CURRICULUM VITAE

A. Biographical Data

Name: **CHRISTOPHER CIVILIAN LOUIS CHASE**
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B. Education

South Dakota State University, Brookings, SD, Pre-Veterinary Medicine, 1974-1976
Iowa State University, Ames, IA, D.V.M. 1980
University of Wisconsin-Madison, Madison, WI, M.S. 1987
University of Wisconsin-Madison, Madison, WI, Ph.D. 1990
University of Wyoming, Laramie, WY, Special Student, 1990-1991

C. Present Positions

Professor, Department of Veterinary Science, South Dakota State University, Brookings, SD
Adjunct Professor, Department of Biology-Microbiology, South Dakota State University, Brookings, SD
Consulting Veterinarian, Flandreau Veterinary Clinic, Flandreau, SD
President, Rural Technologies, Inc., Brookings, SD

D. Positions

1980-1985: Associate veterinarian, Viborg Veterinary Clinic, Viborg, SD.
1985-1990: Research assistant, Department of Veterinary Science, University of Wisconsin-Madison, Madison, WI.
1985-1990: Relief veterinarian, Stoughton Veterinary Service, Stoughton, WI.
1990-1992: Veterinary Medical Officer, Arthropod-borne Animal Diseases Research Laboratory, Laramie, WY
1990-1992: Adjunct Assistant Professor, Department of Molecular Biology, University of Wyoming, Laramie, WY
1991-1992: Relief Veterinarian, All Pet Animal Hospital, Laramie, WY
1992-1996: Assistant Professor, Department of Veterinary Science, South Dakota State University, Brookings, SD
1996-2001: Associate Professor, Department of Veterinary Science, South Dakota State University, Brookings, SD
1994-1997: Secretary-Treasurer, Rural Technologies, Inc., Brookings, SD
1997-1998: Chairman of the Board, Rural Technologies, Inc., Brookings, SD

E. Licensed to Practice Veterinary Medicine
Iowa, South Dakota

F. Board Certification
Diplomat, American College of Veterinary Microbiology (Immunology and Virology)

G. Professional Organizations
American Association of Bovine Practitioners
American Association of Small Ruminant Practitioners
American Association of Swine Practitioners
American Association of Veterinary Immunologists
American Veterinary Medical Association
American Society for Microbiology
American Society for Virology
Conference of Research Workers in Animal Disease
Iowa State University Veterinary Medical Association
Phi Kappa Phi
Sigma Xi
South Dakota Veterinary Medical Association

H. Teaching Activities (Since 2010)

1993-	Co-Coordinator, MICR 424/524 Medical and Veterinary Virology, South Dakota State University
1994-	Lecturer, MICR 422 Immunology, South Dakota State Universit
2004-	Course Coordinator, VETSCI 793 Vaccinology, South Dakota State University
2006-	Course Coordinator, MICRO 492/592 Immunology-Internet, South Dakota State University
2006-	Course Coordinator, BIOS 662 Cellular and Molecular Biology-Internet, South Dakota State University
2006-	Lecturer, MICR 499 Applied Microbiology and Biotechnology, South Dakota State University
2007-	Course Coordinator BIOS 663 Advanced Concepts in Infectious Disease-Internet, South Dakota State University
2009-	Course Coordinator, MICRO 492/592 Virology-Internet, South Dakota State University
2010-	Lecturer, When is the Right Time to Vaccinate the Cow? Continuing Education Program-Internet, College of Veterinary Medicine, Ohio State University, Columbus, OH.
2012-	Lecturer, Herd Health. Advanced Dairy Manager Class, US Dairy Education and Teaching Consortium-Teaching, Clovis, NM.
2014:	Lecturer, HON 320 One Health, South Dakota State University

I. Honors (Since 2009)

2009:	Veterinarian of the Year, South Dakota Veterinary Medical Association
2010:	FO Butler Foundation Excellence in Research Faculty Award, South Dakota State University
2011:	Golden Key Honorary Member, South Dakota State University

J. Committees (Since 2010)

1992-	Ad hoc referee, Journal of Veterinary Diagnostic Investigation
1992-	NC-107 Technical Committee on Bovine Respiratory Disease, USDA-CSRS
1993-	Ad hoc reviewer, Mechanisms of Animal Disease Program, USDA-CSRS
1993-	Ad hoc reviewer, Journal of the American Veterinary Medical Association
1993-	Ad hoc reviewer, American Journal of Veterinary Research
1995-	Graduate Student Coordinator, Department of Veterinary Science, South Dakota State University
1997-	Ad hoc reviewer, Vaccine
2000-	Ad, hoc reviewer, Swine Health and Production
2000-	Ad hoc reviewer, Journal of Dairy Science
2000-	Ad hoc reviewer, Veterinary Immunology and Immunopathology
2001-	Ad Hoc Reviewer, Journal of Leukocyte Biology
2002-	Ad Hoc Reviewer, Comparative Immunology Microbiology & Infectious Diseases
2002-	Ad Hoc Reviewer, Journal of Clinical Microbiology
2003-	Ad Hoc Reviewer, Clinical and Diagnostic Laboratory Immunology
2003-	Chairman, Joseph F. Nelson Scholarship Committee, South Dakota State University
2004-10	Council of Biological and Therapeutic Agents, American Veterinary Medical Association
2004-	Ad Hoc Reviewer, Clinical and Diagnostic Laboratory Immunology
2005-	Institutional Animal Care and Use Committee, South Dakota State University
2006-	Ad hoc reviewer, Theriogenology
2006-14	Chairman, NC1027 Bovine Respiratory Disease Regional Committee
2007-10	Agriculture Animal Liaison Committee, American Veterinary Medical Association
2008-11	Chairman, Continuing Education and Program Committee, American College of Veterinary Microbiologists
2009-	Ad Hoc Reviewer, National Pork Board Grant Program
2009-10	Chairman, Agriculture Animal Liaison Committee, American Veterinary Medical Association
2009-12	Board of Governors, American College of Veterinary Microbiology
2010-14	External Review Panel, 2010 Center for the Biological Control and Analysis by Applied Photonics, Department of Biochemistry and Chemistry, South Dakota State University
2010	Accreditation Site Visit, Globe University Veterinary Technician Program, AVMA Committee on Veterinary Technician Education and Activities (CVTEA), Sioux Falls, SD, March 17-19, 2010

