

Thomas Edward Spencer, Ph.D.**• Contact Information**

Division of Animal Sciences
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• Academic Background

<u>Institution</u>	<u>Degree</u>	<u>Year</u>	<u>Major</u>
Auburn University	B.S.	1989	Animal Science
Auburn University	M.S.	1992	Animal Science
Texas A&M University	Ph.D.	1995	Physiology of Reproduction
Baylor College of Medicine	Postdoc	1997	Molecular and Cell Biology

• Current Positions

2015: Professor of Animal Science, Division of Animal Science, University of Missouri, Columbia.

• Previous Positions

2011-2015: Baxter Endowed Chair in Research and Professor of Animal Sciences and Molecular Biosciences, Washington State University, Pullman; Member, Center for Reproductive Biology.

2013-2015: Associate Director, Center for Reproductive Biology, Washington State University, Pullman.

2009-2011: Texas AgriLife Research Faculty Fellow and Professor of Reproductive Biology and Physiological Genomics, Department of Animal Science, Texas A&M University, College Station.

2003-2011: Associate Director, Center for Animal Biotechnology and Genomics, Texas A&M University.

2005-2009: Associate Professor, Department of Animal Science, Texas A&M University, College Station.

2006-2007: Co-Director, Environment and Reproduction Research Core, NIEHS Center for Environmental and Rural Health, Texas A&M University, College Station.

2001-2005: Assistant Professor, Department of Animal Science, Texas A&M University, College Station.

1997-2001: Research Assistant Professor, Center for Animal Biotechnology, Texas A&M Institute of Biosciences and Technology, College Station; Joint appointment as Research Assistant Professor, Department of Animal Science, Texas A&M University, College Station.

1996-1997: NIH Postdoctoral Research Fellow, Department of Cell Biology, Baylor College of Medicine, Houston, Texas. (Mentors: Drs. Bert W. O'Malley & Ming-Jer Tsai)

1994-1995: Tom Slick Graduate Research Fellow, College of Agriculture and Life Sciences, and Doctoral Candidate and Graduate Teaching Assistant, Physiology of Reproduction, Department of Animal Science, Texas A&M University, College Station. (Mentor: Dr. Fuller W. Bazer)

1992-1994: Regents' Graduate Research Fellow and Graduate Teaching Assistant, Physiology of Reproduction, Department of Animal Science, Texas A&M University, College Station. (Mentor: Dr. Fuller W. Bazer)

1989-1992: Graduate Research and Teaching Assistant in Reproductive Biology, Department of Animal and Dairy Sciences, Auburn University, Auburn, Alabama. (Mentor: Dr. Frank F. Bartol)

● Professional Organizations

American Association for the Advancement of Science
 American Society of Animal Science
 Sigma Xi
 Society for Reproductive Investigation
 Society for Reproduction and Fertility
 Society for the Study of Reproduction

● Professional Activities

Faculties and Centers: *Washington State University*: Center for Reproductive Biology, Faculty of Animal Sciences, Faculty of Molecular Biosciences; *Texas A&M University*: Center for Animal Biotechnology (Associate Director), Faculty of Animal Science, Faculty of Biotechnology, Faculty of Genetics (Member), Faculty of Reproductive Biology (Member and Chair), Faculty of Toxicology, NIEHS Center for Environmental Health and Safety (Director of Reproductive and Developmental Biology Core, Member of Science Advisory Committee), Sigma Xi Chapter (President).

Editorial Duties: *Biology of Reproduction* (Associate Editor, 2005-2009; Editor-In-Chief, 2013-2017); *Domestic Animal Endocrinology* (Associate Editor, 2009-2012)

Editorial Board Membership: *American Journal of Reproductive Immunology* (2006-present); *Journal of Nutritional Biochemistry* (2009-2013); *Reproduction* (2004-2013).

Ad hoc Scientific Peer Review: *Biology of Reproduction*; *BMC Reproductive Biology and Endocrinology*; *BMC Genetics*; *Domestic Animal Endocrinology*; *Endocrinology*; *Genesis*; *Human Reproduction Update*; *Journal of Animal Science*; *Journal of Biological Chemistry*; *Journal of Clinical Endocrinology and Metabolism*; *Journal of Dairy Science*; *The Journal of Nutrition*; *Molecular Endocrinology*; *Molecular Human Reproduction*; *National Institute of Environmental Health and Safety (NIEHS Board of Scientific Counselors, 2014)*; *Nature*; *Nature Biotechnology*; *Physiological Genomics*; *PLOS One*; *Proceedings of the National Academy of Sciences USA*; *Reproduction*; *Reproduction, Fertility and Development*; *Science*.

Grant Reviewer: Austrian Science Foundation; Binational Agricultural and Research Development (BARD) Fund; Genome Canada; Biotechnology and Biological Sciences Research Council of the United Kingdom; National Science and Engineering Research Council of Canada; Medical Research Council, United Kingdom; National Institutes of Health (2010-2012, Permanent Member of Pregnancy and Neonatology Study Section; 2011 & 2013, Chair and 2014, Vice Chair of Dual Purpose with Dual Benefit: Research in Biomedicine and Agriculture Using Agriculturally Important Domestic Species Study Section; 2014, P01 Special Emphasis Panel/Scientific Review Group); National Science Foundation; The Lalor Foundation; The Wellcome Trust.

