

Curriculum Vitae

Current as of August 24, 2015

1. **Name:** Herman Wildrik Barkema

2. **Personal Data**

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Lemsterland
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Citizenship: Canada

3. **Academic Qualifications**

1998 Bovine specialist, Royal Dutch Veterinary College
1998 PhD in Veterinary Epidemiology, Utrecht University
1994 Epidemiologist A, Dutch National Science Foundation
1988 DVM, Utrecht University, The Netherlands

4. **Employment History**

2014 -- **NSERC Industrial Research Chair** in Infectious Diseases of Dairy Cattle
(Supported by Alberta Milk, Dairy Farmers of Canada, Dairy Farmers of
Manitoba, BC Milk, Westgen Endowment Fund, CanWest DHI, and Canadian
Dairy Network)
2008 -- 2013 **Head** of the Department of Production Animal Health, Faculty of Veterinary
Medicine, University of Calgary
2007 -- **Professor Epidemiology of Infectious Diseases**, Department of Community
Health Sciences, Faculty of Medicine, University of Calgary
2007 - 2008 **Interim Head** of the Department of Production Animal Health, Faculty of
Veterinary Medicine, University of Calgary
2006 -- **Professor Epidemiology of Infectious Diseases**, Department of Production
Animal Health, Faculty of Veterinary Medicine, University of Calgary

- 2006 -- **Graduate Faculty**, Department of Community Health Sciences, Faculty of Medicine, University of Calgary
- 2006 -- **Graduate Faculty**, Department of Medicine, Faculty of Medicine, University of Calgary
- 2006 -- **Adjunct Professor** and Graduate Faculty, University of Prince Edward Island (renewed Jan. 2014)
- 2006 **Professor Epidemiology/Farm Service** (accelerated promotion), Department of Health Management, Atlantic Veterinary College, University of Prince Edward Island
- 2001 – 2006 **Associate Professor Epidemiology/Farm Service**, Department of Health Management, Atlantic Veterinary College, University of Prince Edward Island.
- 1992 - 2001 **Veterinarian/epidemiologist** of the Ruminant department of the Dutch Animal Health Service, Drachten, the Netherlands
- 1990 - 1992 **Veterinarian**, Department of Herd Health and Reproduction, Utrecht University
- 1989 - 1990 **Veterinarian**, Department of Ambulatory Clinic and Herd Health, Veterinary Faculty, Universidad Nacional, Costa Rica
- 1988 - 1989 **Manager and veterinarian** of a 3500 cow dairy and beef herd, Boca de Arenal, Costa Rica

5. Professional Awards and Honors

- Journal of Dairy Science Most Cited Award, 2015. This award is presented annually by Elsevier and Journal of Dairy Science to recognize contributors to Journal of Dairy Science whose work is significantly impacting research and the dairy industry.
- Fellow of the Canadian Academy of Health Sciences. 2014. This fellowship is one of the most prestigious awards in Canada recognizing substantial contributions to health science.
- Journal of Dairy Science Most Cited Award, 2014. This award is presented annually by Elsevier and Journal of Dairy Science to recognize contributors to Journal of Dairy Science whose work is significantly impacting research and the dairy industry.
- University of Calgary Teaching Award for Curriculum Development. 2014. This award is presented annually by the University of Calgary and was given to the initial faculty members of UCVM as a group in recognition of outstanding contributions in the area of curriculum development.
- West Agro, Inc. Award, 2013. This award is presented annually by the American Dairy Science Association to recognize outstanding research of milk quality as affected by control of mastitis, management of milking, and practices in production of milk.
- Journal of Dairy Science Most Cited Award, 2011. This award is presented annually by Elsevier and Journal of Dairy Science to recognize contributors to Journal of Dairy Science whose work is significantly impacting research and the dairy industry.
- Intervet/Schering-Plough Award, 2010. This award is presented annually by the Canadian Veterinary Medical Association to a veterinarian whose work in large

animal practice, clinical research or basic sciences has contributed significantly to the advancement of large animal medicine, surgery and theriogenology, including herd health management.

- Guest Professor at Dept. of Obstetrics, Fertility and Herd Health, Ghent University, Belgium, 2008-2018 (renewed in 2013). This is an honorary position with a 5% time commitment.
- Merit Award for Scholarly Achievement, 2006. This is the annual research award of the University of Prince Edward Island Faculty Association.
- Pfizer Animal Health Award for Research Excellence, 2005. This is the annual research award of the Atlantic Veterinary College.
- Nominated by the UPEI Graduate Student Association for the Pfizer Carl J. Norden Distinguished Teacher Award, 2005 and 2006.
- Dutch Veterinary Journal. Best journal manuscript for 2002.
- Dutch Veterinary Journal. Best journal manuscript for 1994.

6. Professional Memberships

- Canadian Veterinary Medical Association
- Alberta Veterinary Medical Association (License No. 2388)
- University of Calgary GastroIntestinal Research Group
- University of Calgary Snyder Institute for Chronic Diseases
- Calgary Institute for Public Health
- Royal Dutch Veterinary College
- NMC (National Mastitis Council)
- American Dairy Science Association
- American Association of Bovine Practitioners
- Canadian Society for Epidemiology and Biostatistics

7. Professional Activities

Current:

- Chair EU Expert Group on Paratuberculosis funded by the DISCONTTOOLS project (2014 – present)
- Dairy Farmers of Canada Biosecurity Working Group (2014 – present)
- American Dairy Science Association West Agro, Inc. Award selection committee (2013 - present)
- Adviser, USDA-NIFA-funded project “An Integrated Milk Quality Extension and Education Program to Reduce Mastitis” (2012 – present)
- Chair technical committee of Canadian Johne’s Disease Initiative (2008 – present)

- Organizing committee of UCVM Annual Beef Health Conferences (May 2011, June 2012, June 2013 and June 2014). I have founded this event and chaired the first 3 conferences. Drs. John Kastelic and Claire Windeyer are the current co-chairs
 - Together with Drs. Jeroen De Buck and Karin Orsel, I have organized the first six annual Canadian *Mycobacterium avium* subsp. *paratuberculosis* meetings in Banff in October 2008 to 2013, and we are currently organizing the 7th meeting
 - Leader Alberta Inflammatory Bowel Disease Consortium (2009 – present)
 - Alberta Johne's Disease Initiative Advisory Committee (2009 – present)
 - Alberta Animal Health Strategy Working Committee (2007 – present)
 - Dairy Farmers of Canada Production Expert Scientific Advisory Committee (PESAC) (2007 – present)
 - Scientific Committee of the Canadian Bovine Mastitis Research Network, Leader of the Environment Theme (2003 – present)
 - Research Committee of the National Mastitis Council (NMC), USA (2005 – present)
- Past:
- Organizing committee of the 2014 summer meeting of the NMC in Ghent, Belgium
 - Organizing committee of the 2014 annual meeting of the NMC in Fort Worth, TX, USA
 - Search and selection committee NSERC Industrial Research Chair Dairy Cattle/Nutrition/Physiology, University of Alberta (2013 – 2014)
 - Interim Scientific Director Canadian Bovine Mastitis Research Network (2011 – 2012)
 - Board of NMC (formerly National Mastitis Council) (2008 – 2011)
 - Chair of the International Advisory Committee of the National Mastitis Council (NMC), USA (2006 – 2011)
 - External advisor of Dutch National Mastitis Reduction Project (2004 – 2011)
 - Vice-chair technical committee of Canadian Johne's Disease Initiative (2008 – 2009)
 - Program committee of the Canadian Voluntary Johne's Disease Prevention and Control Program (2008 – 2009)
 - Alberta Johne's Disease Working Group (2006 – 2009)
 - Vice-chair of the International Advisory Committee of the National Mastitis Council (NMC), USA (2004 – 2006)
 - Canadian Voluntary Johne's Disease Prevention and Control Program Committee of the Canadian Animal Health Coalition (2005 – 2006), chair of both the program design and the concurrent research subcommittee
The establishment of both control programs was accomplished in close collaboration with the provincial Dairy Boards and Cattlemen Associations, the provincial ministries of Agriculture and Fisheries, provincial bovine practitioners, Dairy Farmers of Canada and the Canadian Cattlemen Association
 - Organizing committee of the 2008 annual meeting of the NMC in New Orleans, USA
 - Organizing committee of the Conference on Heifer Mastitis, Ghent, Belgium, June 2007. I was the editor of the proceedings that were published as a special issue in *Vet. Microbiol.* (2009) 134.

- Organizing committee of the 2007 annual meeting of the Am. Assoc. of Bovine Practitioners, Vancouver, Canada. I was responsible for the organization of the dairy section
- Scientific committee of the 2008 Canadian Association of Veterinary Epidemiology and Production Management annual meeting, Charlottetown, PEI, Canada
- Organizing committee of the 2007 Canadian Association of Veterinary Epidemiology and Production Management annual meeting, Edmonton, AB, Canada
- Organizing committee of the 2006 National Mastitis Council (NMC) summer meeting in Charlottetown, Prince Edward Island, Canada
- Organizing committee of the 2006 annual meeting of the National Mastitis Council (NMC) in Orlando (FL), USA
- Organizing committee of the 2004 annual meeting of the National Mastitis Council (NMC) in Charlotte (NC), USA

8. Participation on University, College and Department Committees

University of Calgary (2006 -)

Current:

- UofC Advisory Committee on Knowledge Engagement (ACKE) (2015 -)
- UofC SUPPORT: Research Infrastructure Programs subcommittee (2013 -)
- Executive Council of the Snyder Institute for Chronic Diseases (2012 -)
- UCVM Research Committee (2013 -)
- UCVM Graduate Scholarship Evaluation Committee (2013 -)
- UofC Academic Review Committee for the University Fundraising Campaign (2012 -)

Past:

- UCVM Academic Appointment Review Committee (2013, 2014)
- UCVM Government and International Relations Committee (2008 - 2013)
- UCVM Leadership Council (2007 - 2013)
- UofC Killam Memorial Chair Selection Committee, 2011
- UCVM Research Strategy Committee (2008 - 2010)
- Faculty of Veterinary Medicine (UCVM) 3rd year teachers committee (2009 - 2010)
- UCVM Curriculum Working Group (2008)
- UCVM Student Affairs Working Group (2008)
- UCVM Admissions committee (2006 - 2007)
- UCVM Library committee (2006 - 2007)
- UCVM Distributed Veterinary Teaching Hospital committee (2006 - 2008)
- Many (>30) UCVM faculty search and selection committees, most of whom I have chaired

UPEI (2001-2006)

- AVC Diagnostic Research Committee (2006)
- University of Prince Edward Island senate (2005 – 2006)
- UPEI Faculty Association Finance committee (2004 – 2006)
- Atlantic Veterinary College (AVC) Teaching Space Allocation Committee (2002 – 2005)
- AVC Population Health Space Allocation Committee (2002 – 2005)

9. Editorial Activity

Current:

- Editorial Board of Journal of Dairy Science (2005 – 2011, and 2014 – present)
- Editorial Advisory Board of Preventive Veterinary Medicine (1998 – present)

Past:

- Editorial Board of Veterinary Research (2008 – 2010)
- Editor of a special issue of Veterinary Microbiology on Heifer Mastitis (2007 – 2008)
- Board of Scientific Reviewers for the American Journal of Veterinary Research (2003 – 2006)
- Editor of a special issue of the Dutch Veterinary Journal on Chronic Wasting Disease in Cattle (2001)

10. Reviewer for (52 manuscripts in 2014):

- Preventive Veterinary Medicine
- Journal of Dairy Science
- Animal
- Epidemiology and Infection
- Canadian Veterinary Journal
- Journal of the American Veterinary Medical Association
- American Journal of Veterinary Research
- Canadian Journal of Veterinary Research
- Veterinary Research
- International Journal of Parasitology
- Veterinary Parasitology
- Veterinary Microbiology
- Acta Veterinaria Scandinavia
- Journal of Dairy Research
- Tijdschrift voor Diergeneeskunde (Dutch Veterinary Journal)
- Theriogenology
- Veterinary Record
- New Zealand Veterinary Journal
- Foodborne Pathogens and Disease

- Inflammatory Bowel Disease
- Veterinary Medicine International
- Journal of Mammary Gland Biology and Neoplasia
- Irish Veterinary Journal
- Animal Welfare
- Veterinary Quarterly

Additionally, I review on a regular basis books, and research proposals (NSERC, CHIR, USDA, Agricultural Funding Consortium, the Wellcome Trust, Alberta Livestock Industry Development Fund, Alberta Livestock and Meat Agency, Beef Cattle Research Council, Manitoba Rural Adaptation Council, Alberta Innovates – BioSolutions, MITACS, Genome BC, and The Academy of Finland).

