

CURRICULUM VITAE
Terry F. McElwain

Biographical Information:

Birth date: May 3, 1952
Birth Place: Hutchinson, Kansas

Education:

BS, 1978, College of Agriculture, Kansas State University, summa cum laude
DVM, 1980, College of Veterinary Medicine, Kansas State University, summa cum laude,
valedictorian
PhD, 1986, College of Veterinary Medicine, Washington State University

Clinical Specialty:

Diplomate, American College of Veterinary Pathologists, 1985

Professional Experience:

1980-1981	Clinical practice, Crestview Animal Clinic, New London, Pennsylvania.
1981-1983	Resident in Veterinary Pathology and PhD Candidate, Department of Veterinary Microbiology and Pathology, Washington Animal Disease Diagnostic Laboratory, Washington State University.
1983-1986	NIH Postdoctoral Fellowship, Department of Veterinary Microbiology and Pathology, Washington State University.
1987-1989	Assistant Professor of Immunology, Department of Infectious Diseases, Center for Tropical Animal Health, College of Veterinary Medicine, University of Florida.
1988-1989	Joint Assistant Professor of Pathology, Department of Comparative and Experimental Pathology, College of Veterinary Medicine, University of Florida.
1989-2007	Assistant Professor (1989-1993), Associate (1993-1996), and Professor (1996-Present) of Pathology, Department of Veterinary Microbiology and Pathology, Washington Animal Disease Diagnostic Laboratory, College of Veterinary Medicine, Washington State University.
2007-2012	Professor, School for Global Animal Health
1993-2015	Director (1993-2001), Executive Director (2001-Pres), Washington Animal Disease Diagnostic Laboratory.
1995-2015	Director, Animal Health Research Center, College of Veterinary Medicine, Washington State University.
June, 1998-1999	Interim Dean, College of Veterinary Medicine, Washington State University.
Jan - July, 2000	Professional Leave, Visiting Professor, Department of Microbiology and Immunology, School of Medicine, University of Melbourne, and Walter and Eliza Hall Institute of Medical Research, Melbourne, Victoria, Australia.
2011-2015	Associate Director, Paul G. Allen School for Global Animal Health, College of Veterinary Medicine, Washington State University

2012-2016	President, Global Animal Health-Tanzania (GAHT), WSU registered NGO in United States, Tanzania and Kenya
2012-2016	Regents Professor, Paul G. Allen School for Global Animal Health, College of Veterinary Medicine, Washington State University
2016-Pres	Regents Professor Emeritus, Paul G. Allen School for Global Animal Health, College of Veterinary Medicine, Washington State University

Professional Associations:

American Association for the Advancement of Science
 American Association of Veterinary Laboratory Diagnosticians
 American College of Veterinary Pathologists
 American Veterinary Epidemiology Society
 American Veterinary Medical Association
 United States Animal Health Association
 Washington State Veterinary Medical Association

Honors and Awards:

Phi Zeta, Veterinary Honor Society
 Gamma Sigma Delta, Honor Society of Agriculture
 Phi Kappa Phi, National Honor Society
 Valedictorian, College of Veterinary Medicine, Kansas State University, 1980
 Invited Lectureship, University of Buenos Aires, Faculty of Veterinary Sciences, 1994
 Invited Lectureship, University of Arizona, Department of Veterinary Science, 1995
 Pfizer Award for Research Excellence, College of Veterinary Medicine, Washington State University, 1997
 Distinguished Service Award, Washington State Veterinary Medical Association, 1999
 Board of Directors, World Association of Veterinary Laboratory Diagnosticians, 2002-Present
 Elected President, American Association of Veterinary Laboratory Diagnosticians, 2002-03
 E.P. Pope Award, American Association of Veterinary Laboratory Diagnosticians, 2003
 Official USDA Representative to the EC-US Task Force on Biotechnology Research, "Predictive, Forward Thinking Workshop on Emerging Infectious Diseases", Brussels, June 2004.
 Faculty Honoree, Washington State University "Salute to World-class Inventors", September, 2004
 Alumni Recognition Award, College of Veterinary Medicine, Kansas State University, 2006
 USDA APHIS Administrator's Award, 2006 (first time this award has been given to someone outside state or federal government)
 Washington State University Faculty Innovator Series, 2007
 Honorary Diplomate, American Veterinary Epidemiology Society, 2008
 Sahlin Faculty Excellence Award for Outreach and Engagement (Public Service), 2009
 National Academy of Sciences, Institute of Medicine, elected in 2009
 Washington State Academy of Sciences, elected 2009
 Washington State Veterinary Medical Association Faculty Member of the Year Award, 2010
 Fellow, American Association for the Advancement of Science, Medical Sciences, 2011
 Niemeyer Lecture, University of Missouri College of Veterinary Medicine, September 1, 2011
 2013 Alumni Fellow, Kansas State University College of Veterinary Medicine, February 2013
 WWAMI Science in Medicine Lecture, University of Washington, March 2013
 Regents Professor, Washington State University, July 1, 2013

Board of Directors, Foundation for Food and Agriculture Research, July 2014
Oscar W. Schalm Lectureship, University of California Davis School of Veterinary Medicine, 2015
K.F. Meyer/James H. Steele Gold-Headed Cane Award, American Veterinary Epidemiology Society, 2017.

International Research:

Consultant, Zimbabwe Agricultural Sector Assistance Program, Vaccine Development for Heartwater Disease, Causeway, Zimbabwe, 1986-1989.
Visiting Scientist, USDA-Office of International Cooperation and Development, Veterinary Research Laboratories, Causeway, Zimbabwe, 1987.
Collaborating Scientist, USAID Program in Science and Technology, Project on Anaplasmosis Vaccine Development, Causeway, Zimbabwe, 1987-1992.
Consultant, Lesotho Highlands Water Project, Lesotho Highlands Development Authority, Animal Health Component, 1992.
Director of Babesiosis Vaccine Development and Collaborating Scientist, USAID Program on Improved Animal Vaccines Through Biotechnology - Anaplasmosis and Babesiosis, Veterinary Research Laboratories, Kenya Agricultural Research Institute, and International Laboratory for Research on Animal Diseases, Nairobi, Kenya, 1989-1994.
Program Director, Joint US-Israel Program on Development of a Vaccine Against *Babesia bovis*, Department of Parasitology, Kimron Veterinary Institute, Bet Dagan, Israel, 1989-Present.
Visiting Scientist, Department of Parasitology, Kimron Veterinary Institute, Israel, 1990.
Collaborating Scientist, USAID Program in Science and Technology, Project on Molecular Based Diagnostics for Infectious Diseases of Cattle, 1992-1998.
Visiting Professor of Immunology, University of Buenos Aires, Faculty of Veterinary Sciences, 1994.
Visiting Scientist, Department of Microbiology and Immunology, School of Medicine, University of Melbourne, and Walter and Eliza Hall Institute of Medical Research, Melbourne, Victoria, Australia, Jan – July, 2000.
Consultation on Surveillance and Diagnostics, Uganda Ministry of Agriculture, Animal Industry, and Fisheries, November, 2008
Head of East Africa Operations, Paul G. Allen School for Global Animal Health

Administrative/Leadership Training

Completed 31-hour Administrative Development for Senior Managers course as part of Leadership Development Program at Washington State University, 1999-2000.

Family Educational Rights and Privacy Act (FERPA) Training, July 13, 2004.

Continuing Education

Diagnostic Pathology Seminar on Neoplasia of Domestic Animals, Charles Louis Davis, D.V.M. Foundation, Hershey, PA, November 1, 2001.

Diagnostic Pathology Symposium on Ocular Diseases of Animals, Charles Louis Davis, D.V.M. Foundation, Salt Lake City, December 1, 2001.

ISO 17025 and Laboratory Accreditation Course, Las Vegas, NV, June 2-5, 2002.

AAVLD Essential Requirements and Site Visit Procedures, Las Vegas, NV, February 23-24, 2005.

State of Washington Department of Agriculture Veterinary Reserve Corp Training, April and September, 2005

AAVLD Auditor Training, Las Vegas, NV, February 20-21, 2006

Zoonotic and Vector-Borne Disease: Current and Emerging Issues, University of Washington, Northwest Center for Occupational Health and Safety, Seattle, WA, March 14, 2006.

