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Major Professor: Milo Wiltbank

Degree Objective: Ph.D. Endocrinology and Reproductive Physiology

Background: DVM, University of Buenos Aires, Argentina. MSc and Residency Large Animal Clinical Sciences, University of Saskatchewan, Canada. Diplomate of the American College of Theriogenologists.

Current Research Project: Selection of a single dominant follicle from a cohort of growing follicles is a unique biological process and a key step in female reproductive function. Disturbances in this process can lead to anovulation and infertility or, alternatively, multiple ovulations and multiple births. Cattle represent an excellent animal model for investigation of the follicle selection process in monovular species, with many similarities in the dynamics of the follicular, hormonal, and molecular events during follicle selection in humans and cattle. We hypothesize that follicle selection is based on the ability of a follicle to attain a dominant phenotype in its granulosa cells that allows continued growth under declining circulating FSH. In contrast, animals with selection of multiple dominant follicles, have acquisition of the dominant follicle phenotype prior to full suppression of circulating FSH. Two distinct bovine models (single gene mutation and high milk production) that have naturally-occurring multiple ovulations, will be used to investigate the hypothesis and compared to single ovulating controls. The hormonal milieu and timing of acquisition of dominance in each model will be determined by the response of follicles to an ovulatory stimulus and by evaluation of the granulosa cells and oocyte transcriptome during acquisition of dominance. Use of two models with multiple ovulations will allow us to compare and contrast molecular and physiological mechanisms that underlie this key biological process, with potential applications to other monovular species such as humans.

Honors:

- Animal Science Young Scholar, Midwestern Section, American Society of Animal Science, 2017
- USDA–NIFA–AFRI Merit Award, 2015
- Larry Ewing Memorial Trainee Travel Fund grant, Society for Study of Reproduction, 2015
- Howard Hughes Medical Institute International Student Research Fellowship, University of Wisconsin-Madison nominee, 2014.
- Student Delegate for the Canadian Embryo Transfer Association, 2012
- College of Graduate Studies and Research Travel Award, University of Saskatchewan, 2012



- Pfizer Fellowship Award, 2011
- American Association of Bovine Practitioners Graduate Student Competition – 3rd place, 2011
- WCVM Graduate Student Travel Award, Western College of Veterinary Medicine, 2011
- American Association of Bovine Practitioners Research Assistantship, 2011
- Hope Haanen Memorial Scholarship Award, Western College of Veterinary Medicine, 2010

Grants Received:

- Zoetis, 2013-2014. Efficacy of vaccination for *Campylobacter fetus venerealis* in preventing infection and reproductive loss in cattle. Jointly with Hendrick, S., Waldner, C., Hill, J., Chaban B.
- Saskatchewan Agriculture Development Fund, 2011-2012. Sensitivity of a pooled real time PCR assay for Trichomonosis in bovine preputial samples. Jointly with Waldner, C., Hendrick, S., and Hill, J.
- Alberta Livestock and Meat Agency, 2010-2012. Improving Diagnostic Techniques for Bovine Venereal Diseases in Bulls. Jointly with Waldner, C., Hill, J., Campbell, J.

Publications:

M. C. Wiltbank, G. M. Baez, A. Garcia Guerra, M. Z. Toledo, P. L. J. Monteiro, L. F. Melo, J. C. Ochoa, J. E. P. Santos, R. Sartori. 2016. Pivotal periods for pregnancy loss during the first trimester of gestation in lactating dairy cows. *Theriogenology*, 86:239-256.

A. Garcia Guerra, C. L. Waldner, A. Pellegrino, N. Macdonald, B. Chaban, J. E. Hill, S. H. Hendrick. 2016. Effect of sample pooling and transport conditions on the clinical sensitivity of a real-time PCR assay for *Campylobacter fetus* subsp. *venerealis* in preputial samples from bulls. *Canadian Journal of Veterinary Research*, 80:23-26.

