dairy Science, Journal of Agricultural Science, Small Ruminant Research.

## Honors

2009	J. L. Pratt Doctoral Fellowship in Animal Nutrition, Virginia Tech
2010	Travel Award, Virginia Tech Graduate Student Association
2013	Outstanding PhD Dissertation, Virginia Tech
2016	Postdoctoral Research Fellowship, American Diabetes Association
2016	2016 Combined Annual Meeting Travel Award, CSCTR/MWAFMR
2017	2017 Combined Annual Meeting Oral Presentation, CSCTR/MWAFMR

## **PUBLICATIONS**

### Manuscripts under review

1. Brinkman, JA, Carbajal KA, **Arriola Apelo SI**, Peng, Y, Puglielli, L, Lamming, DW. mTOR signaling increases with age in the murine brain. *J Gerontol A Biol Sci Med Sci*.

### Peer Reviewed Publications

1. Lamming, DW, Baar, EL, **Arriola Apelo, SI**, Tosti, V, Fontana, L. 2017. Short-term consumption of a plant protein diet does not improve glucose homeostasis of young C57BL/6J mice. *Nutr. Health Aging. In press.*
2. Hanigan, MD, White RR, **Arriola Apelo SI**, Aguilar M, Estes K, Myers A. 2017. Predicting post-absorptive protein and amino acid metabolism. *Revista Brasileira de Zootecnia. In press.*
3. **Arriola Apelo SI** and Lamming DW. mTORC2 Puts Its Shoulder to Krebs' Wheel. *Mol Cell*. 2016. 63(5): 723-5. PubMed PMID: [27588599](#).
4. **Arriola Apelo SI**, Pumper CP, Baar EL, Cummings NE, Lamming DW. Intermittent Administration of Rapamycin Extends the Life Span of Female C57BL/6J Mice. *J Gerontol A Biol Sci Med Sci*. 2016. 71(7): 876-81. PubMed PMID: [27091134](#).
5. **Arriola Apelo SI**, Lamming DW. Rapamycin: An InhibiTOR of Aging Emerges from the Soil of Easter Island. *J Gerontol A Biol Sci Med Sci*. 2016. 71(7): 841-9. PubMed PMID: [27208895](#).
6. **Arriola Apelo SI**, Neuman JC, Baar EL, Syed FA, Cummings NE, Brar HK, Pumper CP, Kimple ME, Lamming DW. Alternative rapamycin treatment regimens mitigate the impact of rapamycin on glucose homeostasis and the immune system. *Aging Cell*. 2016. 15(1):28-38. PubMed PMID: [26463117](#).
7. Castro Marquez J, **Arriola Apelo SI**, Appuhamy J, Hanigan M. Development of a model describing regulation of casein synthesis by the mTOR signaling pathway in response to insulin, amino acids, and acetate. *J Dairy Sci*. 2016. 99(8): 6714-36. PubMed PMID: [27236753](#).
8. Fontana L\*, Cummings NE\*, **Arriola Apelo SI**, Neuman JC, Kasza I, Schmidt BA, Cava E, Spelta F, Tosti V, Sayed FA, Baar EL, Veronese N, Cotrell SE, Fenske RJ, Bertozzi B, Brar HK, Pietka T, Bullock AD, Fingeshau RS, Andriole GL, Merrins MJ, Alexander CM, Kimple ME, Lamming DW. Decreased consumption of branched chain amino acids improves metabolic health. *Cell reports*. 2016. 16(2):520-.30; PubMed PMID: [27346343](#).