AAVLD Essential Requirements, Quality System, and Internal Auditing, Las Vegas, NV, February 20, 2009.

AAVLD and NAHLN Laboratory Quality System Training, Las Vegas, NV, February 23, 2011.

AAVLD and NAHLN Quality Assurance Training, Las Vegas, NV, February 12&14, 2013.

State, National and International Service/Appointments:

Board of Directors, Foundation for Food and Agriculture Research, United States
Department of Agriculture, 2014-Pres

Board of Directors, World Association of Veterinary Laboratory Diagnosticians, 2001 -
Present

National Academy of Sciences

Committee Chair, Revisiting Brucellosis in the Greater Yellowstone Area, National
Research Council, 2015-Present.

Committee Chair, Analysis of the Requirements and Alternatives for Foreign Animal
and Zoonotic Disease Research and Diagnostic Laboratory Capabilities, National
Research Council, 2012.

Reviewer, Animal Models for Assessing Countermeasures to Bioterrorism Agents
Report, National Research Council, 2011.

Life Sciences Review Panel, National Research Council Research Associateship
Program, 2010-Present

Committee on Achieving Sustainable Global Capacity for Surveillance and Response
to Emerging Diseases of Zoonotic Origin, National Academy of Sciences Institute of
Medicine (2008-2009)

Invited presenter, Animal Disease Diagnostics, National Academy of Sciences
Committee to Study Technologies to Benefit Farmers in Sub-Saharan Africa and
South Asia, October 2007

Committee on “Assessing the Nation’s Framework for Addressing Animal Diseases”, National Academy of Sciences, Board on Agriculture and Natural Resources, 2004-2005

National Animal Health Laboratory Network

Coordinating Council, National Animal Health Laboratory Network, 2010-2012

Chair, Evaluation Team, Phase I review of the National Animal Health Laboratory Network, 2007

Co-Chair, Methods Technical Working Group, National Animal Health Laboratory Network, 2006-2013

Steering Committee (Founding Member), National Animal Health Laboratory Network, 2002 - 2005

One Health Steering Committee, State of Washington, Department of Health, 2014-present

Invited Speaker, “Addressing Global Health Challenges at the Human-Animal Interface”, Oscar W. Schalm Lectureship, School of Veterinary Medicine, University of California, Davis, October 5, 2015

Keynote Speaker, “Linking Human and Livestock Health: Evidence from Agro-pastoral Households in Kenya”, Agriculture and Applied Economics Association and Western Agricultural Economics Association Joint Meeting, San Francisco, CA, July 27, 2015.

Keynote Speaker, “One World-One Health: The Role of Animal Health in Global Health Security”, Institute of Infectious Animal Diseases, Department of Homeland Security Center of Excellence, College Station, Texas, November 13, 2014.

Invited Speaker, “One World-One Health: The Role of Veterinary Medicine in Global Health”, DVM Research Careers Seminar Series, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, October 8, 2014.

Invited Speaker, “The Many Faces of Disease Surveillance in Global Health”, 2013 Kansas State University College of Veterinary Medicine Alumni Fellow, February 2013.

Invited Speaker, “Addressing Global Health at the Animal Human Interface”, WWAMI Science in Medicine Lecture, University of Washington, March, 2013

Invited Speaker, “The Role of the Animal Health Laboratory in Global Health: Challenges and Opportunities”, Opening Panel Session on One World-One Health: Laboratories and their Roles in Protecting the World’s Health, Association of Public Health Laboratories Annual Meeting, Seattle, WA, May 2012.

Steering Committee and Biodetection/Biodiagnostics Working Group Co-Chair, United States Department of the Interior and Department of Homeland Security Workshop “Preparing for and Responding to High Consequence and Foreign Animal Diseases”, National Conservation Training Center, Shepherdstown, West Virginia, August 26-29, 2013.

Invited Speaker, “Emerging Diseases at the Wildlife/Livestock Interface”, Wildlife and Emerging Infectious Diseases, International Conference on Emerging Infectious Diseases, Atlanta, GA, March 2012

Chair, Review Panel, Department of Homeland Security (DHS) Science and Technology (S&T) agricultural defense branch portfolio (Chemical and Biological Defense Division), February, 2012.

Panel Member, United States Department of the Interior, USGS, National Wildlife Health Center, Expert Panel - Can We Predict the Unpredictable? Future Emerging Wildlife Disease Threats to North America, January 25-27, 2011, Madison, WI.

Institute for Infectious Animal Diseases (formerly National Center for Foreign Animal and Zoonotic Disease Defense), Department of Homeland Security, External Advisory Committee, 2010 – 2016.

Expert Advisor, Consultants meeting to develop a roadmap for the implementation of modern OIE principles and methods of diagnostic test validation, Vienna, Austria, September 6-9, 2010

Government Accountability Office Expert Panel on Review of Statutory and Regulatory Framework Governing Live Animal Imports, Invited Panel Member, 2010

Program Review, Animal Systems Portfolio, National Institute of Food and Agriculture (formerly CSREES), United States Department of Agriculture, 2009

Invited Panelist, “Tracking animal-borne diseases”, Association of Health Care Journalists, Health Journalism Conference, Seattle, WA, April 18th, 2009

Board of Directors, Washington Vaccine Alliance, 2007-2010

Invited assessor, Washington State Public Health Laboratory, Performance Assessment, January 2007

Search Committee, Plum Island Animal Disease Center Director, 2007

Expert Advisor, Consultants Meeting on Standards, Referencing and Validation, International Atomic Energy Agency, Vienna, Austria, November 21-24, 2006.

Invited assessor, Washington State Public Health Laboratory System performance assessment, Shoreline, WA, January 12, 2006

Program Review, Department of Population Medicine and Diagnostic Sciences, Cornell University, May, 2005.

External Advisor, Centers for Disease Control and Prevention, Emerging Infections Plan, 2003

Avian Influenza Task Force, State of Washington, 2005-2010.

Advisory Committee, Bioterrorism Preparedness and Response Program, Washington State Public Health Laboratories, 2002-2014.

Working Group, Laboratory Capacity, Bioterrorism Preparedness and Response Program, Washington State Public Health Laboratories, 2002 – 2004.

American Association of Veterinary Laboratory Diagnosticians

Vice President (2000-2001), President-Elect (2001-2002), President (2002-2003).

Chair, Accreditation Committee, 2006-2009 (member 1996-present)

CDC Liaison, 2003-2008

Co-Chair, Membership Committee, 2000-2001.

Executive Committee, 2000-2004.

Program Committee, 2000-2002 (Chair, 2002 Annual Meeting, St. Louis, MO).

Government Relations Committee, 2000-Present.

Awards Committee, 2004-2006.

Nominating Committee, 1997.

Northwest Representative, Executive Board, 1995-1997.

Aquaculture Committee, 1993-2000.

International Issues Committee, United States Animal Health Association, 2001–2004

Government Policy Committee, American College of Veterinary Pathologists, 2004 - 2006

Veterinary Medicine Liaison Representative, Western Association of Agricultural Experiment Station Directors, 1998-2002.

Group Leader, Sustaining Food and Fiber Animal Production Systems, Critical Issues in Veterinary Medical Research III Conference, American Association of Veterinary Medical Colleges, Washington, DC, January, 1997.

Ad hoc Committee for International Disease Diagnostic and Reporting Criteria, American Association of Veterinary Laboratory Diagnosticians, AAVLD representative for beef, dairy, and small ruminant industries, 1996-1997.

Appeals Chair, Anatomic Pathology Certifying Examination Committee, American College of Veterinary Pathologists, 1997, 1998.

Chair, Anatomic and Clinical Pathology Certifying Examination Committee, American College of Veterinary Pathologists, 1996.

General Pathology Section Head, Anatomic Pathology Certifying Examination Committee, American College of Veterinary Pathologists, 1995-1996.

Small Animal Section Head, Anatomic Pathology Certifying Examination Committee, American College of Veterinary Pathologists, 1993-1994.

Proctor, Anatomic Pathology Certifying Examination Committee, American College of Veterinary Pathologists, 1991.

Program Committee, International Meeting of Veterinary Hemoparasite Research Workers, St. Louis, MO., 1989.

University Teaching:

A. Clinical Instruction - Professional Undergraduate

VM581 - Advanced Services – Diagnostic Pathology.