- As a member of Dairy Farmers of Canada’s Production Expert Scientific Advisory Committee (PESAC) I review the research proposals (2007 – present). This committee meets two times annually, in the spring to evaluate and select the LOIs and in the fall to evaluate and select the full proposals that will be recommended for funding to the Board and to NSERC for matching funding.
- I have reviewed promotion files to full professor for Cornell University (2008), University of Saskatchewan (2009), University of Minnesota (2009), University of British Columbia (2009), University of Georgia (2010), University of Jordan (2010), and the University of Alberta (2013), and tenures files for the University of Saskatchewan (2008), Cornell University (2011), Washington State University (2012), North Carolina State University (2012), University of Jordan (2013), University of Guelph (2014), and the University of Vermont (2014).
- I have been an external evaluator for full professor positions in Disease Modelling (2010) and Disease Control and Prevention (2013) at the University of Copenhagen, and a full professor position in Milk Quality and Cattle Health at the University of Helsinki (2014). Finally, I have been an external member of the search and selection committee for an NSERC Industrial Research Chair in Cattle Production at the University of Alberta (2013), and two Assist. Prof. positions in Biostatistics in the Dept. of Mathematics of the University of Calgary (2013 and 2014).

11. Most Significant Contributions to Research

The over-all goal of my research program is to ensure a safe and economical food supply with a reduced risk to transmission of zoonotic diseases to farm families and the general population. I have two main research interests. My first interest is research to prevent and control infectious diseases on dairy farms, such as mastitis and Johne’s disease, with animal and public health perspectives. New prevention and control programs in Canada, The Netherlands, and other countries have been introduced or changed based on results of my research. My second main research interest is the interaction between host, microbes and the environment in Inflammatory Bowel Disease. I lead the Alberta Inflammatory Bowel Disease Consortium, a strategic research initiative funded by Alberta Innovates – Health Solutions. All my research projects are carried out by graduate students, often with assistance of summer students. Because I value a

multidisciplinary education of these graduate students, all my graduate students are co-supervised by a faculty member with a complimentary expertise, most often a basis scientist. Knowledge transfer and exchange is a logical and important extension of my research program.

1. Bovine mastitis

a. Prevention and control of mastitis in dairy cattle (96 papers in refereed journals, 1 accepted and 1 submitted paper, and 1 book chapter). Bovine mastitis is the most costly disease of the dairy industry worldwide. Every year, approximately 25% of dairy cows are affected by clinical mastitis, whereas the incidence of subclinical mastitis is even higher. We have demonstrated that the management practices to decrease the prevalence of subclinical mastitis are available, and that this decrease does not lead to an increased incidence of clinical mastitis. We have suggested and evaluated improved detection methods of intramammary infection. Also, we have determined factors that determine cure of *Staphylococcus aureus* mastitis treatment, and developed algorithms that predict the cure rate. With the results of the studies, mastitis prevention and control programs in The Netherlands, Canada, the US and many other countries have been improved. I have served as a Board member of the NMC, the international organization for udder health research, was Chair of the International Advisory Committee, and am a member of the Research Committee. Also, I have served as advisor of the Dutch Udder Health Centre, and I currently am adviser of the USDA-NIFA funded project “An Integrated Milk Quality Extension and Education Program to Reduce Mastitis”.

b. Canadian Bovine Mastitis and Milk Quality Research Network

The Canadian Bovine Mastitis and Milk Quality Research Network (CBMQRN) was established to help the dairy industry reduce mastitis. It is the most comprehensive and exciting research endeavour in support of the dairy industry that has ever existed in Canada. The Network consists of 38 scientific investigators at 8 universities and 2 federal research institutions who have expertise in a wide variety of scientific disciplines (genetics, epidemiology, clinical medicine, immunology, microbiology, etc.) and who have come together to work as a team to tackle the most important mastitis research issues. I am the leader of the Environment theme (there are 2 other themes). Funding was committed for 5 years by NSERC (\$7.1 million), and the dairy industry (\$2.2 million). Dairy Farmers of Canada has asked CBMRN to select projects for a total of \$1 million in funding for the Dairy Cluster. I lead one of the three research activities: “Enhancing sustainable production of safe, high quality milk by optimizing dairy farm best management practices for preventing mastitis and reducing its environmental impact.” Additionally, I have been the Interim Scientific Director for a year. The CBMRN has recently been awarded \$1.8 million in funding for the second 5-year Dairy Cluster of Dairy Farmers of Canada and Agriculture and Agri-Food Canada and a 6-year NSERC CREATE grant for training of graduate students and post-doctoral fellows in Milk Quality.

2. Inflammatory Bowel Disease (IBD)

a. IBD research (10 papers in refereed journals, 2 accepted, 2 submitted papers). Inflammatory bowel diseases (IBD) are a group of chronic, idiopathic and debilitating illnesses comprised mainly of Crohn's disease (CD) and ulcerative colitis (UC). A systematic review published by the Alberta IBD Consortium demonstrated that 0.5% of

Canadians are affected by IBD and more than 9,000 new diagnoses are made annually. Alberta ranks among the highest in the world in terms of IBD prevalence, and the incidence continues to rise.

b. Alberta IBD Consortium

Currently in its fifth year of a 5-year, \$5 million Interdisciplinary Team Grant (ITG) from AHFMR (now Alberta Innovates—Health Solutions), the Alberta IBD Consortium was formed to identify key gene-environment-microbe interactions that will lead to a better understanding of the pathogenesis of IBD. I am the leader of the Consortium, which now consists of a multidisciplinary team of 41 clinicians and scientists, mainly from the Universities of Calgary and Alberta, but including members in Lethbridge and Toronto. A key deliverable of the Consortium has been development of one of the world's most comprehensive IBD patient cohorts, with genotype, phenotype, serotype and environmental data for over 2,000 individuals. An integral part of this collaborative approach to tackling IBD is engaging a wide range of stakeholders in a comprehensive integrated knowledge transfer and exchange (KTE) program in partnership with the Crohn's and Colitis Foundation of Canada (CCFC). An additional \$4.5 million has already been secured from a variety of sources to support this initiative.

3. Johne's disease

a. Johne's disease research (19 papers in refereed journals, 1 accepted and 4 submitted papers, and 2 book chapters). Johne's disease (paratuberculosis) is an infectious, chronic enteritis caused by *Mycobacterium avium* subsp. *paratuberculosis* (MAP). It results in intermittent diarrhea, loss of body condition and lower productivity in both beef and dairy cattle. Currently, it is non-treatable and in the terminal stage, cattle die in an extremely weakened state. Johne's disease is widespread in cattle populations in most countries with major dairy and beef industries. There is a potential association of MAP with Crohn's disease. We have determined the prevalence of MAP-infection in cattle in The Netherlands and Atlantic Canada (16%), evaluated diagnostic tests, and improved testing schemes and prevention and control programs. Currently, we are conducting a study to determine the age- and dose-dependent susceptibility of calves to MAP. The results of our research program have defined the testing strategies currently used worldwide in Johne's disease control programs.

b. Canadian Johne's disease prevention and control programs

In May 2005, the Canadian Animal Health Coalition was sanctioned by its stakeholders, the Canadian dairy and beef industry, provincial ministries of agriculture, veterinary colleges and associations of bovine practitioners, to design a national Johne's disease control program. Five subcommittees were formed, 3 of which I was requested to chair: 'Goals and Objectives', 'Design of the Program', and 'Concurrent Research'. In May 2006, the committee delivered the draft of the program, including a knowledge transfer program and a template of the concurrent research program. The commodities have approved the program in the summer of 2007 and in July 2008 Agriculture and Agri-Food Canada have approved the program and its budget under the Advancing Canadian Agriculture and Agri-Food program. I lead the Scientific Committee in this program and I am co-chair of the Technical Committee.

Additionally, regional initiatives for Johne's disease control programs have started. With funding of the PEI Holstein branch, I started with the group at the Atlantic Veterinary College a program on PEI, and requests for funding were submitted in New Brunswick, Nova Scotia and Newfoundland by the provincial Dairy Boards that were approved after I left PEI. After moving to Alberta, I am now actively involved in the Alberta Johne's Disease Working Group. With a small group, we drafted a proposal for the Alberta Johne's Disease Initiative which was funded by the Alberta Livestock and Meat Agency and Alberta Milk, the organization of Alberta dairy producers, for \$730,000. Our research group at the Department of Production Animal Health coordinates this Initiative to reduce the prevalence and incidence of Johne's Disease in Alberta. Currently, 355 (~65%) Alberta dairy farms participate in the Alberta Johne's Disease Initiative.

To improve Johne's control efforts nation-wide, I have also worked to bring together researchers from other institutions, as well as government and industry experts. Together with Dr. Jeroen De Buck, I have initiated an annual meeting of the Canadian MAP researchers in Banff. This year the meeting will be held for the sixth time.

4. ***Neospora caninum* and prevention and control of neosporosis** (10 papers in refereed journals). *Neospora caninum* is the most frequent cause of abortion outbreaks in cattle herds. We demonstrated that dogs are an important transmission vector in dairy cattle. In a series of fundamental and epidemiological studies, we demonstrated for the first time that dogs could be infected by consumption of infected placentas (fetal membranes) and that introduction of a dog to the farm was associated with outbreaks. We have also found that the coyote may be a definitive host for *N. caninum*. These results have led to easily implemented control mechanisms to reduce the incidence of this disease in dairy cattle.
5. **Prevention and control of gastro-intestinal infections in cattle** (18 papers in refereed journals). A significant proportion of dairy cows are infected with gastro-intestinal parasites such *Giardia duodenalis* and *Cryptosporidium* spp. or pathogenic microbes such *Salmonella* species. Outbreaks cause significant economic losses and shedding animals can be a source of food-borne infections. We have determined the prevalence of infection and risk factors for introduction and persistence of these infections in dairy herds. Also, we have validated cow- and herd-level tests for detection of these infections in dairy herds. Our results were used to design various North-European *Salmonella* programs.
6. **Building a research-intensive department**
As Head of the Department of Production Animal Health, I have actively built a research-intensive department (without compromising the quality of teaching DVM and graduate students). After 6 years of building, we now have a well-functioning multidisciplinary department of 17 faculty members. I have mentored all young faculty members (9 have started in our department as 1st year assistant professor), and am co-investigator on many of their first grant proposals. When their CV was not yet sufficient, we have submitted grant proposals with myself as PI and them as Co-PI, with the intention that they would be the supervisor of the graduate student and lead the project. This has been important to start their career, and I am proud to see that all research-intensive members of my department are now successful on their own in obtaining research funding and supervision of graduate students.

After 6 years, I have handed the Headship over to Dr. John Kastelic, because I have become an NSERC Industrial Research Chair in Infectious Diseases of Dairy Cattle.

