

Curriculum Vitae

David H. Townson, PhD
Department of Fisheries, Animal and Veterinary Sciences
University of Rhode Island
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Educational Background

B.S. (1984) Michigan State University, East Lansing, MI (Animal Husbandry)

M.S. (1988) University of Wisconsin, Madison, WI (Veterinary Sciences; with Oliver J. Ginther)

Ph.D. (1993) The Ohio State University, Columbus, OH (Dairy Science; with Joy L. Pate)

Professional Accomplishments

Employment History

2022-present	Professor (60% Teaching appointment; 40% Research appointment) Department of Fisheries, Animal and Veterinary Sciences, College of the Environment and Life Sciences, University of Rhode Island, Kingston, RI
2016-2022	Professor and Chair, Department of Animal & Veterinary Sciences, College of Agriculture and Life Sciences, University of Vermont, Burlington, VT
2014-2015	Acting Chair, Department of Molecular, Cellular and Biomedical Sciences, College of Life Sciences and Agriculture, University of New Hampshire, Durham, NH
2014-2015	Professor (60% Teaching appointment; 40% Research appointment) Department of Molecular, Cellular and Biomedical Sciences, University of New Hampshire, Durham, NH
2013-2014	Sabbatical leave at the Center for Reproductive Biology (CRB), Department of Animal Sciences, Penn State University, University Park, PA
2012-2016	Faculty member, Center for Molecular and Comparative Endocrinology, University of New Hampshire, Durham, NH
2009-2013	Associate Professor (60% Teaching appointment; 40% Research appointment) Department of Molecular, Cellular and Biomedical Sciences, University of New Hampshire, Durham, NH
2005-2009	Director, Biology Program, College of Life Sciences and Agriculture, University of New Hampshire, Durham, NH
2003-2009	Associate Professor (60% Teaching appointment; 40% Research appointment) Department of Animal and Nutritional Sciences, University of New Hampshire, Durham, NH
1997-2003	Assistant Professor (60% Teaching appointment; 40% Research appointment) Department of Animal & Nutritional Sciences, University of New Hampshire, Durham, NH
1996-1997	NIH-F32 Postdoctoral Research Fellow (NRSA), Department of Physiology, Reproductive Sciences Program, University of Michigan, Ann Arbor, MI
1993-1996	NIH-T32 Postdoctoral Research Fellow, Department of Physiology, Reproductive

Sciences Program, University of Michigan, Ann Arbor, MI

Professional

Memberships, Honors, Awards

Society for the Study of Reproduction, 1988-present
Gamma Sigma Delta, The Honor Society of Agriculture, 1988-present
Phi Sigma, The Honor Society of Biology, 2007-present
UNH Research and Engagement Academy Scholar, 2010-2011
UP-2-NIH Scholar, 2012-2013
UNH, College of Life Sciences and Agriculture Outstanding Advisor, 2008
UNH, University Outstanding Associate Professor, 2014

TEACHING

Courses Taught

University of Rhode Island (Kingston, RI), 2022-present

1. AVS101-Introductory Animal Sciences

Course that provides an overview of the genetics, nutrition, reproduction, and management of livestock and other species; introduction to animal behavior, animal disease, and biotechnology. Non-majors course. *Taught every Fall and Spring from 2022 to the present.*

2. AVS372-Endocrinology

Course that provides an overview about how the endocrine system modifies essential physiological functions including water regulation and mineral balance, stress responses and environmental adaptation, nutrient uptake and metabolism, growth and development, biological rhythms and reproduction. Cross-listed with biology. *Taught every Fall from 2022 to the present.*

3. AVS472-Physiology of Reproduction

Fundamental principles of the physiology of reproduction with emphasis on, but not limited to, farm animals. Required for majors in Animal and Veterinary Sciences. *Taught every Spring from 2022 to the present.*

4. AVS473-Physiology of Reproduction Laboratory

Experiential course reinforcing the basic reproductive principles of AVS472, by providing hands-on opportunities with estrous synchronization, artificial insemination, ultrasonography, hormone assays, semen processing and embryo transfer. *Taught every Spring from 2023 to the present.*

University of Vermont (Burlington, VT), 2016-2022

1. ASCI 001-Introductory Animal Sciences

Team-taught course that provides an overview of the genetics, nutrition, reproduction, and management of livestock and recreation species; introduction to animal behavior, animal disease, and biotechnology.

Required for majors in Animal & Veterinary Sciences. *Taught every Fall from 2018 to the present.*

2. ASCI 156-Dairy Management Seminar

Discussion and workshop activities exploring the dairy industry and dairy management. Required for 2+2 FARMS articulation students in Animal & Veterinary Sciences. *Taught every Fall from 2018 to the present.*

3. ASCI 181-Animal Science Career Seminar

Discussion and workshop activities exploring careers in animal and food science. Includes resume preparation and interview training. Required for majors in Animal and Veterinary Sciences. *Taught every Fall from 2016 to Fall 2017.*

4. ASCI 191-Winter Dairy Travel Course

Winter term travel course coordinated jointly with other New England universities (UNH, UMaine, UCONN, UMASS, URI) in which students interested in the dairy industry visit regional farms and support facilities to learn about their operations. *Winter 2019 to the present.*

5. ASCI 215-Physiology of Reproduction

Fundamental principles of the physiology of reproduction with emphasis on, but not limited to, farm animals. Required for majors in Animal and Veterinary Sciences. *Taught every Spring from 2016 to the present.*

University of New Hampshire (Durham, NH), 1997-2015

1. BIOL 411-Introductory Biology: Molecular and Cellular (formerly Principles of Biology)

Introduction to structure and function of cells; tissues and organs; physiological processes; genes and heredity. Required for majors in the biological sciences. *Taught every Fall from 1997- 2009, and every Spring from 2011 to 2013.*

2. BIOL 411H- Honors/Principles of Biology (with laboratory)

Introduction to structure and function of cells; tissues and organs; physiological processes; genes and heredity. Honors students only. *Taught Fall 2010, Fall 2011.*

3. BIOL 411 (Summer) - Introductory Biology: Molecular and Cellular

Introduction to structure and function of cells; tissues and organs; physiological processes; genes and heredity. Required for majors in the biological sciences. *Taught every Summer from 2008 to the present.*

4. BIOL 411 (Summer- On-line) - Introductory Biology: Molecular and Cellular

Introduction to structure and function of cells; tissues and organs; physiological processes; genes and heredity. Required for majors in the biological sciences. *Taught Summer 2012, Summer 2013, Summer 2014.*

5. BIOL 410- (On-line) - Introductory Biology: Molecular and Cellular. For bioengineering students.

Introduction to structure and function of cells; tissues and organs; physiological processes; genes and heredity. Required for bioengineering majors in the College of Engineering and Physical Sciences. *Taught Fall 2014 and 2015..*

6. BIOL 401/BMS 402- Special Topics: Designer babies - designer cells: New frontiers in biology
Special topics course covering methods of assisted reproductive technology (IVF, embryo transfer, etc.), stem cell research, government policy regarding stem cell research and use, and case studies. *Taught every Spring from 2006-2010, Spring 2013.*