● Teaching

2002-2011: Course coordinator and lecturer for graduate level courses in Reproductive Biology (ANSC 630 & ANSC 631), Department of Animal Science, Texas A&M University.

2010-Present: Faculty in the NIH Frontiers in Reproductive Sciences (FIRS) Course, Woods Hole Marine Biological Laboratory, Massachusetts.

2012-Present: Course coordinator and lecturer for graduate level course in Reproductive Biology (AS 528), Department of Animal Sciences, Washington State University.

● Honors and Awards

Lambda Sigma (1988)

Phi Kappa Phi (1989)

Gamma Sigma Delta (1989, 1995)

Cardinal Key Honor Society (1989)

American Society of Animal Science Scholarship Award (1989)

Ward Animal Science Graduate Student Scholarship Award (1990)

Auburn University Outstanding Graduate Student Award (1991)

Texas A&M Regents' Graduate Research Fellow (1992-94)

Tom Slick Graduate Research Fellow (1994-95)

Dr. A.M. "Tony" Sorenson, Jr. Achievement Award (1995)

Texas A&M University Agriculture Program Vice Chancellor's Award in Excellence for Graduate Research (1995)

NIH National Research Service Award (1996)

American Society of Animal Science (ASAS) Southern Section Outstanding Young Animal Scientist Award - Research (2003)

Animal Science Graduate Student Association Distinguished Lecturer, University of Florida (2004)

International Congress on Animal Reproduction-Young Scientist Designate from the Society for the Study of Reproduction (2004)

Meat & Livestock Australia Plenary Lecturer for the Australian Society for Reproductive Biology (2004)

Society for the Study of Reproduction New Investigator Award (2004)

Sigma Xi Young Investigator Award (2005)

Texas A&M University Agriculture Program Vice Chancellor's Award in Excellence for Research (2005)

Texas A&M University Agriculture Program Vice Chancellor's Award in Excellence for Team Research (2005)

Gordon Research Conference on Reproductive Tract Biology, Vice Chair (2006)

Texas A&M AgriLIFE Research Faculty Fellow (2008)

Gordon Research Conference on Reproductive Tract Biology, Chair (2008)

Scientific Advisory Board, Science Foundation Ireland Reproductive Biology Research Cluster, Dublin, Ireland (2008-2013)

Otto J. and Opal I. Hill Lecturer, Pennsylvania State University (2009)

Alltech Distinguished Lecturer, University of Kentucky (2010)

6th Annual Gilbert S. Greenwald Symposium Lecturer, Kansas University Medical Center (2009)

Barron Lecturer, University of Florida (2011)

Visiting Fellow, Center for Advanced Studies, Laboratory for Functional Genome Analysis, GENE Center, Ludwig-Maximilians-Universitaet, Munich, Germany (2011)

Distinguished Keynote Lecturer, Texas A&M Health Science Center Research Day, College Station (2013)

Billie Fields Reproductive Biology Distinguished Lecturer, University of Illinois, Champaign-Urbana (2013)

Faculty Excellence in Research Award, College of Agricultural, Human and Natural Resource Sciences,

Washington State University (2013)

American Society of Animal Science Physiology and Endocrinology Award (2013)

Society for the Study of Reproduction Research Award (2013)

Chancellor's Distinguished Visitor, University of Missouri-Columbia (2014)