2010-	Ad Hoc Reviewer, Binational Agriculture Research and Development (BARD)
2010-	Ad hoc Reviewer, Clinical and Vaccine Immunology
2011	Ad Hoc Reviewer, USDA-ARS CRIS Projects-Brucellosis, Leptospirosis, BVDV, National Animal Disease Center, Ames IA
2011-	Honors College Development Council, South Dakota State University
2011-	Editorial Board, Animal Health Research Reviews
2011	Member, University Veterinarian Search Committee, South Dakota State University
2011-	USDA BRD CAP Extension/Outreach Advisory Committee
2011-12	AVMA Representative, Executive Committee, Federation of Animal Science Societies (FASS) FAIR 2012 Conference
2011-12	Co-Chairman, American Dairy Science Association 23rd DISCOVER Conference Bovine Immunology: The Intersection of Innate and Acquired Immunity
2011	External Reviewer, 2011 American Animal Hospital Association (AAHA) Canine Vaccination Guidelines
2011-	Ad hoc Reviewer, Virus Research
2011	USDA Veterinary Medicine Loan Repayment Panel (VMLRP)
2011	Research Leader Search Committee, USDA-ARS Meat Animal Research Center, Animal Health Research Unit (AHRU), Clay Center, NE
2011-13	South Dakota Veterinary Medical Association Alternate Delegate, American Veterinary Medical Association
2011-	Member, Intercollegiate Athletic Board, South Dakota State University
2011-12	Vice-Chairman, Intercollegiate Athletic Board, South Dakota State University
2011-	Ad hoc Reviewer, Journal of Immunology
2011-	Ad hoc Reviewer, Virology Journal
2011-	Ad hoc Reviewer, Journal of Animal Science
2012	External CRIS Plan Reviewer, National Animal Disease Center, USDA-ARS
2012-13	Member, Strategic Planning Committee, College of Agriculture and Biological Sciences, South Dakota State University
2012-14	Chairman, Intercollegiate Athletic Board, South Dakota State University
2012	Animal Welfare and Stress Review Panel, USDA-Agricultural Research Service
2012-	Ad hoc Reviewer, Alberta Livestock and Meat Agency
2012-	Panel Manager, USDA-NIFA SBIR Animal Health and Well Being Grant Review Panel
2012-	Councilor, Conference for Research Workers in Animal Disease
2013-14	Chairman, 2014 Bovine Respiratory Disease Symposium Organizing Committee
2013-14	Member, 6th BVDV-Pestivirus Meeting Organizing Committee
2013	Member, Center Director Search Committee, USDA-ARS National Animal Disease Center, Ames Iowa
2013	Member, Search Committee for Head of Department of Veterinary and Biomedical Sciences
2013	Epidemiology Working Group, Gap Analysis and Countermeasures Assessment Orbiviruses Workshop
2013-	South Dakota Veterinary Medical Association Delegate, American Veterinary Medical Association
2013-	External Reviewer, Poland National Science Center, Krakow, Poland

2013 External Reviewer, Natural Sciences and Engineering Research Council of Canada, Ottawa Canada
2013 Ad hoc Reviewer, Infection, Genetics and Evolution
2014- President, Board of Governors, American College of Veterinary Microbiology
2014- Ad hoc Reviewer, Vector-Borne and Zoonotic Diseases
2014- Ad hoc Reviewer, Animal Health Research and Reviews
2014- External Tenure Faculty Reviewer, Faculty of Science King Saud University, Riyadh, Saudi Arabia
2014- External Reviewer, Alberta Livestock and Meat Agency
2014 External Reviewer, AAAS, Rhode Island Science and Technology Advisory Council
2015 External Reviewer, Canadian Research Council Tier 1 Chairs