7. BMCB 401- Opportunities in Biochemistry, Molecular and Cellular Biology
Views scope of biochemistry, molecular and cellular biology and explores professional opportunities for BMCB majors. Guest speakers from on and off campus present seminars and lead discussions on contemporary issues in subject area. Departmental and interdepartmental majors and option programs and strategies for achieving professional goals are discussed. *Taught every Fall from 2010 to the present.*

8. MCBS 997- Graduate Seminar
Graduate student and faculty presentations on current topics in the molecular life sciences and biomedical sciences. Graduate students are expected to present one seminar per year and attend all seminars each semester. *Taught Fall 2008, Fall 2009, Spring 2009, Spring 2010.*

9. ANSC 997/998- Graduate Seminar
Graduate student and faculty presentations on current topics in the animal, nutritional, and medical laboratory sciences. Graduate students are expected to present one seminar per year and attend all seminars each semester. *Taught Fall 2005, Fall 2006, Fall 2007, Spring 2006, Spring 2007, Spring 2008...*

10. ANSC 909 – Contemporary trends in reproductive physiology
Comprehensive survey of recent developments in the areas of comparative mammalian reproduction and animal biotechnology. *Taught Fall 2003, Fall 2008.*

11. ANSC 511 & 512 – Anatomy and Physiology
Introduction to the principles of human structure and function. Includes molecular and cellular mechanisms of major processes (such as muscle contraction, neural transmission, and signal transduction) and systematic aspects of the nervous, cardiovascular, respiratory, endocrine, gastrointestinal, and renal systems. Structure of the above systems will be covered at both the microscopic and macroscopic levels. *Taught Fall 1999, Spring 2000.*

12. ZOOL 508 –Human Anatomy and Physiology
Cellular and systematic aspects of the human body. *Taught Spring 1999.*

Guest lectures for the following courses:

1. ANSC 401 – Animals and Society
The use of animals in agricultural production, for recreation, companionship, and research is considered. The nutrition, genetics, diseases, and reproduction of domestic animals are covered. *Taught every Fall from 1998 to the present.*

2. ANSC 701/801 – Physiology of Reproduction
Comparative aspects of embryology, anatomy, endocrinology, and physiology of reproduction. *Taught Fall*

2011, Fall 2012.

3. BIOL 400 – Professional Perspective on Biology

Views scope of biology and explores professional opportunities for biological sciences majors. Guest speakers from on and off campus present seminars and lead discussions on contemporary issues in biology. Departmental and interdepartmental major and option programs and strategies for achieving professional goals are discussed. Required for all first-semester biology majors. *Taught Fall 2007, Fall 2008.*

Graduate Committees

1. Committees chaired:

- Lauren DeCastro (M.S., Animal & Veterinary Sciences), 2021-present
- Abigail Mauceri (M.S., PhD, Animal & Veterinary Sciences), 2018-present
- Allie Lundberg (M.S., Animal & Veterinary Sciences), 2016-2019
- Nicole Jaskiewicz (Ph.D. Student, Biochemistry), 2012-2018
- Sarah Kinsman (M.S., Animal Sciences), 2010- 2012
- Amanda Rivers (M.S., Animal Sciences), 2008—left program
- Alice Duncan (M.S., Animal Sciences), 2007-2009
- Jennifer Forcina (M.S., Animal Sciences), 2007-2009
- Jessica Cherry (M.S., Animal Sciences), 2004-2006
- Brian Sullivan (M.S. Animal Sciences), 2001-2004
- Amy Liptak (M.S., Animal Sciences), 2001-2004
- Victoria Cavicchio (M.S., Animal Sciences), 1999-2001
- Kristen Olson (M.S., Animal Sciences), 1997-1999

2. Committee member:

- Emily Fread (M.S., Animal & Veterinary Sciences), 2021-present
- Michelle Lacasse (M.S., Animal & Veterinary Sciences), 2019-present
- Andrew J. Spitzer (M.S., Animal & Veterinary Sciences), 2016-2019
- Lauren Kordonowy (Ph.D. Candidate, Genetics) 2014-2019
- Taka Kosugi (Ph.D. Candidate, Biochemistry), 2011-2013
- Jay Meyers (Ph.D., Animal and Nutritional Sciences), 2008-2013
- Tim Warner (Ph.D., Psychology), 2007-2012
- Naomi Crystal (M.S., Kinesiology), 2010-2012
- Kate Stephanie (Ph.D., Microbiology), 2006-2011
- Neal Callahan (M.S., Animal Sciences), 2007-withdrawn
- Darren Ferguson (M.S., Animal Sciences), 2006-2008
- Lisa Merrill (M.S., Animal Sciences), 2006-2008
- Bryon Ricketts (M.S., Animal Sciences), 2004-2006
- Melissa Kopka (M.S., Animal Sciences), 2004-2006
- John Christianson (Ph.D., Psychology), 2002-2007
- Jennifer Silva (M.S., Psychology), 2005-2007
- Jennifer Allen (M.S., Animal Sciences), 2003-2006
- Jillien Allen (M.S., Animal Sciences), 2001-2003
- Valentina Jeliaskova (M.S., Animal Sciences), 2000-2002
- Theresa Towle (M.S., Animal Sciences), 1998-2000

- Bo Zhang (Ph.D., Animal Sciences), 1997-2002

Undergraduates – Independent Research Projects/Investigations

- Hannah Pcolar, 2020-2021, *UVM DUR and UVM Honors College Senior Thesis*
- Maya Samuelson, 2019-2021, *Senior research experience*
- Anna Horowitz, 2020-2021, *UVM Honors College Senior Thesis (2021)*
- Julia Weiz, 2017-2018, *UVM Honors College Senior Thesis (2018)*
- Keshav Nepal, 2014-2015, *McNair Scholars Program (2014)*
- Stephanie Parisi, 2013-2014, *McNair Scholars Program (2013)*
- Sarah Piet, 2013-2014 *Research Experience and Apprenticeship Program (2013)*
- Nicolette Schwab, 2012-2014, *Senior research experience*
- Amanda Berger, 2012-2014, *Summer Undergraduate Research Fellowship (2013)*
- Ben Grotton, 2011-2014, *Summer Undergraduate Research Fellowship (2013)*
- Samantha Docos, 2011-2014, *Summer Undergraduate Research Fellowship (2013)*
- Caitlin McCarthy, 2009-2014, *Summer Undergraduate Research Fellowship (2012)*
- Kathryn Comeau 2012-2013, *Senior research experience*
- Benjamin Duckless, 2010-2012, *Senior research experience*
- Andrew Clark, 2010-2012, *Senior research experience*
- Brittany Welch, 2010-2011, *Senior Honors Thesis (2011)*
- Christopher DiCroce, 2010-2011, *Senior research experience*
- Katelyn Gagne, 2010- 2011, *Senior research experience*
- Alyssa Birt, 2009-2011, *Summer Undergraduate Research Fellowship (2010)*
- Hayley Very, 2009-2010, *Senior research experience*
- Sarah Kinsman, 2008-2009, *Undergraduate Research Opportunities Program (2009)*
- Amanda Ramos, 2008-2009, *Undergraduate Research Opportunities Program (2009)*
- Nicholas Sherman, 2008-2009, *Senior Honors Thesis (2009)*
- Danielle Oliveri, 2007-2009, *Summer Undergraduate Research Fellowship (2010)*
- Kara Judson, 2006-2007, *Undergraduate Research Opportunities Program (2007)*
- Ariel Hudson, 2006-2007, *Undergraduate Research Opportunities Program (2007)*
- Sarah Grieve, 2004-2005, *Senior research experience*
- Nicole Young, 2004-2005, *Senior research experience*
- Amanda Putnam 2001-2005, *Summer Undergraduate Research Fellowship (2005)*
- Lindsey Wilder, 2003-2004, *Undergraduate Research Opportunities Program (2004)*
- Sarah Zoller, 2001-2002, *Summer Undergraduate Research Fellowship (2002)*
- Kristen Pastir, 2001- 2002, *Summer Undergraduate Research Fellowship (2002)*
- Jessica Gramlich, 1999- 2001, *Summer Undergraduate Research Fellowship (2001)*
- Sarah Zoller, 2000-2001, *Oliver J. Hubbard Undergraduate Research Award (2001)*
- Caroline Ring, 2000-2001, *Oliver J. Hubbard Undergraduate Research Award (2001)*
- Jennifer Cushing, 1998-1999, *Undergraduate Research Opportunities Program (1999)*
- Christopher Ware, 1998-1999 *Undergraduate Research Opportunities Program (1999)*
- Cindy O'Connor , 1997-1998, *Senior Honors Thesis (1998)*

