

BIOGRAPHICAL SKETCH

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NAME Milo C. Wiltbank	POSITION TITLE Professor		
eRA COMMONS USER NAME WILTBANK			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Brigham Young University	B.S.	1980	Zoology
Brigham Young University	M.S.	1982	Zoology/Physiology
University of Michigan	Ph.D.	1987	Physiology
Colorado State University	Post-doctoral	1987-1991	Reproductive Physiology

A. Biosketch

Dr. Milo Wiltbank joined the faculty at the University of Wisconsin-Madison in 1991 in the Department of Dairy Science and has done research primarily in dairy cattle during the last two decades. He has research publications in many areas including: interactions of nutrition and reproduction, physiological basis for anovular cows, and hormonal regulation of the ovary. From a practical standpoint, he is probably best known for development, validation, and modification of the timed AI protocol known as Ovsynch. From a basic perspective, he has done substantial research on the mechanisms involved in regression of the corpus luteum, mechanisms involved in selection of a single dominant follicle in cattle, and nutritional and hormonal interactions that determine embryo quality and pregnancy establishment and maintenance.

B. Positions and Honors:

1987-1991. Postdoctoral Fellow/Research Assistant Professor. Department of Physiology, Colorado State University

1991-1997. Assistant Professor, Dairy Science Department, University of Wisconsin-Madison.

1997-2002. Associate Professor, Dairy Science Department, University of Wisconsin-Madison. Appointment: 70% Research, 30% Teaching.

2002- Present. Professor, Dairy Science Department and Endocrinology-Reproductive Physiology Program, University of Wisconsin-Madison. Appointment: 70% Research, 30% Teaching.

Professional Memberships

Society for the Study of Reproduction (SSR)
 American Dairy Science Association (ADSA)
 American Animal Science Association (ASAS)
 International Embryo Transfer Society (IETS)
 Brazilian Embryo Transfer Society (SBTE)

Service and Awards

New Investigator Award: First Place, Society for the Study of Reproduction, 1988.

John S. Donald Teaching Award, College of Agriculture and Life Sciences, Univ of Wisconsin, 1999.

NIH Reprod Endocrinology and Reproductive Biology Study Sections adhoc panel member, multiple years.

USDA Reproductive Biology Study Section panel member, multiple years.

Pharmacia Physiology Award, American Dairy Science Association, 2001.

Service and Awards (continued)

Chair, Membership Committee, Society for the Study of Reproduction, 2000-2002.

Director, Society for the Study of Reproduction, 2003-2006.
Standing Committee, Representative of USA to International Congress on Animal Reproduction, 2004-Present.
WALSAA Outstanding Advisor Award. College of Agriculture and Life Sciences. University of Wisconsin-Madison, 2005.
Research Award. National Association of Animal Breeders, 2006.
Service to Agriculture Award. Farm and Industry Short Course Alumni, 2007.
Merital Dairy Management Award. American Dairy Science Association, 2008.

C. Teaching Program:

Dairy Science 534 – Reproductive Management of Dairy Cattle – 3 credit hours

16-20 students every Spring semester – Elective Course
2 h of lecture/discussion per week and 2 h of laboratory instruction per week
Role: Instructor

Farm and Industry Shortcourse – Reproduction in Farm Animals – 3 credit hours

60-70 students every Fall semester – Required Course for FISC Dairy Management
5 h of lecture/discussion per week and 6 h of laboratory instruction per week during the 6 week period of the course
Role: Instructor

Dairy Science/Animal Science 373 – Animal Physiology – 3 credit hours

35-45 students every Spring semester – Required Course for certain programs
3 h of lecture/discussion per week
Role: Co-Instructor with Laura Hernandez

Dairy Science 535 – Dairy Herd Practicum - Capstone Course for Dairy Science– 3 credit hours

20-25 students every Fall semester – Required Course for Department of Dairy Science
4 h of lecture or computer laboratory work per week; multiple and 6 h of laboratory instruction per week during the 6 week period of the course
Role: Co-Instructor with Dave Combs

Advanced Reproductive Physiology 703 – 3 credit course

First time teaching will be Spring 2016
3 h of lecture/discussion per week
Role: Co-Instructor with John Parrish

Dairy Science/Animal Science 101 – Livestock Production – 4 credit course

80-100 students every Fall semester – Required Course for Animal Science and Dairy Science; I teach the Reproduction lectures (4 lectures) and I run the reproduction laboratories (2 labs of 3 hours each)
Role: Guest Lecturer

