CURRICULUM VITAE

**MATTHEW M. ERDMAN, DVM, PhD**

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## EDUCATION

**Doctor of Philosophy (PhD)****May 2005**

 Iowa State University, Ames, IA

 Major: Veterinary Microbiology

 Dissertation: Studies on the epidemiology and control of human food-borne *Salmonella* in swine

**Doctor of Veterinary Medicine (DVM)****May 2004**

 Iowa State University, Ames, IA

 Emphasis: Food animal medicine

**Bachelor of Science (BS)****May 2000**

 Iowa State University, Ames, IA

 Major: Microbiology

 Emphasis: Pathogenic microbiology

## WORK EXPERIENCE

**Partner and Consultant, EDGE Veterinary Vaccines Consulting Group May 2025 – Present**

Advise established and start-up companies on strategy, development, and licensure of veterinary biologics.

**Science Advisor, Diagnostics and Biologics June 2022 – April 2025**

Advised on animal vaccine regulations and use in multiple arenas including USDA disease response strategies, biodefense, research coordination, interagency collaboration, and international engagements including serving as the U.S. Lead for Veterinary Products to the World Organisation for Animal Health (WOAH).

**Acting Director, Policy, Evaluation and Licensing Feb 2022 – August 2022**

Center for Veterinary Biologics, United States Department of Agriculture, Ames, IA 50010.

Duties: Management of policy development and implementation. Primary contact with regulated industry and stakeholders regarding licensure of veterinary biologics.

**Risk Manager** **Jan 2019 – June 2022**

Center for Veterinary Biologics, United States Department of Agriculture, Ames, IA 50010.

 Duties: Evaluation of biotechnology-derived veterinary products including vaccines and immunomodulators for infectious agents, cancer, and other diseases. Primary liaison to other federal agencies for veterinary and public health issues.

**Senior Staff Veterinarian Oct 2016 – Jan 2019**

Center for Veterinary Biologics, United States Department of Agriculture, Ames, IA 50010.

Duties: Assessment of veterinary biologicals for licensure, policy development, project management, scientific computing and technology implementation.

**Acting Director, National Veterinary Services Laboratories Nov 2013 – Mar 2015**

Animal and Plant Health Inspection Service, United States Department of Agriculture, Ames, IA 50010.

Duties: In addition to the duties of Director of the Diagnostic Bacteriology Laboratory, rotated management of NVSL operations including personnel and budget. Served on National Centers for Animal Health’s Board of Directors.

**Director,Diagnostic Bacteriology Laboratory Sep 2011 – Oct 2016**

 National Veterinary Services Laboratories, United States Department of Agriculture, Ames, IA 50010.

Duties: Managed strategy, personnel (staff of 65), budget, technology and research in support of national veterinary and zoonotic disease programs.

**Section Leader, Bacterial Identification May 2008 – Sept 2011**

Diagnostic Bacteriology Laboratory, National Veterinary Services Laboratories, United States Department of Agriculture, Ames, IA 50010.

 Duties: Managed section responsible for bacterial diagnostics and reagent production. Supervised 17 employees.

**Assistant Professor (Collaborator) May 2008 – Present**

Department of Veterinary Diagnostic and Production Animal Medicine (VDPAM), and Department of Veterinary Microbiology and Preventive Medicine (VMPM), College of Veterinary Medicine, Iowa State University, Ames, IA 50011.

 Duties: Collaborate on scientific projects related to veterinary diagnostics, mentor graduate students.

**Chief Technical Officer Jan 2007 – May 2009**

 Harrisvaccines, Ames, IA 50010.

Summary: Managed all scientific aspects of a veterinary vaccine company. Raised capital, managed budgets, intellectual property, developed staff, and reported to shareholders. First RNA based vaccines licensed for animals.

**Co-Founder, Director of Research and Development Aug 2005 – December 2006**

 Harrisvaccines, Ames, IA 50010.

 Summary: Co-founded a veterinary vaccine company based on a recombinant, platform-based system and led all developmental research.

**Active Partner and Owner 1995 – Present**

Erdman Farms, beef cow-calf operation. Winterset, IA.

**ADDITIONAL TRAINING (SELECTED)**

**Engaging Intergovernmental Organizations Program 2015**

 Paris, France, Geneva, Switzerland, and Rome, Italy.

Summary: Visited the World Organisation for Animal Health (OIE), World Health Organization (WHO), World Trade Organization (WTO) and the Food and Agriculture Organization (FAO) to learn about these organizations, form networks and present collaboration opportunities.

**Federal Executive Institute 2014**

 Charlottesville, VA.