K. Graduate and Undergraduate Students (Since 2010)

Graduate Students

1. Susan Morarie Kane, PhD 2012, Dissertation title- Unraveling the biology of bovine viral diarrhea virus (BVDV) persistent infections: integrating field and laboratory studies
2. Jessica Mediger, MS 2013, Thesis title- Epizootic Hemorrhagic Disease Virus: An Outbreak of Cattle Herds in South Dakota
3. Russell Daly, MS 2013, Thesis title- Characterization of Shiga-Toxin Producing *Escherichia Coli* Infections and Cryptosporidiosis in South Dakota with Respect to Animal Exposures.
4. Mahmoud Darweesh, PhD 2013, Dissertation title-Using Genetic and Pathogenesis Studies to Develop Antiviral and BVDV Vaccine Targets
5. Mrigenda Rajput, PhD 2013, Dissertation title- Understanding the Effect of BVDV on Antigen Presenting Cells and Cytoplasmic Trafficking
6. Ben Hause, PhD 2013, Dissertation title-Investigation of Swine Influenza Virus Genetic Diversity and Evolution
7. Ashley Petersen, MS 2014, Thesis title- Developing An *In Vitro* System To Mimic The Natural Germinal Center Reaction Using An Ovine And Human Model
8. Eric Bumgardner, MS 2014, Thesis title- A Comparative Genomics Analysis of Seven Strains of *Mycoplasma hyosynoviae*
9. Kaci Park, MS 2015, Thesis title-The Effect of Bovine Herpesvirus Type 1 on Bovine Monocyte Derived Dendritic Cells
10. Brianne Thicke, MS 2015, Thesis title- A Nano-Particle Based Adjuvant to Treat Breast Cancer Induced Secondary Lymphedema
11. Emily Collin, PhD 2015, Influenza D Virus: Investigation Of The Newly Proposed Influenza Genus
12. Brittany Wiener, MS Candidate, Thesis topic-Genetic characterization of *Fusobacterium necrophorum* toxin
13. Clayton Scofield, MS Candidate, Thesis topic-Cytokines levels in colostral whey following a commercial processing
14. Neelu Rajput, PhD Candidate- BVDV and Neutrophils
15. Jacob Sobraske, MS Candidate, Thesis topic- BVDV and natural killer cells
16. Eric Bumgardner, PhD Candidate, Thesis topic- A comparison of virulence of *Mycoplasma hyosynoviae* and *Mycoplasma hyorhinis*

17. Matt Kinney, MS Candidate, Thesis topic- Development of new vaccine strains of infectious bronchitis disease virus (IBDV)
18. Allison Richards, MS Candidate, Thesis topic- Development of an ELISA for *Mycoplasma hyosynoviae*
19. Karim Addulsalem, MS Candidiate, Thesis topic-Macrophage interaction with neutrophils and lymphocytes following BVDV infectionC. Scott Mark, PhD candidate, Thesis topic- The effect of BVDV persistent infection on cellular markers

Graduate Student Awards

1. Susan Morarie, 3rd place Poster, American Association of Veterinary Immunologists, CRWAD 2010.
2. Susan Morarie Kane, American Society of Virology Travel Award, 2012.
3. Mrigendra Rajput, American Society of Virology Travel Award, 2012.
4. Mrigendra Rajput, Outstanding Graduate Student Poster, American College of Veterinary Microbiologists, CRWAD 2012
5. Mahmoud Darweesh, IMMUNOLOGY 2013 Junior Scientist Travel Awards, American Association of Veterinary Immunologists-American Association of Immunologists
6. Jessica Mediger, Selected Graduate Student Presentation, Academy of Veterinary Consultants 2013.
7. Kaci Park, 2nd Place Graduate Student Poster, North Central American Society for Microbiology, 2013.

Undergraduate and Veterinary Research Students

1. Anne Schaeffer,+ 2007-2011. Project-Optimizing CFSE assay in bovine cells and measurement of immune function.
2. Jessica Ludvik,* 2009-2011. Project- The effect of BVDV on macrophage morphology.
3. Kristin Hanson, 2009. Project- BHV-1 infection in bovine fetal loss using real-time PCR
4. Rebecca Niewohner, 2010-12. Project- Optimization of human cytokine multiplex assay.
5. Hannah Phillips**, 2011-13. Project-BVDV and natural killer function.
6. Katherine Kondertuk, 2011-2013. Project- Neutrophil function and BVDV.
7. Pavan Kulkarni, 2011-2012. Project- The effect of BVDV on macrophage functions
8. Sarah Peton, 2012. Preceptorship in Research Administration and Methods
9. Kaci Park+, 2012. Project-Innate immunity and BVDV
10. Daniel Marra**, 2012. Project-BVDV cell culture
11. Jenna Guthmiller+, 2012-13. Project-EHDV outbreak in cattle in southeast South Dakota.
12. Casey Finnicum+, 2012-14. Project-Cellular proteins that interact with CP BVDV
13. Thomas Hudson, 2013-14. Project-Influenza C and bovine coronavirus serology in cattle.
14. Katie Schneider, 2013-14. Project-EHD and BRD serology
15. Ashley Munsch, 2013. Project-BVDV propagation
16. Nathen Wilen*. 2014 Project- Testing and acquisition of bovine leukemia virus serum
17. Jazmine Brown, 2014-15. Project- Vaccination Serology and neutrophil function and BVDV.
18. Ben Gillette, 2014-. Project-BVDV and cell culture
19. Christa Koeller, 2014-15. Project- Vaccination Serology.
20. Hannah Krueger, 2015-. Project- BVDV and cell culture
21. Cassandra Tenkote, 2015. Project- BVDV and cell culture

22. Brandee Bly, 2015

*students who entered veterinary school **students who entered medical school
+students who entered graduate school

Undergraduate Research Awards (Since 2010)

