

# Claudia A. Muñoz-Zanzi, DVM, MPVM, PhD

## Curriculum Vitae

### Affiliation

Division of Epidemiology and Community Health  
School of Public Health, University of Minnesota  
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### Education

1988 – 1994      University of Concepcion, Chillan, Chile. School of Veterinary Medicine.  
Degree: Doctor in Veterinary Medicine (DVM)  
Date awarded: January 10<sup>th</sup>, 1995.  
1995 – 1997      University of California, Davis, USA.  
Degree: Master of Preventive Veterinary Medicine (MPVM).  
Date awarded: June 13<sup>th</sup>, 1997  
1997 – 2002      University of California, Davis, USA.  
Degree: Ph.D. in Epidemiology.  
Date awarded: February 1<sup>st</sup>, 2002.

### Professional employment

August 1994 – June 1995      Department of Pathology, School of Veterinary Medicine.  
University of Concepcion, Chillan, Chile.  
Position: Instructor of Veterinary Epidemiology and Public Health.  
February 2002 – September 2003      Dept. Veterinary Pathobiology. College of Veterinary Medicine.  
University of Illinois at Urbana-Champaign.  
Position: Epidemiology research associate / Visiting teaching  
associate.  
October 2003 – May 2006      Department of Veterinary Population Medicine.  
University of Minnesota.  
Position: Assistant professor  
August 2004 – Present      Austral University, Valdivia, Chile.  
Adjunct professor of epidemiology.  
June 2006 – Present      Division of Epidemiology and Community Health, School of  
Public Health. University of Minnesota.  
Position: Assistant professor.

### Honors and scholarships

1995      Chilean Association of Veterinary Medicine. Best Student of Class 1992 of the School  
of Veterinary Medicine, University of Concepcion, Chile.  
1995-1998      Presidente de la República de Chile Scholarship. Government of Chile.  
1998-1999      American Association of University Women scholarship.  
1998-2001      Jastro Shields Grant. Graduate Group in Epidemiology, University of California,  
Davis.  
1999-2001      Eugene Lyons Scholarship. School of Graduate Studies, University of California,  
Davis.

- 2000 Association of Teachers of Veterinary Public Health and Preventive Medicine. Graduate Student Award in Epidemiology and Health Economics section at the 81<sup>st</sup> CRWAD meeting.
- 2003 American Association of Veterinary Diagnosticians Foundation's 2002 Journal of Veterinary Diagnostic Investigation Award.
- 2007 Boehringer Ingelheim 2006 Advancement in PRRS Research Award
- 2010 "Distinguish Mentor Award", President's Distinguish Faculty Mentor Program, Multicultural Center for Academic Excellence, University of Minnesota

### **Memberships and service**

- Member, International Leptospirosis Society (2007 – Present)
- Member, International Society of Infectious Diseases (2008 – Present)
- Member of the Executive Committee of the International Leptospirosis Society (2011 – Present)
- Steering Committee Member, Predict Pillar Coordinator, Global Leptospirosis Environmental Action Network, WHO (2012-Present)
- Member, Toxoplasmosis Working Group, National Institute for Mathematical and Biological Synthesis (NIMBios) (2012 – Present)
  
- Associate Editor, PLoS Neglected Tropical Diseases (2012 – Present)
- Editorial Board Member, Journal of Veterinary Diagnostic Investigation (2006 – 2008)
- Editorial Board Member, Archivos de Medicina Veterinaria, Chile (2010 – Present)
- Scientific reviewer, PLoS ONE (2013 – Present)
- Scientific reviewer, PLoS Neglected Tropical Diseases (2007 - Present)
- Scientific reviewer, Zoonosis and Public Health (2006 – Present)
- Scientific reviewer, Emerging Infectious Diseases (2008 – Present)
- Scientific reviewer, American Journal of Epidemiology (2012 – Present)
- Scientific reviewer, Preventive Veterinary Medicine (2004-2006)
- Scientific reviewer, Journal of the Royal Society Interface (2006)
- Scientific reviewer, American Journal of Preventive Medicine (2008)
- Scientific review panel, USDA-NRI (2004, 2007)
- Scientific review panel, NIH – SCORE, Minority Biomedical Research (2007, 2008)
- Scientific review panel, J.B. Hawley Student Research Award review committee, Division of Epidemiology, School of Public Health (2007 – Present)
- Scientific review panel, Seed Grant, Academic Health Center, University of Minnesota (2008)
- UROP reviewer, University of Minnesota (2011-Present)
  
- Member, Veterinary Medicine graduate program PAC, University of Minnesota.(2005 – 2006)
- Member, Epidemiology MPH Admissions Committee, Division of Epidemiology, University of Minnesota (2006 – 2009)
- Member, Epidemiology PhD Admissions Committee, Division of Epidemiology, University of Minnesota (2010 – Present)
- Organizing Committee Chair: Symposium on Sampling Methods for Disease Detection, American Association of Veterinary Diagnosticians annual meeting (November 2006).