Summary: Leadership for a Democratic Society, focused on personal leadership, transforming organizations, policy in government system and global context for executive action.

**Postdoctoral Fellow 2005 – 2007**

 Department of Animal Science, Iowa State University, Ames, IA

 Emphasis: Development of novel vaccines and DIVA diagnostics for porcine reproductive and respiratory syndrome virus and swine influenza virus.

**Research and Epidemiology Externship 2003**

Centers for Disease Control and Prevention, National Center for Infectious Diseases, Division of Viral and Rickettsial Diseases, Atlanta, GA.

 Emphasis: Molecular forensics of *Rickettsia rickettsia*, epidemiology of *Coxiella burnetii* and human influenza virus.

## AWARDS (SELECTED)

USDA Secretary’s Honor Award for Excellence – Whole Genome Sequencing Implementation

USDA Chief Scientist Merit Award – Antimicrobial Resistance Contributions

Veterinary Services Award – Contagious Equine Metritis Outbreak Response

Iowa State University Research Excellence Award – Salmonella Epidemiology

Phi Zeta – Veterinary Honor Society

Alpha Zeta – Agricultural Honor Society

**PUBLICATIONS**

**Erdman MM**, Clough N, Hauer PJ. 2020. Review of updated veterinary vaccine regulations and product license categories in the United States. *J Am Vet Med Assoc* 257(11):1142-1147.

Yuan C, Krull A, Wang C, **Erdman M**, Fedorka-Cray PJ, Logue CM, O’Connor AM. 2018. Changes in the prevalence of Salmonella serovars associated with swine production and correlations of avian, bovine and swine-associated serovars in the United States (1997-2015). *Zoonoses and Public Health* 65(6):648-661.

Hicks J, Stuber T, Lantz K, **Erdman M**, Robbe-Austerman S, Huang X. 2018. Genomic diversity of Taylorella equigenitalis introduced into the United States from 1978 to 2012. *Plos One* 13(3).

Sharma A, **Erdman MM**, Munoz-Vargas L, Mollenkopf DF, Habing GG. 2017. Changes in the prevalence, genotypes and antimicrobial resistance phenotypes of non-typhoidal Salmonella recovered from mail-order hatchling poultry sold at US feed stores, 2013-2015. *Zoonoses and Public Health* 65(1):102-112.

LeCount KJ, Schlater LK, Stuber T, Robbe-Austerman S, Frana TS, Griffith RW, **Erdman MM**. 2017. Comparison of whole genome sequencing to restriction endonuclease analysis and gel diffusion precipitin-based serotyping of *Pasteurella multocida*. *J Vet Diagn Invest* DOI: 10.1177/1040638717732371.

Mollenkopf DF, Mathys DA, Dargatz DA, **Erdman MM**, Habing GG, Daniels JB, Wittum TE. 2017. Genotypic and epidemiologic characterization of extended-spectrum cephalosporin resistant *Salmonella enterica* from US beef feedlots. *Prev Vet Med* 146:143-149.

Dargatz DA, **Erdman MM**, Harris B. 2017. A survey of methods used for antimicrobial susceptibility testing in veterinary diagnostic laboratories in the United States. *J Vet Diagn Invest* 29(5):669-675.

Reimschuessel R, Grabenstein, Guag J, Nemser SM, Song K, Qiu J, Clothier KA, Byrne BA, Marks SL, Cadmus K, Pabilonia K, Sanchez S, Rajeev S, Ensley S, Frana TS, Jergens AE, Chappell KH, Thakur S, Byrum B, Cui J, Zhang Y, **Erdman MM**, Rankin SC, Daly R, Das S, Ruesch L, Lawhon SD, Zhang S, Baszler T, Diaz-Campos D, Hartmann F, Okwumabua O. 2017. Multilaboratory survey to evaluate *Salmonella* prevalence in diarrheic and nondiarrheic dogs and cats in the United States between 2012 and 2014. *J Clin Microbiol* 55(5):1350-1368.

Anderson TC, Marsden-Haug N, Morris JF, Culpepper W, Bessette N, Adams JK, Bidol S, Meyer S, Schmitz J, **Erdman MM**, Gomez TM, Barton Behravesh C. 2017. Multistate outbreak of human *Salmonella* Typhimurium infections linked to pet hedgehogs – United States, 2011-2013. *One Health* 64(4) 290-298.

Dargatz DA, Kopral CA, **Erdman MM**, Fedorka-Cray PJ. 2016. Prevalence and antimicrobial resistance of *Salmonella* isolated from cattle feces in United States feedlots in 2011. *Foodborne Pathog Dis* 13(9) 483-489.