1. Jessica Ludvik, Orville and Enolia Bentley Research Award, 2010
2. Jessica Ludvik, University of Nebraska-Lincoln Summer Undergraduate Research Award, 2010
3. Anne Schafer, Schultz-Werth Undergraduate Award, 2011
4. Jessica Ludvik, Schultz-Werth Undergraduate Award, 2011
5. Rebecca Niewohner, University of California-San Diego Summer Research Award, 2011
6. Rebecca Niewohner, Griffith Undergraduate Research Award, 2011
7. Rebecca Niewohner, Schultz-Werth Undergraduate Award, 2012
8. Katherine Kondertuk, Joseph Nelson Undergraduate Research Award, 2012
9. Katherine Kondertuk, American Society for Microbiology Undergraduate Research Award, 2012
10. Katherine Kondertuk, Griffith Undergraduate Research Award, 2013
11. Katherine Kondertuk, American Society for Microbiology Travel Award, 2013
12. Thomas Hudson, Joseph Nelson Undergraduate Research Award, 2013
13. Casey Finnicum, 2010 Center for the Biological Control and Analysis by Applied Photonics Undergraduate Research Award, 2013.
14. Jazmine Brown, Griffith Undergraduate Research Award, 2014.
15. Ben Gillette, Joseph Nelson Undergraduate Research Award, 2015
16. Hannah Krueger, Griffith Undergraduate Research Award, 2015

L. Grants and Contracts (Funded Since 2010)

1. 2010: National Institute of Health, National Children's Study, Formative Research Grant, Cytokine and Protein Biomarker Multiplex Analysis, Co-Principal Investigator, $281,065, funded.
2. 2011: 2010 Center for the Biological Control and Analysis by Applied Photonics, Department of Biochemistry and Chemistry, South Dakota State University, Exploratory Grant Program, co-investigator, $27,778, funded
3. 2011: South Dakota State University Experiment Station Hatch Funds, Bovine Viral Diarrhea Virus Infections in Cattle: Implications on Innate immunity and Acquired Immune Development, South Dakota State University, Principal Investigator, funded.
4. 2011: South Dakota State University Experiment Station Animal Health Funds, An integrated approach to control of bovine respiratory diseases, South Dakota State University, funded
5. 2012: 2010 Center for the Biological Control and Analysis by Applied Photonics, Department of Biochemistry and Chemistry, South Dakota State University, Exploratory Grant Program, co-investigator, $27,778, funded.
6. 2013: USDA-NFIA Conference Grants. New Approaches to Bovine Respiratory Disease Prevention, Management, and Diagnosis Conference Grant. Co-PI, PI-Alison Van Eenennaam, University of California-Davis, $10,000, funded.

7. 2013: Lallemand Animal Health. Growth and health of pre and post-weaned dairy heifers fed LEVUCELL® SB in combination with LEVUCELL® SC. Co-investigator. PI-Alvaro Garcia, Department of Dairy Science, SDSU, $27,188, funded,
8. 2013: 2010 Center for the Biological Control and Analysis by Applied Photonics, Department of Biochemistry and Chemistry, South Dakota State University, Exploratory Grant Program, co-investigator, $34,664.00, funded.
9. 2013: Bayer Animal Health. Measuring Innate Immunity following the use of an experimental agonist, $17,303, funded
10. 2013: Novartis Animal Health, Analyzing Vaccine and Field Strains of Bovine Herpesvirus 1 using Rapid Sequencing, Novartis Animal Health, $4,000 funded
11. 2013: Vi-Cor. The Effect of Beta-Glucans on Immune Response in Lactating Dairy Cows, $5,600, funded.
12. 2014: USDA-NFIA Conference Grants. Conference Grant Proposal for the 6th BVDV-Pestivirus Meeting. PI-Chase, $10,000, funded.
13. 2014: Bayer Animal Health. Measuring Innate Immunity following the use of an experimental agonist, $10,000, funded.

45 grants funded since 1994 28 since 1999), $3.39 million total + $4 million State of South Dakota 2010 Research Initiative=$7.39 million

M. Scientific Presentations (Since 2010)

1. Chase C. Bovine viral diarrhea virus persistent infection of white-tailed deer and their risk to domestic cattle. Joint Meeting of Multistate Research Committee NC 1027 "An Integrated Approach To Control Of Bovine Respiratory Diseases" and active USDA-NIFA Bovine Respiratory Disease Competitive Awards from AFRI / NRI Animal Health, Albuquerque, NM, August 18, 2010.
2. Neill J, Schefers J, Chase C, Ridpath J. Vaccination of cattle persistently infected with BVDV does not cause a change in the consensus sequence of the structural proteins of the viral quasispecies. 53rd Annual Joint Meeting American Association of Veterinary Laboratory Diagnosticians (AAVLD)/United States Animal Health Association (USAHA), Minneapolis, MN, November 14, 2010.
3. Lokken J, Chase C, Halaweish F, Effects of St. John's Wort Extracts on the metabolism of anti-inflammatory and anti-hypertensive agents via cytochrome P450 3A4 inhibition, American Association of Pharmaceutical Science annual meeting, New Orleans, LA, November 16, 2010.
4. Lokken J, Chase C, Halaweish F, Effects of Echinacea Extracts on the metabolism of anti-inflammatory and anti-hypertensive agents via cytochrome P450 3A4 inhibition, American Association of Pharmaceutical Science annual meeting, New Orleans, LA, November 16, 2010.
5. Morarie, S, Mediger J, Braun L, Chase C, Smirnova N, Hansen T. Fetal immunological effects and liver tolerance following persistent bovine viral diarrhea virus infection. 91st annual meeting of Conference of Research Workers in Animal Disease, Chicago, IL, December 6, 2010.
6. Ludvik J, Braun LJ, Hoppe A, Kerkvlite J, Chase C. The effects of BVDV on the cytoskeleton of bovine macrophages and epithelial cells: tracking actin changes using

immunofluorescence. 96th Annual Meeting of the South Dakota Academy of Science, Oacoma, SD, April 9, 2011.