● Invited Talks

1. "Role of endometrial glands in uterine function: lessons learned from the uterine gland knockout model in sheep". Havemeyer Foundation Workshop on Fetomaternal Control of Pregnancy, Barbados, West Indies. November, 1999.
2. "Lactogenic and somatogenic hormones in ovine uterine morphogenesis and function". Prolactin Gordon Research Conference, Ventura, California. February, 2000.
3. "Endometrial gland morphogenesis and function in the mammalian uterus: lessons learned from the ovine uterine gland knockout model". Gordon Research Conference on Reproductive Tract Biology, New London, Connecticut. July, 2000.
4. "Developmental biology and role of endometrial glands in uterine function". Gordon Research Conference on Reproductive Tract Biology, New London, Connecticut. July, 2002.
5. "Uterine Development: Regulatory Mechanisms and Their Impact on Fertility". Women's Health Research Symposium, Texas A&M University, College Station. April 22, 2003.
6. "Developmental biology and role of endometrial glands in uterine function". Havemeyer Foundation Workshop on Embryonic and Fetal Nutrition, Ravello, Italy. May, 2003.
7. "Uterine and placental factors regulating conceptus growth in domestic animals". Triennial Symposium on Reproductive Biology, American Society of Animal Science/American Dairy Science Association, Phoenix, Arizona. June, 2003.
8. "Biology of Progesterone and Placental Hormone Actions on the Uterus". Mini-symposium on Steroids and Uterine Function, 36th Annual Meeting of the Society for the Study of Reproduction, Cincinnati, Ohio. July, 2003.
9. "Developmental Biology and Function of Uterine Glands". MO-KAN Reproductive Biology Symposium, Kansas City, MO. November, 2003.
10. "Discovery of uterine genes regulating conceptus survival and growth using the uterine gland knockout (UGKO) sheep model". Cattle/Sheep Workshop, Plant and Animal Genome XII, San Diego, CA. January, 2004.
11. "Lactogenic Hormones and Uterine Function". Gordon Conference on the Prolactin Family, Ventura, California. February, 2004.
12. "Hormonal, Cellular, and Molecular Regulation of Uterine Development and Function: Insights from the Ewe." Trans-Atlantic Exchange Lectures, 37th Annual Meeting of the Society for the Study of Reproduction, Vancouver, British Columbia, Canada. August, 2004.
13. "Conceptus signals for establishment and maintenance of pregnancy". 15th International Congress on Animal Reproduction (ICAR), Porto Seguro Brazil. August, 2004.
14. "Uterine and placental factors regulating conceptus growth: insights from the ewe". Meat & Livestock Australia Plenary Lecturer, Annual Meeting of the Society for Reproductive Biology of Australia, Sydney. August, 2004.
15. "Biology of viruses and crystals in the uterus and placenta: insights from the ewe". Animal Science Graduate Student Association Distinguished Lecture, University of Florida, Gainesville. November, 2004.
16. "Progesterone regulation of uterine function and conceptus growth: genes and conundrums". University of Nottingham, Sutton Bonington Campus, England. April, 2005.
17. "Endogenous betaretroviruses in sheep: biological roles in uterine function, conceptus growth, and placental differentiation". Institute of Comparative Medicine, University of Glasgow Veterinary School, Glasgow, Scotland. April, 2005.

18. "Programming of neonatal and adult uterine development and function by hormones: impacts on conceptus survival and development". New Investigator Exchange Lecturer, Fertility 2005, Warwick University, Coventry, England. April, 2005.
19. "Endogenous betaretroviruses of sheep: biological roles in uterine function and placental morphogenesis". Mini-Symposium X. Endogenous Retroviruses and Reproduction, Annual Meeting of the Society for the Study of Reproduction, Quebec City, Canada. July, 2005.
20. "Comparative biology as a key to understanding uterine development and function." Young Investigator Award Lecture, Annual Meeting of the Sigma Xi Society, Seattle, Washington. November, 2005.
21. "Progesterone regulation of peri-implantation conceptus development: genes and conundrums". Havemeyer Foundation Workshop on Embryonic and Fetal Nutrition, Ravello, Italy. May, 2006.
22. "Endogenous retroviruses in the female reproductive tract: potential roles in placental morphogenesis and mucosal immunity". Annual Meeting of the American Society for Reproductive Immunology, Nashville, Tennessee. June, 2006.
23. "Developmental biology and functional role of endometrial glands in the uterus". Gordon Research Conference on Reproductive Tract Biology, New London, Connecticut. June, 2006.
24. "Fetal-maternal interactions during the establishment of pregnancy in ruminants". 7th International Ruminant Reproduction Symposium, Wellington, New Zealand. August, 2006.
25. "Postnatal uterine development in the ewe: role of prolactin and the ovary". AgResearch, Invermay, New Zealand. August, 2006.
26. "Endogenous retroviruses regulate peri-implantation conceptus growth and differentiation". Workshop on Endogenous Retrovirus and Retroelements, Mystic, CT. September, 2006.
27. "Progesterone and Interferon Tau Regulation of Blastocyst Development in Ruminants". Department of Animal Science, The Ohio State University, Columbus, OH. September 21, 2006.
28. "Endogenous Retroviruses: Essential Regulators of Placental Development". Ohio Agricultural Research and Development Center, The Ohio State University, Wooster, OH. September 22, 2006.
29. "Pregnancy Recognition and Conceptus Implantation in Domestic Ruminants: Roles of Progesterone, Interferons and Endogenous Retroviruses". International Embryo Transfer Society 33rd Annual Conference, Kyoto, Japan. January, 2007.
30. "Hormonal Regulation of Endometrial Function and Conceptus Development: Insights from the Sheep". Iwate University, Morioka, Japan. January, 2007.
31. "Endocrine Disruption of Neonatal Uterine Development Compromises Pregnancy". Sigma Xi and Center for Environmental and Rural Health Spring 2007 Symposium, Texas A&M University. March 29, 2007.
32. "Endogenous Retroviruses: Essential Regulators of Placental Development?". Center for Virus Research, University of California, Irvine. April, 2007.
33. "Regulatory Mechanisms Governing Blastocyst Elongation and Development in Ruminants". Conaway Institute, University College of Dublin, Ireland. June, 2007.
34. "Biological Functions of Galectin-15 in the Ovine Uterus". CSREES USDA National Research Initiative Animal Reproduction Annual Investigator Meeting, San Antonio, Texas. August, 2007.
35. "Pregnancy Recognition Signaling by Interferon Tau". Keynote Speaker, European Society for Domestic Animal Reproduction, Hanover, Germany. September, 2007.
36. "Pathways Regulating Conceptus-Endometrial Interactions: Insights from the Sheep". Second International Meeting on Mammalian Embryogenomics, Paris, France. October, 2007.
37. "Overview of Embryo-Maternal Interactions: Novel Insights and Critical Events for Pregnancy Success". 1st World Congress on Reproductive Biology, Kona, Hawaii. May, 2008.
38. "Genes and Pathways Regulating Implantation: Comparative Insights from the Sheep". Society for the Study of Reproduction, Annual Meeting, Kona, Hawaii. May, 2008.
39. "Biological Functions of Galectin-15 in the Ovine Uterus". CSREES USDA National Research