12. Grants received

Since start at Univ. of Calgary (August, 2006 –):

- Reverse vaccinology approach for the prevention of mycobacterial disease in cattle. Genome Canada LSARP, 2015, \$7,343,840. Co-Applicant.
- Evaluation of the efficacy of in-parlor treatment of digital dermatitis. Alberta Milk and Growing Forward 2, 2015, \$82,000. PI
- NSERC CREATE in Milk Quality. NSERC, 2015. \$1,650,000. Co-applicant.
- Development of a bovine leukemia virus control program in Alberta. Alberta Livestock and Meat Agency, and Alberta Milk, 2015, \$93,486. Co-investigator.
- NSERC Industrial Research Chair in Infectious Diseases of Dairy Cattle. Supported by Alberta Milk, Dairy Farmers of Canada, Dairy Farmers of Manitoba, BC Milk, Westgen Endowment Fund, CanWest DHI, and Canadian Dairy Network, 2014, \$1,800,000. PI
- Application of laboratory assays for product efficacy studies focusing on treatment and control of Digital Dermatitis in cattle to improve animal welfare. Alberta Livestock and Meat Agency and Alberta Milk. 2014, \$124,510. Co-investigator.
- A national dairy cattle health and management benchmarking study. Agriculture and Agri-Food Canada and Dairy Farmers of Canada, Dairy Cluster 2. 2013, \$950,000. Co-investigator.
- Automatic milking systems: factors affecting health, productivity and welfare. Agriculture and Agri-Food Canada and Dairy Farmers of Canada, Dairy Cluster 2. 2013, \$378,082. Co-investigator.
- Canadian Bovine Mastitis and Milk Quality Research Network. Agriculture and Agri-Food Canada and Dairy Farmers of Canada, Dairy Cluster 2. 2013, \$1,714,722. Co-PI.
- Impact of management practices on antimicrobial resistance in bovine mastitis pathogens. Agriculture and Agri-Food Canada and Dairy Farmers of Canada, Dairy Cluster 2. 2013, \$145,462 (within Canadian Bovine Mastitis and Milk Quality Research Network funding in Dairy Cluster 2). PI.
- Better animal welfare leads to improved animal health and longevity, and economic advantages to dairy producers. Agriculture and Agri-Food Canada and Dairy Farmers of Canada, Dairy Cluster 2. 2013, \$630,240. Co-investigator.
- Evaluation of an alternative environmental sample collection method to detect dairy herds infected with *Mycobacterium avium* subspecies *paratuberculosis* (MAP). Canadian Agricultural Adaptation Program, and Alberta Milk, 2013, \$23,300. PI.
- Broad-spectrum infrared thermography for use as an early detection method for Digital Dermatitis in dairy cattle. Canadian Agricultural Adaptation Program, and Alberta Milk, 2013, \$12,500. PI.
- Effectiveness of a standardized footbath protocol in the prevention of bovine digital dermatitis on dairy farms in Alberta. Alberta Livestock and Meat Agency, and Alberta Milk, 2013, \$184,000. Co-investigator.

- Hoofbath efficacy evaluation. DeLaval, 2013, \$81,900. PI.
- Effectiveness of farm pasteurization to control horizontal transmission of *Mycobacterium avium* subsp. *paratuberculosis*. UCVM Clinical Research Grant competition, 2013, \$14,970. PI.
- A translational approach to understanding and managing Primary Sclerosing Cholangitis. The Faculty of Medicine and Alberta Health Services (Calgary Zone) Emerging Research Teams Grant Program, 2011, \$300,000. Co-investigator.
- The partnership between University of Calgary Faculty of Veterinary Medicine and Kerala Veterinary & Animal Sciences University to promote education, research, and knowledge transfer. Partnership Development Seed Grant, Shastri Indo-Canadian Institute, 2011, \$10,000. Co-applicant.
- Integrated analysis of *Mycobacterium avium* subspecies *paratuberculosis* genotype and phenotype: identifying vaccine targets. Alberta Livestock and Meat Agency, 2011, \$498,897. Co-investigator.
- Characterization of coagulase-negative staphylococcal species isolated from intramammary infections and extramammary sites on dairy farms. Agriculture Funding Consortium. 2011, \$270,581. Co-investigator.
- Transmission pattern profiling of *Mycobacterium avium* subsp. *paratuberculosis* between and within Canadian dairy herds by fast and discriminating strain typing. Dairy Farmers of Canada. 2010, \$94,000. PI.
- Inhalation as route of transmission for *Mycobacterium avium* subspecies *paratuberculosis*; comparison of intratracheal and aerosolized challenge. Agricultural Funding Consortium, 2010, \$126,908. Co-investigator.
- Rapid identification and consequences of intramammary infection with coagulase-negative staphylococci. Agriculture and Agri-Food Canada and Dairy Farmers of Canada, Dairy Cluster 1. 2010, \$149,845. PI.
- Reducing intramammary infection in free-stall housed dairy cows: interaction of post-milking standing time with cow cleanliness, lameness, and social status. Agriculture and Agri-Food Canada and Dairy Farmers of Canada, Dairy Cluster 1. 2010, \$108,364. Co-investigator.
- Developing a molecular phenotype to select for robust beef cattle to reduce cost of production and improve animal health, animal welfare and food safety. Agricultural Funding Consortium, 2010, \$652,050. Co-investigator.
- The influence of management practices on claw health, lameness and animal welfare on Alberta dairy farms. Alberta Livestock and Meat Agency, 2010, \$158,350. Co-PI.
- Improving cow comfort to increase longevity in tie stalls and free stalls. Agriculture and Agri-Food Canada and Dairy Farmers of Canada, Dairy Cluster 1. 2010, \$215,000. Co-investigator.
- Enhancing sustainable production of safe, high quality milk by optimizing dairy farm best management practices for preventing mastitis and reducing its environmental impact. Agriculture and Agri-Food Canada and Dairy Farmers of Canada, Dairy Cluster 1. 2010, \$315,000. PI.
- Assessment of health, welfare and milk composition on organic and conventional dairy farms. Organic Science Cluster, 2009, \$360,000. Co-PI.

- Reducing the incidence of mastitis in robotic milking systems through feed bunk management and design. Ontario Ministry of Agriculture, Food & Rural Affairs, New Directions & Alternative Renewable Fuels Research Program, 2009, \$88,351. Co-Investigator.
- Etiology of Inflammatory Bowel Disease: gene, microbe, and environment interactions. Alberta Heritage Foundation for Medical Research, 2009, \$5,000,000. Team Leader.
- Age and dose dependent susceptibility of *Mycobacterium avium* subsp. *paratuberculosis* infection in calves. Agricultural Funding Consortium, 2009, \$450,514. Co-PI.
- Prevalence and contact-structure analysis for transmission of important production limiting diseases of cattle and elk in southwest Alberta. Agricultural Funding Consortium, 2009, \$102,640. Co-Investigator.
- Age dependent susceptibility of *Mycobacterium avium* subsp. *paratuberculosis* infection in calves. Dairy Farmers of Canada/NSERC, 2008, \$237,281. Co-PI.
- Canadian Voluntary Johne's Disease Prevention and Control Program. Advancing Canadian Agriculture and Agri-Food program, 2008, \$191,000. Co-PI (proposal submitted by the Canadian Animal Health Coalition).
- Etiology of the Inflammatory Bowel Disease: gene, microbe & environment interactions. Alberta Heritage Foundation for Medical Research, 2008, \$10,000 for composing the full proposal after approval of the Letter of Intent. Team Leader.
- Prevalence of methicillin-resistant *Staphylococcus aureus* (MRSA) and extended-spectrum- β -lactamase (ESBL) *Escherichia coli* in milk samples of cows having clinical or subclinical mastitis. Public Health Agency of Canada, 2007, \$71,732. Co-PI.
- Selenium status of Maritime dairy cows and its relationship to the incidence of new intramammary infections. Atlantic Veterinary College internal competition, 2007, \$10,000. Co-investigator.
- Selenium and mastitis in early lactating dairy cows. Alltech Chile, 2007, \$23,000. Co-PI.
- The identification of genetic polymorphisms and protein biomarkers that are associated with susceptibility or resistance to bovine Johne's disease. Dairy cattle genetics research and development council (DAIRYGEN) of Canadian Dairy Network, 2006, \$542,000. Co-investigator.

UPEI (August, 2001 – August, 2006):

- Maritime Quality Milk – Integrated milk quality research and services for enhanced competitiveness in the regional dairy-food sector. Atlantic Innovation Fund, 2006, \$4,498,310. Co-PI.
- Determination of the relationship between bacterial concentration of *Mycobacterium avium* subsp. *paratuberculosis* in bovine feces and time to detection in TREK ESP Diagnostic unit. Atlantic Veterinary College internal competition, 2006, \$7350. Co-investigator.
- Presence of mastitis pathogens in culture-negative milk samples from cows with clinical mastitis. National Mastitis Research Foundation, 2006, US\$15,000. PI.
- Local Support for the Canadian Bovine Mastitis Research Network. TechPEI, 2006, \$170,000. Co-PI.
- Fecal survey of parasites infecting humane society animals. Sir James Dunn Animal Welfare Centre, 2005, \$28,910. Co-PI.

- Canadian Bovine Mastitis Research Network. NSERC Research Networks, 2005, \$9,312,220. Theme leader of one of the two research themes, the Monitoring theme.
- Association between antimicrobial usage in mastitis treatment and control, and antimicrobial resistance. NSERC Research Networks. Project within Canadian Bovine Mastitis Research Network, 2005, \$507,910. PI.
- Validation of *Neospora caninum* ELISA for use in bulk tank milk samples. Atlantic Veterinary College internal competition, 2005, \$5505. PI.
- The effect of intramammary antimicrobial therapy at dry-off on antimicrobial resistance in commensal fecal *Escherichia coli* bacteria on Quebec dairy farms. CORPAQ, 2005, \$100,000. Co-PI.
- Prevalence and transmission of *Giardia* and *Cryptosporidium* at the farm level. APF project 4500609 (Health Canada and Agriculture and Agri-Food Canada), 2004, \$320,000. PI.
- Efficacy of vaccination in preventing giardiasis in calves. Atlantic Veterinary College internal competition, 2004, \$7485. PI.
- Role of wild canids in the epidemiology of *Neospora caninum*. Atlantic Veterinary College internal competition, 2004, \$6746. PI.
- Estimation of sensitivity of individual and pooled fecal culture for detection of *Mycobacterium avium* subsp. *paratuberculosis* infection in dairy cattle. Dairy Farmers of Canada/NSERC, 2004, \$106,510. PI.
- Assessment of the mastitis situation in Canada. Dairy Farmers of Canada/NSERC, Canadian Bovine Mastitis Research Network, 2003/2004, \$209,912. PI.
- Establishment of laboratory facilities for *Mycobacterium avium* subsp. *paratuberculosis* at the Atlantic Veterinary College. Canadian Foundation for Innovation, New Opportunities, 2003, \$178,079. PI.
- Zoonotic potential and transmission dynamics of *Giardia* and *Cryptosporidium* infections in domestic livestock. PEI Health Research Institute, Group Development Award, 2003, \$2,500. PI.

Before start position at UPEI:

- Cohort of herds infected with paratuberculosis, Dairy Commodity Board, Ministry of Agriculture, The Netherlands, 2000-2003, \$1,380,000. PI.
- Objective parameters related to chronic wasting in Dutch dairy farms, Ministry of Agriculture and Dairy Commodity Board, The Netherlands, 2000, \$330,000. PI.
- Paratuberculosis in roes, Ministry of Agriculture, 2000, \$35,000. Co-PI.
- Most rapid eradication of paratuberculosis in infected herds, Dairy Commodity Board, Ministry of Agriculture, The Netherlands, 2000-2002, \$212,000. PI.
- Robotic milking and mastitis, European Community, 2000, \$441,000. Co-investigator
- Role of Calcium in retained placenta of Friesian mares, Commission Promotion of Veterinary and Comparative Research of Animal Diseases, The Netherlands, 2000, \$9,000 (supervisor). Co-PI.
- Randomized clinical trial on the efficacy of a J5-vaccine for Gram-negative mastitis, Merial, The Netherlands, 1999-2000, \$55,000. PI.