7. Stevens ET, Thomson DU, Wileman BW, O'Dell S, Chase CCL. The Survival of Bovine Viral Diarrhea Virus on Materials Associated with Livestock Production. 44th annual conference of the American Association of Bovine Practitioners, St. Louis, MO, September 22, 2011.
8. Morarie S, Braun L, Smirnova N, Hansen TR, Chase CCL. Kupffer cells are the primary population of cells infected in persistently infected fetal liver. 5th US BVDV Symposium: Preventing, Detecting and Controlling the Spectrum of Diseases Caused by BVDV. November 18, 2011, San Diego, CA
9. Rajput MKS, Braun LJ, Ridpath JF, Mwangi W, Young AJ, Darweesh MW, Chase CCL. Bovine viral diarrhea virus (BVDV) replication in monocyte-derived dendritic cells and significance of breed difference in its generation. 97th Annual Meeting of the South Dakota Academy of Science, Oacoma, SD, April 9, 2012.
10. Morarie, S, Braun L, Smirnova N, Hansen T, Chase C. Liver tolerance may serve a role in the development of BVDV persistent infection. 31st annual meeting of the American Society of Virology, Madison, WI, July 23, 2012.
11. Rajput MKS, Braun LJ, Ridpath JF, Mwangi W, Darweesh MW, Chase CCL. Bovine viral diarrhea virus (BVDV) infects and replicates viral RNA but does not produce infectious virus in bovine monocyte-derived dendritic cells. 31st annual meeting of the American Society of Virology, Madison, WI, July 23, 2012.
12. Rajput MKS, Braun LJ, Ridpath JF, Mwangi W, , Darweesh MW, Chase CCL. Bovine viral diarrhea virus (BVDV) infects and replicates viral RNA but does not produce infectious virus in bovine monocyte-derived dendritic cells. 4th annual SDSU/Avera Research Symposium, Sioux Falls, SD, September 12, 2012
13. Darweesh MF, Ridpath J, Neill J, Young A, Braun, L, Rajput M, Chase C. Mutation in noncytopathic BVDV persistently infected animal to generate cytopathic pair is a rare event where one animal developed a cytopathic virus that hit all the animals within one herd. 4th annual SDSU/Avera Research Symposium, Sioux Falls, SD, September 12, 2012.
14. Morarie, S, Smirnova N, Hansen TR, Mediger J, Braun L, Chase CCL. Liver tolerance as a mechanism for the development of BVDV persistent infection. Poster 7. 45th annual conference of the American Association of Bovine Practitioners, Montreal, CA September 20-21, 2012.
15. Morarie, SE, Braun LJ, Holler, LD, Neill JD,Ridpath, JF, Chase CCL. Outcome of a bovine viral diarrhea virus infection in a South Dakota herd including reproductive losses, persistent infection, and mortality data from PI animals. Poster 8. 45th annual conference of the American Association of Bovine Practitioners, Montreal, CA September 20-21, 2012.
16. Rajput MKS, Braun LJ, Ridpath JF, Mwangi W, Darweesh MW, Chase CCL. Bovine viral diarrhea virus (BVDV) infects and replicates viral RNA but does not produce infectious virus in bovine monocyte-derived dendritic cells12th annual Symposium in Virology, Nebraska Center for Virology, Lincoln, NE, October 5th, 2012.
17. Darweesh MF, Ridpath J, Neill J, Young A, Braun, L, Rajput M, Chase C. Mutation in noncytopathic BVDV persistently infected animal to generate cytopathic pair is a rare event where one animal developed a cytopathic virus that hit all the animals within one

herd. 12th annual Symposium in Virology, Nebraska Center for Virology, Lincoln, NE, October 5th, 2012.