R.J. Mapletoft, A. García Guerra, F.C.F. Dias, J. Singh, G.P. Adams. 2015. In vitro and in vivo embryo production in cattle superstimulated with FSH for 7 days. *Animal Reproduction*, 12: 383-388.

A. García Guerra, A. Tribulo, J. Yapura, G. P. Adams, J. Singh, R. Mapletoft. 2015. Lengthened superstimulatory treatment in cattle: Evidence for rescue of follicles within a wave rather than continuous recruitment of new follicles. *Theriogenology*, 84: 467-476.

M.C. Wiltbank, A. Garcia Guerra, P. D. Carvalho, K. S. Hackbart, R. W. Bender, A. H. Souza, M. Z. Toledo, G. M. Baez, R. S. Surjus, R. Sartori. 2014. Effects of energy and protein nutrition in the dam on embryonic development. *Animal Reproduction*, 11:168-182.



A. Garcia Guerra, B. Chaban, J. E. Hill, C. L. Waldner, S. H. Hendrick. 2014. Clinical sensitivity and specificity of a real-time PCR assay for *Campylobacter fetus* subsp *venerealis* in preputial samples from bulls. *American Journal of Veterinary Research*, 75:851-860.

A. Garcia Guerra, J. E. Hill, J. Campbell, C. L. Waldner, S. H. Hendrick. 2014. Use of pooled protozoal cultures of preputial scraping samples obtained from bulls for the detection of *Tritrichomonas foetus* by means of a real-time polymerase chain reaction assay. *Journal of the American Veterinary Medical Association*, 244: 352-356.

A. Garcia Guerra Garcia Guerra, J. E. Hill, C. L. Waldner, J. Campbell, S. H. Hendrick. 2013. Sensitivity of a real time polymerase chain reaction for *Tritrichomonas foetus* in direct individual and pooled preputial samples. *Theriogenology*, 80: 1097-1103.

B. Chaban, A. García Guerra, S. Hendrick, C. Waldner, J. E. Hill. 2013. Isolation rates of *Campylobacter fetus* subsp *venerealis* from bovine preputial samples via passive filtration on nonselective medium versus selective medium, with and without transport medium. *American Journal of Veterinary Research*, 74: 1066-1069.

A. Garcia Guerra, S. Hendrick, A. D. Barth. 2013. Increase in average testis size of Canadian beef bulls. *Canadian Veterinary Journal*, 54: 485-490.

C. Waldner, A. Garcia Guerra. 2013. Cow attributes, herd management, and reproductive history events associated with the risk of nonpregnancy in cow-calf herds in Western Canada. *Theriogenology*, 79: 1083-1094.

C. Waldner, S. Hendrick, B. Chaban, A. Garcia Guerra, G. Griffin, J. Campbell, J. E. Hill. 2013. Application of a new diagnostic approach to a Bovine Genital *Campylobacteriosis* outbreak in a Saskatchewan beef herd. *Canadian Veterinary Journal*, 54: 373-376.

A. García Guerra, A. Tribulo, J. Yapura, J. Singh, R. Mapletoft. 2012. Lengthening the superstimulatory treatment protocol increases ovarian response and number of transferable embryos in beef cows. *Theriogenology*, 78: 353-360.

National and International Presentations:

- Poster presentation: A. García Guerra, R. V. Sala, G. M. Baez, M. Fosado, L. F. Melo, J. C. L. Motta, L. Leffers, J. C. Ochoa, J. F. Moreno, M. C. Wiltbank. "Pregnancy loss in IVP-ET recipient heifers: embryo/fetal death or CL regression?" 18th International Congress of Animal Reproduction 2016, June 26th – 30th, Tours, France.
- Invited presentation: Garcia Guerra A. (2016). Extended superstimulatory treatments: Are we maximizing the ovarian response? / Synchronization protocols and strategies to decrease pregnancy loss in IVP recipients. 3er Congreso Internacional de la Sociedad Argentina de Tecnologías Embrionarias, June 2-3, Buenos Aires, Argentina.