RESEARCH

Research Support (Funded Projects)

1. USDA/NIFA AFRI Grant #2020-67016-31018 (2020-2022), "Influence of O-GlcNAcylation on Bovine Granulosa Cell Function" – Principal Investigator, Total Award: \$200,000
2. USDA Hatch/Multistate Project, Regional Project NE-1727 (2017-2022), "Influence of the ovary, uterus and embryo on pregnancy success in ruminants" - Principal Investigator, Total Award: \$80,000 (20,000/yr)
3. USDA Hatch/Multistate Project, Regional Project NE-1227 (2016-2020), "Ovarian Influences on Reproductive Success in Ruminants" - Principal Investigator, Total Award: \$80,000 (20,000/yr)
4. NIH/NIEHS Grant 1R15ES024520-01 (2014-2017), "Endocrine disruption in the bovine follicle" – Co-Investigator (w/Catherine Combelles-Middlebury College, VT), Total Award: \$410,195
5. NIFA/USDA AFRI Grant #2013-67016-21071 (2013-2014), "Immune-mediated mechanisms of resistance to apoptosis in granulosa cells: Role of the ERK signaling pathway" – Principal Investigator, Total Award: \$75,332
6. UNH/COLSA Equipment funds (2014), "LiCor Odyssey Infrared Imaging System" – Co-Investigator (w/Rick Cote-UNH), Total Award: \$43,500
7. UNH/COLSA Equipment funds (2014), "Automated Cell Counter and NanoDrop UV-Vis Spectrophotometer" – Co-Investigator (w/Paul Tsang-UNH), Total Award: \$17,676
8. USDA Hatch Project, Regional Project NE-1227 (2012-2017), "Ovarian Influences on Reproductive Success in Ruminants" - Co-Investigator (w/Paul Tsang-UNH), Total Award: \$75,000 (15,000/yr)
9. Prince Agri Products, Inc. (2012-2014), "Influence of OmniGen AF and Neutrophil Infiltration on Ovulation and Fertility in the Rat" –Principal Investigator, Total Award: \$35,000
10. UNH/COLSA Karabelas COLSA Faculty Development fund (2011-2013), "Role of cellular FLICE inhibitory protein (cFLIP) and phosphorylated extracellular regulated kinases-1/2 (ERK 1/2) in Fas ligand-induced death of human cervical cancer cells"– Principal Investigator, Total Award: \$22,000
11. NIFA/USDA OREI Grant #2011-51300-30766 (2011-2015), "Assisting Organic Dairy Producers to Meet the Demands of New and Emerging Milk Markets" – Co-Investigator (w/Andre Brito [PD], Rich Smith, Kirk Broders –UNH, and other co-investigators at UMaine, UVM, Cornell, USDA-ARS), Total Award: \$2,863,915
12. NRICGP/USDA Grant # 2011-67016-20041 (2010-2012), "Control of oxidative stress during bovine folliculogenesis" – Co-Investigator (w/Catherine Combelles-Middlebury College), Total Award: \$149,958
13. NIFA/USDA OREI Grant #2010-51300-21263 (2010-2011), "Research and Extension Needs Assessment of the Organic Dairy Industry in the Northeast" – Co-Investigator (w/Andre Brito-UNH), Total Award: \$32,115
14. NERA Planning Proposal #NE1005 (2010-2011), "Addressing the Nutritional and Reproductive Research and Extension Needs of the Organic Dairy Industry in the Northeast" – Principal Investigator (co-investigators- Paul Tsang, Andre Brito, Pete Erickson, Lisa Townson, Trent Schiefer-UNH, and other co-investigators at UConn, Cornell, USDA-ARS, NODPA, and Penn Dutch Veterinary Practice, Total Award: \$10,000
15. UNH/COLSA Equipment funds (2010), "Zeiss Microscope Upgrade"- Co-Investigator (w/Chuck Walker-UNH), Total Award: \$22,726
16. UNH/COLSA Equipment funds (2010), "Fluorescent Plate Reader" – Co-Investigator (w/David Berlinsky-UNH), Total Award: \$30,353
17. UNH/COLSA Equipment funds (2010), "Ultrasound Machine Replacement" – Co-Investigator