Quance C, Robbe-Austerman S, Stuber T, Brignole T, DeBess EE, Boyd L, LeaMaster B, Tiller R, Draper J, Humphrey S, **Erdman MM**. 2016. Identification of source of *Brucella suis* infection in human by using whole-genome sequencing, United States and Tonga. *Emerg Infect Dis* 22(1):79-82.

Mollenkopf DF, Faubel RL, Pancholi P, Landers TF, **Erdman MM**. 2015. Surveillance and characterization of carbapenemase-producing *Klebsiella pneumoniae* recovered from patient stool samples at a tertiary care medical center. *Antimicrob Agents Chemother* 59(9):5857-5859.

Dargatz DA, Marshall KL, Fedorka-Cray PJ, **Erdman MM**, Kopral CA. 2015. *Salmonella* prevalence and antimicrobial susceptibility from the National Animal Health Monitoring System sheep 2011 study. *Foodborne Pathog Dis* 12(12):953-957.

Nakao JH, Pringle J, Jones RW, Nix BE, Borders J, Heseltine G, Gomez TM, McCluskey B, Roney CS, Brinson D, **Erdman M**, McDaniel A, Behravesh CB. 2015. ‘One health’ investigation: outbreak of human *Salmonella* Braenderup infections traced to a mail-order hatchery – United States, 2012-2013. *Epidemiol Infect* 143(10):2178-2186.

Habing GG, Kessler SE, Mollenkopf DF, Wittum TE, Anderson TC, Barton Behravesch C, Joseph LA, **Erdman MM**. 2015. Distribution and diversity of *Salmonella* Braenderup infections traced to a mail-order hatchery, United States, 2013. *Zoonoses and Public Health* 62(5):375-380.

Pornsukarom S, Patchanee P, **Erdman M**, Cray PF, Wittum T, Lee J, Gebreyes WA. 2014. Comparative phenotypic and genotypic analyses of *Salmonella* Rissen that originated from food animals in Thailand and United States. *Zoonoses Public Health*. 62(2):151-158.

Basler C, Forshey TM, Machesky K, **Erdman M**, et al. 2014. Multistate outbreak of human Salmonella infections linked to live poultry from a mail-order hatchery in Ohio –March-September 2013. *Morb Mortal Wkly Rep* 63(10):222.

Griffith J, Blaney D, et al. 2014. Investigation of inhalation anthrax case, United States. *Emerg Infect Dis* 20(2):280-283.

Pabilonia KL, Cadmus KJ, Lingus TM, Bolte DS, Russell MM, Van Metre DC, **Erdman MM**. 2013. Environmental *Salmonella* in Agricultural Fair Poultry Exhibits in Colorado. *Zoonoses and Public Health* 61(2):138-144.

Jacques-Simon R, Millien M, Flanagan JK,….**Erdman MM**, et al. 2013. A field and laboratory investigation of viral diseases of swine in the Republic of Haiti. *J Swine Health Product* 21(3):130-138.

Wittum TE, Mollenkopf DF, **Erdman MM**. 2012. Detection of Salmonella enterica isolates producing CTX-M cephalosporinase in U.S. livestock populations. *Appl Environ Microbiol* 78(20): 7487-7491.

Reilly TJ, Calcutt MJ, Ganjam IK, **Erdman MM**, Aalsburg AM, Blyden JF, Fales WH. 2012. Isolation and identification of Taylorella asinigenitalis from a mare in Oklahoma, USA. *Clin Theriogenol* 4(2):163-167.

Lombard JE, Beam, AL, Nifong EM, Fossler CP, Kopral CA, Dargatz DA, Wagner BA, **Erdman MM**, Fedorka-Cray PJ. 2012. Comparison of individual, pooled, and composite fecal sampling methods for detection of Salmonella on U.S. dairy operations. *J Food Protect* 75(9):1562-1571.

Haley CA, Dargatz DA, Bush EJ, **Erdman MM**, Fedorka-Cray PJ. 2012. Salmonella prevalence and antimicrobial susceptibility from the National Animal Health Monitoring System swine 2000 and 2006 studies. *J Food Protect* 75(3):428-436.

Loharikar A, **Erdman MM**, et al. 2012. Four multistate outbreaks of human *Salmonella* infections associated with live poultry contact, United States, 2009. *Zoonoses and Public Health*  1-8.

**Erdman MM**, Creekmore LH, Fox PE, Pelzel AM, Porter-Spalding BA, Aalsburg AM, Cox LK, Morningstar-Shaw BR, Crom RL. 2011. Diagnostic and epidemiologic analysis of the 2008-2010 investigation of a multi-year outbreak of contagious equine metritis in the United States. *Prev Vet Med* 101:219-228.