B. Clinical Instruction – Graduate/Post-DVM Assistants

VPA542 - Advanced Systemic Pathology.

C. Formal Course Teaching – Professional Undergraduate

VM572 – Agricultural Animal Medicine II – FAD Surveillance and Response

VM545 – General Pathology

VM546 – Systemic Pathology

VM534 – Immunology

D. Formal Course Teaching – Graduate

VPa592 - Histopathology Seminar.

VMic536 - Seminar in Infectious Disease.

VME6151 - Seminar in Molecular Pathogenesis.

GLANHLTH 503 – Animal Human Disease Interface, Co-Course Coordinator

GLANHLTH 504 – Multidisciplinary Case Challenge, Co-Course Coordinator

Graduate Student Committees/Post-doctoral Fellows:

Graduate Faculty, University of Florida, 1987.

Doctoral Research Faculty, University of Florida, 1988.

Graduate Faculty, Program in Veterinary Science, Washington State University, 1989

A. Graduate Students - M.S.

Suzan M. Oberle BS	1988	Committee
Tesopgoni Tuekam	1990	Committee
Pam Kaylor	1990	Committee

Ntando Tebele	1991	Committee
Yudha Fahrimal	1991	Committee
Tendai Ushe	1994	Major advisor
Susana Torioni de Echaide	1997	Major advisor
Ignacio Echaide	1997	Committee
Devere Munodzana	1998	Committee
Appudurai Arulkanthan	1998	Committee
Dara Nunn	Withdrew	Committee
Jose Rodriguez	2005	Committee
Karla Cereceres	2009	External Advisor (Advisor, Juan Mosqueda, CENID-PAVET, INIFAP, Morelos, Mexico)
Dan Righter	2010	Major Advisor
Lucas Ferreri	2010	Major Advisor
Jacob Laughery	2011	Committee
Salma Al-Adwani	2011	Committee
Moses Ole-Neselle Mamasita	2013	Committee

B. Graduate Students - Ph.D.

Stephen A. Hines	1989	Co-Major Advisor
Inge Eriks	1992	Committee
Glenn Cantor	1993	Committee
Sankale Shampole	1993	Committee
Gordon Hullinger	1993	Committee
Ted A. Birkebak	1994	Major Advisor
Laurie Tatalick	1994	Committee
Sue Kanaly	1995	Committee
Barbara von Buest	1997	Committee
Isidro Hotzel	1997	Committee
Esther S. Trueblood	1998	Major Advisor
Maureen T. Long	1998	Committee
Sue Dowling	1998	Committee
Dorothy M. French	1999	Committee
Jeff LeJeune	2000	Committee
Reginald A. Valdez	2001	Committee
Juan Mosqueda	2002	Committee
Marianela Lopez	2002	Committee
Yan Zhang	2002	Committee
Christiane Löhr	2002	Committee
Kevin Lahmers	2005	Committee
Tanya LeRoith	2005	Major Advisor
Art Khachatryan	2005	Committee
Jeanne Howell	2007	Committee
Susan Noh	2007	Committee
Shawn Berens	2007	Major Advisor
Henriette Macmillan	2007	Committee
Chantal Rothschild	Withdrew	Committee
Xiaohui Zhou	2008	Committee
Sudarvili Shanthalingam	2010	Committee
Seth Harris	2010	Committee

Renuka Subramaniam	2011	Committee
Kerry Sondgeroth	2014	Co-Major Advisor
Karol Gliniewicz	2014	Committee
Carla Schubiger	2014	Committee
Petronella Hove	2015	Committee
Sylvia Omulo	Current	Committee

C. Post-doctoral Fellows/Visiting Scientists

Vishnu Mishra	1988-1989
Carlos Suarez	1989-1992
Rosangela Machado	1991-1992
Odillon Vidotto	1991-1992
Jorge Florin-Christensen	1998-1999
Monica Jacobsen	1998-2001
Monica Jacobsen	2005 (Fulbright fellow)

Extramural Support:

Pending support as principal investigator/co-principal investigator/primary sponsor/co-investigator

Current support

GH16-006: Conducting Communicable Disease Research in Kenya, Centers for Disease Control and Prevention, 1U01GH002143-01, Department of Health and Human Services, 09/30/16-09/29/17, Total Costs \$1,400,000 for year 1 of 5 year approved project (Direct Costs year 1 \$1,151,333), Co-PI (K. Njenga PI).

Conducting Communicable Disease Research in Kenya, Centers for Disease Control and Prevention, 3U01GH002143-01W1, Department of Health and Human Services, 09/30/16-09/29/17, Total Costs \$2,027,858 for year 1 of 5 year project period (Direct costs year 1 \$667,671), Co-PI (K. Njenga PI).

Preventing Zoonotic Diseases (GA Strategy #3) in Kenya, Centers for Disease Control and Prevention 1U2GGH001717-01, Department of Health and Human Services, 09/30/15-09/29/20, \$6,248,000 Total Costs approved (5,444,333 Direct Costs approved), 09/30/15-09/29/16 Total Costs year 1 \$500,000, Total Costs year 2 \$400,000, Co-PI (K. Njenga PI).

Ecological and socio-economic factors impacting maintenance and dissemination of antibiotic resistance in the Greater Serengeti Ecosystem, National Science Foundation Ecology of Infectious Diseases Program #DEB1216040, 7/1/2012 – 06/30/2016, \$2,499,897 (\$1,779,453 Direct), Co-Investigator.

Patents and Licensing Agreements:

"Novel proteins and cloned genes for diagnosis and prophylaxis of babesiosis", Co-inventor with SA Hines, TC McGuire, GH Palmer, DP Jasmer, DW Reduker, WL Goff, LE Perryman, WC Davis. South Africa Patent #90/2546, April 24, 1991.

"Cloning of the *Babesia bovis* 60 kD antigen", Co-inventor with SA Hines, TC McGuire, GH Palmer, DP Jasmer, DW Reduker, WL Goff, LE Perryman, WC Davis. U.S. Patent #5,171,685, December 15, 1992.

"Cloned Babesia DNA", Co-inventor with TC McGuire, DP Jasmer, WL Goff, D Stiller. Serial # 08/342,480, US Patent #5,518,916, May 21, 1996.

"Immunization against babesiosis using purified surface antigens of *Babesia bigemina* and similar immunogens", Serial #07/803,636, Co-inventor with TC McGuire, WC Davis, LE Perryman. U.S. Patent #5,422,428, June 6, 1995.

"Serological identification of cattle, sheep and goats infected with *Anaplasma* species", Serial No. 08/730,995, Docket No. 0272.96, US Patent 5,798,219, Issued August 25, 1998, and US #6,242,571 B1, issued June 5, 2001; Co-inventor with DP Knowles, TC McGuire, GH Palmer, WC Davis, Licensed to Veterinary Medical Research and Development, Inc., Executed November 21, 1994.

"The use of primary goat antibodies for the detection of infectious agents in fixed tissues", Washington State University Research Foundation, WSURF Case #229, Licensed to Veterinary Medical Research and Development, Inc., executed August, 1992.

"Equine infectious anemia antibody test kit", Invention disclosure, Washington State University Research Foundation, Co-inventor with TC McGuire, DS Adams, AL Brassfield, S Leib, and TM Harkins, WSURF #250, Licensed to Veterinary Medical Research and Development, Inc. Pullman, WA, Executed August 4, 1993.

"Five antibodies to surface proteins of *Babesia bigemina* merozoites; A panel of 18 monoclonal antibodies that detect *Anaplasma marginale* antigens", Invention disclosure, Washington State University Research Foundation, WSURF #260 and #263, Co-inventor with WC Davis, TC McGuire, GH Palmer, and LE Perryman, Licensed to Veterinary Medical Research and Development, Inc., Executed April 13, 1995.

"*Neospora caninum* cDNA library", Invention disclosure, Washington State University Research Foundation, WSURF #387, Co-inventor with TV Baszler, CE Suarez, GH Palmer, Licensed to Pfizer Central Research, Executed 16 January, 1997.

"Genetically modified Babesia parasites expressing protective tick antigens and uses thereof", USDA, Co-inventors CE Suarez, DP Knowles, TF McElwain, Issued July 18, 2017, Patent No. 9,707,283.