- Epidemiology of *Neospora caninum*, Dairy Commodity Board, The Netherlands, 1999-2002, \$640,000. Co-PI.
- Development of a bulk milk ELISA for *Neospora caninum*, Dairy Commodity Board, The Netherlands, 1999-2000, \$64,000. Co-PI.
- Randomized clinical trial two dry cow treatments, Elanco Animal Health, The Netherlands, 1999-2000, \$26,000. PI.
- Cohort study of 100 paratuberculosis-unsuspected herds, Dairy Commodity Board, Ministry of Agriculture, The Netherlands, 1999-2002, \$244,000. PI.
- A new type of *Salmonella typhimurium* in Dutch dairy herds, Dairy Commodity Board, Ministry of Agriculture, The Netherlands, 1999-2000, \$150,000. Co-PI.
- Validation of a bulk milk ELISA for *Salmonella dublin*, Dairy Commodity Board, Ministry of Agriculture, The Netherlands, 1999, \$67,000. PI.
- Specificity of Johnine and gamma-interferon for paratuberculosis, Dairy Commodity Board, Ministry of Agriculture, The Netherlands, 1999-2000, \$ 146,000. Co-PI.
- Role of viruses in the prevalence of subclinical mastitis, ID-Lelystad, 1999, \$70,000. PI.
- Randomized clinical trial of two clinical mastitis treatments, Pharmacia and Upjohn, Belgium, 1999, \$41,000. PI.
- Role of viruses in the incidence of clinical mastitis, ID-Lelystad, The Netherlands, 1998-1999, \$50,000. PI.
- Randomized clinical trial of two clinical mastitis treatments, Intervet International, 1998-1999, \$48,000. PI.
- Randomized clinical trial of two dry cow treatments, Intervet International, 1998-1999, \$70,000. PI.
- Prevalence of management measures to prevent infection with paratuberculosis in Dutch cow-calf herds, Dairy Commodity Board, Ministry of Agriculture, The Netherlands, 1998-1999, \$49,000. PI.
- Prevalence of management measures to prevent infection with paratuberculosis in Dutch dairy herds, Dairy Commodity Board, Ministry of Agriculture, The Netherlands, 1998-1999, \$103,000. PI.
- Seroprevalence of paratuberculosis in Dutch cow-calf herds using an absorbed ELISA, Dairy Commodity Board, Ministry of Agriculture, The Netherlands, 1998-1999, \$112,000. PI.
- Seroprevalence of paratuberculosis in Dutch dairy herds using an absorbed ELISA, Dairy Commodity Board, Ministry of Agriculture, The Netherlands, 1998-1999, \$318,000. PI.
- Validation of an absorbed ELISA for detection of antibodies to *Mycobacterium avium* subsp. *paratuberculosis*, Dairy Commodity Board, Ministry of Agriculture, The Netherlands, 1998, \$24,000. Co-PI.
- Association between heat stress and mastitis, Dairy Commodity Board, The Netherlands, 1998, \$15,000. PI.
- Epidemiology of *Staphylococcus aureus* on low BMSCC Herds, Intervet, Dairy Commodity Board, The Netherlands, 1997-2001, \$470,000. Co-PI.
- Randomized clinical trial of treatment of mastitis in early lactation, Pharmacia and Upjohn, Belgium, 1996, \$66,000. PI.

- Association between ‘closed’ dairy farming and disease, Dairy Commodity Board, Ministry of Agriculture, The Netherlands, 1995-1999, \$327,000. PI.
- Mastitis and teat-end callosity, Dutch dairy board, Dairy Commodity Board, The Netherlands, 1995-1999, \$353,000. PI.
- Excretion of oxytetracycline and lugol in milk of intrauterine treated cows, Commission Promotion of Veterinary and Comparative Research of Animal Diseases, The Netherlands, 1993, \$9,000 (co-investigator). Co-PI.
- Clinical mastitis in three bulk milk somatic cell count cohorts, J. Mesdag Foundation, Animal Health Service in the northern Netherlands, 1992-1998, \$621,000. PI.

13. Graduate Students and Postdoctoral fellows

Future

1. Ali Naqvi. Will start September 2015, MSc, UofC. Heifer mastitis in Canadian dairy herds (co-supervised by Dr. Jeroen De Buck, bacteriologist UCVM).
2. Liu Gang. Will start September 2015, MSc, Beijing Agricultural University visiting graduate student.
3. Mark Lowerison. Will start September 2015, PhD, UofC. Biostatistical analysis of large health datasets (co-supervised by Dr. Rob Deardon, biostatistician UCVM).
4. Diego Borin Nobrega. Will start January 2015, PhD, UofC. Antimicrobial resistance of coagulase-negative staphylococci (co-supervised by Dr. Jeroen De Buck, bacteriologist UCVM).
5. Ana Paula Alves Monteiro. Will start January 2015, PhD, UofC. Inhibition of major udder pathogens by coagulase-negative staphylococci (co-supervised by Dr. Jeroen De Buck, bacteriologist UCVM).

Current

1. Domonique Carson. Started in September 2014, MSc, UofC. Inhibition of growth and intramammary infection of major pathogens by coagulase-negative staphylococci (co-supervised by Dr. Jeroen De Buck, bacteriologist UCVM).
2. Ana Bras. Started in September 2013, MSc, UofC. Expected to defend September 2015. *Mycoplasma bovis* in farmed bison: Analysis of the epidemiology of an emerging bison pathogen (co-supervisor; Dr. Claire Windeyer is supervisor).
3. Amanda Mirto. Started in September 2013, MSc, UofC. Expected to defend December 2015. Development of a marked live attenuated Johne’s disease vaccine strain (co-supervisor; Dr. Jeroen De Buck, bacteriologist UCVM is supervisor).
4. Carolina Ritter. Started in September 2013, PhD, UofC. Motivation of farmers to participate in Johne’s disease prevention and control programs (co-supervised by Dr. Cindy Adams, professor UCVM).
5. Caroline Corbett. Started in September 2013, MSc, UofC. Calf-to-calf transmission of *Mycobacterium avium* subsp. *paratuberculosis* (co-supervised by Dr. Jeroen De Buck, bacteriologist UCVM).

6. Bayan Missaghi. Started in March 2013, MSc, UofC. The role of pathogenic bacteria in Crohn's disease (co-supervised by Dr. Subrata Ghosh, gastroenterologist and immunologist UofC).
7. Casey Jacobs. Started in February 2013, PhD, UofC. Footbaths and digital dermatitis.
8. Larissa Condas. Started in January 2013, MSc, UofC. Expected to defend November 2015. The role of coagulase-negative staphylococci in bovine mastitis (co-supervised by Dr. Jeroen De Buck, bacteriologist UCVM).
9. Laura Solano. Started in February 2011, PhD, UofC. Expected to defend January 2016. Lameness in Alberta dairy herds (co-supervisor; Dr. Karin Orsel, epidemiologist of infectious diseases UCVM is supervisor).

Defended

1. Christina Ahlstrom. 2011-2015, PhD, UofC. The Genomic Diversity and Molecular Epidemiology of *Mycobacterium avium* subsp. *paratuberculosis* in Canadian dairy cattle
2. Robert Wolf. 2010-2014, PhD, UofC. Control of *Mycobacterium avium* subspecies *paratuberculosis* on Western Canadian dairy farms; prevalence, diagnostics and risk factors
3. Rienske Mortier. 2009-2014, PhD, UofC. Age- and dose-dependent susceptibility to *Mycobacterium avium* subsp. *paratuberculosis* in dairy calves
4. Maria Negron. 2010-2014, PhD, UofC. Non-medical reasons for colectomy among ulcerative colitis patients
5. Joel David. 2011-2013, MSc, UofC. Gene expression study of *Mycobacterium avium* subspecies *paratuberculosis* infected cows – “A road to identify transcripts that could serve as biomarkers for early diagnosis of Johne's disease”
6. Praseeda Ajitkumar. 2009-2012, MSc, UofC. Molecular techniques for the identification of bovine mastitis pathogens
7. Andrea Wasko. 2007-2012, MSc, University of Calgary. Equine lung inflammation in Alberta: Evaluation of clinical signs, risk-screening questionnaire, and bronchoalveolar lavage in recurrent airway obstruction and inflammatory airway disease
8. Vineet Saini. 2007-2011, PhD, University of Calgary. Association between antimicrobial use and antimicrobial resistance in bovine mastitis pathogens
9. Jan Lievaart. 2004-2010, PhD, Utrecht University. Somatic cells counts in dairy herds
10. Alejandro Ceballos. 2005 - 2010, PhD, UPEI. Selenium supplementation in cattle: transfer to milk and udder health
11. Sofie Piepers. 2006 - 2010, PhD, Ghent University, Belgium. Udder health of dairy heifers in early lactation: risk factors at the herd-, heifer-, and quarter- level, and the impact on performance during first lactation
12. Otlis Sampimon. 2004 – 2009, PhD, Utrecht University, The Netherlands. Coagulase-negative staphylococci mastitis in Dutch dairy herds
13. Richard Olde Riekerink. 2003 – 2007, PhD, UPEI. Assessment of the mastitis situation in Canada
14. Fabienne Uehlinger. 2003 – 2007, PhD, UPEI. Prevalence and zoonotic potential of *Giardia duodenalis* in cattle and dogs
15. Wendela Wapenaar. 2003 – 2006, PhD, UPEI. Epidemiology of *Neospora caninum* in dairy cattle and wild canids on Prince Edward Island

16. Shawn McKenna. 2001- 2005, PhD, UPEI. Detection of bovine paratuberculosis
17. Zhiying Zhang. 2002 – 2005, MSc, UPEI. Use of bioactive compounds to preserve boar sperm
18. Francesca Neijenhuis. 1997 - 2004, PhD, Utrecht University, The Netherlands. Teat condition in dairy cows
19. Mello Sevinga. 1999 - 2004, PhD, Utrecht University, The Netherlands. Retained placenta in Friesian horses
20. Sarne de Vliegheer. 2000 - 2004, PhD, Ghent University, Belgium. Udder health in dairy heifers. Some epidemiological and microbiological aspects
21. Jan Veling. 1998 - 2004, PhD, Utrecht University, The Netherlands. Diagnosis and control *Salmonella* Dublin infections on Dutch dairy farms
22. Kees Kalis. 1998 - 2003, PhD, Utrecht University, The Netherlands. Diagnosis and control of paratuberculosis in dairy herds
23. Yvette de Haas. 1999 - 2003, PhD, Wageningen University, The Netherlands. Genetics of bovine mastitis and somatic cell count
24. Jan Sol. 1997 - 2002, PhD, Utrecht University, The Netherlands. Cure of *Staphylococcus aureus* mastitis in Dutch dairy cows
25. Thomas Dijkstra. 1999 - 2002, PhD, Utrecht University, The Netherlands. Horizontal and vertical transmission of *Neospora caninum*
26. Ruth Zadoks. 1997 - 2002, PhD, Utrecht University, The Netherlands (with distinction). Molecular and mathematical epidemiology of *Staphylococcus aureus* and *Streptococcus uberis* mastitis in dairy herds

Postdoctoral fellows

1. Helen Becker. 2013 – 2015, UofC. The role of microbial infection in Crohn's disease.
2. Vineet Saini. 2011 – 2013, UofC. Epidemiology of infectious diseases.
3. Ajitkumar Gopinathamenon. 2009 - 2010, UofC. An epidemiologic analysis of the incidence and causes of culling in Alberta beef bulls