Aalsburg AM, **Erdman MM**. 2011. Pulsed-field gel electrophoresis genotyping of *Taylorella equigenitalis* isolated in the United States: 1978-2010. *J Clin Microbiol* 49(3):829-833.

Bosworth B, **Erdman MM**, Stine DL, Harris I, Irwin C, Jens M, Loynachan A, Kamrud K, Harris DL. 2010. Replicon particle vaccine protects swine against influenza. *Comp Immuno Infect Dis* 33:99-103.

**Erdman MM**, Kamrud KI, Harris DL, Smith J. 2010. Alphavirus replicon particle vaccines developed for use in humans induce high levels of antibodies to influenza virus hemagglutinin in swine: proof of concept. *Vaccine* 28(3):594-6.

Gaul SB, **Erdman MM**, Wedel S, Hoffman L, Harris I, Harris DL. 2006. Prediction of *Salmonella* serovars using Pulsed-field gel electrophoresis by identifying conserved *Xba1* fragments. *J Clin Micro* 45(2):472-6.

Faaberg, KS, Hocker, JD, **Erdman, MM,** Harris, DL, Nelson EA, Torremorell, M, Plagemann, PGW. 2006. Neutralizing antibody responses of pigs infected with natural GP5 N-glycan mutants of porcine reproductive and respiratory syndrome virus. *Viral Immunol* 19(2):294-304*.*

Crabtree BG, **Erdman MM**, Harris, DL. 2006. Preservation of necrotizing hepatopancreatitis bacterium (NHPB) by freezing tissue collected from experimentally infected *Litopenaeus vannamei*. *Dis Aquat Organ* 70(1-2):175-9.

**Erdman, MM**, Harris, IT, Torremorell, M, Wilt, M, Harris, DL. 2005. Occurrence of *Salmonella enterica* serovar Typhimurium DT104 on a commercial swine farm before, during, and after depopulation-repopulation. *J Am Vet Med Assoc* 227(3):460-6.

Loynachan, AT, Nugent, JM, **Erdman, MM**, Harris, DL. 2004. Acute infection of swine by various *Salmonella* serovars. *J Food Protect* 67(7):1484-1488.

**Erdman, MM**, Wedel, SD, Harris, DL. 2003. Genotypic and phenotypic comparison of swine *Salmonella* isolates from farm and abattoir. *J Swine Health Product* 11(4):169-172.

**Erdman, MM**, Harris, DL. 2003. Evaluation of the 1-2 test for detecting *Salmonella* in swine feces. *J Food Protect* 66(3):518-521.

**GRANTS (PI or Co-PI):**

**Erdman, MM,** et al. (2006). Autogenous replicon particle vaccines for PRRSV. USDA SBIR. $79,620.

**Erdman, MM,** et al. (2006). Evaluation of a virus-like replicon particle vaccine expressing the HA protein of SIV in pigs with maternally derived antibodies to SIV. USDA formula funds. $24,041.

**Erdman, MM,** Hogberg, M. (2006). Viral replicon particle discovery research for development of improved vaccines for swine. Grow Iowa Values Fund. $104,064.

Harris, DL, **Erdman, MM**, et al. (2006). Protective antigenic determinant vaccines for PRRSV which differentiate infected from vaccinated animals. National Pork Board. $133,784.

**Erdman, MM**, Harris, DL, Kamrud, K. (2005). Alphavirus as a vaccine vector for PRRSV. USDA NRI, PRRS CAP. $164,143.

Harris, DL, **Erdman, MM**, Harris, IT. (2005). Evaluation of Equine Arteritis Virus (EAV) as a vaccine for Porcine Reproductive and Respiratory Syndrome (PRRS). Iowa Pork Producers Association. $255,698.

Harris, DL, **Erdman, MM**, Osorio, F, Plagemann, P, Platt, KB, Strohbehn, R. (2005). Prevention of PRRS by antibody administration. National Pork Board. $113,483.

Harris, DL, **Erdman, MM.** (2002).Vaccination to prevent acute infection by *Salmonella* in transport and lairage prior to slaughter. National Pork Board. $25,000.

**PATENTS**

Harris, DL and **Erdman, MM**. Identification of the Protective Antigenic Determinants of the Porcine Reproductive and Respiratory Syndrome Virus and Uses Thereof. U.S. Patent Numbers 7,622,254 B2 (2009) and 7,763,428 B2 (2010).

Harris, DL, **Erdman, MM**, et al. Method of rapidly producing improved vaccines for animals. US20130122025A1 (Pending).