- Poster presentation: A. Garcia-Guerra, R. V. Sala, G. M. Baez, M. Fosado, L. F. Melo, J. C. L. Motta, L. Leffers, E. A. Walleser, J. C. Ochoa, J. F. Moreno and M. C. Wiltbank. Treatment with GnRH on day 5 reduces pregnancy loss in heifers receiving in vitro-produced expanded blastocysts. 42nd Annual Conference of the International Embryo Technology Society 2016, January 23-26, Louisville, KY.
- Poster presentation: L. C. Carrenho-Sala, R. V. Sala, M. Fosado, D. C. Pereira, S. Garcia, A. Lopez, J. F. Moreno, A. Garcia-Guerra and M. C. Wiltbank. Factors that influence fertility in an IVF embryo transfer program in dairy heifers. 42nd Annual Conference of the International Embryo Technology Society 2016, January 23-26, Louisville, KY
- Poster presentation: A. Garcia Guerra, M. Kamalludin, A. Sallam, B. Kirkpatrick, M. C. Wiltbank. Hormonal profiles and follicular dynamics in cattle that are carriers of a high fecundity allele. 48th Annual Meeting of the Society for the Study of Reproduction 2015, Submitted, June 18-22, Puerto Rico.
- Invited presentation: Garcia Guerra A. (2014). Extended superstimulatory treatments: Are we maximizing the ovarian response? Joint Convention of the American Embryo Transfer Association and Canadian Embryo Transfer Association, October 6-8, Madison, Wisconsin.
- Invited presentation: Garcia Guerra A. (2014). The effect of a lengthened Folitropin treatment protocol on superovulatory response. 40th Annual Conference of the International Embryo Transfer Society, Reno, NV.
- Invited presentation: Garcia Guerra A. (2013). New strategies for the diagnosis of venereal diseases in bulls. 22nd Annual Conference of the Western Canadian Association of Bovine Practitioners, Saskatoon, SK, Canada.
- Selected for Oral Presentation: A. García Guerra, B. Chaban, J. E. Hill, C. Waldner, S. Hendrick, 2012. Clinical sensitivity and specificity of a quantitative PCR assay for Bovine Genital Campylobacteriosis in bulls. 45th Annual Convention of the American Association of Bovine Practitioners, Montreal, QC, Canada.
- Selected for Oral Presentation: A. García Guerra, J. Hill, J. Campbell, C. Waldner, S. Hendrick, 2012. Real time PCR for Trichomonosis on pooled direct preputial samples. 45th Annual Convention of the American Association of Bovine Practitioners, Montreal, QC, Canada.
- Selected for Oral Presentation: A. García Guerra, S. Hendrick, C. Waldner, J. Hill, J. Campbell., 2011. Sensitivity of a real time PCR assay for bovine Trichomonosis in pooled preputial samples. 44th Annual Convention of the American Association of Bovine Practitioners, St. Louis, MO.
- Poster Presentation: A. Garcia Guerra, R. Mapletoft, J. Singh, S. Hendrick. 2012. Effect of estrus synchronization on interval to estrus and pregnancy of bull-bred, post-partum beef cows. 17th International Congress on Animal Reproduction, Vancouver, BC, Canada.