Graduate and examination committees

Student	Year	Program	Graduate committee	Comprehensive or Candidacy exam	Examination committee
Ebo Budu-Amoako ¹	06-11	PhD	X		
Tatjana Coklin ²	05-07	MSc	X		
Elmabrok Masaoud ¹	04-06	PhD	X		
Tim Burnley ¹	04-06	MSc	X (chair)		
Nicole O'Brien ¹	04-06	MSc	X (chair)		
Linda Waite ¹	2004	MSc			X
Pascale Nerette ¹	2004	PhD		X	
Christine MacWilliams ¹	03-09	MSc	X		
Carolyn Sanford ¹	02-05	PhD	X	X	
Fortune Sithole ¹	02-05	PhD	X	X	X
Sarah Purcell ¹	02-06	PhD	X		
Pipat Arunvipas ¹	2003	PhD		X	
Vicky Benson ¹	2003	PhD		X	
Joao Paulo Haddad ¹	2003	PhD		X	X
Aboubakar Mouchili ¹	2003	PhD		X	
Ashwani Tiwari ¹	2003	PhD		X	X
Liza Rosenbaum-Nielsen ³	2003	PhD			X
Åse Margrethe Sogstad ⁴	2006	PhD			X
Roberta Lea McCombie ⁵	2007	PhD		X	
Simon Dufour ⁶	07-11	PhD	X		X
Chris Bartels ⁷	2007	PhD			X
Suvi Taponen ⁸	2008	PhD			X
Byron Weckworth ⁵	08-12	PhD	X	X	X
Pieter Passchyn ⁹	2008-	PhD	X		
Carrie Lavers ¹	09-14	PhD	X		
Patricia Curry ⁵	08-12	PhD		X	
Oudesso Kerro Deogo ¹⁰	2009	PhD			X
Natalie Molodecky ⁵	09-11	MSc	X		X
Matthieu Pruvot ⁵	09-14	PhD	X	X	X
Fox Underwood ⁵	10-13	MSc	X	X	X
Vanessa Oliver ⁵	2010	MSc			X
Christopher Luby ¹⁰	2010	PhD			X
Kaiyu Wu ⁵	2011	PhD			X
Susanne Eisenberg ⁷	2011	PhD			X

Guilherme Bond ⁵	2011-	PhD	X	X	
Barbara Wolfger ⁵	11-15	PhD	X	X	X
Yasmeen Khalil ⁵	11-13	MSc	X		X
Jesse Invik ⁵	11-15	PhD	X		X
Kristen Reti ⁵	12-14	MSc	X		X
Kristin Eccles ⁵	12-14	MSc	X		X
Alysha Rusk ⁵	2014-	MSc	X		
Sarah Akierman ⁵	2015	MSc			X
Jason Jiang ⁵	2015	MSc			X

¹University of Prince Edward Island; ²University of Ottawa; ³University of Copenhagen, Denmark; ⁴Norwegian Veterinary School, Oslo, Norway; ⁵University of Calgary; ⁶University of Montreal; ⁷Utrecht University, The Netherlands; ⁸University of Helsinki, Finland; ⁹Ghent University, Belgium; ¹⁰University of Saskatchewan.

In addition, I have chaired many thesis defenses and candidacy exams as a neutral chair.

14. Publications

Graduate students of Dr. Barkema are printed in bold.

Every underlined authorship reflects senior authorship position.

H-index Web of Science: 45

Refereed Journals:

1. B. Wolfger, E. Timsit, E. A. Pajor, N. Cook, H.W. Barkema, and K. Orsel. 2015. Technical Note: Accuracy of an ear tag-attached accelerometer to monitor rumination and feeding behavior in feedlot cattle. *J Anim Sci* 93:3164-3168.
2. **R. Wolf**, K. Orsel, J. De Buck, and H.W. Barkema. 2015. Calves shedding *Mycobacterium avium* subspecies *paratuberculosis* are common on infected dairy farms. *Vet Res* 46:71.
3. **C. Ahlstrom**, H.W. Barkema, K. Stevenson, **R.N. Zadoks**, R. Biek, R. Kao, H. Trewby, D. Hauptstein, D.F. Kelton, G. Fecteau, O. Labrecque, G.P. Keefe, **S.L.B. McKenna**, and J. De Buck. 2015. Limitations of variable number of tandem repeat typing identified through whole genome sequencing of *Mycobacterium avium* subsp. *paratuberculosis* on a national and herd level. *BMC Genomics* 16:161.
4. **H.M. Becker**, D. Grigat, S. Ghosh, G.G. Kaplan, L.A. Dieleman, E. Wine, R.N. Fedorak, A. Fernandes, R. Panaccione, and H.W. Barkema. 2015. Living with inflammatory bowel disease: A Crohn's and Colitis Canada survey. *Can J Gastroenterol Hepatol* 29:77- 84.
5. S. Coward, S.J. Heitman, F. Clement, **M. Negron**, R. Panaccione, S. Ghosh, H.W. Barkema, C. Seow, Y. Leung, and G.G. Kaplan. 2015. Funding a smoking cessation program for Crohn's disease: An economic evaluation. *Am J Gastroenterol* 110:368-377.
6. Y.P.Y. Leung, G.G. Kaplan, S. Coward, D. Tanyingoh, B.J. Kaplan, D.W. Johnston, H.W. Barkema, S. Ghosh, R. Panaccione, and C.H. Seow. 2015. Intrapartum corticosteroid use

significantly increases the risk of gestational diabetes in women with Inflammatory Bowel Disease. *J Crohn's Colitis* 9: 223-230.

7. B. Wolfger, B.J. Manns, H.W. Barkema, K.S Schwartzkopf-Genschwein, C. Dorin, and K. Orsel. 2015. Evaluating the cost implications of a radio frequency identification feeding system for early detection of Bovine Respiratory Disease in feedlot cattle. *Prev Vet Med*. 118:285-292.
8. J. Detilleux, J.P. Kastelic, and H.W. Barkema. 2015. Mediation analysis to estimate direct and indirect milk losses due to clinical mastitis in cattle. *Prev Vet Med* 118:449-456.
9. B. Wolfger, K.S. Schwartzkopf-Genschwein, R. Silasi, H.W. Barkema, E.A. Pajor, M. Levy, and K. Orsel. 2015. Feeding behavior as early disease predictor of bovine respiratory disease in North American feedlot systems. *J Anim Sci* 93:377-385.
10. **R. Wolf**, H.W. Barkema, J. De Buck, and K. Orsel. 2015. Sampling location, herd size and season influence *Mycobacterium avium* ssp. *paratuberculosis* environmental culture results. *J Dairy Sci* 98:275-287.
11. J. De Buck, R. Shaykhutdinov, H.W. Barkema, and H.J. Vogel. 2014. Metabolomic profiling in cattle experimentally infected with *Mycobacterium avium* subsp. *paratuberculosis*. *PLoS One* 9: e111872.
12. M. Pruvot, S. Kutz, H.W. Barkema, J. De Buck, and K. Orsel. 2014. Occurrence of *Mycobacterium avium* subspecies *paratuberculosis* and *Neospora caninum* in Alberta cow-calf operations. *Prev Vet Med* 117:95-102.
13. **M.E. Negrón**, G.G. Kaplan, H.W. Barkema, B. Eksteen, F. Clement, B.J. Manns, S. Coward, S. Ghosh, and S.J. Heitman. 2014. Colorectal cancer surveillance in patients with inflammatory bowel disease and primary sclerosing cholangitis: an economic evaluation. *Inflamm Bowel Dis* 20:2046-2055.
14. **J. David**, H.W. Barkema, L. Luo Guan, and J. De Buck. 2014. Gene-expression profiling of calves 6 and 9 months after inoculation with *Mycobacterium avium* subspecies *paratuberculosis*. *Vet Res* 45:96.
15. **R.A.R. Mortier**, H.W. Barkema, T.A. Wilson, T.T. Sajobi, R. Wolf, and J. De Buck. 2014. Dose-dependent interferon-gamma release in dairy calves experimentally infected with *Mycobacterium avium* subspecies *paratuberculosis*. *Vet Immunol Immunopathol* 161:205-210.
16. **R. Wolf**, H.W. Barkema, J. De Buck, M. Slomp, J. Flaig, D. Hauptstein, C. Pickel, and K. Orsel. 2014. High herd-level prevalence of *Mycobacterium avium* subspecies *paratuberculosis* in Western Canadian dairy herds, based on environmental sampling. *J Dairy Sci* 97:6250-6259.
17. **R.A.R. Mortier**, H.W. Barkema, K. Orsel, **R. Wolf**, M.E. Negron, G.A. Atkins, and J. De Buck. 2014. Antibody response early after experimental infection with *Mycobacterium avium* subspecies *paratuberculosis* in dairy calves. *J Dairy Sci*. 97:5558-5565.
18. **M.E. Negrón**, H.W. Barkema, K.P. Rioux, J. De Buck, S. Checkley, M.-C. Proulx, A. Frolkis, P.L. Beck, L. Dieleman, R. Panaccione, S. Ghosh, and G.G. Kaplan. 2014. *Clostridium difficile* infection worsens the prognosis of ulcerative colitis. *Can J Gastroenterol Hepatol* 28:373-380.
19. **R.A.R. Mortier**, H.W. Barkema, K. Orsel, **R. Wolf**, and J. De Buck. 2014. Shedding patterns of dairy calves experimentally infected with *Mycobacterium avium* subspecies *paratuberculosis*. *Vet Res* 45:71.

20. E. Cresswell, M. Brennan, H.W. Barkema, and **W. Wapenaar**. 2014. A questionnaire-based survey on the uptake and use of cattle vaccines in the UK. *Vet Rec Open* 1:e000042.
21. **B. Missaghi**, H.W. Barkema, K.L. Madsen, and S. Ghosh. 2014. Perturbation of the human microbiome as a contributor to inflammatory bowel disease. *Pathogens* 3:549-562.
22. S.Y. Salim, J. Jovel, E. Wine, G.G. Kaplan, R. Vincent, A. Thiesen, H.W. Barkema, and K.L. Madsen. 2014. Exposure to ingested airborne pollutant particulate matter increases mucosal exposure to bacteria and induces early onset of inflammation in neonatal IL-10 deficient mice. *Inflamm Bowel Dis* 20:1129-1138.
23. **J. David**, H.W. Barkema, R. Mortier, S. Ghosh, L. Luo Guan, and J. De Buck. 2014. Gene expression profiling and putative biomarkers of calves 3 months after infection with *Mycobacterium avium* subspecies *paratuberculosis*. *Vet Immunol Immunopathol* 160:107-117.
24. M.E.A. Watters, H.W. Barkema, K.E. Leslie, M.A.G. von Keyserlingk, and T.J. DeVries. 2014. Relationship between postmilking standing duration and risk of intramammary infection in free-stall housed dairy cows milked 3 times per day. *J Dairy Sci* 97:3456–3471.
25. A. Ueno, H. Jijon, S. Traves, R. Chan, K. Ford, P.L. Beck, M. Iacucci, M. Fort Gasia, H.W. Barkema, R. Panaccione, G.G. Kaplan, D. Proud, and S. Ghosh. 2014. Opposing effects of smoking in ulcerative colitis and Crohn’s disease may be explained by differential effects on dendritic cells. *Inflamm Bowel Dis* 20:800-810.
26. **R. Wolf**, F. Clement, H.W. Barkema, and K. Orsel. 2014. Economic evaluation of participation in a voluntary Johne’s disease prevention and control program from a farmer’s perspective - The Alberta Johne’s Disease Initiative. *J Dairy Sci* 97:2822-2834.
27. G.W. Moran, M.F. Dubeau, G.G. Kaplan, H. Yang H, C.H. Seow, R.N. Fedorak, L.A. Dieleman, H.W. Barkema, S. Ghosh, and R. Panaccione. 2014. Phenotypic features of Crohn’s disease associated with failure of medical treatment. *Clin Gastroenterol Hepatol* 12:434-442.
28. M. Pruvot, S. Kutz, F. van der Meer, M. Musiani, H.W. Barkema, and K. Orsel. 2014. Pathogens at the livestock-wildlife interface in Western Alberta: does transmission route matter? *Vet Res* 45:18.
29. **C. Ahlstrom**, H.W. Barkema, and J. De Buck. 2014. Improved short-sequence-repeat genotyping of *Mycobacterium avium* subspecies *paratuberculosis* by using matrix-assisted laser desorption ionization-time of flight mass spectrometry. *Appl Environm Microbiol* 80:534-539.
30. C. Lavers, H.W. Barkema, I.R. Dohoo, and **S.L.B. McKenna**, and G.P. Keefe. 2014. Evaluation of milk ELISA for detection of *Mycobacterium avium* subspecies *paratuberculosis* in dairy herds and association with within-herd prevalence. *J Dairy Sci* 97:299-309.
31. J.C. Zaffino Heyerhoff, S.J. LeBlanc, T.J. DeVries, C.G.R. Nash, J. Gibbons, K. Orsel, H.W. Barkema, L. Solano, J. Rushen, A.M. de Passillé, and D.B. Haley. 2014. Prevalence of and factors associated with hock, knee, and neck injuries on dairy cows in free-stall housing in Canada. *J Dairy Sci* 97:173-184.
32. **L.A.Z. Condas**, M.G. Ribeiro, K. Yazawa, A.C. Vargas, T. Salerno, R. Giuffrida, H. Langoni, P.A. Melville, S. Biesdorf, T. Matsuzama, T. Gonoi, J.P. Kastelic, and H.W. Barkema. 2013. Molecular identification and drug susceptibility pattern of *Nocardia* spp. isolated from bovine mastitis in Brazil. *Vet Microbiol.* 167:708-712.