- Initiative Animal Reproduction Annual Investigator Meeting, Indianapolis, Indiana. July, 2008.
40. "Maternal Interactions with Gametes and Embryos". EU COST GEMINI Meeting, Volos, Greece. October, 2008.
 41. "Conceptus-endometrial Interactions in Ruminants". 6th International Congress on Farm Animal Endocrinology, Roanoke, Virginia. November, 2008.
 42. "Postnatal Uterine Development: Strategies and Insights from Domestic Animals". Keystone Symposium, Frontiers in Reproductive Biology and Regulation of Fertility, Santa Fe, New Mexico. February, 2009.
 43. "Endogenous Retroviruses: From Infectious Elements to Essential Genes". Otto J. and Opal I. Hill Lecturer, The Pennsylvania State University, University Park. April 9, 2009.
 44. "Conceptus-Uterine Interactions: New Insights from Sheep". Dairy and Animal Science Department, The Pennsylvania State University, University Park. April 10, 2009.
 45. "Implantation in Domestic Animals: Mechanisms and Insights". 2nd International (French-Polish) Symposium on Endocrinology and Reproduction, Krakow, Poland. April 23-25, 2009.
 46. "Retroviruses and Pre-implantation Development: Insights from Sheep". Trophoblast Research Day, Centre for Trophoblast Research, Cambridge University, England. July 13-14, 2009.
 47. "Conceptus-Maternal Interactions". University of Texas-San Antonio. September, 2009.
 48. "Endogenous Retroviruses: From Infectious Elements to Essential Genes". 6th Annual Gilbert S. Greenwald Reproductive Biology Symposium, Kansas City, Kansas. October 9, 2009.
 49. "Conceptus-Maternal Interactions: Problems, Insights and Possible Solutions". The Joy Goodwin Lecture, College of Veterinary Medicine, Auburn University, Alabama. November 6, 2009.
 50. "The Role of Wnt Signaling in Conceptus-Endometrial Interactions". 57th Annual Meeting of the Society for Gynecologic Investigation, Orlando, Florida. March 25, 2010.
 51. "Endogenous Retroviruses: From Infectious Elements to Essential Genes". Asdell Lecturer, Department of Animal Science, Cornell University. April 7, 2010.
 52. "Comparative Aspects of Conceptus-Endometrial Interactions and Implantation". Frontiers in Periimplantation Biology Symposia of the First State Key Laboratory of Reproductive Biology, Beijing, China. May 8-12, 2010.
 53. "Endogenous Retroviruses: From Infectious Elements to Essential Genes". WCU Biomodulation Major Symposium, Seoul National University, Korea. May 14, 2010.
 54. "Maternal Nutrition and Programming of Fetal Development". Alltech Distinguished Lecturer, University of Kentucky, Lexington. July 1, 2010.
 55. "Endogenous Retroviruses: From Infections Elements to Essential Genes". Society for the Study of Reproduction, Annual Meeting, Milwaukee, Wisconsin. July, 2010.
 56. "Wnt Genes and Uterine Differentiation". Gordon Research Conference on Reproductive Tract Biology, Andover, New Hampshire. August, 2010.
 57. "Endogenous retroviruses of sheep: a model system for understanding physiological adaptation to an evolving ruminant genome". 8th International Ruminant Reproduction Symposium, Anchorage, Alaska. September 3-7, 2010.
 58. "Endogenous Retroviruses: From Infectious Elements to Essential Genes". Center for Pregnancy and Newborn Research, University of Texas Health Science Center, San Antonio. November, 2010.
 59. "Conceptus-Maternal Interactions: Problems, Insights and Potential Solutions". Department of Animal Science and Center for Reproductive Biology, Washington State University. January, 2011.
 60. "Endogenous Retroviruses: From Infectious Elements to Essential Genes". Department of Veterinary Pathobiology, University of Guelph, Ontario, Canada. March, 2011.
 61. "Conceptus-Maternal Interactions: Problems, Insights and Potential Solutions". Barron Lecture, University of Florida, Gainesville. March, 2011.
 62. "Endogenous Retroviruses: A Model System for Understanding Physiological Adaptation to a Rapidly