- Poster Presentation: A. García Guerra, A. Tribulo, J. Yapura, J. Singh, R. Mapletoft. 2012. Effect of lengthening the superstimulatory treatment protocol on the ovarian response and numbers of transferable embryos in beef cows. 38th Annual Conference of the International Embryo Transfer Society, Phoenix, AZ. Published in *Reproduction, Fertility and Development*, Vol. 24 No. 1 Page 224.
- Poster Presentation: A. García Guerra, G. M. Brogliatti. 2010. Computer-Assisted Sperm Analysis of Frozen sperm motility after repeated exposures to room temperature. 36th Annual Conference of the International Embryo Transfer Society, Cordoba, Argentina. Published in *Reproduction, Fertility and Development*, Vol. 22 No. 1 Page 200-201.
- Poster Presentation: A. García Guerra, J. Villarreal, G. Larraburu, G. M. Brogliatti. 2010. Superstimulated bovine donors inseminated with semen with different linearity evaluated by Computer-Assisted Sperm Analysis. 36th Annual Conference of the International Embryo Transfer Society, Cordoba, Argentina. Published in *Reproduction, Fertility and Development*, Vol. 22 No. 1 Page 361-362.
- Poster Presentation: A. García Guerra, M. G. Lussenhoff, G. M. Brogliatti. 2010. Motility (CASA) and viability of frozen sperm after different times of Exposure at 15°C. 36th Annual Conference of the International Embryo Transfer Society, Cordoba, Argentina. Published in *Reproduction, Fertility and Development*, Vol. 22 No. 1 Page 204-205.
- Poster Presentation: G. Brogliatti, J. Villarreal, L. Cutaia, A. Albrech, A. García Guerra, G. A. Bó. 2009. Optimal of dose of ovine pituitary gland extract Ovagen for superstimulation of beef cow donors in Argentina. 35th Annual Conference of the International Embryo Transfer Society, San Diego, CA. Published in *Reproduction, Fertility and Development*, Vol. 21 No. 1 Page 242.
- Poster Presentation: A. García Guerra, G. A. Bó, J. Villarreal, G. M. Brogliatti. 2008. Superovulatory response in cows following synchronization of follicle wave emergence with estradiol at different stages of the estrous cycle. 34th Annual Conference of the International Embryo Transfer Society, Denver, CO. Published in *Reproduction, Fertility and Development*, Vol. 20 No. 1 Pages 227 – 228.
- Poster Presentation: J. Villarreal, A. Garcia Guerra, G. M. Brogliatti. 2008. Effect of recipient category on pregnancy rates on a bovine embryo transfer program in Patagonia Argentina. 34th Annual Conference of the International Embryo Transfer Society, Denver, CO. Published in *Reproduction, Fertility and Development*, Vol. 20 No. 1 Pages 155 – 156.
- Poster Presentation: A. García Guerra, M. P. Etcheverry, D. Rodríguez, G. Larraburu, G. M. Brogliatti. 2008. Computer assisted sperm analysis of frozen sperm motility alter different times of exposure at 15°C. 34th Annual Conference of the International Embryo Transfer Society, Denver, CO. Published in *Reproduction, Fertility and Development*, Vol. 20 No. 1 Page 119.
- Poster Presentation: M. G. Lussenhoff, G. Larraburu, R. Cavia, D. Rodríguez, A. García Guerra, G. M. Brogliatti. 2008. Computer assisted sperm analysis parameters of Bos Taurus



Criollos bull semen vs. those of other Bos Taurus breeds in Argentina. 34th Annual Conference of the International Embryo Transfer Society, Denver, CO. Published in *Reproduction, Fertility and Development*, Vol. 20 No. 1 Page 88.

- Poster Presentation: A. García Guerra, D. Rodríguez, J. Villareal, A. Albrecht, G. Brogliatti. 2007. Effects of condition score on ovarian response and transferable embryos in superstimulated cows in Argentina. 33th Annual Conference of the International Embryo Transfer Society, Kyoto, Japan. Published in *Reproduction, Fertility and Development*, Vol. 19 No. 1 Pages 307 – 308.

Other Presentations:

- Oral Presentation: A. García Guerra, A. Tribulo, J. Yapura, J. Singh, R. Mapletoft., 2012. Superovulatory response in beef cows treated with FSH for 7 days. Reproductive Science and Medicine Research Symposium, University of Saskatchewan, March 10, Saskatoon, SK.

Teaching and Mentorship:

Animal Physiology, ANSCI 373, Spring 2015-2016. Delivering of two selected lectures.

Reproduction of Farm Animals, Farm & Industry Short Course, Fall 2013-2014. Assisting in the laboratory portion of the class.

Reproduction of Farm Animals, Farm & Industry Short Course, Fall 2014-2015. Assisting in the laboratory portion of the class and presented a selected lecture.

ERP Service:

ERP Seminar Committee 2014-2015