33. C. Lavers, **S.L.B. McKenna**, I.R. Dohoo, H.W. Barkema, and G.P. Keefe. 2013. Evaluation of environmental fecal culture for *Mycobacterium avium* subspecies *paratuberculosis* detection in dairy herds and association with apparent within-herd prevalence. *Can Vet J* 54:1053-1060.
34. A. Ueno-Yamanouchi, H. Jijon, R. Chan, K. Ford, C. Hirota, G.G. Kaplan, P.L. Beck, M. Iacucci, M. Fort Gasia, H.W. Barkema, R. Panaccione, and S. Ghosh. 2013. Increased prevalence of circulating novel IL-17 secreting Foxp3 expressing CD4+ T cells and defective suppressive function of circulating Foxp3+ regulatory cells support plasticity between Th17 and regulatory T cells in inflammatory bowel disease patients. *Inflamm Bowel Dis* 19:2522-2534.
35. A. Frolkis, J. Dykeman, **M.E. Negrón**, J. deBruyn, N. Jette, K.M. Fiest, T. Frolkis, H.W. Barkema, K.P. Rioux, R. Panaccione, S. Ghosh, S. Wiebe, and G.G. Kaplan. 2013. Risk of surgery for the inflammatory bowel diseases has decreased over time: A systematic review and meta-analysis of population-based studies. *Gastroenterology* 145:996-1006.
36. **R.A.R. Mortier**, H.W. Barkema, K. Orsel, R. Wolf, G.A. Atkins, J. Bystrom, O. Illanes, J. De Buck. 2013. Evaluation of age-dependent susceptibility in calves infected with two doses of *Mycobacterium avium* subspecies *paratuberculosis* using pathology and tissue culture. *Vet Res* 44:94.
37. **F.D. Uehlinger**, S.J. Greenwood, J T. McClure, G.A. Conboy, R.M. O’Handley, and H.W. Barkema. 2013. Zoonotic potential of *Giardia duodenalis* and *Cryptosporidium* spp. and prevalence of intestinal parasites in young dogs from different populations on Prince Edward Island, Canada. *Vet Parasitol* 196:509-514.
38. M.E.A. Watters, K.M.A. Meijer, H.W. Barkema, K.E. Leslie, M.A.G. von Keyserlingk, and T.J. DeVries. 2013. Associations of herd- and cow-level factors, cow lying behavior, and risk of elevated somatic cell count in free-stall housed lactating dairy cows. *Prev Vet Med* 111:245-255.
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Publications in Press:

1. Y. Khalil, A. Ueno, **R. Mortier**, H.W. Barkema, S. Ghosh, and J. De Buck. T-cell profiles in the peripheral blood of calves orally inoculated with *Mycobacterium avium* subspecies *paratuberculosis*. Accepted for publication (*Vet Immunol Immunopathol*).
2. **R.A.R. Mortier**, H.W. Barkema, K. Orsel, G.P. Muench, J. Bystrom, and J. De Buck. 2015. Longitudinal evaluation of diagnostics in young calves during subclinical and clinical paratuberculosis. In press (*Can Vet J*).
3. **L. Solano**, H.W. Barkema, E. Pajor, S. Mason, S.J. LeBlanc, J.C. Zaffino Heyerhoff, D.B. Haley, J. Rushen, A.M. de Passillé, and K. Orsel. 2015. Prevalence of lameness and associated risk factors in Canadian Holstein-Friesian cows housed in freestall barns. In press (*J Dairy Sci*).
4. H.W. Barkema, M.A.G. von Keyserlingk, J.P. Kastelic, T.J.G.M. Lam, C. Luby, J.-P. Roy, S.J. LeBlanc, G.P. Keefe, and D.F. Kelton. Changes in the dairy industry affecting dairy health and welfare. In press (*J Dairy Sci*).
5. **C. Ritter**, G.P. Kwong, **R. Wolf**, C. Pickel, M. Slomp, J. Flaig, S. Mason, C.L. Adams, D.F. Kelton, J. Jansen, J. De Buck, and H.W. Barkema. Factors influencing participation of Alberta dairy farmers in a voluntary management-based Johne's disease control program. In press (*J Dairy Sci*).
6. **R. Wolf**, H.W. Barkema, J. De Buck, and K. Orsel. Factors impacting management changes on farms participating in a Johne's disease control program. In press (*J Dairy Sci*).
7. L.J. Levison, E.K. Miller-Cushon, A.L. Tucker, R. Bergeron, K.E. Leslie, H.W. Barkema, and T.J. DeVries. Incidence rate of pathogen-specific clinical mastitis on organic and conventional Canadian dairy farms. Accepted for publication (*J Dairy Sci*).
8. **R.A.R. Mortier**, H.W. Barkema, and J. De Buck. Susceptibility to and diagnosis of *Mycobacterium avium* subspecies *paratuberculosis* infection in dairy calves: A review. In press (*Prev Vet Med*).
9. C.F. Murray, L. Fick, E.A. Pajor, H.W. Barkema, M. Jelinski, and M.C. Windeyer. Calf management practices and associations with herd-level morbidity and mortality on cow-calf operations. Accepted for publication (*Animal*).

Publications Submitted:

1. J. Invik, S. Checkley, A. Massolo, N. Neumann, H.W. Barkema. Spatiotemporal analysis of *Escherichia coli* and total coliform water contamination in Alberta, Canada, an observational study. Submitted for publication (*Environ Health*).
2. **M.E. Negrón**, A. Rezaie, H.W. Barkema, K.P. Rioux, J. De Buck, S. Checkley, P.L. Beck, M. Carroll, R.N. Fedorak, L.A. Dieleman, R. Panaccione, S. Ghosh, and G.G. Kaplan. Ulcerative colitis patients with *Clostridium difficile* are at increased risk of death, colectomy, and post-operative complications: A population-based inception cohort study. Submitted for publication (*Gastroenterology*).
3. H. Derakhshani, J. De Buck, **R. Mortier**, H.W. Barkema, D.O. Krause, and E. Khafipour. Gut microbiota profiling of dairy calves experimentally infected with *Mycobacterium avium* subspecies *paratuberculosis*. Submitted for publication (*Appl Environm Biol*).
4. **C. Ahlstrom**, H.W. Barkema, K. Stevenson, R.N. Zadoks, R. Biek, R. Kao, H. Trewby, D. Hauptstein, D.F. Kelton, G. Fecteau, O. Labrecque, G.P. Keefe, S.L.B. McKenna, K. Tahlan, and J. De Buck. Genome-wide diversity and phylogeography of *Mycobacterium avium* subsp. *paratuberculosis* in Canadian dairy cattle. Submitted for publication (*BMC Genomics*).
5. **C. Ahlstrom**, H.W. Barkema, and J. De Buck. The relative frequency of four major strain types of *Mycobacterium avium* subsp. *paratuberculosis* in Canadian dairy herds. Submitted for publication (*Vet Microbiol*).
6. **A.L. Bras**, H.W. Barkema, M. Woodbury, C. Ribble, and M.C. Windeyer. Prevalence, clinical presentation, and risk factors associated with *Mycoplasma bovis* in farmed bison (*Bison bison*) herds in Western Canada. Submitted for publication (*J Am Vet Med Assoc*).
7. **R. Wolf**, K. Orsel, J. De Buck, U. Kanevets, and H.W. Barkema. Evaluation of sampling socks for detection of *Mycobacterium avium* subspecies *paratuberculosis* on dairy farms. Submitted for publication (*J Dairy Sci*).

Publications in Preparation:

1. **S.L.B. McKenna**, H.W. Barkema, M.E. Negrón, G.P. Keefe, and D.C. Sockett. Examination of fecal pooling strategies for detection of *Mycobacterium avium* subsp. *paratuberculosis*. In preparation for submission (*J Dairy Sci*).
2. **R. Wolf**, H.W. Barkema, J. De Buck, and K. Orsel. Dairy farms testing positive for *Mycobacterium avium* subspecies *paratuberculosis* have poorer hygiene and are less cautious when purchasing cattle than test-negative herds. In preparation for submission (*Prev Vet Med*).
3. **L. Solano**, H.W. Barkema, E.A. Pajor, S. Mason, S.J. LeBlanc, J.C. Zaffino Heyerhoff, R. Nash, D. B. Haley, D. Pellerin, J. Rushen, A.M. de Passillé, E. Vasseur and K. Orsel. 2015. Association between lying behavior and lameness in Canadian Holstein-Friesian cows housed in freestall barns. In preparation for submission (*J Dairy Sci*).