9. **Arriola Apelo SI**, Bell AL, Estes K, Ropelewski J, de Veth MJ, Hanigan MD. Effects of reduced dietary protein and supplemental rumen-protected essential amino acids on the nitrogen efficiency of dairy cows. *J Dairy Sci.* 2014 Sep;97(9):5688-99. **Highlighted Article.** PubMed PMID: [25022689](#).
10. **Arriola Apelo SI**, Knapp JR, Hanigan MD. **Invited review:** Current representation and future trends of predicting amino acid utilization in the lactating dairy cow. *J Dairy Sci.* 2014. 97(7):4000-17. PubMed PMID: [24767883](#). **Top 100 most cited papers in the Journal of Dairy Science published between 2014 and 2017.**
11. **Arriola Apelo SI**, Singer LM, Ray WK, Helm RF, Lin XY, McGilliard ML, St-Pierre NR, Hanigan MD. Casein synthesis is independently and additively related to individual essential amino acid supply. *J Dairy Sci.* 2014. 97(5):2998-3005. **Highlighted Article.** PubMed PMID: [24582441](#).
12. **Arriola Apelo SI**, Singer LM, Lin XY, McGilliard ML, St-Pierre NR, Hanigan MD. Isoleucine, leucine, methionine, and threonine effects on mammalian target of rapamycin signaling in mammary tissue. *J Dairy Sci.* 2014. 97(2):1047-56. **Featured Article.** PubMed PMID: [24359813](#).
13. **Arriola Apelo SI** and M.D. Hanigan. A mechanistic model of casein synthesis in mammary tissue based on the phosphorylation of mTOR. *Animal Production Science* 2014 Oct; 54, Special issue: 11-12, "Modelling Nutrient Digestion and Utilisation in Farm Animals".
14. **Arriola Apelo, SI**, Singer LM, Lin X, Ray WK, Helm RF, McGilliard ML, Hanigan MD. Mammary gland from lactating cows responded additively to individual essential amino acids in casein synthesis rate. Page 449. In: *Energy and protein metabolism and nutrition in sustainable animal production.* 2013. J. W. Oltjen, E. Kebreab, and H. Lapierre, ed. Wageningen Academic, The Netherlands.
15. Jarrett, JP, Knowlton KF, Pike KL, Blatcher C, **Arriola Apelo SI**, Hanigan MD. Barley protein meal for lactating dairy cows: effects on production, intake, and nutrient excretion. *Prof. Anim. Sci.* 2011 Dec. 27:518-524.
16. **Arriola Apelo SI**, W. A. D. Nayananjalie, J. A. D. R. N. Appuhamy, and M. D. Hanigan. m-TOR independent model of protein synthesis regulation by essential amino acids in mammary epithelial cells. 2010. Page 247. In: *Energy and protein metabolism and nutrition.* M. G. Croveto, ed. Wageningen Academic, The Netherlands.

### **Abstracts, Oral Presentations and Thesis**

1. **Sebastian I. Arriola Apelo**, Cassidy P. Pumper, Mark T. Morrison, Emma Meyer, Nicole E. Cummings, Amy Lin, Emma L. Baar, and Dudley W. Lamming. 2017. Sex Hormones Effects on the Metabolic Impact of Hepatic *Rictor* Deletion. *Experimental Biology - Energy Metabolism and Aging.*
2. **Sebastian I. Arriola Apelo**, Mark Morrison, Emma Meyer, Cassidy P. Pumper, Nicole E. Cummings, Emma L. Baar, and Dudley W. Lamming. 2017. Male and Female Sex Hormones Determine Metabolic Effects of Hepatic mTORC2. *Keystone Symposia on Molecular and Cellular Biology - Sex and Gender Factors Affecting Metabolic Homeostasis, Diabetes and Obesity.*