Publications in refereed journals:

(Italicized authors are those for which TF McElwain had an advisory/mentorship role in the published research).

1. Traub JL, Grant BD, Rantanen NW, **McElwain T**, Wagner PC, Bayly WM: Surgical removal of choleliths in a horse. J Am Vet Med Assoc 182:714-716, 1983
2. Evermann JF, LeaMaster BR, **McElwain TF**, Potter KA, McKeirnan AJ, Green JS: Natural infection of captive coyote pups with a herpesvirus antigenically related to canine herpesvirus. J Am Vet Med Assoc 185:1288-1290, 1984.

3. Hargis AM, **McElwain TF**: Vascular neoplasia in the skin of horses. J Am Vet Med Assoc 184:1121-1124, 1984.
4. **McElwain TF**, Perryman LE, Davis WC, McGuire TC: Antibodies define multiple proteins with epitopes exposed on the surface of live *Babesia bigemina* merozoites. J Immunol 138:2298-2304, 1987.
5. Parish SM, Maag-Miller L, Besser TE, Weidner JP, **McElwain T**, Knowles DP, Leathers CW: Myelitis associated with protozoal infection in newborn calves. J Am Vet Med Assoc 191:1599-1600, 1987.
6. **McElwain TF**, Palmer GH, Goff WL, McGuire TC: Identification of *Babesia bigemina* and *Babesia bovis* merozoite proteins with isolate- and species-common epitopes recognized by antibodies in bovine immune sera. Infect Immun 56:1658-1660, 1988.
7. Goff WL, Davis WC, Palmer GH, **McElwain TF**, Johnson WC, Bailey JF, McGuire TC: Identification of *Babesia bovis* merozoite surface antigens using immune bovine sera and monoclonal antibodies. Infect Immun 56:2363-2368, 1988.
8. *Hines SA*, **McElwain TF**, Buening GM, Palmer GH: Molecular characterization of *Babesia bovis* merozoite surface proteins bearing epitopes immunodominant in protected cattle. Mol Biochem Parasitol 37:1-10, 1989.
9. Allred DR, McGuire TC, Palmer GH, Leib SR, Harkins TM, **McElwain TF**, Barbet AF: Molecular basis for surface antigen size polymorphisms and conservation of a neutralization sensitive epitope in *Anaplasma marginale*. PNAS 87:3220-3224, 1990.
10. McGuire TC, Davis WC, Brassfield AL, **McElwain TF**, Palmer GH: Identification of *Anaplasma marginale* long-term carrier cattle by detection of serum antibody to isolated MSP-3. J Clin Microbiol 29:788-793, 1991.
11. *Suarez CE*, Palmer GH, Jasmer DP, Hines SA, Perryman LE, **McElwain TF**: Characterization of the gene encoding a 60 kDa *Babesia bovis* merozoite protein with conserved and surface exposed epitopes. Mol Biochem Parasitol 46:45-52, 1991.
12. *Kaylor PS*, Crawford TB, **McElwain TF**, Palmer GH: Passive transfer of antibody to *Ehrlichia risticii* protects mice from ehrlichiosis. Infect Immun 59:2058-2062, 1991.
13. **McElwain TF**, Perryman LE, Musoke AJ, McGuire TC: Molecular characterization and immunogenicity of neutralization sensitive *Babesia bigemina* merozoite surface proteins. Mol Biochem Parasitol 47:213-222, 1991.
14. *Mishra VS*, Stephens EB, Dame JB, Perryman LE, McGuire TC, **McElwain TF**: Immunogenicity and sequence analysis of recombinant p58 - a neutralization sensitive, antigenically conserved *Babesia bigemina* merozoite surface protein. Mol Biochem Parasitol 47:207-212, 1991.
15. Palmer GH, **McElwain TF**, Perryman LE, Davis WC, Reduker DR, Jasmer DJ, Shkap V, Pipano E, Goff WL, McGuire TC: Strain variation of *Babesia bovis* merozoite surface exposed epitopes. Infect Immun 59:3340-3342, 1991.

16. Suarez CE, **McElwain TF**, Palmer GH: Sequence conservation among merozoite apical complex proteins of *Babesia bovis*, *Babesia bigemina*, and other apicomplexa. Mol Biochem Parasitol 49:329-332, 1991.
17. Mishra VS, **McElwain TF**, Dame JB, Stephens EB: Isolation, nucleic acid sequence and differential expression of the p58 gene family of *Babesia bigemina*. Mol Biochem Parasitol 53:149-158, 1992.
18. Hines SA, Palmer GH, Jasmer DP, McGuire TC, **McElwain TF**: Neutralization-sensitive merozoite surface antigens of *Babesia bovis* encoded by members of a polymorphic gene family. Mol Biochem Parasitol 55:85-94, 1992.
19. Suarez CE, Palmer GH, Hines SA, **McElwain TF**: Immunogenic B-cell epitopes of *Babesia bovis* rhoptry-associated protein 1 are distinct from sequences conserved between species. Infect Immun 61:3511-3517, 1993.
20. Brown WC, Palmer GH, **McElwain TF**, Hines SA, Dobbela DAE: *Babesia bovis*: Characterization of the T helper cell response against the 42 kilodalton merozoite surface antigen (MSA-1) in cattle. Exp Parasitol 77:97-110, 1993.
21. Machado RM, **McElwain TF**, Suarez CE, Hines SA, Palmer GH: *Babesia bigemina*: isolation and characterization of merozoite rhoptries. Exp Parasitol 77:315-325, 1993.
22. Cantor GH, **McElwain TF**, Birkebak TA, Palmer GH: Ribozyme cleaves *rex/tax* RNA and inhibits bovine leukemia virus expression. Proceedings of the National Academy of Sciences, USA 90:10932-10936, 1993.
23. Dilbeck PM, **McElwain TF**: Immunohistochemical detection of *Coxiella burnetti* in formalin-fixed placenta. J Vet Diagn Invest 6:125-127, 1994.
24. Suarez CE, Thompson SM, **McElwain TF**, Hines SA, Palmer GH: Conservation of oligopeptide motifs in rhoptry proteins from different genera of erythroparasitic protozoa. Exp Parasitol 78:246-251, 1994.
25. McGuire TC, Stephens EB, Palmer GH, **McElwain TF**, Lichtensteiger CA, Leib SR, Barbet AF: Recombinant vaccinia virus expression of *Anaplasma marginale* surface protein MSP-1a: effect of promoters, leader sequences and GPI anchor sequence on enhancement of antibody response. Vaccine 12:465-471, 1994.
26. Shompole S, **McElwain TF**, Jasmer DP, Hines SA, Katende J, Musoke AJ, Rurangirwa FR, McGuire TC: Identification of *Babesia bigemina* infected erythrocyte surface antigens containing epitopes conserved among strains. Parasite Immunol 16:119-127, 1994.
27. Birkebak TA, Palmer GH, Davis WC, **McElwain TF**: Quantitative characterization of the CD5 bearing lymphocyte population in the peripheral blood of normal sheep. Vet Immunol Immunopath 41:181-186, 1994.
28. Shkap V, Pipano E, **McElwain TF**, Herzberg U, Krigel Y, Fish L, Palmer GH: Cross-protective immunity induced by *Babesia bovis* clones with antigenically unrelated