- (w/Paul Tsang-UNH), Total Award: \$16,788
18. NRICGP/USDA Grant #2007-35203-18074 (2007-2010), "Role of Cytokeratin 8/18 Filaments in Fas Ligand-Induced Apoptosis of Ovarian Steroidogenic Cells" – Principal Investigator (co-investigators-John S. Davis-UNebraska; Bo R. Rueda-Harvard), Total Award: \$307,198
 19. USDA Hatch Project, Regional Project NE-1027 (2007-2012), "Ovarian Influences on Embryonic Survival in Ruminants" - Co-Investigator (w/Paul Tsang-UNH), Total Award: \$50,000 (\$10,000/yr)
 20. NRICGP/USDA Grant #2006-35203-17249 (2006-2009), "Mechanism of Gonadotropin Action" – Co-Investigator (w/John S. Davis-UNebraska), Total Award: \$300,000
 21. President's Excellence Initiative (University of New Hampshire) (2006-2007), "A Comparison of Infants Born to Mothers Under Chronic Stress: A Pilot Study that Examines the Potential Effect of Stress Reduction Interventions During Pregnancy"- Collaborator (w/Barbara Prudhomme White [PI], Robert C. Drugan-UNH), Total Award: \$64,850
 22. USDA Animal Health Project (2005-2007), "Influence of Cytokeratin 8/18 Expression on Fas Ligand-Induced Apoptosis in Bovine Luteal Cells" - Principal Investigator, Total Award: \$13,700
 23. NRICGP/USDA Grant #2002-35203-12257 (2002-2004), "Role of Endothelial Cell-Immune Cell Interactions in PGF-Induced Luteolysis" - Principal Investigator (co-investigator-John S. Davis-UNebraska), Total Award: \$120,000
 24. USDA Hatch Project, Regional Project NE-1007(2002-2007), "Ovarian and Environmental Influences on Embryonic/Fetal Mortality in Ruminants" - Co-Investigator (w/Paul Tsang-UNH), Total Award: \$50,000 (\$10,000/yr)
 25. University of New Hampshire Graduate School Summer Faculty Fellowship (2002) Principal Investigator, Total Award: \$4,625
 26. Alpharma, Inc. (2001-2002), "Supplemental Chlortetracycline for Dairy Heifers: Effects on Growth and Reproduction" – Collaborator (w/Pete Erickson-UNH), Total Award: \$39,370
 27. Vice President for Research and Public Service Discretionary Fund Competition (University of New Hampshire)(1999-2000), "Swim Stress Controllability: Changes in Immune Responses"- Co-Investigator (w/Robert C. Drugan-UNH), Total Award: \$6,000
 28. NRICGP/USDA Grant #98-35208-6654 (1998), "Acquisition of a Cryotome for Research in Animal Sciences" - Principal Investigator, Total Award: \$23,090
 29. NIH-sponsored 5-day Interdisciplinary Workshop in Psychoneuroimmunology (1998), Co-Investigator (w/Robert C. Drugan-UNH), Total Award: \$2,000
 30. Vice President for Academic Affairs Undesignated Gifts Fund Competition (University of New Hampshire)(1998), "Acquisition of a Supertech System for the Department of Animal and Nutritional Sciences" – Principal Investigator, Total Award: \$5,465
 31. Pharmacia and Upjohn (1998), "Lutalyse", Principal Investigator, Total Award: \$300
 32. Rhone Merieux, Inc. (1997-1998), "Cystorelin", Principal Investigator, Total Award: \$4,000
 33. NRICGP/USDA Grant #97-35208-4705 (1997-199), "Monocyte Chemoattractant Protein-1 in the Bovine Corpus Luteum" - Principal Investigator, Total Award: \$50,000
 34. USDA Hatch Project, Regional Project NE-161 (1997-2002), "Association of Fertility with Temporal Changes in Ovarian Function of Domestic Ruminants" - Co-Investigator (w/Paul Tsang-UNH), Total Award: \$50,000
 35. Vice President for Research and Public Service Discretionary Fund Competition (University of New Hampshire) (1997-1998), "Expression of Intercellular Adhesion Molecule-1 (ICAM-1) in the Rat Corpus Luteum"- Principal Investigator, Total Award: \$7,000

Research Support (Applied but not funded)

1. USDA AFRI Sustainable Agriculture Systems (SAS) proposal (2018-2023)—“Expanding markets for bioenergy and bioproducts from dairy manure through socioeconomic and policy research”. PD with CoPIs Dr. Anju Krivov (GSR Solutions, LLC) and other collaborators. Total costs: \$9M
2. NSF proposal (2017-2018)—“RII Track-2 FEC: Infrastructure for Studying Phenotypes and Genotypes of Animal Parturition (PAGAP)” Co-PI with Elizabeth Bonney (UVM Ob/Gyn) and Neil Sarkar (PI) of Brown University. Total Costs: \$1.6M
3. NSF proposal (2017-2018)—“SPOKES:SMALL:NORTHEAST:Collaborative: Leveraging biodiversity dark data for health and agriculture. Co-PI with Neil Sarkar (PI) of Brown University. Total Costs: \$70,000
4. NIH/NCI Grant 1R15CA179289-01 (2013-2016), “Role of keratin 8/18 (K8/K18) filaments in cervical cancer” – Principal Investigator (collaboration w/John S. Davis-UNebraska), Total Costs: \$290,041
5. NIFA/USDA AFRI Grant (2013-2016), “Role of uterine immune cells in the establishment of pregnancy in ruminants” – Collaborator (co-investigators-Troy L. Ott, Joy L. Pate-Penn State), Total Costs: \$449,141
6. NIFA/USDA AFRI Grant (2011-2013),“Pro-survival mechanisms in bovine granulosa cells: Role of cytokeratin 8/18 intermediate filaments, cFLIP, and the ERK1/2 signaling pathway.” – Principal Investigator, Total Costs: \$168,554
7. NIH/NIMH R01 Grant (2010-2012), “Autism spectrum disorders and stress biomarkers ” – Co-Investigator (w/Barbara Prudhomme White [PD] and Robert C. Drugan-UNH), Total Costs: \$764,010
8. AUTISM SPEAKS Grant (2009-2012), “Autism spectrum disorders and biomarkers”- Co-Investigator (w/Barbara Prudhomme White [PD] and Robert C. Drugan-UNH), Total Costs: \$364,010
9. NIH/NICHD Grant (2006-2010), “Regulation of the function and fate of the corpus luteum by Egr-1” – Co-Investigator (w/John S. Davis-UNebraska), Total Costs: \$1,000,000
10. NRICGP/USDA Grant (2005-2008),“Role of cytokeratin 8/18 filaments in Fas ligand-induced apoptosis of ovarian steroidogenic cells” – Principal Investigator (co-investigators-John S. Davis-UNebraska, Bo R. Rueda- Harvard), \$284,403
11. NIH/NICHD Grant (2005-2009), “Regulation of the function and fate of the corpus luteum by Egr-1” – Co-Investigator (w/ John S. Davis-UNebraska), Total Costs: \$1,000,000
12. NIH/COBRE Proposal (2005-2010), “COBRE: Center for Developmental and Neural Endocrinomics”—Co-Investigator/Mentor (w/Stacia Sower [PD] –UNH and William North [PD]-Dartmouth), Total Costs: \$10,618,759
13. NIH/COBRE Proposal (2004-2009), “COBRE: Center for Developmental and Neural Endocrinomics”—Co-Investigator/Mentee (w/Stacia Sower [PD] –UNH and William North [PD]-Dartmouth), Total Costs: \$9,755,752

Consultations

1. Conducted trials as an independent laboratory for approval of test kits that detect trace antibiotic concentrations in milk (IDEXX laboratories, Inc., Westbrook, ME). Collaboration with Dr. Paul Tsang, 2006
 - a. Standards established by the AOAC Research Institute and FDA-Laboratory Quality Assurance Branch were met to permit independent laboratory testing of the IDEXX kits.
 - b. Our efforts resulted in the independent approval of the antibiotic kits and kit reader for

- manufacture and distribution by IDEXX Laboratories, Inc.
2. Conducted trials as an independent laboratory to verify use IDEXX antibiotic residue kits for detecting trace antibiotics in powdered milk products. Collaboration with Dr. Paul Tsang and Jeff Kneebone, 2008
 - a. Our efforts resulted in validation of the use of the kits for powdered milk products, which was published in the *Journal of Dairy Science* (Kneebone et al., 2010).
 3. Proposed and conducted preliminary experiments testing the efficacy of a feed supplement (OmniGen AF) to potentially improve ovulation rate and fertility in animals. Collaboration with Drs. Jim Chapman, Neil Forsberg, and Derek McLean (Prince Agri Products, Inc., A Division of Phibro Animal Health Corp., Teaneck, NJ).
 - a. Currently the work is in its infancy, and we have been challenged by our methods to first systemically manipulate neutrophil populations in rats and, secondly, to measure the degree of neutrophil activation following OmniGen AF supplementation. Nevertheless, we are encouraged to continue with the rat model for the time-being, in the hope that the information obtained can be translated to a larger study involving cattle and/or sheep.