D. Peer-Reviewed Publications (Total of 196)

h-Index = 52; Total Citations > 8,000; Total Citing Articles >4,000

Published in 2015 (n = 6); 2014 (n = 12); 2013 (n = 15); 2012 (n = 12); 2011 (n = 9)

Published in 2014/early 2015

1. Souza, A. H., P. D. Carvalho, A. E. Rozner, L. M. Vieira, K. S. Hackbart, R. W. Bender, A. R. Dresch, J. P. Verstegen, R. D. Shaver, and M. C. Wiltbank. 2015. Relationship between circulating anti-Mullerian hormone (AMH) and superovulatory response of high-producing dairy cows. *Journal of Dairy Science* 98:169-178.
2. Pereira, M. H., M. C. Wiltbank, L. F. Barbosa, W. M. Costa, Jr., M. A. Carvalho, and J. L. Vasconcelos. 2015. Effect of adding a gonadotropin-releasing-hormone treatment at the beginning and a second prostaglandin F2alpha treatment at the end of an estradiol-based protocol for timed artificial insemination in lactating dairy cows during cool or hot seasons of the year. *Journal of Dairy Science* 98:947-959.
3. Pontes G. C. S., P. L. J. Monteiro, A. B. Prata, M. M. Guardieiro, D. A. M. Pinto, G. O. Fernandez, M. C. Wiltbank, J. E. P. Santos, R. Sartori. 2015. Effect of injectable vitamin E on incidence of retained fetal membranes and reproductive performance of dairy cows. *Journal of Dairy Science* 2014-8886; dx.doi.org/10.3168, in press.
4. Bender, R. W., K. S. Hackbart, A. R. Dresch, P. D. Carvalho, L. M. Vieira, P. M. Crump, J. N. Guenther, P. M. Fricke, R. D. Shaver, D. K. Combs, and M. C. Wiltbank. 2014. Effects of acute feed restriction combined with targeted use of increasing LH content of FSH preparations on ovarian superstimulation, fertilization, and embryo quality in lactating dairy cows. *Journal of Dairy Science* 97:764-778.
5. Ferraretto, L. F., H. Gencoglu, K. S. Hackbart, A. B. Nascimento, F. Dalla Costa, R. W. Bender, J. N. Guenther, R. D. Shaver, and M. C. Wiltbank. 2014. Effect of feed restriction on reproductive and metabolic hormones in dairy cows. *Journal of Dairy Science* 97:754-763.
6. Nascimento AB, Souza AH, Keskin A, Sartori R, Wiltbank MC. 2014. Lack of complete regression of the Day 5 CL after one or two doses of PGF2 α in nonlactating Holstein cows. *Theriogenology* 81:389-395.
7. Pereira MHC, Rodriguez ADP, De Carvalho RJ, Wiltbank MC, Vasconcelos JLM. 2014. Increasing length of an estradiol and progesterone timed artificial insemination protocol decreases pregnancy losses in lactating dairy cows. *Journal of Dairy Science* 97:1-11.
8. Wiltbank, MC. and Pursley JR. 2014. The cow as an induced ovulator: Timed AI after synchronization of ovulation. *Theriogenology* 81:170-185.
9. Carvalho, P. D., J. N. Guenther, M. J. Fuenzalida, M. C. Amundson, M. C. Wiltbank, and P. M. Fricke. 2014. Presynchronization using a modified Ovsynch protocol or a single gonadotropin-releasing hormone injection 7 d before an Ovsynch-56 protocol for submission of lactating dairy cows to first timed artificial insemination. *Journal of Dairy Science* 97:6305-6315.
10. Carvalho, P. D., A. H. Souza, M. C. Amundson, K. S. Hackbart, M. J. Fuenzalida, M. M. Herlihy, H. Ayres, A. R. Dresch, L. M. Vieira, J. N. Guenther, R. R. Grummer, P. M. Fricke, R. D. Shaver, and M. C. Wiltbank. 2014. Relationships between fertility and postpartum changes in body condition and body weight in lactating dairy cows. *Journal of Dairy Science* 97:3666-3683.
11. Souza, A. H., C. D. Narciso, E. O. S. Batista, P. D. Carvalho, and M. C. Wiltbank. 2014. Effect of uterine environment on embryo production and fertility in cows. *Animal Reproduction* 11:159-167.