- variable merozoite surface antigens (VMSA). *Vet Immunol Immunopath* 41:367-374, 1994.
29. Stone DM, **McElwain TF**, Davis, WC: Enhanced B-lymphocyte expression of IL-2Ra associated with T lymphocytosis in BLV-infected persistently lymphocytotic cows. *Leukemia* 8:1057-1061, 1994.
 30. Suarez CE, **McElwain TF**, Echaide I, Toriani de Echaide S, Palmer GH: Interstrain conservation of babesial RAP-1 surface-exposed B-cell epitopes despite *rap-1* genomic polymorphism. *Infect Immun* 62:3576-3579, 1994.
 31. *Vidotto MC*, McGuire TC, **McElwain TF**, Palmer GH, Knowles DP: Intermolecular relationships of major surface proteins of *Anaplasma marginale*. *Infect Immun* 62:2940-2946, 1994.
 32. Palmer GH, Eid G, Barbet AF, McGuire TC, **McElwain TF**: The immunoprotective *Anaplasma marginale* major surface protein 2 (MSP-2) is encoded by a polymorphic gene family. *Infect Immun* 62:3808-3816, 1994
 33. Palmer GH, Munodzana D, Tebele N, *Ushe T*, **McElwain TF**: Heterologous strain challenge of cattle immunized with *Anaplasma marginale* outer membranes. *Vet Immunol Immunopath* 42:265-273, 1994.
 34. Eriks IS, Stiller D, Goff WL, *Panton M*, Parish SM, **McElwain TF**, Palmer GH: Molecular and biological characterization of a newly isolated *Anaplasma marginale* strain. *J Vet Diagnost Invest* 6:435-441, 1994.
 35. *Ushe TC*, Palmer GH, *Sotomayor L*, Figueroa JV, Buening GM, Perryman LE, **McElwain TF**: Antibody response to a *Babesia bigemina* RAP-1 surface exposed and neutralization sensitive epitope in immune cattle. *Infect Immun* 62:5698-5701, 1994.
 36. *Birkebak TA*, Palmer GH, Davis WC, Knowles DP, **McElwain TF**: Association of GP51 expression and persistent CD5+ B-lymphocyte expansion with lymphomagenesis in bovine leukemia virus infected sheep. *Leukemia* 8:1890-1899, 1994.
 37. Hines SA, Palmer GH, Jasmer DP, Goff WL, **McElwain TF**: Immunization of cattle with recombinant *Babesia bovis* merozoite surface antigen-1 (MSA-1). *Infect Immun* 63:349-352, 1995.
 38. Ndung'u LW, *Aguirre C*, Rurangirwa FR, **McElwain TF**, McGuire TC, Knowles DP, Palmer GH: Detection of *Anaplasma ovis* infection in goats using the MSP5 competitive inhibition ELISA. *J Clin Micro* 33:675-679, 1995.
 39. Hines SA, Palmer GH, Brown WC, **McElwain TF**, Suarez CE, Vidotto O, Rice-Ficht AC: Genetic and antigenic characterization of *Babesia bovis* merozoite spherical body protein Bb-1. *Mol Biochem Parasitol* 69:149-159, 1995.
 40. Knowles DP, Perryman LE, **McElwain TF**, Kappmeyer LS, Stiller D, Palmer GH, Visser ES, Hennager SG, Davis WC, McGuire TC: Conserved recombinant antigens of *Anaplasma marginale* and *Babesia equi* for serologic diagnosis. *Vet Parasitol* 57:93-96, 1995.

41. Shompole S, Perryman LE, **McElwain TF**, Jasmer DP, Musoke AJ, Rurangirwa FR, McGuire TC: Monoclonal antibody to a conserved epitope on proteins encoded by *Babesia bigemina* and present on the surface of intact infected erythrocytes. *Infect Immun* 63:3507-3513, 1995.
42. *Vidotto O*, **McElwain TF**, Machado RZ, Perryman LE, Suarez CE, Palmer GH: *Babesia bigemina*: Identification of B cell epitopes associated with parasitized erythrocytes. *Exp Parasitol* 81:491-500, 1995.
43. *Madruga CR*, Suarez CE, **McElwain TF**, Palmer GH: Conservation of merozoite membrane and apical complex B-cell epitopes among *Babesia bigemina* and *Babesia bovis* strains isolated in Brazil. *Vet Parasitol* 61:21-30, 1996.
44. Eid G, French DM, Lundgren AM, Barbet AF, **McElwain TF**, Palmer GH: Expression of major surface protein 2 antigenic variants during acute *Anaplasma marginale* rickettsemia. *Infect Immun* 64:836-841, 1996.
45. Rodriguez SD, Palmer GH, **McElwain TF**, McGuire TC, Ruef BJ, Chitko-McKown CG, Brown WC: CD4+ helper lymphocyte responses against *Babesia bigemina* rhoptry associated protein-1 (RAP-1). *Infect Immun* 64:2079-2087, 1996.
46. Baszler TV, Knowles DP, Dubey JP, Gay JM, Mathison BA, **McElwain TF**: Serological diagnosis of bovine neosporosis by *Neospora caninum* monoclonal antibody-based competitive inhibition ELISA. *J Clin Micro* 34:1423-1428, 1996.
47. Brown WC, **McElwain TF**, Ruef BJ, Suarez CE, Shkap V, Chitko-McKown CG, Rice-Ficht AC, Palmer GH: *Babesia bovis* rhoptry-associated protein 1 (RAP-1) is immunodominant for T helper cells of immune cattle and contains T cell epitopes conserved among geographically distant *B. bovis* strains. *Infect Immun* 64:3341-3350, 1996.
48. Hotzel I, Brown WC, **McElwain TF**, Rodriguez SD, Palmer GH: Dimorphic sequences of *rap-1* genes encode B and CD4+ T helper lymphocyte epitopes in the *Babesia bigemina* rhoptry associated protein-1. *Mol Biochem Parasitol* 81:89-99, 1996.
49. Knowles D, *Torioni de Echaidc S*, Palmer G, McGuire T, Stiller D, **McElwain TF**: Antibody against an *A. marginale* MSP5 epitope common to tick and erythrocyte stages identifies persistently infected cattle. *J Clin Micro* 34:2225-2230, 1996.
50. Cantor GH, Stone DM, **McElwain TF**, Palmer GH: Comparison of the antiviral efficacy of ribozymes and antisense RNA directed against bovine leukemia virus *rex/tax*. *Antisense and Nucleic Acid Drug Development* 6:301-304, 1996.
51. Alleman AR, Palmer GH, McGuire TC, **McElwain TF**, Perryman LE, Barbet AF: *Anaplasma marginale* major surface protein 3 (MSP3) is encoded by a polymorphic, multigene family. *Infect Immun* 65:156-163, 1997.
52. Reuf BJ, Tuo W, Rodriguez SD, Roussel AJ, Chitko-McKown CG, Palmer GH, **McElwain TF**, Canals A, Zarlenga DS, Gasbarre LC, Brown WC: Immunization with

Babesia bigemina rhoptry-associated protein 1 induces a type 1 cytokine response. Journal of Interferon and Cytokine Research 17:45-54, 1997.

53. Hotzel I, Suarez CE, **McElwain TF**, Palmer GH: Genetic variation in the dimorphic regions of *rap-1* genes and *rap-1* loci of *Babesia bigemina*. Mol Biochem Parasitol 90:479-489, 1998.
54. *Torioni de Echaide S*, Knowles DP, McGuire TC, Palmer GH, Suarez CE, **McElwain TF**: Detection of cattle naturally infected with *Anaplasma marginale* in a region of endemicity by nested PCR and a competitive enzyme-linked immunosorbent assay using recombinant major surface protein 5. J Clin Micro 36:777-782, 1998.
55. Pessier AP, Hamilton VT, Foreyt WJ, Parish S, **McElwain TF**: Probable elaeophorosis in a moose (*Alces alces*) from eastern Washington state. J Vet Diag Invest 10:82-84, 1998.
56. Brown WC, **McElwain TF**, Hotzel I, Suarez CE, Palmer GH: Helper T-cell epitopes encoded by the *Babesia bigemina rap-1* gene family in the constant and variant domains are conserved among parasite strains. Infect Immun 66:1561-1569, 1998.
57. *Trueblood ES*, Brown WC, Palmer GH, Davis WC, Stone DM, **McElwain TF**: B-lymphocyte proliferation during BLV-induced persistent lymphocytosis is dependent on T-lymphocyte derived IL-2. J Virol 72:3169-3177, 1998.
58. French DM, **McElwain TF**, McGuire TC, Palmer GH: Expression of *Anaplasma marginale* major surface protein 2 variants during persistent cyclic rickettsemia. Infect Immun 66:1200-1207, 1998.
59. **McElwain TF**, Hines SA, Palmer GH: Persistence of antibodies against epitopes encoded by a single gene copy of the *Babesia bovis* variable merozoite surface antigen 1 (MSA-1). J Parasitol 84:449-452, 1998.
60. Suarez CE, Palmer GH, Hotzel I, **McElwain TF**: Structure, sequence, and transcriptional analysis of the *Babesia bovis rap-1* multigene locus. Mol Biochem Parasitol 93:215-224, 1998.
61. Munodzana D, **McElwain TF**, Knowles DP, Palmer GH: Conformational dependence of *Anaplasma marginale* major surface protein 5 surface-exposed B-cell epitopes. Infect Immun 66:2619-2624, 1998.
62. *Echaide IE*, Hines SA, **McElwain TF**, Suarez CE, McGuire TC, Palmer GH: In vivo binding of immunoglobulin M to the surfaces of *Babesia bigemina*-infected erythrocytes. Infect Immun 66:2922-2927, 1998.
63. Brown WC, **McElwain TF**, Hotzel I, Ruef BJ, Rice-Ficht AC, Stich RW, Suarez CE, Estes DM, Palmer GH: Immunodominant T-cell antigens and epitopes of *Babesia bovis* and *Babesia bigemina*. Annals of Trop Med Parasitol 92:473-482, 1998.
64. Von Beust BR, Brown WC, Estes DM, Zarlenga DS, **McElwain TF**, Palmer GH: Development and in vitro characterization of recombinant vaccinia viruses expressing BLV gp51 in combination with bovine IL4 or IL12. Vaccine 17:384-395, 1998.