Research Collaborations

Off Campus

John Davis, PhD
Dept. of Obstetrics and Gynecology
University of Nebraska-Omaha

Troy Ott, PhD
Dept. of Animal Science
Penn State University

Akio Miyamoto, PhD
Obihiro University of Agriculture and
Veterinary Medicine
Inada-cho, Obihiro, Hokkaido, JAPAN

Catherine Combelles, PhD
Dept. of Biology
Middlebury College

Bo Rueda, PhD
Vincent Ctr for Reproductive Biology
Mass Gen Hosp/Harvard Medical School

Helen Rodgers, PhD
School of Medical Science
Griffith University, Australia

Peer- Reviewed Publications

1. Lundberg AL, Jaskiewicz MN, Maucieri AM, **Townson DH**. 2022 Short Communication: Stimulatory Effects of TGF α in Granulosa Cells of Bovine Small Antral Follicles. *Journal of Animal Science*; *In Press*.
2. Bishop C, Selvaraj V, **Townson DH**, Pate JL, Wiltbank MC. 2022 History, insights, and future perspectives on studies into luteal function in cattle. *Journal of Animal Science*, *In Press*
3. Maucieri AM, **Townson DH** 2021 Evidence and manipulation of O-GlcNAcylation in granulosa cells of bovine antral follicles. *Biol Reprod* 104(4): 914-923
4. Jaskiewicz NM, **Townson DH** 2019 Hyper-O-GlcNAcylation promotes epithelial-mesenchymal transition in endometrial cancer cells. *Oncotarget* 10:2899-2910.

5. Jaskiewicz NM, Parisi S, Hermawan C, **Townson DH** 2017 O-GlcNAcylation enhances the tumorigenic properties of cervical cancer cells in vitro. *Clinical Obstetrics, Gynecology and Reproductive Medicine* 3(3):1-6.
6. Walusimbi SS, Wetzel LM, Townson DH, Pate JL 2017 Isolation of luteal endothelial cells and functional interactions with T lymphocytes. *Reproduction* 153(5):519-533.
7. Kamat MM, Vaudevan S, Maalouf SA, **Townson DH**, Pate JL, Ott TL 2016 Changes in myeloid lineage cells in the uterus and peripheral blood of dairy heifers during early pregnancy. *Biol Reprod.* 68: 1-12.
8. Trisdale SK, Schwab NM, Hou X, Davis JS, **Townson DH** 2016 Molecular manipulation of keratin 8/18 intermediate filaments: Modulators of FAS-mediated death signaling in human ovarian granulosa tumor cells. *Journal of Ovarian Research* 9:8
9. Ott TL, Kamat MM, Vaudevan S, **Townson DH**, Pate JL 2014 Maternal immune responses to conceptus signals during early pregnancy in ruminants. *Anim. Reprod.* 11: 237-245.
10. Pereira ABD, Brito AF, Townson LL, **Townson DH** 2013 Assessing the research and education needs of the organic dairy industry in the Northeast United States. *Journal of Dairy Science* 96:7340-7348. doi: 10.3168/jds.2013-6690
11. Crystal NJ, **Townson DH**, Cook SB, LaRoche DP 2013 Effect of cryotherapy on muscle recovery and inflammation following a bout of damaging exercise. *European Journal of Applied Physiology* 113:2577-2586. doi: 10.1007/s00421-013-2693-9
12. Duncan A, Forcina JJ, Birt AN, **Townson DH** 2012 Estrous cycle-dependent changes of Fas expression in the bovine corpus luteum: Influence of keratin 8/18 intermediate filaments and cytokines. *Reproductive Biology and Endocrinology* 10:90
13. **Townson DH**, Combelles CMH 2012 Ovarian Follicular Atresia. In: *Basic Gynecology – Some Related Issues*, In Tech Publishing, Atef Darwish (Ed), Rijeka, Croatia. pp. 43-76. ISBN 978-953-51-0166-6.
14. Sullivan BT, Cherry JA, Sakamoto H, Henkes LE, **Townson DH**, Rueda BR 2010 Cytokeratin-18 (CK18) expression inhibits cytokine-induced death of cervical cancer cells. *International Journal of Gynecologic Cancer* 20:1474-1481. doi: 10.1111/IGC.0b013e3181fc3a03
15. Kneebone J, Tsang PCW, **Townson DH** 2010 Short Communication: Rapid antibiotic screening tests detect antibiotic residues in powdered milk products. *Journal of Dairy Science* 93:3961-3964.
16. **Townson DH**, Putnam AN, Sullivan BT, Guo L, Irving-Rodgers, HF 2010 Expression and distribution of cytokeratin 8/18 intermediate filaments in bovine antral follicles and corpus luteum: An intrinsic mechanism of resistance to apoptosis? *Histology and Histopathology* 25: 889-900.
17. Cherry JC, Hou X, Rueda BR, Davis JS, **Townson DH** 2008 Microvascular endothelial cells of the bovine corpus luteum: A comparative examination of the estrous cycle and pregnancy. *Journal of Reproduction and Development* 54: 183-191.
18. **Townson DH** 2006 Immune cell-endothelial cell interactions in the bovine corpus luteum. *Integrative and Comparative Biology* 46:1055-1-059
19. Liptak AR, Sullivan BT, Henkes LE, Wijayagunawardane MPB, Miyamoto A, Davis JS, Rueda BR, **Townson DH** 2005 Cooperative expression of monocyte chemoattractant protein 1 within the bovine corpus luteum: Evidence of immune cell-endothelial cell interactions in a coculture system. *Biol Reprod* 72: 1169-1176.
20. **Townson DH**, Liptak AR 2003 Chemokines in the corpus luteum: Implications of leukocyte chemotaxis. *Reproductive Biology and Endocrinology* 1:94
21. Cavicchio VA, Pru JK, Davis BS, Davis JS, Rueda BR, **Townson DH** 2002 Secretion of monocyte chemoattractant protein-1 (MCP-1) by endothelial cells of the bovine corpus luteum: Regulation by