- Evolving Ruminant Genome”. International Meeting for Evolution of Reproductive Biology and Task of Frontiers: Trajectory and Prospects of IVF, Stem Cell and Epigenetic Studies, Morioka, Japan. September 12-15, 2011.
63. “Application of Next Generation Sequencing in Mammalian Embryo Genomics”. 3rd International Embryo Genomics Meeting, Bonn, Germany. September 19-22, 2011.
 64. “Conceptus-Endometrial Interactions: Insights and Opportunities”. Ludwig-Maximilians-Universitaet, Munich, Germany. September 25, 2011.
 65. “Endogenous Retroviruses: From Infectious Elements to Essential Genes”. Department of Obstetrics/Gynecology and Reproductive Biology, Center for Women's Health Research, Michigan State University, Grand Rapids. October 25, 2011.
 66. “Conceptus-Endometrial Interactions: Insights and Opportunities”. Center for Reproductive Biology, Michigan State University, East Lansing. October 26, 2011.
 67. “Comparative Developmental Biology of the Uterus: Tails from Different Species”. Center for Reproductive Biology, Washington State University, Pullman. November 30, 2011.
 68. “Developmental Biology of the Uterus”. Center for Reproductive Medicine, Baylor College of Medicine, Houston, Texas. February 16, 2012.
 69. “Insights into Development of the Uterus”. Northwest Reproductive Sciences Symposium, Portland, Oregon. April 28, 2012.
 70. “Conceptus-Maternal Interactions: Insights from Studies in Sheep”. Frontiers in Reproductive Sciences, Woods Hole Marine Biological Laboratory, Massachusetts. June 1, 2012.
 71. “Strengthening the Ties Between Animal Science and Biomedicine Dual Use and Other Opportunities Through the NIH”. FASS Webinar. June 13, 2012.
 72. “Biological Role of Interferon Tau in Endometrial Function and Conceptus Elongation in Ruminants”. Reproductive Immune Interactions Symposium, Joint Annual Meeting of the American Society of Animal Science and Western Section ASAS. July 19, 2012.
 73. “Comparative Developmental Biology of the Uterus: Tails from Different Species”. Department of Avian and Animal Sciences, University of Maryland. November 5, 2012.
 74. “Insights into Conceptus Elongation in Ruminants: Roles of Ovarian Progesterone and the Uterus”. Affymetrix Workshop at the Plant and Animal Genome XXI, San Diego, CA. January 14, 2013.
 75. “Pregnancy Success and Failure: Tails from Different Species”. Keynote Lecturer, Texas A&M Health Science Center Graduate Research Day, College Station, Texas. April 26, 2013.
 76. “Comparative Developmental Biology of the Uterus: Tails from Different Species”. Billie Fields Distinguished Lecturer, University of Illinois-Champaign Urbana, Illinois. May 6, 2013.
 77. “Developmental Biology of the Uterus: Insights from Genetics and Genomics”. Inland Northwest Genomics Research Symposium, Institute of Bioinformatics and Evolutionary Studies, University of Idaho, Moscow. May 16, 2013.
 78. “Early Pregnancy Success and Failure: Tails from Different Species”. Department of Animal Science, University of California-Davis, California. June 10, 2013.
 79. “Mechanisms Regulating Uterine Gland Differentiation, Development and Function”. Graduate Genetics Seminar, University of California-Davis, California. June 10, 2013.
 80. “Biological Role of Progesterone, Interferons and Prostaglandins in Conceptus Elongation and Endometrial Function”. Society for Brazilian Embryo Technology, Brazil. August 31, 2013.
 81. “Endometrial Development, Differentiation and Function: Keys to Early Pregnancy Success”. Distinguished Exchange Plenary Lecturer, American Society for Reproductive Medicine, Boston, MA. October 16, 2013.
 82. “Cellular and Molecular Mechanisms Regulating Uterine Gland Development and Function”. Laboratory of Reproductive and Developmental Toxicology Workshop, National Institute of Environmental Health Sciences, Research Triangle, North Carolina. February 7, 2014.