4. **C. Ahlstrom, H.W. Barkema, J. Wasmuth, and J. De Buck.** The microevolution of *Mycobacterium avium* subsp. *paratuberculosis* in Canadian dairy cattle. In preparation for submission (*BMC Genomics*).
5. G. Roy, J. De Buck, **R. Wolf, R.A.R. Mortier, K. Orsel, and H.W. Barkema.** Effect of experimental infection with *Mycobacterium avium* subspecies *paratuberculosis* on weight in Holstein-Friesian dairy calves. In preparation for submission (*Can Vet J*).
6. **F.D. Uehlinger, S.J. Greenwood, J.T. McClure, G.A. Conboy, R.M. O'Handley, and H.W. Barkema.** Comparison of six diagnostic tests for *Giardia duodenalis* in fecal samples from young dogs. In preparation for submission (*Am J Vet Res*).
7. **R. Wolf, H.W. Barkema, J. De Buck, R. Mortier, and K. Orsel.** Use of cow characteristics and within-herd prevalence to explain differences between serum and milk ELISA results in low prevalence paratuberculosis herds. In preparation for submission (*Can Vet J*).
8. **H.W. Barkema, M.A.G. von Keyserlingk, J.P. Kastelic, T.J.G.M. Lam, C. Luby, J.-P. Roy, G.P. Keefe, and D.F. Kelton.** Changes in dairy veterinary practice resulting from changes in the dairy industry. In preparation for submission (*J Dairy Sci*).
9. G.B. Bond, D.M. Weary, M.A.G. von Keyserlingk, L. Doepel, K. Orsel, H.W. Barkema, and E. A. Pajor. Use of single measurements to assess growth and health of dairy calves and the effect of management practices on calf body weight variability and health status in Western Canada. In preparation for submission (*J Dairy Sci*).
10. **M.E. Negrón, H.W. Barkema, and G.G. Kaplan.** Changes in the annual incidence of colectomy for colorectal neoplasia among patients with ulcerative colitis: A population-based cohort. In preparation for submission (*Clin Gastroenterol Hepatol*).
11. **H.W. Barkema, K. Orsel, many others, J. De Buck.** Bottlenecks in the prevention and control of *Mycobacterium avium* subspecies *paratuberculosis* infection. In preparation for submission (*Prev Vet Med*).
12. J.H. Higginson Cutler, J. Rushen, A.M. de Passillé, J. Gibbons, K. Orsel, E. Pajor, H.W. Barkema, L. Solano, and E. Vasseur. What are the challenges that Canadian dairy producers face to reduce lameness in their herds? In preparation for submission (*J Dairy Sci*).
13. **A.L. Bras, H.W. Barkema, M. Woodbury, C. Ribble, and M.C. Windeyer.** Risk factors associated with *Mycoplasma bovis* in farmed bison (*Bison bison*) herds in Western Canada: a case-control study. In preparation for submission (*Prev Vet Med*).
14. P.H. Hogewerf, **R.G.M. Olde Riekerink, A.H. Ipema, C.J.A.M. de Koning, H.J. Schuiling, B.A. Slaghuis, V. Tancin, I. Ohnstad, and H.W. Barkema.** Impact of an automatic teat dipping and cluster flushing system on iodine residuals, milking characteristics and teat coverage. In preparation for submission (*J Dairy Sci*).
15. **V. Saini, J.T. McClure, P. Boerlin, J.-P. Roy, H.W. Barkema.** Effect of antimicrobial treatment at dry-off and for clinical mastitis on development of AMR. In preparation for submission (*J Clin Microbiol*).
16. **V. Saini, K. Reyher, D. Leger, J.T. McClure, D.T. Scholl, H.W. Barkema.** Comparison of two on-farm antimicrobial use record systems. In preparation for submission (*J Dairy Sci*).
17. **V. Saini, R. Huggins, J. De Buck, H.W. Barkema.** The impact of intramammary infection with coagulase-negative staphylococci on 305-day milk production and culling. In preparation for submission (*J Dairy Sci*).

18. **L.A.Z. Condas**, J. De Buck, **D.B. Nobrega**, **D. Carson**, and **H.W. Barkema**. Distribution of coagulase-negative staphylococci species isolated from milk in Canadian dairy herds. In preparation for submission (*J Dairy Sci*).
19. C.A. Bauman, **H.W. Barkema**, J. Dubuc, G.P. Keefe, and D.F. Kelton. Canadian National Dairy Study: Needs assessment of dairy producers, government, and dairy advisors. In preparation for submission (*J Dairy Sci*).
20. **C. Ritter**, G.P. Kwong, **R. Wolf**, C. Pickel, S. Mason, C.L. Adams, D.F. Kelton, J. Jansen, K. Orsel, J. De Buck, and **H.W. Barkema**. Is the herd-level prevalence of *Mycobacterium avium* subsp. *paratuberculosis* on Alberta dairy farms associated with participation in a voluntary Johne's disease control program? In preparation for submission (*J Dairy Sci*).

Book chapters:

1. A. Bradley, H.W. Barkema, A. Biggs, M. Green, and T.J.G.M. Lam. 2013. Control of mastitis and enhancement of milk quality. Chapter 5 in Dairy Herd Health. Ed. M. Green. CAB International. ISBN 9781845939977, pp. 117-168.
2. **H.W. Barkema**, J.W. Hesselink, **S.L.B. McKenna**, G. Benedictus, and H. Groenendaal. 2010. Global prevalence and economics of infection with *Mycobacterium avium* subsp. *paratuberculosis* in ruminants. Chapter 2 in *Paratuberculosis: organism, disease, control*. Eds. M.A Behr and D.M. Collins. CAB International. ISBN 9781845936136, pp. 10-21.
3. **H.W. Barkema**, S. Hendrick, J. de Buck, G.G. Kaplan, and K. Rioux. 2010. Crohn's disease in humans and Johne's disease in cattle – linked diseases? Chapter 10 in *Zoonotic pathogens in the food chain*. Ed. D. Krause and S. Hendrick. CAB International. ISBN 9781845936815, pp. 197-213.
4. Y.H. Schukken, M.L. Beiboer and H.W. Barkema. 1995. Sampling of animal populations - a manual and computer program (in Dutch). Gezondheidsdienst voor Dieren, 75 pp.

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Publications in Non-refereed Journals:

1. R. Wolf, K. Orsel, J. De Buck, and H.W. Barkema. 2015. Calves shedding *Mycobacterium avium* subspecies *paratuberculosis* are common on infected dairy farms. Western Canadian Association of Bovine Practitioners Newsletter 22(2):18.
2. R. Wolf, K. Orsel, J. De Buck, and H.W. Barkema. 2014. High percentage of Alberta and Saskatchewan dairy farms are infected with *Mycobacterium avium* subsp. *paratuberculosis*, the cause of Johne's disease. Dairy Research and Extension Consortium of Alberta dairy research summary, July 2014.

3. H.W. Barkema, J. De Buck, P. Ajitkumar, L. Condas, and H. Poirier. 2013. Des progrès pour percer le mystère des staphyloques à coagulase négative! *Le producteur de lait québécois* June 2013:42-44.
4. H.W. Barkema, and D.F. Kelton. 2013. Are Canadian dairy farms coping with the decrease in the bulk milk somatic cell count limit? *Canadian Jersey Breeder Magazine* Dec 2012-Jan 2013:29-30.
5. H.W. Barkema, and R.G.M. Olde Riekerink. 2012. Udder health in Canadian dairy herds. *Canadian Jersey Breeder Magazine* June-July 2012:38-39.
6. V. Saini, S. Nilsson, H.W. Barkema, P. Boerlin, J McClure, and H. Poirier. 2012. Concerns allayed? New study data show that Canadian dairy farmers using antibiotics responsible to treat or prevent mastitis in their cattle. *Milk Producer* May 2012:34-35.
7. H.W. Barkema. 2012. The future of milk testing by milk recording organizations: “What else can milk tell us”? *2011 Progress report CanWest DHI Ontario*, p. 72 and *2011 CanWest DHI Western Herd Improvement Report*, p. 32.
8. C. Heinrich, S. Ghosh, K. Sharkey, and H.W. Barkema. 2011. Toward patient-focused research: integrated KT in action. *Alberta Innovates – Health Solutions KT Casebook* 2:21-25.
9. T.J. De Vries, K.E. Leslie, H.W. Barkema, J. Rodenburg, G. Seguin, and A.-M. Christen. 2010/2011. Système de traite robotisée. Le comportement des vaches influence-t-il la santé du pis? *Le producteur de lait québécois*. December 2010/January 2011:36-38.
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14. Barkema, H.W., S. de Vliegheer, J. Baillargeon, and R.N. Zadoks. 2009. Comment résoudre un problème de CCS élevé? *Le producteur de lait québécois*. February 2009:42-44.
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21. Barkema, H.W., J. De Buck, and O. Illanes. 2007. Public perception of risk. *Milk Producer* December 2007:34-37.
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53. H.W. Barkema, M.M. de Jong, and L. Sennema. Heifer mastitis (in Dutch). 1996. *Veeteelt* 13 (March 1): 240-241.
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55. C. Rougoor, A.A. Dijkhuizen, H.W. Barkema, and Y.H. Schukken. 1992. A cost-benefit analysis of Cesarean sections of dairy cattle (in Dutch). *Veeteelt* 9 (3): 86-87.
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15. Invited Presentations (since start position UPEI at August, 2001)

- November 20, 2014 Changes in the dairy industry affecting dairy veterinary practice. Colloque sur la santé des troupeaux laitiers, 10th edition. Drummondville, QC, Canada.
- August 11-14, 2014 Mastitis prevention. Seven lectures in England, UK, for DairyCo.

- June 24, 2014 Keynote presentation: Bottlenecks in the prevention and control of *Mycobacterium avium* subsp. *paratuberculosis* infection. 12th International Colloquium on Paratuberculosis. Parma, Italy.
- April 23, 2014 Biosecurity on Alberta dairy farms. Animal Disease Risk Assessment and Surveillance Symposium. Calgary, AB, Canada.
- April 10, 2014 The future of dairy veterinary practice. Ontario Association of Bovine Practitioners and Ontario Agri-Business Association Spring Meeting. Guelph, ON, Canada.
- March 11, 2014 Mastitis prevention workshop. Western Canadian Dairy Seminar. Red Deer, AB, Canada.
- February 4-5, 2014 Consumer Concerns about food production: do we need to be worried about how milk is produced? Nutrition File Seminar, Food integrity: building consumer trust in our food system. Edmonton and Calgary, AB, Canada.
- January 20, 2014 The Alberta Inflammatory Bowel Disease Consortium – a logical collaboration between human and veterinary medical researchers. Working together for better health; Symposium celebrating research collaborations between the faculties of Veterinary Medicine and Medicine. University of Calgary, AB, Canada.
- November 29, 2013 Update on Johne's disease research in Calgary. Continuing Education for Belgian Veterinary Practitioners. Ghent University, Belgium.
- November 26, 2013 Prevention and treatment of mastitis: the role of the veterinary practitioner, and an update on Canadian research. Udder forum, Kortrijk, Belgium
- July 25, 2013 Transmission pattern profiling of *Mycobacterium avium* subsp. *paratuberculosis* between and within Canadian dairy herds by fast and discriminating strain typing. *Dairy Research for a Healthy World Symposium*, Toronto, ON, Canada
- March 14, 2013 Results of research in the Canadian Bovine Mastitis and Milk Quality Research Network. *Webinar for directors of the provincial and national Canadian dairy organizations*.
- January 30, 2013 Managing infectious disease in dairy herds. *Central Manitoba Holstein Dairy Club annual conference*, Carman, MB, Canada.
- November 30, 2012 The mastitis situation in Canada. *TOPVAC vaccine launch*, Edmonton, AB, Canada.
- October 3, 2012 The UofC Faculty of Veterinary Medicine: Born out of the BSE crisis. *Gyro Club Calgary Central*, Calgary, AB, Canada.
- September 26, 2012 Managing infectious disease in dairy herds. *17th Annual General Meeting of Canadian Dairy Network and the 2012 Dairy Cattle Improvement Industry Forum*, West Kelowna, BC, Canada
- September 25, 2012 Innovation, discovery and improving health outcomes – The Alberta Inflammatory Bowel Disease Consortium. *Research Network Fest*, Calgary, AB, Canada