12. Surjus, R. S., A. B. Prata, M. Borsato, F. C. S. Z. Mattos, M. C. Martins da Silveira, G. B. Mourao, A. V. Pires, M. C. Wiltbank, and R. Sartori. 2014. In vivo embryo production in cows superovulated 1 or 2 days after ovum pick-up. *Reproduction Fertility and Development* 26:527-532.
13. Wiltbank, M. C., G. M. Baez, J. L. M. Vasconcelos, M. Pereira, A. H. Souza, R. Sartori, and J. R. Pursley. 2014. The physiology and impact on fertility of the period of proestrus in lactating dairy cows. *Animal Reproduction* 11:225-236.
14. Wiltbank, M. C., A. Garcia-Guerra, P. D. Carvalho, K. S. Hackbart, R. W. Bender, A. H. Souza, M. Z. Toledo, G. M. Baez, R. Surjus, and R. Sartori. 2014. Effects of energy and protein nutrition in the dam on embryonic development. *Animal Reproduction* 11:168-182.
15. Wiltbank, M. C., A. H. Souza, P. D. Carvalho, A. P. Cunha, J. O. Giordano, P. M. Fricke, G. M. Baez, and M. G. Diskin. 2014. Physiological and practical effects of progesterone on reproduction in dairy cattle. *Animal* 8:70-81.

Published in 2013 (n = 15)

1. Ayres, H., R. M. Ferreira, A. P. Cunha, R. R. Araujo, and M. C. Wiltbank. 2013. Double-Ovsynch in high-producing dairy cows: Effects on progesterone concentrations and ovulation to GnRH treatments. *Theriogenology* 79:159-164.
2. Carvalho, P. D., A. H. Souza, R. Sartori, K. S. Hackbart, A. R. Dresch, L. M. Vieira, P. S. Baruselli, J. N. Guenther, P. M. Fricke, R. D. Shaver, and M. C. Wiltbank. 2013. Effects of deep-horn AI on fertilization and embryo production in superovulated cows and heifers. *Theriogenology* 80:1074-1081.
3. Diaz, F. J., W. Luo, and M. C. Wiltbank. 2013. Prostaglandin F2alpha regulation of mRNA for activating protein 1 transcriptional factors in porcine corpora lutea (CL): lack of induction of JUN and JUND in CL without luteolytic capacity. *Domestic Animal Endocrinology* 44:98-108.
4. Giordano, J. O., M. C. Wiltbank, P. M. Fricke, S. Bas, R. A. Pawlisch, J. N. Guenther, and A. B. Nascimento. 2013. Effect of increasing GnRH and PGF2 α during Double-Ovsynch on ovulatory response, luteal regression, and fertility of lactating dairy cows. *Theriogenology* 80:773-783..
5. Hackbart, K. S., P. M. Cunha, R. K. Meyer, and M. C. Wiltbank. 2013. Effect of Glucocorticoid-Induced Insulin Resistance on Follicle Development and Ovulation. *Biology of Reproduction* 88(6):1-12.
6. Haughian, J. M., O. J. Ginther, F. J. Diaz, and M. C. Wiltbank. 2013. Gonadotropin-releasing hormone, estradiol, and inhibin regulation of follicle-stimulating hormone and luteinizing hormone surges: implications for follicle emergence and selection in heifers. *Biology of Reproduction* 88(6):165-177.
7. Lopes, G., Jr., J. O. Giordano, A. Valenza, M. M. Herlihy, J. N. Guenther, M. C. Wiltbank, and P. M. Fricke. 2013. Effect of timing of initiation of resynchronization and presynchronization with gonadotropin-releasing hormone on fertility of resynchronized inseminations in lactating dairy cows. *Journal of Dairy Science* 96(6):3788-3798.
8. Nascimento AB, Souza AH, Sartori R, Wiltbank MC. 2013. Progesterone production and metabolism and its role before, during, and after artificial insemination influencing the fertility of high producing dairy cows. *Acta Scientiae Veterinariae* 41:1-14
9. Nascimento, A. B., A. H. Souza, J. N. Guenther, F. P. D. Costa, R. Sartori, and M. C. Wiltbank. 2013. Effects of treatment with human chorionic gonadotrophin or intravaginal progesterone-

releasing device after AI on circulating progesterone concentrations in lactating dairy cows. *Reproduction, Fertility and Development* 25:818-824.