18. Darweesh MF, Ridpath J, Neill J, Young A, Braun, L, Rajput M, Chase C. Mutation in noncytopathic BVDV persistently infected animal to generate cytopathic pair is a rare event where one animal developed a cytopathic virus that hit all the animals within one herd. 93rd annual meeting of Conference of Research Workers in Animal Disease, Chicago, IL, December 3, 2012.
19. Rajput MKS, Braun LJ, Darweesh MW, Ridpath JF, Mwangi W, Young AJ, Chase CCL. Non-adherent CD14 negative bovine monocyte-derived dendritic cells lose their capability to produce infectious bovine viral diarrhea virus (BVDV) during its development. 93rd annual meeting of Conference of Research Workers in Animal Disease, Chicago, IL, December 3, 2012.
20. Park, K., M. Rajput, L.J. Braun and CCL Chase. Effect of bovine herpesvirus 1 and bovine viral diarrhea virus (BVDV) on bovine monocyte-derived dendritic cells. 73rd annual meeting of the North Central Branch of the American Society for Microbiology, Brookings SD, October 11, 2013.
21. Darweesh M, Rajput M, Braun L, Ridpath J, Neill J, Young A, Chase C. Characterization of the cytopathic BVDV strains isolated from 13 mucosal disease cases arising in one cattle herd. 73rd annual meeting of the North Central Branch of the American Society for Microbiology, Brookings SD, October 11, 2013.
22. Park K, Rajput M, Braun LJ, Chase CCL. Effect of bovine herpesvirus 1 and bovine viral diarrhea virus (BVDV) on bovine monocyte-derived dendritic cells. 2013 Sanford Health-SDSU Biomedical Research Symposium, Sioux Falls SD, November 19, 2013.
23. Park, K., M. Rajput, L.J. Braun, C.C.L. Chase. Effect of bovine herpesvirus 1 and bovine viral diarrhea virus (BVDV) on bovine monocyte-derived dendritic cells. 94th annual meeting of the Conference for Research Workers in Animal Diseases, Chicago IL, December 9, 2013.
24. Chase CCL. Characterization of 13 cytopathic BVDV strains from mucosal disease cases from a single herd. 47th annual conference of the American Association of Bovine Practitioners, Albuquerque, NM September 18-21, 2014.
25. Ridpath JF, Neill JD, Holler L, Braun LJ, Kane SE, Chase CC, Young DB. Genetic variation observed in BVDV isolated from 34 persistently infected cattle generated in one outbreak. Poster #5. US BVDV/ESVV Pestivirus Symposium: Pestiviruses: Old Enemies, New Challenges. Kansas City MO, October 14, 2014.
26. Kane SE, Neill J, Ridpath J, Chase CCL. Bovine Viral Diarrhea Virus Outbreak in a Cow Herd in South Dakota. Poster 6. US BVDV/ESVV Pestivirus Symposium: Pestiviruses: Old Enemies, New Challenges. Kansas City MO, October 14, 2014.
27. Darweesh MF, Rajput MKS, Braun LJ, Ridpath JF, Neill JD, Chase CCL. Genetic Characterization of 13 Cytopathic BVDV strains from Mucosal Disease Cases from a Single Herd. Poster 7. US BVDV/ESVV Pestivirus Symposium: Pestiviruses: Old Enemies, New Challenges. Kansas City MO, October 14, 2014.
28. Thakur N, Braun L, Chase CCL. Effect of bovine viral diarrhea virus (BVDV) infection on neutrophil survival and surface marker expression. 95th annual meeting of the Conference for Research Workers in Animal Diseases, Chicago IL, December 8, 2014.
29. Rajput MKS, Braun LJ, Darweesh MW, Park K, Mwangi W, Young AJ, Chase CCL. Effect of bovine viral diarrhea virus (BVDV) strains on bovine monocyte-derived

dendritic cells (MO-DC) and MO-DC Phenotype. Keystone Symposium-Immunity to Veterinary Pathogens: Informing Vaccine Development, Keystone CO, January 21, 2015.

30. Chase CCL. Gibbens J, Gourde,R. Tedrow T, Burcham GN, Clement T, Braun L. Using single nucleotide polymorphisms (SNPS) to sort out bovine herpesvirus-1 vaccine-induced reproductive disease. 47^{8h} annual conference of the American Association of Bovine Practitioners, New Orleans LA, September 19, 2015.
31. Thakur N, Braun L, Chase CCL. BVDV infection significantly compromises bovine neutrophil activity. 96th annual meeting of the Conference for Research Workers in Animal Diseases, Chicago IL, December 7, 2015

N. Invited Presentations (Since 2010)

1. Chase, CCL. Chase C. Vaccines-Important for Good Human and Veterinary Health. 6th annual Regional Bioscience Conference, Worthington MN, March 26, 2010.
2. Chase C. Vaccination of the Cow for Viral Diseases- What Timing Makes Sense? Center for Veterinary Biologics, USDA-APHIS, Ames IA, April 6, 2010.
3. Chase C. Application of Real-Time PCR in BHV-1 Infection Diagnosis on Bovine Aborted Fetuses Samples. Faculty of Veterinary Medicine, Warsaw University of Life Sciences, Warsaw, Poland, April 22, 2010.
4. Chase C. The Many Faces of Bovine Viral Diarrhea Virus: The Virus, Diagnostics and Wildlife Threats. Polish Buiatrics Association Scientific Conference, Pulawy, Poland, April 24, 2010.
5. Chase C. Being an Entrepreneur- You can Do it Why Juggling Multiple Balls. Trask Seminar, College of Veterinary Medicine, Iowa State University, Ames, IA, October 29, 2010.
6. Chase C. Vaccination: who, what, when, where, how. 5th US BVDV Symposium: Preventing, Detecting and Controlling the Spectrum of Diseases Caused by BVDV. November 17, 2011, San Diego, CA.
7. Chase C. The activation of the immune system-it doesn't get a free ride. 27th annual Southwest Nutrition & Management Conference, February 23, 2012.
8. Chase C. Swine immunology- What does it take to make the immune response "take"? 43rd annual meeting of the American Association of Swine Veterinarians, Denver CO, March 12, 2012.
9. Chase C. The Immune Response in Newly Arrived Cattle: What can we do to insure it "works"? 2012 Plains Nutrition Council Spring Conference, San Antonio, TX, April 12, 2012.
10. Chase C. Development of the Immune System. 23rd ADSA Discover Conference on Food Animal Agriculture-Bovine Immunology: The Intersection of Innate and Acquired Immunity, May 30, 2012.
11. Chase C. Bovine Respiratory Disease Complex: What's New? Symposium on Infectious Diseases, School of Veterinary Medicine, University of Wisconsin-Madison, Madison WI, June 23, 2012.
12. Chase C. Bovine viral diarrhea virus-understanding more about a persistent problem. BCAAP Seminar, South Dakota State University, Brookings, SD, October 12, 2012.
13. Chase C. Innate Response to ODN-CpG in Ruminants. Bayer Animal Health Immunology Expert Meeting, Atlanta, GA, November 27, 2012.