65. Suarez CE, Palmer GH, Hotzel I, Hines SA, **McElwain TF**: Sequence and functional analysis of the intergenic regions separating babesial rhoptry-associated protein 1 (*rap-1*) genes. *Exp Parasitol* 90:189-194, 1998.
66. Palmer GH, Abbott JR, French DM, **McElwain TF**: Persistence of *Anaplasma ovis* infection and conservation of the *msh-2* and *msh-3* multigene families within the genus *Anaplasma*. *Infect Immun* 66:6035-6039, 1998.
67. Brown WC, Shkap V, Zhu D, McGuire TC, Tuo W, **McElwain TF**, Palmer GH: CD4+ T lymphocyte and IgG2 responses in calves immunized with *Anaplasma marginale* outer membranes and protected against homologous challenge. *Infect Immun* 66:5406-5413, 1998.
68. Brown WC, **McElwain TF**, Palmer GH, Chantler SE, Estes DM: Bovine CD4+ T-lymphocyte clones specific for rhoptry-associated protein 1 of *Babesia bigemina* stimulate enhanced immunoglobulin G1 (IgG1) and IgG2 synthesis. *Infect Immun* 67:155-164, 1999.
69. Molloy JB, Bowles PM, Knowles DP, **McElwain TF**, Bock RE, Kingston TG, Blight GW, Dalgliesh RJ: Comparison of a competitive inhibition ELISA and the card agglutination test for detection of antibodies to *Anaplasma marginale* and *Anaplasma centrale* in cattle. *Aust Vet J* 77: 245-249, 1999.
70. Rurangirwa FR, Dilbeck PM, Crawford TB, McGuire TC, **McElwain TF**: Analysis of 16S rRNA gene of WSU 86-1044 microorganism from an aborted bovine fetus reveals it is a member of the order *Chlamydiales*: proposal of *Waddliaceae* fam. Nov., *Waddlia chondrophila*, gen. nov., sp. nov. *Int J Systematic Biol* 49:577-581, 1999.
71. Machado RZ, **McElwain TF**, Pancraccio HP, Freschi CR, Palmer GH: *Babesia bigemina*: Immunization with purified rhoptries induces protection against acute parasitemia. *Exp Parasitol* 93:105-108, 1999.
72. Baszler TV, Long MT, **McElwain TF**, Mathison BA: Interferon- γ and interleukin-12 mediate protection to acute *Neospora caninum* infection in BALB/c mice. *Int J Parasitol* 29:1635-1646, 1999.
73. Florin-Christensen J, Suarez CE, Florin-Christensen M, Hines SA, **McElwain TF**, Palmer GH: Phosphatidylcholine formation is the predominant lipid biosynthetic event in the hemoparasite *Babesia bovis*. *Mol Biochem Parasitol* 106:147-156, 2000.
74. Tebele N, Skilton RA, Katende J, Wells CS, Nene V, **McElwain T**, Morzaria SP, Musoke AJ: Cloning, characterization and expression of a 200 kilodalton diagnostic antigen of *Babesia bigemina*. *J Clin Microbiol* 38:2240-7, 2000.
75. Baszler TV, **McElwain TF**, Mathison BA: Immunization of BALB/c mice with killed *Neospora caninum* tachyzoite antigen induces a type 2 immune response and exacerbates encephalitis and neurological disease. *Clin Diag Lab Immunol* 7:893-898, 2000.
76. Suarez CE, Florin-Christensen M, Hines SA, Palmer GH, Brown WC, **McElwain TF**:

- Characterization of allelic variation in the *Babesia bovis* merozoite surface antigen-1 (*msa-1*) locus and identification of a cross-reactive, inhibition-sensitive MSA-1 epitope. *Infect Immun* 68:6865-6870, 2000.
77. Bradway DS, *Torioni de Echaide S*, Knowles DP, Hennager SG, **McElwain TF**: Sensitivity and specificity of the complement fixation test for detection of cattle persistently infected with *Anaplasma marginale*. *J Vet Diag Invest* 13:79-81, 2001.
 78. Palmer GH, Rurangirwa FR, **McElwain TF**: Strain composition of the ehrlichia *Anaplasma marginale* within persistently infected cattle, a mammalian reservoir for tick transmission. *J Clin Micro* 39:631-635, 2001.
 79. Snekvik KR, Beyer JC, Bertoni G, Von Beust BR, Baszler TV, Palmer GH, **McElwain TF**, Cheevers WP: Characterization of caprine interleukin 4. *Vet Immunol Immunopathol*, 78:219-229, 2001.
 80. Fisher TG, **McElwain TF**, Palmer GH: Molecular basis for variable expression of the merozoite surface antigen gp45 among American isolates of *Babesia bigemina*. *Infect Immun* 69:3782-3790, 2001.
 81. Florin-Christensen J, Suarez CE, Florin-Christensen M, Wainszelbaum M, Brown WC, **McElwain TF**, Palmer GH: A unique phospholipid organization in bovine erythrocyte membranes. *Proceedings of the National Academy of Sciences, USA*, 98:7736-7741, 2001.
 82. Löhr CV, Rurangirwa FR, **McElwain TF**, Stiller D, Palmer GH: Specific expression of *Anaplasma marginale* major surface protein 2 salivary gland variants occurs in the midgut and is an early event during tick transmission. *Infect Immun* 70:114-120, 2002.
 83. Mosqueda J, **McElwain TF**, Stiller D, Palmer GH: *Babesia bovis* Merozoite surface antigen 1 and rhoptry-associated protein 1 are expressed in sporozoites, and specific antibodies inhibit sporozoite attachment to erythrocytes. *Infect Immun* 70: 1599-1603, 2002.
 84. O'Donnell RA, Freitas-Junior LH, Preiser PR, Williamson DH, Duraisingh M, **McElwain TF**, Scherf A, Cowman AF, Crabb BS: A genetic screen for improved plasmid segregation reveals a role for Rep20 in the interaction of *Plasmodium falciparum* chromosomes. *EMBO J* 9:1-9. 2002.
 85. Norimine J, Suarez CE, **McElwain TF**, Florin-Christensen M, Brown WC: Immunodominant epitopes in *Babesia bovis* rhoptry-associated protein 1 (RAP-1) that elicit memory CD4+ T lymphocyte responses in *B. bovis*-immune individuals are located in the amino terminal domain. *Infect Immun* 70:2039-2048, 2002.
 86. Florin-Christensen M, Suarez CE, Hines SA, Palmer GH, Brown WC, **McElwain TF**: The *Babesia bovis* merozoite surface antigen 2 locus contains four tandemly arranged and expressed genes encoding immunologically distinct proteins. *Infect Immun* 70:3566-3575, 2002.
 87. Mosqueda J, **McElwain TF**, Palmer GH: *Babesia bovis* MSA-2 proteins are expressed on the merozoite and sporozoite surface and specific antibodies inhibit

attachment and invasion of erythrocytes. *Infect Immun* 70:6448-6455, 2002.