83. “Systems Biology Approaches to Understanding Fertility and Infertility”. Animal Reproduction and Biotechnology Laboratory, Colorado State University, Fort Collins, Colorado. March 10, 2014.
84. “Uterine Glands: Critical Regulators of Blastocyst Implantation and Stromal Cell Decidualization?”. Epithelia/Stroma/Decidua: Who is Really Influencing Who? Symposium, Society for Gynecologic Investigation, Florence, Italy. March 27, 2014.
85. “Genetic Regulation of Uterine Development and Function”. IPN/Neuroscience Program Retreat, Washington State University, Pullman. May 28, 2014.
86. “Challenges and Opportunities in Beef Cattle Reproduction”. WSU Beef Conference, Yakima, WA. June 13, 2014.
87. “Systems Biology Approaches to Understanding Conceptus Elongation and Early Pregnancy Loss”. Translation of Basic Science to Real-World Practice: Agricultural/Large Animal Species Symposium, Society for the Study of Reproduction, Grand Rapids, Michigan. July 21, 2014.
88. “Systems Biology Approaches to Understanding Pregnancy Loss and Success”. Gordon Research Conference on Mammalian Reproduction, New London, New Hampshire. August 14, 2014.
89. “Systems Biology Approaches to Understanding Fertility, Infertility and Disease”. Chancellor’s Distinguished Visitor Program, University of Missouri, Columbia. October 13, 2014.
90. “Biology of Uterine Gland Development and Function”. SKLRB Symposia on Frontiers in Reproductive Biology, Beijing, China. October 26-31, 2014.
91. “Biological Pathways Regulating Conceptus Survival and Implantation”. Joint Workshop on Immune Mechanisms at the Maternal-Fetal Interface. Uterine Function and Implantation Biology Program, Fertility and Infertility Branch, Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), and Division of Allergy, Immunology and Transplantation, National Institute of Allergy and Infectious Diseases (NIAID), National Institutes of Health. Bethesda, Maryland. November 13-14, 2014.
92. “Uterine Function and Fertility: Insights from Animal Models”. Center for Reproductive Sciences, Institute for Reproductive Health and Regenerative Medicine, University of Kansas Medical Center, Kansas City, Kansas. March 19, 2015.
93. “Uterine Gland Function and Fertility: Insights from Animal Models”. Keynote Speaker, 34th Annual Symposium in Reproductive Sciences and Women’s Health, University of Kentucky, Lexington, Kentucky. March 25, 2015.
94. “Uterine Development, Differentiation and Function: Keys to Early Pregnancy Success”. Molecular and Cell Biology Seminar, Baylor College of Medicine, Houston, Texas. April 21, 2015.

● **Papers in Refereed Scientific Journals:**

1. Spencer TE, Bartol FF, Wiley AA, Coleman DA. Lectin binding sites as markers of neonatal porcine uterine development. *J Histochem Cytochem* 1992; 40:1937-1942.
2. Spencer TE, Bartol FF, Wiley AA, Coleman DA, Wolfe DF. Neonatal porcine endometrial development involves coordinated changes in DNA synthesis, glycosaminoglycan distribution, and ³H-glucosamine labeling. *Biol Reprod* 1993; 48:729-740.
3. Spencer TE, Wiley AA, Bartol FF. Neonatal age and period of estrogen exposure affect uterine growth, morphogenesis and protein synthesis. *Biol Reprod* 1993; 48:741-751.
4. Wolfenson D, Bartol FF, Badinga L, Barros CM, Marple DN, Cummins K, Wolfe D, Lucy MC, Spencer TE, Thatcher WW. Secretion of PGF_{2α} and oxytocin during hyperthermia in cyclic and pregnant heifers. *Theriogenology* 1993; 39:1129-1142.
5. Bartol FF, Johnson LL, Floyd JG, Wiley AA, Spencer TE, Buxton DF, Coleman DA. Neonatal exposure to progesterone and estrogen alters uterine morphology and luminal protein content in adult beef heifers. *Theriogenology* 1995; 43:835-844.

6. Kelley RL, Jungst SB, Spencer TE, Owsley WF, Rahe CH, Mulvaney DR. Maternal treatment with somatotropin alters embryonic development and early postnatal growth of pigs. *Dom Anim Endocrinol* 1995; 12:83-94.
7. Spencer TE, Graf GA, Bazer FW. Sulfated glycoprotein one (SGP-1) expression in ovine endometrium during the estrous cycle and early pregnancy. *Reprod Fertil Develop* 1995; 7:1053-1060.
8. Spencer TE, Ing NH, Ott TL, Mayes JS, Becker WC, Watson GH, Mirando MA, Bazer FW. Intrauterine injection of ovine interferon-tau alters oestrogen receptor and oxytocin receptor expression in the endometrium of cyclic ewes. *J Mol Endo* 1995; 15:203-220.
9. Spencer TE, Becker WC, George P, Mirando MA, Ogle TF, Bazer FW. Ovine interferon-tau regulates expression of endometrial receptors for estrogen and oxytocin, but not progesterone. *Biol Reprod* 1995; 53:732-745.
10. Spencer TE, Mirando MA, Ogle TF, Bazer FW. Ovine interferon-tau inhibits estrogen receptor up-regulation and estrogen-induced luteolysis in ewes. *Endocrinology* 1995; 136:4932-4944.
11. Spencer TE, Bazer FW. Temporal and spatial regulation of uterine receptors for estrogen and progesterone during the estrous cycle and early pregnancy in ewes. *Biol Reprod* 1995; 53:1527-1544.
12. Ing NH, Spencer TE, Bazer FW. Estrogen enhances endometrial estrogen receptor gene expression by a post-transcriptional mechanism in the ovariectomized ewe. *Biol Reprod* 1996; 54:591-599.
13. Spencer TE, Bazer FW. Ovine interferon-tau suppresses transcription of the estrogen receptor and oxytocin receptor genes in ovine endometrium. *Endocrinology* 1996; 137:1144-1147.
14. Spencer TE, Mirando MA, Watson GH, Ott TL, Bazer FW. Effects of interferon-tau and progesterone on estrogen-stimulated expression of receptors for estrogen, progesterone and oxytocin in the endometrium of ovariectomized ewes. *Reprod Fertil Develop* 1996; 8:843-853.
15. Christenson RK, Bartol FF, Vallet JL, Wiley AA, Spencer TE. Comparative study of uterine morphogenesis and protein secretion in neonatal Meishan and white crossbred pigs. *Biol Reprod* 1997; 56:1112-1119.
16. Jenster G, Spencer TE, Burcin MM, Tsai SY, Tsai M-J, O'Malley BW. Steroid receptor induction of gene transcription: a two-step model. *Proc Natl Acad Sci USA* 1997; 94:7879-7884.
17. Ott TL, Fleming JG, Spencer TE, Joyce MM, Chen P, Green CNK, Zhu D, Welsh TH Jr, Harms PG, Bazer FW. Effects of exogenous recombinant ovine interferon tau on circulating concentrations of progesterone, cortisol, LH and antiviral activity, interestrous interval, rectal temperature, and uterine response to oxytocin in cyclic ewes. *Biol Reprod* 1997; 57:621-629.
18. Spencer TE, Jenster G, Burcin M, McKenna N, Allis CD, Zhou J, Onate S, Tsai SY, Tsai M-J, O'Malley BW. Steroid receptor coactivator one (SRC-1) is a histone acetyltransferase. *Nature* 1997; 389:194-196.
19. Onate SA, Boonyaratanakornkit V, Spencer TE, Tsai SY, Tsai M-J, Edwards DP, O'Malley BW. Steroid receptor coactivator-one contains multiple receptor interacting and activation domains that cooperatively enhance the activation function 1 (AF1) and AF2 domains of the steroid receptors. *J Biol Chem* 1998; 273:12101-12108.
20. Ott TL, Spencer TE, Lin JY, Kim H-T, Gerami B, Bartol FF, Wiley AA, Bazer FW. 1998. Effects of the estrous cycle and early pregnancy on uterine expression of Mx protein in sheep (*Ovis aries*). *Biol Reprod* 1998; 59: 784-794.
21. Spencer TE, Ott TL, Bazer FW. Expression of interferon regulatory factors one (IRF-1) and two (IRF-2) in the ovine endometrium: effects of pregnancy and interferon tau. *Biol Reprod* 1998; 58:1154-1162.
22. Tarleton BJ, Wiley AA, Spencer TE, Moss AG, Bartol FF. Ovary-independent estrogen receptor expression in the neonatal porcine uterus. *Biol Reprod* 1998; 58:1009-1019.

