

Anthony W. Confer, Ph.D.
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Education:

1972: D.V.M., Veterinary Medicine, Oklahoma State University
1974: M.S., Veterinary Pathology, The Ohio State University
1978: Ph.D., Microbiology, University of Missouri – Columbia

Board Certification

Diplomate: American College of Veterinary Pathologists

Academic Appointments:

2003 – present: Regents Professor, Oklahoma State University
1995-present: Sitlington Chair in Food Animal Research, College of Veterinary Medicine, Oklahoma State University
1985-present: Professor, Veterinary Pathology, Oklahoma State University
2004 – 2008: Head, Veterinary Pathobiology, Oklahoma State University
1999-2001: Associate Dean for Research and Graduate Education, CVM, Oklahoma State University
1996-1999: Head, Anatomy, Pathology, and Pharmacology, Oklahoma State University
1986-1996: Head, Veterinary Pathology, Oklahoma State University
1990-1991: Visiting Professor, Department of Microbiology, University of British Columbia
1981-1985: Associate Professor, Veterinary Pathology, Department of Veterinary Pathology, OSU
1978-1981: Associate Professor, Veterinary Pathology, Department of Veterinary Pathology, Louisiana State University
1976-1978: Postdoctoral Fellow, sponsored by National Cancer Institute, Department of Veterinary Microbiology, University of Missouri-Columbia
1974-1976: Captain, US Air Force, Veterinary Corps; Staff Pathologist; Armed Forces Institute of Pathology, Department of Veterinary Pathology, Washington DC
1972 – 1974: Pathology Resident, Ohio State University, Department of Veterinary Pathobiology

Research Interests:

Major research interests are in bovine respiratory disease pathogenesis and immunity especially related to *Mannheimia haemolytica* and *Pasteurella multocida* infections. Our laboratory is currently focused on the role of outer membrane and secreted proteins in mucosal and systemic immunity against cattle bacterial pneumonia.

Awards and Honors:

1985, 2011: Pfizer Award for Research Excellence
1987, 2002: Norden Distinguished Teaching Award
1992: AVMA, AFIA Veterinary Medical Research Award
1993: Sigma Xi Chapter Lecturer
1993: Outstanding Instructor - Second Year Class
2003: Oklahoma State University Eminent Faculty Award
2003: Oklahoma State University, Leadership Legacy – October
2005: National Phi Zeta Distinguished Service Award
2006: Oklahoma Journal Record “On the Brink” Award for Research Innovation
2008: Regents Distinguished Teaching Award, CVHS
2009: OSU College of Vet Med Distinguished Alumnus

Research Funding:

Current:

Bovine Respiratory Disease Project - Funded by Oklahoma Agricultural Experiment Station and USDA Formula Funds, OAES #2597 - ~\$15,000 per year.

1997-2014: Principal Investigator - - *Mannheimia haemolytica* Bacterin-Toxoid Efficacy Studies. Pfizer Animal Health, Kalamazoo, MI - \$676,544

2013-2014: Principal Investigator — Development of a *Mannheimia haemolytica* model for studying RecA inhibitors. Noble Foundation, Ardmore, OK - \$88,384

2014-2015: Co-Principal Investigator with Solid Tech Animal Health, Inc. — *Mannheimia haemolytica* outer membrane vesicle-based vaccine for Shipping Fever in cattle. USDA-NIFA, SBIR Program, Phase 1-\$100,000

Recent Past:

2009 – 2012: USDA-CSREES, AFRI Competitive Grant, “*Mannheimia haemolytica* chimeric protein vaccine for delivery of multiple outer membrane protein and leukotoxin antigens.”, Role: PI, \$375,000

2010 -2012: Pfizer Animal Health, Kalamazoo, MI & Australia, “Comparison of *Mannheimia haemolytica* isolates from cattle in Australia with U.S. isolates.”, Role: Co-PI, \$75,419

Selected Publications:

last 2 years (Total Refereed Scientific Journal Articles – 213; Book Chapters – 13; Published abstracts – 125; Medical education articles – 4; Continuing education publications - 14

1. Singh K, Ritchey JW, Confer AW. *Mannheimia haemolytica*: Bacterial-host interactions in bovine pneumonia. Vet Pathol 48:338 – 348, 2011
2. Rose-Dye TK, Burciaga-Robles LO, Krehbiel CR, Step DL, Fulton RW, Confer AW, Richards CJ. Rumen temperature change monitored with remote reporting rumen temperature boluses following challenges with Bovine Viral Diarrhea Virus and *Mannheimia haemolytica*. J Animal Sci 89: 1193-1200, 2011.
3. Singh K, Confer AW, Hope JC, Rizzi T, Wyckoff JH, Weng HY, Ritchey JW. Cytotoxicity and cytokine production by bovine alveolar macrophages challenged with wild type and leukotoxin-deficient *Mannheimia haemolytica*. The Vet J 188: 221-227, 2011