3. **Sebastian I. Arriola Apelo**, Mark Morrison, Emma Meyer, Cassidy P. Pumper, Nicole E. Cummings, Emma L. Baar, and Dudley W. Lamming. 2017. Male and Female Sex Hormones Determine Metabolic Effects of Hepatic mTORC2. Central Society for Clinical and Translational Research.
4. **Arriola Apelo SI**, Lamming DW. "A new chance for rapamycin." Atlas of Science. 2016 Nov 22. AoS Nordic AB. [atlasofscience.org/a-new-chance-for-rapamycin/](http://atlasofscience.org/a-new-chance-for-rapamycin/)
5. **Sebastian I. Arriola Apelo**<sup>1</sup>, Cassidy P. Pumper<sup>1</sup>, Mark Morrison, Emma Meyer, Nicole E. Cummings<sup>1</sup>, Amy Lin<sup>1</sup>, Emma L. Baar<sup>1</sup>, and Dudley W. Lamming. 2016. Female Sex Hormones Alter the Metabolic Impact of Hepatic *Rictor* Deletion. Cold Spring Harbor Laboratory - Mechanism of Aging.
6. Cummings N, Radcliff A, **Arriola Apelo SI**, Sherman D, Barnes M, Konon K, Williams E, Wu J, Hacker T, Brodbeck A, Lamming DW. 2016. Decreased consumption of specific macronutrients promotes metabolic health and longevity. Cold Spring Harbor Laboratory - Mechanism of Aging.
7. **Arriola Apelo SI**, Pumper CP, Baar EL, Cummings NE, Neuman JC, Brar HK, Kimple ME, Lamming DW. Alternative rapamycin treatment regimens mitigate the impact of rapamycin on glucose homeostasis and the immune system, and extend lifespan, 2016 Combined Annual Meeting of CSCTR and MWAFFMR. *J Investigative Medicine*. 2016; 64(4):932-933. doi: 10.1136/jim-2016-000120.45
8. Lamming DW, NE Cummings, **S Arriola Apelo**, JC Neuman, B Schmidt, M Merrins, M Kimple, L Fontana. *Improving glycemic control through reduction of specific dietary amino acids*, 2016 Combined Annual Meeting of CSCTR and MWAFFMR. *J Investigative Medicine*. 2016; 64(4):926. doi: 10.1136/jim-2016-000120.32
9. Lin A, **Arriola Apelo SI**, Lamming DW. *The role of hepatic Rictor on energy metabolism*. Introductory Biology 152 Undergraduate Research Poster Presentation, Madison WI, December 14, 2016
10. Meyer EJ, Arriola Apelo SI, Lamming DW. *The role of testosterone in hepatic Rictor effect on metabolism and lifespan in male C57BL/6J mice*, Introductory Biology 152 Undergraduate Research **Poster Presentation**, Madison WI, December 14, 2016
11. Morrison MR, **Arriola Apelo SI**, Lamming DW. *Estrogen's modulatory effects of hepatic mTORC2 on metabolism in mice*, Introductory Biology 152 Undergraduate Research **Poster Presentation**, Madison WI, December 14, 2016
12. **Arriola Apelo SI**, Cassidy Pumper, Nicole Cummings, Amy Lin, Dawn Sherman, Emma Baar, Dudley Lamming. 2016. Female sex hormones may protect from the negative effects of *Rictor* deletion on mouse lifespan. Department of Medicine - Research Day.
13. Cummings NE, Radcliff A, **Arriola Apelo SI**, Brodbeck A, Sherman DS, Barnes ME, Konon E, Wu J, Hacker TA, Lamming DW. *Diets with altered macronutrients promote metabolic health and longevity in progeroid and aging mice*, UW-Madison Department of Medicine Research Day, Madison, WI, June 3, 2016
14. Cummings NE, Fontana L, Barnes M, Cottrell SE, Konon E, Wu J, **Arriola Apelo SI**, Neuman JC, Kasza I, Schmidt BA, Syed F, Baar EL, Fenske RJ, Brar HK, Merrins MJ, Alexander CM, Kimple ME, Lamming DW. *Improving metabolic health through decreased consumption of branched chain amino acids*, UW-Madison Department of Medicine **Research Day**, Madison, WI, June 3, 2016
15. **Arriola Apelo SI**, Lamming DW. *Alternative Rapamycin Treatment Regimens Promote Longevity While Minimizing Side Effects*, 68th Annual Scientific Meeting of the Gerontological Society of America, "Aging as a Lifelong Process." *The Gerontologist*. 2015; 55 (S2):NP. doi: 10.1093/geront/gnv158.
16. Cummings NE, **Arriola Apelo SI**, Neuman JC, Baar EL, Syed F, Kimple ME, **Lamming DW**. *Decreased dietary intake of branched chain amino acids decreases mTORC1 signaling and*

*improves glucose homeostasis*, Endocrinology and Reproductive Physiology Program Annual Research **Symposium**, Madison, WI, June 25, 2015