23. Johnson GA, Spencer TE, Hansen TR, Austin KJ, Burghardt RC, Bazer FW. Expression of the interferon tau inducible ubiquitin cross-reactive protein in the ovine uterus. *Biol Reprod* 1999; 61:312-318.
24. Johnson GA, Spencer TE, Burghardt RC, Bazer FW. Ovine osteopontin: I. Cloning and expression of mRNA in the uterus during the peri-implantation period. *Biol Reprod* 1999; 61:884-891.
25. Johnson GA, Burghardt RC, Spencer TE, Newton GR, Ott TL, Bazer FW. Ovine osteopontin: II. Osteopontin and $\alpha_v\beta_3$ integrin expression in the uterus and conceptus during the peri-implantation period. *Biol Reprod* 1999; 61:892-899.
26. Johnson GA, Burghardt RC, Taylor KM, Fleming JGW, Bazer FW, Spencer TE. Development and characterization of immortalized ovine endometrial cell lines. *Biol Reprod* 1999; 61:1324-1330.
27. Spencer TE, Bartol FF, Bazer FW, Johnson GA, Joyce MM. Identification and characterization of glycosylation dependent cell adhesion molecule 1 (GlyCAM-1) expression in the ovine uterus. *Biol Reprod* 1999; 60: 241-250.
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● Invited Review Papers

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● Invited Book Chapters

1. Bartol FF, Wiley AA, Spencer TE, Christenson RK, Vallet JL. Early uterine development in the pig. In: Foxcroft GR, Hunter MG, Doberski C (eds.), *Control of Pig Reproduction IV*. *J Reprod Fertil* 1993; 48 (supplement): 99-116.

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12. Spencer TE, Gray CA. Sheep Uterine Gland Knockout (UGKO) Model. In: *Methods in Molecular Medicine, Volume 121: Placenta and Trophoblast: Methods and Protocols, Volume 1* (Soares MJ and Hunt JS, Eds.). Humana Press, Inc., Totowa, NJ; 2005:85-94.
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14. Wu G, Bazer FW, Spencer TE, Yin Y-L, Kim SW. New developments in amino acid research. *WAP Book of the Year 2006*; pp. 299-315.
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 18. Spencer TE, Black SG, Arnaud F, Palmarini M. Spencer TE, Black SG, Arnaud F, Palmarini M. Endogenous retroviruses of sheep: a model system for understanding physiological adaptation to an evolving ruminant genome. In: *Reproduction in Domestic Ruminants VII* (Nottingham University Press, United Kingdom). ISBN 978-1-907284-14-4.
 19. Armezzani A, Murphy L, Spencer TE, Palmarini M, Arnaud F. The evolutionary interplay between exogenous and endogenous sheep betaretroviruses. In: “*Viruses: Essential Agents of Life*” (Edited by Günther Witzany) Springer 2012; pages 293-307.
 20. Spencer TE, Hansen TR. Implantation and establishment of pregnancy in ruminants. In: *Regulation of Implantation and Establishment of Pregnancy in Mammals: Tribute to the 45-year Anniversary of Roger V. Short’s “Maternal Recognition of Pregnancy”* (Edited by Rodney D. Geisert) Springer 2015 (in press).