- cytokines but not prostaglandin F2 \square . *Endocrinology* 143:3582-3589.
22. **Townson DH**, Tsang PCW, Butler WR, Frajblat M, Griel Jr. LC, Johnson CJ, Milvae RA, Niksic GM, Pate JL 2002 Relationship of fertility to ovarian follicular waves before breeding in dairy cows. Cooperative Regional Research Project, NE-161. *Journal of Animal Science* 80:1053-1058.
 23. **Townson DH**, O'Connor CL, Pru JK 2002 Expression of monocyte chemoattractant protein-1 and the distribution of immune cell populations in the bovine corpus luteum throughout the estrous cycle. *Biol Reprod* 66:361-366.
 24. Olson KK, Anderson LE, Wiltbank MC, **Townson DH** 2001 Actions of prostaglandin F2 \square and prolactin on intercellular adhesion molecule-1 expression and monocyte/macrophage accumulation in the rat corpus luteum. *Biol Reprod* 64: 890-897.
 25. Olson KK, **Townson DH** 2000 Prolactin-induced expression of intercellular adhesion molecule-1 and the accumulation of monocytes/macrophages during regression of the rat corpus luteum. *Biol Reprod* 62:1571-1578.
 26. Port CB, Bowen JM, Keyes PL, **Townson DH** 2000 The effects of 3 β -hydroxysteroid dehydrogenase inhibitor on monocyte/macrophage infiltration into the rat corpus luteum and on apoptosis: relationship to the luteolytic action of prolactin. *J Reprod Fert* 119:93-99.
 27. Naftalin DM, Bove SE, Keyes PL, **Townson DH** 1997 The induction of macrophage accumulation in the rabbit corpus luteum by withdrawal of the luteotrophic hormone, 17 β -Estradiol. *Biol Reprod* 56:1175-1180.
 28. **Townson DH**, Wang XJ, Keyes PL, Kostyo JL, Stocco DL 1996 Expression of steroidogenic acute regulatory protein (StAR) in the corpus luteum of the rabbit: Dependence upon the luteotrophic hormone, 17 β -Estradiol. *Biol Reprod* 55:868-874.
 29. Ahmad N, Beam SW, Butler WR, Deaver DR, DUBY RT, Elder DR, Griel Jr. LC, Fortune JE, Jones LS, Milvae RA, Pate JL, Revah I, Schreiber Jr. DT, **Townson DH**, Tsang PCW, Inskip EK 1996 Relationship of fertility to pattern of follicular development and associated hormonal profiles in dairy cows and heifers. Cooperative Regional Research Project, NE-161. *Journal of Animal Science* 74:1943-1952.
 30. **Townson DH**, Pate JL 1996 Mechanisms of action of tumor necrosis factor alpha-stimulated prostaglandin production in cultured bovine luteal cells. *Prostaglandins* 52:361-373.
 31. Bowen J, Warren JS, Keyes PL, **Townson DH** 1996 Prolactin-induced regression of the rat corpus luteum: Expression of monocyte chemoattractant protein-1 (MCP-1) and invasion of macrophages. *Biol Reprod* 54:1120-1127.
 32. **Townson DH**, Warren JS, Naftalin DM, Flory CM, Keyes PL 1996 Expression of monocyte chemoattractant protein 1 (MCP-1) in corpus luteum of the rat. *Biol Reprod* 54:513-520.
 33. **Townson DH**, Keyes PL, Kostyo JL 1995 Estrogen uncouples steroidogenesis from 3',5'-cyclic adenosine monophosphate regulation in the rabbit corpus luteum. *Biol Reprod* 53:718-723.
 34. Karnitis VJ, **Townson DH**, Friedman CI, Danforth DR 1994 Recombinant human follicle stimulating hormone (rhFSH) stimulates multiple follicular growth but minimal estrogen production in gonadotropin releasing hormone (GnRH) antagonist treated monkeys: Examining the role of luteinizing hormone (LH) in follicular development and steroidogenesis. *J Clin Endocrinol Metab* 79:91-97.
 35. **Townson DH**, Pate JL 1994 Regulation of prostaglandin synthesis by interleukin-1 β in cultured bovine luteal cells. *Biol Reprod* 51:480-485.
 36. Pate JL, **Townson DH** 1994 Novel local regulators in luteal regression. *J Anim Sci* 72 (Suppl 3):31-42.
 37. **Townson DH**, Ginther OJ 1989 Size and shape changes in the preovulatory follicle in mares based

- on digital analysis of ultrasonic images. *Anim Reprod Sci* 21:63-71.
38. **Townson DH**, Ginther OJ 1989 Ultrasonic characterization of follicular evacuation during ovulation and fate of the discharged follicular fluid in mares. *Anim Reprod Sci* 20:131-141.
 39. **Townson DH**, Ginther OJ 1989 Ultrasonic echogenicity of developing corpora lutea in pony mares. *Anim Reprod Sci* 20:143-153.
 40. **Townson DH**, Pierson RA, Ginther OJ 1989 Characterization of plasma progesterone concentrations for two distinct luteal morphologies in mares. *Therio* 32:197-204.
 41. **Townson DH**, Ginther OJ 1988 The development of fluid-filled luteal glands in mares. *Anim Reprod Sci* 17:155-163.
 42. **Townson DH**, Ginther OJ 1987 Duration and pattern of follicular evacuation during ovulation in the mare. *Anim Reprod Sci* 15:131-138.

Abstracts

1. Maucieri AM, **Townson DH** 2021 Evaluating the impact of the hexosamine biosynthesis pathway and O-GlcNAcylation on glucose metabolism in bovine granulosa cells. Society for the Study of Reproduction Annual Meeting
2. Maucieri AM, **Townson DH** 2020 Evidence and effects of O-GlcNAcylation in granulosa cells of bovine antral follicles. Society for the Study of Reproduction Annual Meeting
3. Maucieri AM, **Townson DH** 2019 Characterization of O-GlcNAcylation in granulosa cells of bovine ovarian follicles. 12th Annual Symposium of the Réseau Québécois en reproduction.
4. Lundberg AL, Jaskiewicz, NM, Maucieri AM, **Townson DH** 2019 Stimulatory effects of transforming growth factor-alpha in bovine granulosa cells of small antral follicles. Society for the Study of Reproduction Annual Meeting
5. Jaskiewicz NM, **Townson DH** 2018 Disruption to O-GlcNAc cycling promotes epithelial-mesenchymal transition in endometrial cancer cells in vitro. Society for the Study of Reproduction Annual Meeting
6. Jaskiewicz NM, **Townson DH** 2018 Hyper-O-GlcNAcylation impairs the therapeutic effect of progesterone in endometrial cancer cells. Society for the Study of Reproduction Annual Meeting
7. Jaskiewicz NM, Parisi S, Hermawan C, **Townson DH** 2015 O-GlcNAcylation Affects the Tumorigenic Potential of Cervical Cancer Cells. American Society for Biochemistry and Molecular Biology Annual Meeting.
8. Fernandes N, Jaskiewicz NM, Chu F, **Townson DH** 2014 Determining the functional role of keratin filament in apoptosis via the PI3K/Akt signaling pathway using LTQ Orbitrap MS/MS analysis. *Journal for the American Society for Mass Spectrometry Annual Conference*, 25(1): 142.
9. **Townson DH**, Diaz FJ, Ocon-Grove OM, Johnson AL 2014 A practical in vitro approach for the investigation of bovine granulosa cells from small follicles. Society for the Study of Reproduction Annual Meeting.
10. Kamat MM, Vasudevan S, **Townson DH**, Pate JL, Ott TL 2014 Changes in myeloid lineage cells in the endometrium of dairy heifers during the estrous cycle and early pregnancy. *American Society for Reproductive Immunology Proceedings*.
11. Kinsman SE, Davis JS, **Townson DH** 2012 Investigation of the role of cytokeratin 8/18 intermediate filaments in granulosa cell fate. *Biol Reprod* 81(Suppl 1): 513.
12. **Townson DH**, Brito AF, Townson LL, Tsang PCW 2012 Assessing the research and extension needs of the organic dairy industry in the Northeast. *Northeast Organic Research Symposium Proceedings*.