17. **Arriola Apelo SI**, Neuman JC, Baar EL, Syed F, Cummings NE, Brar HK, Kimple ME, Lamming DW. An intermittent treatment regimen mitigates the deleterious effects of rapamycin. UW-Madison Department of Medicine Research Day, Madison, WI, May 29, 2015
18. Cummings NE, **Arriola Apelo SI**, Neuman JC, Baar EL, Syed F, Kimple ME, **Lamming DW**. *Decreased dietary intake of branched chain amino acids decreases mTORC1 signaling and improves glucose homeostasis*, UW-Madison Department of Medicine **Research Day**, Madison, WI, May 29, 2015
19. **Arriola Apelo SI**, Neuman JC, Baar EL, Faizan S, Cummings NE, Brar HK, Kimple ME, Lamming DW. An intermittent treatment regimen mitigates the deleterious effects of rapamycin. APRD Research Day, Madison WI March 5, 2015.
20. **Sebastian I. Arriola Apelo**, Joshua C. Neuman, Emma L. Baar, Faizan A. Syed, Nicole E. Cummings, Harpreet K. Brar, Cassidy P. Pumper, Michelle E. Kimple, Dudley W. Lamming. 2015. Alternative rapamycin treatment regimens mitigate the impact of rapamycin on glucose homeostasis and the immune system. 27<sup>th</sup> Annual Colloquium on Aging. University of Wisconsin-Madison. Institute on Aging.
21. **Sebastian I. Arriola Apelo**, Joshua C. Neuman, Emma L. Baar, Faizan Syed, Nicole E. Cummings, Harpreet K. Brar, Michelle E. Kimple, Dudley W. Lamming. 2015. An intermittent treatment regimen mitigates the deleterious effects of rapamycin. Molecular and Cellular Pharmacology Symposium.
22. **Arriola Apelo, S.I.**, L.M. Singer, X. Lin, M.L. McGilliard, and M.D. Hanigan. 2013. Essential amino acid signal on translation regulation pathways in mammary tissue. J. Dairy Sci. 96 E-Suppl. 1:250 (W68).
23. **Arriola Apelo, S.I.**, L.M. Singer, W.K. Ray, R.F. Helm, X. Lin, M.L. McGilliard, and M.D. Hanigan. 2013. Casein synthesis rate of lactating mammary tissue responds additively to concentrations individual essential amino acid. International Symposium of Energy and Protein, European Fed. Anim. Sci. Sacramento, CA. *Poster presentation*.
24. **Arriola Apelo, S.I.**, J.A.D.R.N. Appuhamy, and M.D. Hanigan. 2012. Protein synthesis regulation in mammary epithelial cells. Anim. Sci. Modelers Meeting. Phoenix, AZ. *Oral presentation*.
25. **Arriola Apelo, S.I.**, E.C. Titgemeyer, and M.D. Hanigan. 2011. Representation of nitrogen kinetics in Molly. Anim. Sci. Modeling Group Meeting. New Orleans, LA. *Oral presentation*.
26. Hanigan, M.D., **S.I. Arriola Apelo**. 2011. Nutritional regulation of mammary protein synthesis. European Fed. Anim. Sci. Annual Meeting. Stavanger, Norway. *Invited talk*.
27. **Arriola Apelo, S.I.**, C. Blatcher, M. McGilliard, and M.D. Hanigan. 2010. Ruminal degradation dynamics of barley protein meal, corn distiller grains and soybean meal. J. Dairy Sci. 93 E-Suppl. 1: 626 (W133).
28. **Arriola Apelo, S.I.**, D. Nayananjalie, J.A.D.R.N. Appuhamy, and M.D. Hanigan. 2010. m-TOR independent model of protein synthesis regulation by essential amino acids in mammary epithelial cells. International Symposium of Energy and Protein, European Fed. Anim. Sci. Parma, Italy. *Oral presentation*.
29. **Arriola Apelo. S.I.**, G. Scaglia, B.F. Tracy, and A.O. Abaye. 2009. Forage characteristics and grazing behavior of weaned calves in a grass-fed system. AFGC Conference. Grand Rapids, MI. *Oral presentation*.

30. **Arriola Apelo. S.I.**, G. Scaglia, B.F. Tracy, and A.O. Abaye. 2009. Influence of forage characteristics on grazing behavior of weaned calves. Am. Soc. An. Sci. Southern Section. Atlanta, GA. *Oral presentation*.
31. **Arriola Apelo. SI.**, B.F. Tracy, A.O. Abaye. G. Scaglia, and W. S. Swecker, Jr. Influence of forage characteristics on grazing behavior of weaned calves. In: Proceeding of the American Forage and Grassland Council. 2009. Grand Rapids, MI.
32. **Arriola Apelo. SI.**, G. Scaglia, B.F. Tracy, and A.O. Abaye. Influence of forage characteristics on grazing behavior of weaned calves. ASAS Southern Section. 2009. Atlanta, GA. Abstract.
33. **Arriola Apelo SI**, Cordal Sorrondegui M, Davyt Peyronel R, Souza Dadalt G. Production and composition of milk from Holstein dairy cows grazing temperate pastures of different lengths and at different times of the grazing session. 2003. Agricultural Engineering Undergraduate Research Thesis. University of the Republic. Montevideo, Uruguay.