10. Nascimento, A. B., R. W. Bender, A. H. Souza, H. Ayres, R. R. Araujo, J. N. Guenther, R. Sartori, and M. C. Wiltbank. 2013. Effect of treatment with human chorionic gonadotropin on day 5 after timed artificial insemination on fertility of lactating dairy cows. *Journal of Dairy Science* 96(5):2873-2882.
11. Penagaricano, F., A. H. Souza, P. D. Carvahlo, A. M. Driver, G. Rocio, K. S. Hackbart, D. Luchini, R. D. Shaver, M. C. Wiltbank, and H. Khatib. 2013. Effect of maternal methionine supplementation on the transcriptome of bovine preimplantation embryos. *PLoS ONE* 8:e72302.
12. Pereira, M. H. C., A. D. P. Rodrigues, T. Martins, W. V. C. Oliveira, P. S. A. Silveira, M. C. Wiltbank, and J. L. M. Vasconcelos. 2013. Timed artificial insemination programs during the summer in lactating dairy cows: Comparison of the 5-d Cosynch protocol with an estrogen/progesterone-based protocol. *Journal of Dairy Science* 96:6904-6914.
13. Pereira, M. H. C., C. P. Sanches, T. G. Guida, A. D. R. Rodrigues, F. L. Aragon, M. B. Veras, P. T. Borges, M. C. Wiltbank, and J. L. M. Vasconcelos. 2013. Timing of prostaglandin F-2 alpha treatment in an estrogen-based protocol for timed artificial insemination or timed embryo transfer in lactating dairy cows. *Journal of Dairy Science* 96:2837-2846.
14. Piccinato, C. A., G. J. M. Rosa, A. U. N'Jai, C. R. Jefcoate, and M. C. Wiltbank. 2013. Estradiol and Progesterone Exhibit Similar Patterns of Hepatic Gene Expression Regulation in the Bovine Model. *PLoS ONE* 8:e73552.
15. Vasconcelos, J. L. M., M. H. C. Pereira, M. Meneghetti, C. C. Dias, O. G. SaFilho, R. F. G. Peres, A. D. P. Rodrigues, and M. C. Wiltbank. 2013. Relationships between growth of the preovulatory follicle and gestation success in lactating dairy cows. *Animal Reproduction* 10:206-214.

Published in 2012 (n = 12)

1. Atli MO, Bender RW, Mehta V, Bastos MR, Luo W, Vezina CM, Wiltbank MC, 2012. Patterns of gene expression in the bovine corpus luteum following repeated intrauterine infusions of low doses of prostaglandin F2alpha. *Biology of Reproduction* 86:1-13.
2. Driver AM, Penagaricano F, Huang W, Ahmad KR, Hackbart KS, Wiltbank MC, Khatib H, 2012. RNA-Seq analysis uncovers transcriptomic variations between morphologically similar in vivo- and in vitro-derived bovine blastocysts. *BMC genomics* 13:118.
3. Giordano JO, Fricke PM, Guenther JN, Lopes G, Jr., Herlihy MM, Nascimento AB, Wiltbank MC, 2012. Effect of progesterone on magnitude of the luteinizing hormone surge induced by two different doses of gonadotropin-releasing hormone in lactating dairy cows. *Journal of Dairy Science* 95:3781-3793.
4. Giordano, J. O., A. S. Kalantari, P. M. Fricke, M. C. Wiltbank, and V. E. Cabrera. 2012. A daily herd Markov-chain model to study the reproductive and economic impact of reproductive programs combining timed AI and estrus detection. *Journal of Dairy Science* 95(9):5442-5460.
5. Giordano, J. O., M. C. Wiltbank, J. N. Guenther, M. S. Ares, G. Lopes, Jr., M. M. Herlihy, and P. M. Fricke. 2012. Effect of presynchronization with human chorionic gonadotropin or gonadotropin-releasing hormone 7 days before resynchronization of ovulation on fertility in lactating dairy cows. *Journal of Dairy Science* 95(10):5612-5625.