88. Goff WL, **McElwain TF**, Suarez CE, Johnson WC, Brown WC, Norimine J, Knowles DP: A competitive enzyme linked immunosorbent assay based on a rhoptry-associated protein-1 epitope specifically detects *Babesia bovis* infected cattle. *Clin Lab Diag Immunol* 10:38-43, 2003.
89. Suarez CE, Palmer GH, Florin-Christensen M, Hines SA, Hotzel I, **McElwain TF**: Organization, transcription, and expression of rhoptry associated protein genes in the *Babesia bigemina rap-1* locus. *Mol Biochem Parasitol* 127:101-112, 2003.
90. Norimine J, Mosqueda J, Suarez C, Palmer GH, **McElwain TF**, Mbassa G, Brown WC: Stimulation of T-helper cell gamma interferon and immunoglobulin G responses specific for *Babesia bovis* rhoptry-associated protein 1 (RAP-1) or a RAP-1 protein lacking the carboxy-terminal repeat region is insufficient to provide protective immunity against virulent *B. bovis* challenge. *Infect Immun* 71:5021-5032, 2003.
91. Suarez CE, Palmer GH, LeRoith T, Florin-Christensen M, Crabb B, **McElwain TF**: Intergenic regions in the rhoptry associated protein-1 (*rap-1*) locus promote exogenous gene expression in *Babesia bovis*. *Int J Parasitol* 34:1177-1184, 2004.
92. LeRoith T, Brayton KA, Molloy JB, Bock RE, Hines SA, Lew AE, **McElwain TF**: *Babesia bovis* Merozoite Surface Antigen-1 (MSA-1) sequence variation and immunologic cross reactivity among vaccine strains and vaccine breakthrough isolates. *Infect Immun* 73:5388-5394, 2005.
93. Berens SJ, Brayton KA, Molloy JB, Bock RE, Lew AE, **McElwain TF**: Merozoite surface antigen 2 proteins of *Babesia bovis* vaccine breakthrough isolates contain a unique hypervariable region composed of degenerate repeats. *Infect Immun* 73:7180-7189, 2005.
94. LeRoith T, Berens SJ, Brayton KA, Hines SA, Brown WC, Norimine J, **McElwain TF**: The *Babesia bovis* merozoite surface antigen 1 hypervariable region induces surface-reactive antibodies that block merozoite invasion. *Infect Immun* 74:3663-3667, 2006.
95. Suarez CE, Norimine J, Lacy P, **McElwain TF**: Characterization and gene expression of *Babesia bovis* *Elongation Factor-1 α* . *Int J Parasitol* 36:965-973. 2006.
96. Scoles GA, **McElwain TF**, Rurangirwa FR, Knowles DP, Lysyk TJ: A Canadian bison isolate of *Anaplasma marginale* (Rickettsiales; Anaplasmataceae) is not transmissible by *Dermacentor andersoni* (Acari: Ixodidae), whereas ticks from two Canadian *D. andersoni* populations are competent vectors of a U.S. strain. *J Med Entom* 43:971-975, 2006.
97. Goff WL, Molloy JB, Johnson WC, Suarez CE, Pino I, Rhalem A, Sahibi H, Ceci L, Carelli G, Adams DS, McGuire TC, Knowles DP, **McElwain TF**: Validation of a competitive enzyme-linked immunosorbent assay for detection of antibodies against *Babesia bovis*. *Clin Vaccine Immunol* 13:1212-1216, 2006.
98. Lau AOT, Tibbals DL, **McElwain TF**: *Babesia bovis*: the development of an expression oligonucleotide microarray. *Exp Parasit* 117:93-98, 2007.

99. Brayton KA, Lau AOT, Herndon DR, Hannick L, Kappmeyer LS, Berens SJ, Bidwell SL, Brown WC, Crabtree J, Fadrosch D, Feldblum T, Forberger HA, Haas BJ, Howell JM, Khouri H, Koo H, Mann DJ, Norimine J, Paulsen IT, Radune D, Ren Q, Smith RK, Suarez CE, White O, Wortman JR, Knowles DP, **McElwain TF***, Nene VM*: Genome sequence of *Babesia bovis* and comparative analysis of apicomplexan hemoprotozoa. (*Contributed equally as senior investigators and corresponding authors). PLoS Path, 3:1401-1413, 2007.
100. Berens SJ, Brayton KA, **McElwain TF**: Co-infection with antigenically and genetically distinct, virulent strains of *Babesia bovis* is maintained through all phases of the parasite life cycle. Infect Immun 12:5769-5776, 2007.
101. de Koning-Ward TF, Olivieri A, Bertuccini L, Hood A, Silvestrini F, Charvalias K, Berzosa Diaz P, Camarda G, **McElwain TF**, Papenfuss T, Healer J, Baldassarri L, Crabb BS, Alano P, Ranford-Cartwright LC: The role of osmiophilic bodies and Pfg377 in female gametocyte emergence and mosquito infectivity in the human malaria parasite *Plasmodium falciparum*. Mol Micro 67:278-290, 2008, PMID:18086189.
102. Suarez CE, **McElwain TF**: Transient transfection of purified *Babesia bovis* merozoites. Exp Parasit 118:498-504, 2008 (2007 Nov 5 Epub ahead of print).
103. Gilson PR, O'Donnell RA, Nebl T, Sanders PR, Wickham ME, **McElwain TF**, de Koning-Ward TF, Crabb BS: MSP1(19) miniproteins can serve as targets for invasion inhibiting antibodies in *Plasmodium falciparum* provided they contain the correct domains for cell surface trafficking. Mol Micro 68:124-138, 2008, PMID:18333885.
104. Goff WL, Johnson WC, Molloy JB, Jorgensen WK, Waldron SJ, Figueroa JV, Matthee O, Adams DS, McGuire TC, Pino I, Mosqueda J, Palmer GH, Suarez CE, Knowles DP, **McElwain TF**: Validation of a competitive enzyme-linked immunosorbent assay for detection of *Babesia bigemina* antibodies in cattle. Clin Vaccine Immunol (2008 July 16 Epub ahead of print), 15:1316-1321, 2008, PMID:18632921.
105. Fish L, Leibovich B, Krigel Y, **McElwain T**, Shkap V: Vaccination of cattle against *B. bovis* infection with live attenuated parasites and non-viable immunogens. Vaccine 26, Supplement 6:G29-G33, 2008.
106. Suarez CE, **McElwain TF**: Stable expression of a gfp-bsd fusion protein in *Babesia bovis* merozoites. Int J Parasitol 39:289-297, 2009 (2008 September Epub ahead of print), PMID: 18831975.
107. Lau AOT, **McElwain TF**, Brayton KA, Knowles DP, Roalson EH: *Babesia bovis*; a comprehensive phylogenetic analysis of plastid-encoded genes supports green algal origin of apicoplasts. Exp Parasitol 123 (3):236-243, 2009 (Epub 2009 July 29), PMID:19646439.
108. Suarez CE, **McElwain TF**: Transfection systems for *Babesia bovis*: a review of methods for the transient and stable expression of exogenous genes. Invited Review, Vet Parasit, 167:205-215, 2010 (Epub 2009 September 19), PMID:19819628.