13. Duncan AR, Forcina JJ, Tsang PCW, **Townson DH** 2009 Disruption of cytokeratin 18-containing intermediate filaments in bovine luteal cells: Effects of acrylamide on progesterone secretion, Fas expression, and FasL-induced apoptosis. *Biol Reprod* 81 (Suppl 1): 558.
14. Forcina JJ, Duncan AR, Hou X, Rueda BR, Davis JS, **Townson DH** 2009 Genetic over-expression of cytokeratin 18 in bovine luteal cells: Effects on intermediate filament formation and FasL-induced death. *Biol Reprod* 81 (Suppl 1): 569
15. **Townson DH**, Putnam AN, Sullivan BT, Irving-Rodgers HF 2006 Expression and potential role of cytokeratin 8/18 filaments in Fas ligand-induced apoptosis of bovine ovarian cells. *Biol Reprod* (Special Issue): 191.
16. Sullivan BT, Cherry JA, Henkes LE, **Townson DH**, and Rueda BR 2006 Tumor cell lines from cervical carcinomas exhibit marked susceptibility to apoptosis: Influence of Cytokeratin-18 (CK18) expression. *American Association for Cancer Research Abstracts*.
17. **Townson DH** 2006 Immune cell-endothelial cell interactions in the bovine corpus luteum. *Society for Integrative and Comparative Biology Abstracts*.
18. Sullivan BT, Cherry JA, Henkes LE, **Townson DH**, and Rueda BR 2005 Cytokeratin-18 expression in cervical cancer as both a marker of tumor progression and regulator of cell death. *New England Association of Gynecologic Oncologists Abstracts*.
19. Bruemmer JE, Henkes LE, Sullivan BT, Lynch MP, Davis JS, **Townson DH**, Rueda BR 2005 Defining the temporal relationship of Notch family members with the proliferation and differentiation (luteinization) of murine granulosa cells. *Biol Reprod* (Special Issue): 219.
20. Cherry JA, Hou X, Henkes LE, Rueda BR, Davis JS, **Townson DH** 2005 Microvascular endothelial cells of the bovine corpus luteum: Do differences exist between the estrous cycle and pregnancy? *Biol Reprod* (Special Issue): 217.
21. Silva JL, Christianson JP, **Townson DH**, Drugan RC 2004 Acute vs. chronic swim stress controllability effects on behavior and endocrine markers. *Society for Neuroscience Abstracts*.
22. Pavlik JA, Hou X, **Townson DH**, Rueda BR, Davis JS 2003 Inflammatory cytokines enhance expression of interferon regulatory factor-1 in bovine corpus luteum microvascular endothelial cells. *Biol Reprod* 68 (Suppl 1):130.
23. Christianson JP, **Townson DH**, Drugan RC 2003 Comparison of intermittent shock and swim stress on endocrine and immune measures following a forced swim test. *Society for Neuroscience Abstracts*
24. Liptak AR, Sullivan BT, Henkes L, Davis JS, Rueda BR, **Townson DH** 2003 Cooperative expression of monocyte chemoattractant protein-1 (MCP-1) within the bovine corpus luteum: Immune cell-endothelial cells interactions in a co-culture system. *Biol Reprod* 68 (Suppl 1):143.
25. **Townson DH**, Cavicchio VA, Pru JK, Hendry IR, Davis JS, Rueda BR 2001 Monocyte chemoattractant protein-1 (MCP-1) in the bovine corpus luteum: Regulation by cytokines in luteal cell cultures containing endothelial cells. *Biol Reprod* 64 (Suppl 1):287.
26. Cavicchio VA, Pru JK, Davis JS, Rueda BR, **Townson DH** 2001 Regulation of monocyte chemoattractant protein-1 (MCP-1) by pro-inflammatory cytokines in endothelial cells of the bovine corpus luteum. *Biol Reprod* 64 (Suppl 1):240.
27. Drugan RC, Repucci N, Ware C, **Townson DH** 2001 Cold water swim stress controllability: effects on behavioral despair, alcohol reactivity, serum corticosterone and cytokine production. *Society for Neuroscience Abstracts*, Vol. 2: Program number 736.2.
28. Drugan RC, Repucci N, Ware C, **Townson DH** 2000 Swim stress controllability: effects on shuttle-escape learning and cytokine production in rats. *Society for Neuroscience Abstracts*, Vol. 1: Program number 471.5.

29. O'Connor CL, **Townson D** 1999 Characterization of immune cell populations in the bovine corpus luteum. Biol Reprod 60 (Suppl 1):100.
30. Olson K, **Townson D** 1999 Failure of prostaglandin F₂ α to induce an immune response in corpora lutea of hypophysectomized rats. Biol Reprod 60 (Suppl 1):100.
31. Towns R, Stocco D, Menon J, **Townson D**, Bowen J, Keyes PL 1998 The stimulatory effect of dexamethasone on luteal steroidogenesis in hypophysectomized rats is associated with increased intraluteal lipids. Biol Reprod 58 (Suppl 1):159.
32. **Townson DH**, Towns R, Bowen JM, Keyes PL 1997 Luteotrophic effect of dexamethasone in corpora lutea of hypophysectomized rats. Biol Reprod 56 (Suppl 1):145.
33. Dobija M, **Townson DH**, Remick DG, Keyes PL 1997 Activation of macrophages in rabbit corpora lutea by lipopolysaccharide: The effect on progesterone synthesis. Biol Reprod 56 (Suppl 1):196.
34. Port CB, Bowen JM, Keyes PL, **Townson DH** 1997 Effects of a 3 β -hydroxysteroid dehydrogenase (3 β -HSD) inhibitor on macrophage infiltration into the rat corpus luteum: Relationship to the luteolytic action of prolactin. Biol Reprod 56 (Suppl 1):175.
35. **Townson DH**, Remick DG, Warren JS, Keyes PL 1996 The effect of dexamethasone (DEX) on prolactin-induced monocyte chemoattractant protein-1 (MCP-1) expression and macrophage infiltration in regressing corpora lutea of the rat. Biol Reprod 54(Suppl 1):145.
36. **Townson DH**, Naftalin DM, Flory CM, Warren JS, Keyes PL 1995 Localization of Monocyte Chemoattractant Protein-1 (MCP-1) in corpora lutea of the rat ovary. Biol Reprod 52 (Suppl 1):152.
37. Naftalin DM, **Townson DH**, Keyes PL 1995 Induction of macrophage invasion in rabbit corpora lutea by withdrawal of the luteotrophic hormone, 17 β -Estradiol. Biol Reprod 52(Suppl 1):152.
38. Keyes PL, **Townson DH**, Wang XJ, Kostyo JL, Stocco DL 1995 Steroidogenic acute regulatory protein (StAR) in the rabbit corpus luteum: Dependence upon the luteotrophic hormone, 17 β -Estradiol. Biol Reprod 52(Suppl 1):66
39. **Townson DH**, Kostyo JL, Keyes PL 1994 Estrogen uncouples steroidogenesis from regulation by cyclic AMP in the rabbit corpus luteum. Seventy-sixth Annual Meeting of the Endocrine Society, p.254.
40. **Townson DH**, Pate JL 1993 Interleukin-1-beta stimulates the eicosanogenic potential of bovine luteal cells *in vitro*. Biol Reprod 48(Suppl 1):60.
41. **Townson DH**, Pate JL 1992 The cellular actions of tumor necrosis factor (TNF) on prostaglandin F₂ α (PG) production by cultured bovine luteal cells. Biol Reprod 46(Suppl 1):125.
42. **Townson DH**, Pate JL 1992 Mechanisms of action of interleukin-1 β in cultured bovine luteal cells. Proc IX Ovarian Workshop, p.61.
43. **Townson DH**, Ginther OJ 1989 Follicular evacuation and ultrasonic morphology of developing corpus luteum in mares. J Anim Sci 67(Suppl 1):337.