14. Chase C. How to get the most out of your vaccination program. Applied Reproductive Strategies in Beef Cattle Conference, Sioux Falls, SD, December 4, 2012.
15. Chase C. Mucosal Immunology 101: The World of Alphabet Soup Unraveled (Hopefully??), Zinpro Winter Research Planning Meeting, Chaska, MN, January 10, 2013.
16. Chase C. Immunology 101, Lellamand Animal Health Winter Research Planning Meeting, Milwaukee, WI, January 16, 2013.
17. Chase C. Swine immune systems and vaccination. 2013 Manitoba Swine Seminar, Winnipeg, Manitoba, January 31, 2013.
18. Chase C. 2012 EHDV Outbreak in Deer and Cattle in South Dakota. Gap Analysis and Countermeasures Assessment Orbiviruses Workshop, Manhattan, KS, May 14, 2013.
19. Chase C. Effective vaccination on the bovine neonate: Challenges and opportunities. 25th ADSA Discover Conference on Food Animal Agriculture-New Developments in Immunity, Nutrition, and Management of the Preruminant Calf, May 29, 2013.
20. Chase C. Overview on IBR and its Effects on Reproduction-Lunch Symposium. Joint Annual Meeting of the American Dairy Science Association (ADSA) and America Society of Animal Science (ASAS), July 9, 2013.
21. Chase C. Immune response in the horse: What makes it work? Equine Nutrition Seminar, Jackson WY, August 22, 2013.
22. Chase C. Innate and APC responses to BVDV: Identifying Immunomodulatory Mechanisms, Department of Ecosystems and Public Health, Faculty of Veterinary Medicine, University of Calgary, Calgary, Alberta, September 6, 2013.
23. Chase C. Immune Systems Functions. 2013 Vi-COR Ruminant Advisory Panel Meeting, Chicago, IL, November 5, 2013.
24. Chase C. The Key Role of the Immune System of Pigs. Dialogues about the Keys to Prevention in Swine Health. 23rd International Pig Veterinary Society, Cancun, Mexico, June 9, 2014.
25. Chase C. BVDV- New Insights on Persistence and Mucosal Disease, Department of Veterinary Science, University of Wyoming, Laramie WY, July 28, 2014.
26. Chase C. The US Cattle Inventory and Vaccine Market. Hipra, Amer, Spain, September 4, 2014.
27. Chase C. Bovine Viral Diarrhea Virus: Trying to Understand a "Persistent Problem", Department of Pathobiology, School of Veterinary Medicine, University of Wisconsin, Madison, WI, October 10, 2014.
28. Chase CCL. Historic perspective on pestivirus infection and the immune system. US BVDV/ESVV Pestivirus Symposium: Pestiviruses: Old Enemies, New Challenges. Kansas City MO, October 14, 2014.
29. Chase C. Gut Immunity-What are the keys to protection? 46th annual meeting of the American Association of Swine Veterinarians, Orlando FL, March 2, 2015.
30. Chase C. Bovine In Vitro Data: Correlation of these data to lung lesion reduction. Zelnate/Victrio Mode of Action Workshop, Bayer Animal Health, Shawnee Mission KS, March 20, 2015.
31. Chase C. Veterinary Immunology Insights. Determining Release and Throughout-Dating Potency Specifications: A Us Regulatory Policy Workshop, Ames IA, April 21-22, 2015.

32. Chase C. Innate immunity at intestinal level and interactions with microbiota. 3rd International Poultry Symposium, Paris, France, May 7, 2015.
33. Chase C. Focus on bacteriological etiology of BRD, management and prevention. 17th Sivar International Conference, Cremona, Italy, May 15, 2015.
34. Chase C. BRD and immunity. 17th Sivar International Conference, Cremona, Italy, May 15, 2015.
35. Chase C. Role of immunostimulants when used in conjunction with live and killed vaccines. 2nd Bayer Innate Immunity Global Advisory Board, Kansas City MO, November 11-12, 2015.
36. Chase CCL. Rinehart C, E, Barling K. Mucosal immunology: microbial interaction and cytokine production. 96th annual meeting of the Conference for Research Workers in Animal Diseases, Chicago IL, December 7, 2015.