● **Grants and Contracts**

Current

“Biological Role of Endometrial Glands in Uterine Function”

Principal Investigator: Thomas E. Spencer

Agency: NIH-NICHD

Type: 1 R21 HD076347

Period: 12/01/2013-11/30/2015

“Improving Fertility of Dairy Cattle Using Translational Genomics”

Principal Investigator: Thomas E. Spencer; Co-investigators: Joe Dalton, Peter J. Hansen, and Holly Neibergs

Agency: USDA National Institute of Food and Agriculture

Type: 2013-68004-20365, Integrated Food Security Challenge Grant

Period: 01/01/2013-12/31/2018

“Systems Biology Approach to Understand Endometrial Receptivity and Pregnancy Loss”

Principal Investigator: Thomas E. Spencer; Co-PI: Thomas W. Geary and Holly Neibergs

Agency: NIH-NICHD

Type: 1 R01 HD072898

Period: 07/01/2012-06/30/2017

“Physiological Roles Of Hydroxysteroid (11-Beta) Dehydrogenases And Cortisol During Early Pregnancy”

Principal Investigator: Thomas E. Spencer

Agency: USDA National Institute of Food and Agriculture

T.E. Spencer

27

Type: AFRI 2012-67015-30173

Period: 01/15/2012-01/14/2016

“Reducing Embryo Mortality Through Improved Understanding of Embryo Maternal Communication”

Principal Investigator: Patrick Lonergan; Co-Principal Investigator: Thomas E. Spencer

Agency: Science Foundation Ireland

Type: Investigator Programme - Non-Themed and Non-ERC Full Proposal

Period: 6/1/2014 – 5/31/17

“Biological Roles of Exosomes in Conceptus Elongation and Uterine Interactions During Early Pregnancy”

Principal Investigator: Thomas E. Spencer

Agency: USDA National Institute of Food and Agriculture

Type: AFRI Competitive Grant

Period: 08/01/2015-07/30/2019

Submitted

“Generation of a Transgenic Mouse Model to Study Uterine Gland Function and Neoplasia”

Principal Investigator: Thomas E. Spencer

Agency: National Institutes of Health

Type: R21

Period: 07/01/2015-06/30/2017

Completed

“Physiological Roles of Prostaglandins and Interferon Tau in Conceptus Development and Endometrial Function”

Principal Investigator: Thomas E. Spencer; Co-I: Fuller W. Bazer & Robert C. Burghardt

Agency: USDA National Institute of Food and Agriculture

Type: AFRI 2009-65203-05664 and 2009-65203-31188

Period: 09/01/2009-08/31/2013

“Endogenous Retroviruses and Placental Morphogenesis”

Principal Investigator: Thomas E. Spencer; Co-PI: Massimo Palmarini

Agency: NIH-NICHD

Type: 1 R01 HD052745

Period: 04/26/2007-02/29/2013

“Genetic Regulation of Postnatal Uterine Morphogenesis and Function”

Principal Investigator: Thomas E. Spencer

Agency: NIH-NICHD

Type: 1 R21 HD54679

T.E. Spencer

Period: 07/01/2007-06/30/2010

“Biological Functions of Galectin-15 in the Ovine Uterus”

Principal Investigators: Thomas E. Spencer & Robert C. Burghardt

Agency: USDA

Type: NRICGP 2005-01476

Period: 09/01/2005 – 08/31/2009

“Ovine Interferon-Tau Regulates Uterine Hormone Receptors”

Principal Investigator: Fuller W. Bazer; Co-I: Thomas E. Spencer

Agency: NIH-NICHD

Type: 2 R01 HD32534

Period: 02/28/2001-02/27/2008

“Mechanisms Regulating Uterine Morphogenesis”

Principal Investigator: Thomas E. Spencer

Agency: NIH-NICHD

Type: R01

Grant Number: 1R01 HD38274

Period: 04/01/2001-03/31/2006

“Role of Endometrial Glands in Uterine Function”

Principal Investigator: Thomas E. Spencer

Agency: USDA

Type: NRICGP 2001-02259

Period: 09/01/2001-08/31/2005

“Placental Lactogen Enhances Production Efficiency in Sheep”

Principal Investigators: Thomas E. Spencer, Fuller W. Bazer (USA); Elisha Gootwine and Arieh Gertler (Israel)

Agency: Binational Agriculture Research and Development Fund (BARD)

Grant Number: US-3199-OCR

Period: 09/01/2001-08/31/2005

“Role of Endometrial Glands in Uterine Function”

Principal Investigator: Thomas E. Spencer

Agency: USDA

Type: NRICGP 98-35203-6322

Period: 09/01/1998-8/31/2002

● **References (provided upon request)**