4. Fulton RW, Cook BJ, Blood KS, Confer AW, Payton ME, Step DL, Saliki JT, Burge LJ, Welsh RD. Immune response to bovine respiratory disease vaccine immunogens in calves at entry to feedlot and impact on feedlot performance. *Bov Practitioner* 45: 1–12, 2011
5. Fulton, R.W., Step, D.L., Wahrmund, J., Burge, L.J., Payton, M.E., Cook, B.J., Burken, D., Richards, C.J., Confer, A.W.: Bovine Coronavirus (BCV) Infections in Transported Commingled Beef Cattle and Sole-Source Ranch Calves. *Can J Vet Res.* 75:191-199, 2011.
6. Holland BP, Step DL, Burciaga-Robles LO, Fulton RW, Confer AW, Rose TK, Laidig LE, Richards CJ, Krehbiel CR. Effectiveness of sorting calves with high risk of developing bovine respiratory disease on the basis of serum haptoglobin concentration at the time of arrival at a feedlot. *AJVR* 72: 1349-1360, 2011
7. Skaggs JS, Holyoak GR, Montelongo M, Ayalew S, Confer AW. Serum antibody responses following immunization with *Actinobacillus equuli* outer membrane proteins and recombinant Aqx toxin. *The Vet J* 190, e91-e94, 2011
8. Ayalew S, Shrestha B, Montelongo M, Confer AW. Identification and immunogenicity of *Mannheimia haemolytica* S1 outer membrane lipoprotein PlpF. *Vaccine* 47: 8712-8718, 2011
9. Ayalew S, Shrestha B, Montelongo M, Wilson AE, Confer AW. Immunogenicity of *Mannheimia haemolytica* recombinant outer membrane proteins SSA-1, OmpA, OmpP2, and OmpD15. *Clin & Vaccine Immunol* 18: 2067-2074, 2011
10. Ayalew S, Shrestha B, Payton ME, Confer AW. A Rapid Microtiter Plate Serum Bactericidal Assay Method for Determining Serum Complement-mediated Killing of *Mannheimia haemolytica*. *J Microbiological Methods* 89: 99-101, 2012
11. Singh H, Confer AW, Step DL, Rizzi T, Wyckoff JH, Weng HY, Ritchey JW. Cytokine expression by pulmonary leukocytes from calves challenged with wild-type and leukotoxin-deficient *Mannheimia haemolytica*. *The Vet J* 192: 112-119, 2012
12. Fulton RW, Confer AW. Gold Standards for Bovine Respiratory Disease Diagnosis; Do they Exist? Laboratory Test Descriptions, Their Strengths and Weaknesses. *Can Vet J* 53: 754-761, 2012
13. Confer AW, Ayalew S. The OmpA Family of Proteins: Roles in Bacterial Pathogenesis and Immunity. *Vet Microbiol* 163: 207-222, 2013
14. Ayalew S, Confer AW, Shrestha B, Wilson AE, Montelongo M. Proteomic Analysis and Immunogenicity of *Mannheimia haemolytica* Vesicles. *Clin & Vaccine Immunol* 20:191-196, 2013
15. Taylor JD, Doyle DJ, Confer AW. Use of REP-PCR and 16s rRNA sequencing for comparison of *Mannheimia haemolytica* isolates obtained from fatal cases of bovine respiratory disease in the United States and Australia. *Australian Vet J*, 92:15-23, 2014
16. Taylor JD, Holland B, Step DL, Payton ME, Confer AW. Nasal isolation of *Mannheimia haemolytica* and *Pasteurella multocida* as predictors of respiratory disease in shipped calves. *Vet Microbiol*, Submitted

Patents:

Principal Inventor - *Mannheimia haemolytica* Outer Membrane Protein as a Vaccine or Vaccine Component for Shipping Fever. U.S. Provisional Patent Application No. 60/422,305. OSU Ref. 2002.08; U.S. Utility Patent Application No. 11/235,982, **U.S. Patent No. 7,144,580, granted December 6, 2006.**

Co-Inventor (S. Ayalew, Principal Inventor) – *Mannheimia haemolytica* Chimeric outer membrane protein PlpE and Leukotoxin Epitopes as a Vaccine or Vaccine Component Against Shipping Fever. Provisional Application Serial No. 60/757,342 filed 1/9/06; **U.S. Patent No. 7,794,734 B2, granted September 14, 2010.**