109. **McElwain TF**: Laboratory preparedness: building a cornerstone for global surveillance. *Future Micro*, 5;531-533, 2010 (Invited Editorial), PMID:20353293.
110. Lau AOT, Cereceres K, Palmer GH, Fretwell DB, Pedroni MJ, Mosqueda J, **McElwain TF**: Genotypic diversity of merozoite surface antigen 1 of *Babesia bovis* within an endemic population. *Mol Biochem Parasitol* 172:107-112, 2010. (Epub 2010, Apr 2), PMID:20371255.
111. Perez de Leon AA, Strickman DA, Knowles DP, et al: One health approach to identify research needs in bovine and human babesioses: Workshop Report, *Parasit and Vectors*, 3:36, 2010, PMID:20377902.
112. Freeman JM, Kappmeyer LS, Ueti MW, **McElwain TF**, Baszler TV, Echaide I, Nene VM, Knowles DP: A *Babesia bovis* gene syntenic to *Theileria parva* p67 is expressed in blood and tick stage parasites. *Vet Parasitol* 173:211-218, 2010 ((Epub 2010, June 25), PMID:20638797.
113. Righter DJ, Rurangirwa FR, Call DR, **McElwain TF**: Development of a bead-based multiplex PCR assay for the simultaneous detection of multiple *Mycoplasma* species. *Vet Microbiol* 153(3-4):246-56, 2011 (Epub 2011 Jun 15), PMID:21726966.
114. Lau AO, Kalyanaraman A, Echaide I, Palmer GH, Bock R, Pedroni MJ, Rameshkumar M, Ferreira MB, Fletcher TI, **McElwain TF**: Attenuation of virulence in an Apicomplexan hemoparasite results in reduced genome diversity at the population level. *BMC Genomics* 12:410-423, 2011, PMID:21838895.
115. Roy S, **McElwain TF**, Wan Y: A network control theory approach to modeling and optimal control of zoonoses: Case study of brucellosis transmission in Sub-Saharan Africa. *Plos Neglected Trop Dis* 5(10):e1259, 2011 (Epub 2011 Oct 11), PMID:22022621.
116. Ferreri LM, Brayton KM, Sondgeroth KS, Lau AOT, Suarez CE, **McElwain TF**: Expression and strain variation of the novel “*Small Open Reading Frame*” (*smorf*) multigene family in *Babesia bovis*. *Int J Parasit* 42:131-138. 2012 (Epub 2011 doi:10.1016/j.ijpara.2011.10.004), PMID:22138017.
117. Suarez CE, Laughery JM, Schneider DA, Sondgeroth KS, **McElwain TF**: Acute and persistent infection by a transfected Mo7 strain of *Babesia bovis*, *Mol Biochem Parasit* 185:52-57, 2012, PMID:22669120.
118. Sondgeroth KS, **McElwain TF**, Allen AJ, Chen AV, Lau AOT: Loss of neurovirulence is associated with reduction of cerebral capillary sequestration during acute *Babesia bovis* infection. *Parasites & Vectors* 6:181, 2013, PMID:23777713.
119. Sondgeroth KS, Davis MA, Schlee SL, Allen AJ, Evermann JF, **McElwain TF**, Baszler TV: Seroprevalence of *Coxiella burnetii* in Washington State domestic goat herds. *Vector-Borne and Zoonotic Diseases* 13:779-83. Epub 2013 Oct 9. PMID:24107207.
120. Chung C, Wilson C, Bandaranayaka-Mudiyanselage CB, Kang E, Adams DS, Kappmeyer LS, Knowles DP, **McElwain TF**, Evermann JF, Ueti MW, Scoles GA, Lee SS, McGuire TC: Improved diagnostic performance of a commercial Anaplasma

antibody competitive enzyme-linked immunosorbent assay using recombinant major surface protein 5-glutathione S-transferase fusion protein as antigen. *J Vet Diagn Invest* 26 (1):61-71, Dec 6 2013 [Epub ahead of print], 2014. PMID:24318928

121. Laughery JM, Knowles DP, Schneider DA, RG Bastos, **McElwain TF**, Suarez CA: Targeted surface expression of an exogenous antigen in stably transfected *Babesia bovis*. *Plos One* 9, Issue 5, May 2014, DOI: 10.1371/journal.pone 0097890, PMID:PMC4026526
122. Sondgeroth KS, **McElwain TF**, Ueti MW, Scoles GA, Reif KE, Lau AO: Tick passage results in enhanced attenuation of *Babesia bovis*. *Infec Immun* 82(10):4426-4434, Oct 2014, Epub Aug 11, 2014, PMID:25114111.
123. Thumbi SM, Njenga MK, Marsh TL, Noh S, Otiang E, Munyua P, Ochieng L, Ogola E, Yoder J, Audi A, Montgomery JM, Bigogo G, Breiman RF, Palmer GH, **McElwain TF**: Linking human health and livestock health: a "One-Health" platform for integrated analysis of human health, livestock health, and economic welfare in livestock dependent communities. *PlosOne* 10(3):e0120761, Epub Mar 23, 2015, PMID: 25798951.
124. Wudiri GA, Osiri JK, Lankester F, Subbiah M, Yoder JK, Pepper S, **McElwain TF**, Kaufman GE: A multidisciplinary approach to mitigating antimicrobial resistance. *Journal of the International Academy for Case Studies* 22(1):124-129, Jan 1, 2016. (Instructors' Notes, 22(2):122-124, 2016).
125. Mosites E, Thumbi SM, Otiang E, **McElwain TF**, Njenga MK, Rabinowitz PM, Rowhani-Rahbara A, Neuhouser ML, May S, Palmer GH, Walson JL. Relationships between household livestock ownership, livestock disease, and young child growth. *J Nutr* 146(5):1118-24, May 2016. Epub 2016 Apr 13, PMID: 27075911.
126. Fowler H, Davis MA, Perkins A, Trufan S, Joy C, Buswell M, **McElwain TF**, Moore D, Worhle R, Rabinowitz PM. A survey of veterinary antimicrobial prescribing practices, Washington State 2015. *Vet Record* doi: 10.1136/vr.103916. [Epub ahead of print], PMID: 27807211.
127. Marsh TL, Yoder J, Deboch T, **McElwain TF**, Palmer GH. Livestock vaccinations translate into increased human capital and school attendance by girls. Accepted, *Science Advances*, 2016, Dec 14 2(12):e1601410, doi: 10.1126/sciadv.1601410, PMID 27990491.
128. **McElwain TF**, Thumbi SM. Animal pathogens and their impact on animal health, economy, food security, food safety and public health. *OIE Scientific and Technical Review*. In press, 2017.

Book Chapters and Invited Reviews:

1. **McElwain TF**, Palmer GH: Development of a subunit diagnostic test for bovine babesiosis. In, *Achievements in Tropical and Subtropical Agricultural Research*, Caribbean Basin Administrative Group, 1991, pp. 63-65.
2. Palmer GH, **McElwain TF**: Molecular basis for vaccine development against anaplasmosis and babesiosis. *Vet Parasitol* 57:233-253, 1995.
3. Musoke AJ, Palmer GH, **McElwain TF**, Nene V, McKeever D: Prospects for subunit vaccines against tick-borne diseases. *Brit Vet J* 152:621-639, 1996.
4. **McElwain TF**: Bovine Anaplasmosis. Chapter 2.3.7. *Manual of Standards for Diagnostic Tests and Vaccines*, Fourth Edition. World Organization for Animal Health (Office International Des Epizooties), pp. 399-411, 2000.
5. **McElwain TF**: Bovine Anaplasmosis. Chapter 2.3.7. *Manual of Standards for Diagnostic Tests and Vaccines for Terrestrial Animals*, Fifth Edition. World Organization for Animal Health (Office International Des Epizooties), pp. 494-506, 2004.
6. National Research Council of the National Academies. *Animal Health at the Crossroads: Preventing, Detecting, and Diagnosing Animal Diseases*, (**McElwain TF**, Committee Member and Co-author), National Academies Press, Washington, DC, 2005.
7. Brown WC, Norimine J, Goff WL, Suarez CE, **McElwain TF**: Prospects for recombinant vaccines against *Babesia bovis* and related parasites. *Parasite Immunol* 28:315-327, 2006.
8. **McElwain TF**: Bovine Anaplasmosis. Chapter 2.3.7. *Manual of Standards for Diagnostic Tests and Vaccines for Terrestrial Animals*, Sixth Edition. World Organization for Animal Health (Office International Des Epizooties), 2008.
9. Rurangirwa FR, **McElwain TF**: The Gray Book, United States Animal Health Association, 7th Edition, Torres A and Brown C, Eds., Chapters on “Contagious Agalactia of Sheep and Goats” and “Contagious Caprine Pleuropneumonia”, 2008.
10. Institute of Medicine and National Research Council of the National Academies. *Sustaining global surveillance and response to emerging zoonotic diseases*. (Keusch GR, et al, Ed., **McElwain TF**, Committee Member and Co-Author), The National Academies Press, Washington, DC, 2009.
11. National Research Council (NRC). *Meeting Critical Laboratory Needs for Animal Agriculture: Examination of Three Options*, (**McElwain, TF**, Committee Chair), The National Academies Press, Washington, DC, 2012.
12. National Academies of Science, Engineering and Medicine. *Revisiting Brucellosis in the Greater Yellowstone Area*, (**McElwain, TF**, Committee Chair), The National Academies Press, Washington, DC, 2017, doi: 10.17226/24750.

Full Length Proceedings, Theses, Abstracts/Presentations:

List available upon request