O. Publications (Since 2010)

Refereed

1. Stevens ET, MS Brown, WW Burdett, MW Bolton, ST Nordstrom CCL Chase. 2011. Efficacy of a non-adjuvanted, modified-live virus vaccination in calves with maternal antibodies against a virulent bovine viral diarrhea virus type 2 challenge seven months following vaccination. *The Bovine Practitioner* **45**:23-31.
2. Stevens ET, DU Thomson, BW Wileman, S O'Dell, CCL. Chase. 2011 The Survival of Bovine Viral Diarrhea Virus on Materials Associated with Livestock Production. *The Bovine Practitioner* **45**:118-123.
3. Rinehart CL, AD Zimmerman, RE Buterbaugh, R Jolie, CCL Chase. 2012. Efficacy Of Vaccination Of Cattle With The *Leptospira Interrogans* Serovar *Hardjo* (Type *Hardjoprajitno*) Component Of A Pentavalent Leptospira Bacterin Against Challenge With *Leptospira Borgpetersenii* Serovar *Hardjo* (Type *Hardjo-Bovis*). *Am J Vet Res* **73**:735-740.
4. Ridpath JF, JD Neill, CCL Chase. 2012. Impact of BVDV Infection of White-Tailed Deer During Second and Third Trimesters of Pregnancy. *J Wild Dis* **48**:758-762.
5. Chase CCL. The Impact of BVDV Infection on Adaptive Immunity. 2013. *Biologicals* **41**:52-60.
6. Perry GA, AD Zimmerman, RF Daly, RE Buterbaugh, J Rhoades, D Scholz, A Harmon, CCL Chase. 2013. The effects of vaccination on serum hormone concentrations and conception rates in synchronized naive beef heifers. *Theriogenology* **79**:200-205.
7. Zimmerman AD, EW Springer, KS Barling, RE Buterbaugh, RD Pooley, D Scholz, J Rhoades, CC Chase. 2013. Prevention of *Leptospira borgpetersenii* serovar hardjo Colonization in Heifers Challenged 12-months after Vaccination with a Multivalent Vaccine containing a US *Leptospira borgpetersenii* serovar hardjo isolate. *JAVMA* **242**:1573–1577.
8. Zimmerman, AD, AL Klein, RE Buterbaugh, B Hartman, CL Rinehart, CCL Chase. 2013. Vaccination with a multivalent modified-live virus vaccine administered one year prior to challenge with bovine viral diarrhea virus type 1b and 2a in pregnant heifers. *The Bovine Practitioner* **47**(1):22-33.
9. Hashish, EA, C Zhan, X Ruan, DE Knudsen, CC Chase, RE Isaacson, G Zhou, W Zhang. 2013. A Multiepitope Fusion Antigen Elicits Neutralizing Antibodies against

Enterotoxigenic Escherichia coli and Homologous Bovine Viral Diarrhea Virus In Vitro. *Clinical and Vaccine Immunology* **20**(7):1076–1083.

10. Zimmerman, AD, AL Klein, RE Buterbaugh, CL Rinehart, CCL Chase. 2013. Protection against bovine herpesvirus type 1 (BHV-1) abortion following challenge 8 months or approximately1 year after vaccination. *The Bovine Practitioner* **47**(2):73–81.
11. Rajput, MK, MF Darweesh, K Park, LJ Braun, W Mwangi, AJ Young, CCL Chase. 2014. The effect of bovine viral diarrhea virus (BVDV) strains on bovine monocyte-derived dendritic cells (Mo-DC) phenotype and capacity to produce BVDV. *Virology Journal*, *11*(1), 44. doi:10.1186/1743-422X-11-44.
12. Rajput, MK. SMG Mansour, LJ Braun, MF Darweesh, N Thakur, CCL Chase. 2014. Comparison of the Affinity Chromatography and the Ion Exchange Chromatography in the Isolation of Bovine Immunoglobulin G. *OALib*, e960. doi:10.4236/oalib.1100889
13. O'Toole, D, Chase CCL, Miller MM, Campen HV. 2014. Kennedy, the Early Sixties, and Visitation by the Angel of Death. *Veterinary Pathology*, *51*(6), 1051–1062. doi:10.1177/0300985814548515.
14. Fulton RW, d'Offay JM., Eberle, R., Moeller, R. B., Campen, H. V., O'Toole, D., Chase, CCL, Miller, MM, Sprowls R, Nydam DV. 2015. Bovine herpesvirus-1: Evaluation of genetic diversity of subtypes derived from field strains of varied clinical syndromes and their relationship to vaccine strains. *Vaccine*, *33*(4), 549–558. doi:10.1016/j.vaccine.2014.11.033
15. Darweesh, MF, Rajput, MKS, Braun, LJ, Ridpath, JF, Neill, JD, Chase, CCL. 2015. Characterization of the cytopathic BVDV strains isolated from 13 mucosal disease cases arising in a cattle herd. *Virus Research*, *195*, 141–147. doi:10.1016/j.virusres.2014.09.015.
16. Mansour SMG, Ali H, Chase CCL, Cepica A. 2015. Loop mediated isothermal amplification for diagnosis of eighteen World Organization for Animal Health (OIE) notifiable viral diseases of ruminants, swine and poultry. *Animal Health Research and Reviews*, *16*(2), 89–106. doi:10.1017/S1466252315000018
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18. Ruder MG, Lysyk TJ, Stallknecht DE, Foil LD, Johnson DJ, Chase CC, Dargatz DA, Gibbs EPJ. 2015. Transmission and epidemiology of bluetongue and epizootic hemorrhagic disease in North America: current perspectives, research gaps and future directions. *Vector-Borne and Zoonotic Diseases*, 15(6), 348–363. doi:10.1089/vbz.2014.1703
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21. Wilson WC, Gaudreault NN, Jasperson D, Johnson D, Ostlund E, Chase CL, Ruder MG, Stallknecht DE. 2015. Molecular evolution of American field strains of bluetongue

and epizootic hemorrhagic disease viruses. *Veterinaria Italiana* 51(4):269-273. Doi: 10.12834/VetIt.555.2627.1

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