- June 17, 2012 Availability and sustainability of health databases and tissue banks in Alberta. *Alberta Innovates – Health Solutions Making Connections Conference*, Jasper, AB, Canada
- June 11, 2012 Research in UCVMs Department of Production Animal Health. *Alberta Beef Producers, Animal Health and Welfare Working Group*, Edmonton, AB, Canada
- April 26, 2012 Johne's disease in cattle and Crohn's disease in humans – linked diseases?? *Seminar Series Gastroenterology Group*, University of Manitoba, Winnipeg, MN, Canada.
- March 8, 2012 An update on the Alberta Johne's Disease Initiative. *30th Western Canadian Dairy Seminar*, Red Deer, AB, Canada
- March 6, 2012 Essentials of a disease control program with a focus on Johne's disease. British Columbia Ministry of Agriculture, Abbotsford, BC, Canada
- February 14, 15, 16, 2012 Mastitis in Alberta. *Canadian Bovine Mastitis Research Network workshops*, Lethbridge, Red Deer and Leduc, AB, Canada
- February 4, 2012 Johne's Disease Control in Canada – Coordinated Nationally – Delivered Provincially. *3rd ParaTB Forum*, Sydney, Australia
- January 31, 2012 Making a difference: from innovation platforms to personalized medicine. *Alberta Health and Wellness Lunch 'n Learn Presentations*, Edmonton, AB, Canada
- January 21, 2012 Improving udder health on dairy farms using the TACTIC udder health veterinary kit. *Annual meeting of Western Canadian Association of Bovine Practitioners*, Calgary, AB, Canada
- January 12, 2012 How to get a low bulk tank somatic cell count and keep it low. *Eastern Manitoba Holstein Dairy Club annual conference*, Steinbach, MN, Canada
- January 12, 2012 Latest research results related to Johne's disease research. *Eastern Manitoba Holstein Dairy Club annual conference*, Steinbach, MN, Canada
- January 11, 2012 Production of safe high quality milk. *Dairy Farmers of Ontario annual general meeting*, Toronto, ON, Canada
- January 10, 2012 Use of milk for monitoring disease in dairy herds. *CanWest DHI annual general meeting*, Toronto, ON, Canada
- October 18, 2011 The role of biosecurity in endemic disease on dairy farms. *CanWest Veterinary Conference*, Banff, AB, Canada
- October 18, 2011 Johne's disease in cattle and Crohn's disease in humans – linked diseases?? *CanWest Veterinary Conference*, Banff, AB.
- October 3, 2011 Johne's disease in cattle and Crohn's disease in humans – linked diseases?? *40th Annual Meeting of the Canadian Institute of Public Health Inspectors*, Calgary, Alberta, Canada
- June 8, 2011 Udder health treatment and prevention: what is in the near future? 10 year Orbeseal Symposium. Pfizer. London, UK.
- June 9, 2011 Mastitis and Animal Welfare. 10 year Orbeseal Symposium. Pfizer. London, UK.

- June 9, 2011 Animal welfare in udder health - Prevention and treatment: the role of the veterinarian. 10 year Orbeseal Symposium. Pfizer. London, UK.
- May 31, 2011 How to get a low bulk tank somatic cell count and keep it low. Nutri-Source annual meeting for clients, Sylvan Lake, AB, Canada
- May 30, 2011 An Alberta Disease Control Program with a focus on Johne's Disease – the AJDI. Personnel of CanWest DHI, Calgary, AB, Canada
- March 29, and April 7 and 8, 2011 The Alberta Johne's Disease Initiative. Alberta Milk Spring Meetings. Red Deer, Taber and Lethbridge, AB, Canada
- February 17, 2011 How to get a low bulk tank somatic cell count and keep it low. Annual Meeting Dairy Farmers of Manitoba, Brandon, MN, Canada
- November 30, 2010 The Dutch Udder Health Centre, an international perspective. Final symposium of the Dutch Udder Health Centre, Arnhem, The Netherlands.
- November 29, 2010 The Canadian Bovine Mastitis Research Network. 3rd Annual meeting *Dutch Mastitis Research Workers*, Utrecht, The Netherlands
- November 28-December 1, 2010 Approach of mastitis on large dairy farms. Four lectures to Dutch farmers for the Dutch Udder Health Centre.
- November 26, 2010 The added value of collaboration between basic scientists and clinicians/epidemiologists. Faculty of Veterinary Medicine, Ghent University, Ghent, Belgium
- November 18, 2010 Johne's disease in cattle and Crohn's disease in humans – linked diseases?? *John Waters Zoonotic Disease Workshop*, Calgary, Alberta, Canada
- June 8, 2010 Johne's disease in cattle and Crohn's disease in humans – linked diseases?? *10th Canadian Animal Health Laboratorian Network Annual Meeting*, Calgary, Alberta, Canada
- December 17, 2009 Johne's disease in cattle and Crohn's disease in humans – linked diseases?? Faculty of Veterinary Medicine, Ghent University, Ghent, Belgium
- November 15, 2009 Alberta Inflammatory Bowel Disease Consortium – A new approach to the study of IBD. Crohn's and Colitis Foundation of Canada Annual Meeting: CCFC & You, Emerging Trends in Inflammatory Bowel Disease, Calgary, Canada
- June 23, 2009 Use of bulk milk for herd-level disease monitoring. CanWest DHI meeting, Guelph, Ontario, Canada
- April 24, 2009 Mastitis Prevention and Therapy – What makes sense from an overall herd perspective. Veterinary clinics around Lethbridge, AB, Canada
- March 10, 2009 Use of bulk milk for herd-level disease monitoring. CanWest DHI seminar at *Western Canadian Dairy Seminar*, Red Deer, Alberta, Canada
- December 5, 2008 Heifer mastitis: Attention today, pays off tomorrow! *Manitoba Dairy Seminar 2008*, Winnipeg, MN, Canada
- March 4-8, 2008 New approaches to mastitis prevention. *Western Canadian Dairy Seminar*, Red Deer, Alberta, Canada
- January 27, 2008 Biosecurity and mastitis. *National Mastitis Council (NMC) 47th annual meeting*, New Orleans, LA, USA
- December 11, 2007 The mastitis situation in Canada – where do you stand? *Colloque sur la*

- July 19, 2007 *santé des troupeaux laitiers*, 3^e edition, Quebec City, Canada
Brief update on status of potential link with Crohn's Disease. *Johne's Disease Meeting of Dairy Farmers of Canada and the Canadian Cattlemen's Association*, Calgary, AB, Canada
- July 19, 2007 Overview of current Canadian research and applications submitted which address the gaps identified. *Johne's Disease Meeting of Dairy Farmers of Canada and the Canadian Cattlemen's Association*, Calgary, AB, Canada
- June 25, 2007 Impact of heifer mastitis on somatic cell count, production, culling and fertility. *Conference on heifer mastitis*, Ghent, Belgium
- March 21, 2007 Johne's disease – the Canadian situation. University of Calgary, *Gastrointestinal Research Group seminars*, Calgary, Canada
- January 17, 2007 Johne's disease – towards a national prevention and control program. Technical Committee of the Alberta Beef Producers, Calgary, Canada
- December 18, 2006 Veterinary Education in Calgary. *Norwegian Veterinary School*, Oslo, Norway
- October 20-23, 2006 Management of a high somatic cell count problem. *27th IDF World Dairy Congress*, Shanghai, China
- March 27-30, 2006 Treatment of mastitis. *III Panamerican Congress on Mastitis Control and Milk Quality*, Leon, Guanajuato, Mexico (presented by my former graduate student Ruth Zadoks because of adoption of our 3rd daughter from China)
- March 7, 2006 Mastitis, the Canadian perspective. *Western Canadian Dairy Seminar*, Red Deer, Alberta, Canada (presented by my graduate student Richard Olde Riekerink because of adoption of our 3rd daughter from China)
- December 7, 2005 Heifer mastitis: Attention today, pays off tomorrow! Collogue sur la santé des troupeaux laitiers, Saint-Hyacinthe, QC, Canada
- July 24, 2005 Epidemiology of mastitis: change in distribution of mastitis pathogens, bulk milk somatic cell count and preventative practices in the last decade. *CSAS Mastitis Symposium at the 2005 American Dairy Science Association/American Animal Science Association/Canadian Society of Animal Science Joint Annual Meeting*, Cincinnati, OH, USA
- June 21-22, 2005 Control of mastitis in dairy cows. *Italian Association of Bovine Practitioners*, Milan, Italy (two-day continuing education course)
- April 2, 2005 Health problems in organic dairy farms. *Organic dairy symposium Prince Edward Island*. Charlottetown, PEI, Canada
- February 23, 2005 Voluntary Atlantic Johne's disease program. *2005 New Brunswick Dairy Conference*, Moncton, NB, Canada
- January 22, 2005 Prepartum heifers – is preventative treatment warranted? *5th Annual CE Conference of the Atlantic Bovine Practitioners Association*, Moncton, NB, Canada
- January 22, 2005 Atlantic Johne's program. *5th Annual CE Conference of the Atlantic Bovine Practitioners Association*, Moncton, NB, Canada
- November 25, 2004 Treatment of subclinical mastitis. *Belgian Mastitis Forum*, Ghent, Belgium

- October 22, 2004 Marrying epidemiology and basic science: a tale of two studies. *Biomedical Science seminars*, Atlantic Veterinary College, Charlottetown, PEI
- March 31, 2004 Johne's Disease – Management and the Crohn's debate. *Dairy Focus*, Dartmouth, NS, Canada
- February 1, 2004 Cure of subclinical *Staphylococcus aureus* mastitis during lactation. 43rd *Natl Mastitis Counc Ann Mtg*, Charlotte, NC, USA
- January 22, 2004 Johne's – An international perspective. 4th *Annual CE Conference of the Atlantic Bovine Practitioners Association*, Moncton, NB, Canada
- October 7, 2003 The effect of an internal teat sealer on udder health after calving. Royal Veterinary and Agricultural College, Copenhagen, Denmark
- October 7, 2003 A slaughterhouse study on the cow-level prevalence of paratuberculosis in dairy cows in Atlantic Canada and the state of Maine (USA). Royal Veterinary and Agricultural College, Copenhagen, Denmark
- May 1, 2003 *Giardia* and *Cryptosporidium* infections in domestic livestock: zoonotic potential, transmission dynamics, and threat to drinking water. *Giardia and Cryptosporidium seminar*. Atlantic Veterinary College, Charlottetown, Canada
- March 18, 2003 The Foot-and-Mouth Disease outbreak in The Netherlands and Great Britain. Veterinary College, Agricultural University, Beijing, China
- March 18, 2003 The role of the dog in the transmission of *Neospora caninum*. Veterinary College, Agricultural University, Beijing, China
- March 18, 2003 Possibilities and challenges to become a graduate student in North America. Veterinary College, Agricultural University, Beijing, China
- February 6, 2003 Udder health in the high production herd. 2003 *New Brunswick Dairy Conference*, Moncton, NB, Canada
- January 26, 2003 The effect of management style on udder health. 42nd *Natl Mastitis Counc Ann Mtg*, Fort Worth, TX, USA
- January 18, 2003 The Foot-and-Mouth Disease outbreak in The Netherlands and Great Britain. Annual conference of the SCVMA, Charlottetown, PE, Canada
- November 14, 2002 Bulk milk SCC and distribution of mastitis pathogens in The Netherlands over the last decades. Mastitis Research Workers annual conference, Chicago, IL, USA
- July 18, 2002. Johne's – An international perspective with special emphasis on The Netherlands. 54th *Ann Conf of the Can. Vet. Med. Assoc.*, Halifax, NS, Canada

16. Teaching Responsibilities

Currently, at the Faculty of Veterinary Medicine of the University of Calgary we are developing the graduate curriculum (the DVM curriculum is now relatively established), continue building the facilities and recruiting the faculty members that are needed for teaching and research.

The courses and contact hours from 2006 to present have changed significantly from year to year because of recruitment of new colleagues. My teaching load is significantly less than at UPEI because of my activities as Leader of the Alberta IBD Consortium and NSERC Industrial Research Chair in Infectious Diseases of Dairy Cattle. My annual course work in the academic year 2013-2014 is as follows.

Course Work and Student Contact

Course	Contact Hours
VETM 344, Principles of Veterinary Epidemiology (1 st year)	6
VETM 420, Health Management (2 nd year)	6
VETM 461, Outbreak Investigation (2 nd year)	8
VETM 462, Foreign Animal Disease Field Course (2 nd year)	1
VETM 520, Advanced Health Management (3 rd year)	15
MDCH640, Fundamentals of Epidemiology (post-graduate)	65
Totals	101

In Calgary, I have supervised 12 DVM summer students, 14 Dutch veterinary students doing a 3-month scientific rotation and 4 HYRS students.