6. Giordano JO, Wiltbank MC, Fricke PM, 2012. Humoral immune response in lactating dairy cows after repeated exposure to human chorionic gonadotropin. *Theriogenology* 78:218-224.
7. Giordano JO, Wiltbank MC, Guenther JN, Pawlisch R, Bas S, Cunha AP, Fricke PM, 2012. Increased fertility in lactating dairy cows resynchronized with Double-Ovsynch compared with Ovsynch initiated 32 d after timed artificial insemination. *Journal of Dairy Science* 95:639-653.
8. Gumen, A., A. Keskin, G. Yilmazbas-Mecitoglu, E. Karakaya, A. Alkan, H. Okut, and M. C. Wiltbank. 2012. Effect of presynchronization strategy before Ovsynch on fertility at first service in lactating dairy cows. *Theriogenology* 78(8):1830-1838.
9. Herlihy, M. M., J. O. Giordano, A. H. Souza, H. Ayres, R. M. Ferreira, A. Keskin, A. B. Nascimento, J. N. Guenther, J. M. Gaska, S. J. Kacuba, M. A. Crowe, S. T. Butler, and M. C. Wiltbank. 2012. Presynchronization with Double-Ovsynch improves fertility at first postpartum artificial insemination in lactating dairy cows. *Journal of Dairy Science* 95(12):7003-7014.
10. Wiltbank, M. C., A. H. Souza, J. O. Giordano, A. B. Nascimento, J. M. Vasconcelos, M. H. C. Pereira, P. M. Fricke, R. S. Surjus, F. C. S. Zinsly, P. D. Carvalho, R. W. Bender, and R. Sartori. 2012. Positive and negative effects of progesterone during timed AI protocols in lactating dairy cattle. *Animal Reproduction* 9(3):231-241.
11. Wiltbank, M. C., A. H. Souza, P. D. Carvalho, R. W. Bender, and A. B. Nascimento. 2012. Improving fertility to timed artificial insemination by manipulation of circulating progesterone concentrations in lactating dairy cattle. *Reproduction, Fertility and Development* 24(1):238-243.
12. Wiltbank, M. C., S. M. Salih, M. O. Atli, W. Luo, C. L. Bormann, J. S. Ottobre, C. M. Vezina, V. Mehta, F. J. Diaz, S. J. Tsai, and R. Sartori. 2012. Comparison of endocrine and cellular mechanisms regulating the CL of primates and ruminants. *Animal Reproduction* 9(3):242-259.

Published in 2011 (n = 9)

1. Diaz FJ, Luo WX, Wiltbank MC. Effect of decreasing intraluteal progesterone on sensitivity of the early porcine corpus luteum to the luteolytic actions of prostaglandin F2alpha. *Biology of Reproduction* 2011; 84:26-33.
2. Giordano JO, Fricke PM, Wiltbank MC, Cabrera VE. An economic decision-making support system for selection of reproductive management programs on dairy farms. *Journal of Dairy Science* 2011; 94:6216-6232.
3. Gumen A, Keskin A, Yilmazbas-Mecitoglu G, Karakaya E, Wiltbank MC. Dry period management and optimization of post-partum reproductive management in dairy cattle. *Reproduction in Domestic Animals* 2011; 46:11-17.
4. Keskin A, Yilmazbas-Mecitoglu G, Gumen A, Karakaya E, Celik Y, Okut H, Wiltbank MC. Comparison of responses to Ovsynch between Holstein-Friesian and Swedish Red cows. *Journal of Dairy Science* 2011; 94:1784-1789.
5. Luo WX, Diaz FJ, Wiltbank MC. Induction of mRNA for chemokines and chemokine receptors by prostaglandin F2 α is dependent upon stage of the porcine corpus luteum and intraluteal progesterone. *Endocrinology* 2011; 152:2797-2805.
6. Luo WX, Gumen A, Haughian JM, Wiltbank MC. The role of luteinizing hormone in regulating gene expression during selection of a dominant follicle in cattle. *Biology of Reproduction* 2011; 84:369-378.

7. Souza AH, Silva EPB, Cunha AP, Gumen A, Ayres H, Brusveen DJ, Guenther JN, Wiltbank MC. Ultrasonographic evaluation of endometrial thickness near timed AI as a predictor of fertility in high-producing dairy cows. *Theriogenology* 2011; 75:722-733.
8. Wiltbank MC, Sartori R, Herlihy MM, Vasconcelos JLM, Nascimento AB, Souza AH, Ayres H, Cunha AP, Keskin A, Guenther JN, Gumen A. Managing the dominant follicle in lactating dairy cows. *Theriogenology* 2011; 76:1568-1582.
9. Souza AH, Ayres H, Giordano JO, Ferreira RM, Carvalho PD, Guenther JN, Wiltbank MC. Evaluation of endometrial thickness near timed AI using ultrasound. *Clinical Theriogenology* 3:547-654.