SERVICE

External Activities

- USDA Panel Reviewer, USDA/NIFA-AFRI, Animal Reproduction (program code A1211), 2020
- NIH Panel Reviewer, National Institute of Child Health and Human Development Special Emphasis Panel, "Topics In Female Reproduction", ZHD DRG-H (41) 2013
- NIH Panel Reviewer, National Institute of Child Health and Human Development Special Emphasis Panel, "Topics In Female Reproduction", ZHD DRG-H (41) 2011
- Ad hoc Proposal Reviewer, USDA-NRICGP, (41.0) *Animal Reproductive Efficiency*, 1998 & 1999
- Reviewer, USDA/CSREES Site visit & Program Review Team, University of Maine-Orono, 2000
- Ad hoc Proposal Reviewer, American Heart Association (w/Dr. Gale Carey) 2001 & 2002

- Editorial Board, *Journal of Animal Science*, 2011-2014
- Journal Reviewer, *Biology of Reproduction*, *Journal of Reproduction and Fertility*, *Journal of Dairy Science*, *Journal of Endocrinology*, *Domestic Animal Endocrinology*, *Theriogenology*, *Human Reproduction*, *Molecular Human Reproduction*, *Journal of Reproductive Immunology*, *Molecular Cancer Research*
- Abstract Reviewer, Annual Meeting of the Society for the Study of Reproduction, 2010
- Abstract Reviewer, Annual Meeting of the Society for the Study of Reproduction, 2005
- Abstract Reviewer, Annual Meeting of the International Embryo Transfer Society, 1997
- Chair, Education Committee, Society for the Study of Reproduction, 2004-2005
- Committee member, Education Committee, Society for the Study of Reproduction, 2002-2005

Internal: University, College, Departmental

- UVM Institutional Animal Care and Use Committee (IACUC), 2018-2021
- UNH Faculty Senate, 2002-2004, 2011-2012
- UNH Faculty Senate, Academic Affairs Committee, 2011-2012
- Committee member, College of Life Sciences and Agriculture (COLSA), Promotion and Tenure Review Committee, 2011-2015
- Committee member, New Hampshire Agricultural Experiment Station Advisory Committee, 2011-2015
- Committee member, Department of Molecular, Cellular and Biomedical Sciences, Promotion and Tenure Committee, 2011-2015
- Committee member, College of Life Sciences and Agriculture (COLSA), Research Space Allocation Review Committee, 2012-2013
- Committee member, College of Life Sciences and Agriculture (COLSA), Sustainable Agriculture and Food Systems Academic Program Committee, 2010-2015
- Committee member, College of Life Sciences and Agriculture (COLSA), Academic Affairs Committee, 2009-2010
- Committee member, College of Life Sciences and Agriculture (COLSA), Faculty Search Committee for Sustainable Agriculture and Agroecosystems (7 tenure-track positions, cluster hire), 2009-2010
- Committee member, Department of Molecular, Cellular and Biomedical Sciences, Undergraduate Program Coordinator (UPC), 2009-2015
- Committee member, Department of Molecular, Cellular and Biomedical Sciences, Academic Affairs Committee, 2009-2015
- Committee member, College of Life Sciences and Agriculture (COLSA), Sustainable Agriculture and Food Systems Curriculum Development Committee, 2009-2010
- Committee member, Biochemistry and Molecular Biology, Graduate Program Committee, 2010-2015
- Committee member, College of Life Sciences and Agriculture (COLSA), Administrative Assistant Reorganization Committee, 2007-2008
- Tri-Chair, College of Life Sciences and Agriculture (COLSA) Strategic Planning and Structural Reorganization Committee, 2006-2007
- Committee member, College of Life Sciences and Agriculture (COLSA) Executive Committee, 2005-2008
- College of Life Sciences and Agriculture Advising Center (Advise Freshmen Biology and Undeclared Students), 2005, 2007

- Chair, College of Life Sciences and Agriculture (COLSA) Annual Undergraduate Research Conference Committee, *2004 & 2005*
- UNH Technology Policy & Planning Group, *2004-2005*
- Committee member, College of Life Sciences and Agriculture (COLSA) Annual Undergraduate Research Conference, *2001-2015*
- Proposal Reviewer, UNH Undergraduate Research Opportunities Program (UROP/SURF), *1999-2004*
- Co-chair, 27th New England Endocrinology Conference, *2000*
- Committee member, Department of Animal and Nutritional Sciences, Program Representatives Committee (PRC), *1999-2008*
- Committee member, Department of Animal and Nutritional Sciences, Graduate Program Committee (PRC), *2004-2006*
- UNH Premedical/Pre dental Advisory committee, *2002-2015*
- UNH College of Liberal Arts Advising Center (Advise Undeclared Freshmen and Sophomore Students), *2000-2004*
- UNH Web Advisory Group, *2003*
- UNH Project SMART (Science and Mathematics Achievement through Research Training), Lectured to high school juniors and seniors about advancements in reproductive biology and biotechnology, *2002*
- 1st Annual New England Dairy Days hosted at UNH, Invited speaker, *1999*
- UNH, College of Life Sciences and Agriculture (COLSA) Open House, Invited speaker, *2001*
- Guest speaker, UNH CREAM (Coop for Real Education in Agricultural Mgt) *2000-2008*
- New Hampshire 4-H Teen Conference held at UNH, Invited speaker, *2002, 2004, 2005*
- Dover High School, Animal Science Program, Invited speaker, *2012 & 2013*
- Northern New Engl and Southern New Engl Junior Sci and Humanities Symp, Invited Judge, *2013*