### Graduate Faculty Appointments:

Epidemiology MPH and PhD Program

Maternal and Child Health MPH Program  
Environmental Health MPH Program  
Public Health Practice Program

## Grants

### Past grants

- Epidemiology of bovine viral diarrhea virus in dairy cows in California.  
USDA NRI. 1998-2002. \$450,000 (graduate student co-Investigator)
- Epidemiology of bovine viral diarrhea virus in dairy cows in California.  
USDA Formula Funds. 1998-2002, \$70,000 (graduate student co-Investigator)
- Use of transmission models to develop BVDV control strategies  
Center for Food Animal Health, UC Davis. 2000-2001, \$19,000 (co-Principal Investigator)
- Least-cost and overall sensitivity and specificity of pooled-sample testing for low prevalence diseases in food animals  
Livestock Disease Research Laboratory, UC Davis California, Davis. 2000-2001, \$10,000 (co-Principal Investigator)
- Influence of Bovine Viral Diarrhea on Cattle Production within Illinois  
Illinois Council on Food and Agricultural Research. 07/01/00 – 12/31/02, \$133,000 (co-Principal Investigator)
- Diagnosis of Bovine Viral Diarrhea Persistent Infection in Illinois Cattle  
Illinois Department of Agriculture. 07/01/00 – 06/30/02, \$21,300 (co-Principal Investigator)
- New testing strategies to detect *Mycobacterium paratuberculosis* on dairy herds  
USDA-APHIS. 10/01/03 – 9/30/04, \$77,764 (co-Principal Investigator)
- Sampling of adult boars during early infection using a new blood collection technique for PRRS PCR testing prior to semen collection.  
National Pork Board 7/1/04 – 4/1/05 \$44,000 (co-Investigator)
- Pilot surveillance system for investigation and control of emerging diseases in the Minnesota swine industry. University of Minnesota. Agricultural Experiment Station, Rapid Response (co-Investigator). 7/01/04 – 12/30/05, \$40,000
- Evaluation of sampling and testing strategies for monitoring of PRRS virus infection in boar studs  
National Pork Board 1/1/05 – 8/1/06 \$40,477 (Principal Investigator)
- Pilot surveillance system for emerging diseases in swine  
National Pork Board \$60,386 1/1/05 – 7/1/06 (co-Investigator)
- Diagnostic and molecular epidemiology of PRRSV in nursery pigs.  
USDA PRRS Integrated Program (sub-contract). 7/01/04 – 1/1/07, \$24,900 (Principal Investigator)
- Investigation of factors impacting the rate of PRRSV transmission in nursery and finisher pig flows and assessment of transmission rate and timing on economic performance.  
National Pork Board 1/1/05 – 12/1/06 \$176,000 (PI in sub-contract for \$21,800).
- Field evaluation of an ELISA test to detect turkey flocks infected with avian pneumovirus. Midwest Poultry Consortium 3/1/05 – 3/1/07 \$53,000 (Principal Investigator).
- Development of cost-efficient herd testing protocols based on testing of pooled samples using ELISA  
National Pork Board 10/1/05 – 4/1/07 \$45,424 (Principal Investigator)
- Estimation of the sensitivity of PRRSV PCR for pooled serum and blood swab samples from boars during acute infection.  
Boehringer-Ingelheim Pharmaceuticals. 5/1/06 – 5/1/07. \$24,827 (Principal Investigator).

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- Dynamics and variability of viremia in boars after infection with a low-virulence PRRSV strain and the effect on effectiveness of monitoring programs for early detection. USDA- PRRS CAP. 6/1/06-1/1/08. \$29,000 (Principal Investigator).
- Evaluation of the diagnostic performance of assays used for screening of source animals for xenotransplantation. Rogosin Institute 10/1/05 – 11/1/07 \$75,000 (Principal Investigator)
- Development of a simple on-site diagnostic test to detect PRRSV acute infection in boar studs National Pork Board 12/1/06 – 8/15/08 \$58,000 (Principal Investigator).
- A cost-effectiveness evaluation of screening programs for congenital infection with toxoplasmosis in Latin America Minnesota Medical Foundation 1/1/07 – 12/31/07 \$24,000 (Principal Investigator).
- Predicting Salmonella loads on broiler carcasses from pre-harvest Salmonella data collected in broiler houses USDA NRI-CGP 6/1/07 – 6/1/08 \$340,031 (Co-investigator)
- Assessment of leptospirosis exposure in Midwest populations. Grant-in-Aid, Graduate School, University of Minnesota 1/1/08-12/1/09. \$24,235 (Principal Investigator).
- Eco-epidemiology of zoonotic pathogens transmission and its impact on public health. Interdisciplinary International Research Circle Grant, University of Minnesota 6/1/08 – 7/1/09 \$15,000 (Co-Principal Investigator)
- Development of a simulation model to predict effective strategies for pertussis control in Minnesota. Seed Grant 6/1/09-5/31/10 \$24,000 (co-investigator)
- Toxoplasmosis in Ghana: Seroprevalence study in the Coastal population. International Society for Infectious Diseases 7/1/09 – 10/30/10 \$6,000 (co-Principal Investigator)
- Modeling of Food Production and Distribution Chains for Detecting Microbial Contamination of Food Products. National Center for Food Protection and Defense 5/15/08 – 10/31/10 \$205,000 (co-investigator)
- Food production, food safety and the global food supply. USDA-NRI 11/1/06-8/31/12. \$790,000 (co-principal Investigator).
- Global Leptospirosis Action Network Symposium. Joint Research Centre, European Commission. 3/15/13 – 3/14/14 \$15,000

### Active grants

- Eco-Epidemiology of Leptospirosis in Latin America: Understanding the dynamics of transmission within a community. NSF- EID 10/1/09-9/30/15 \$1,396,324 (Principal Investigator)
- RESPOND, Emerging Zoonotic Pandemics. USAID Cooperative Agreement. 10/1/09 – 9/30/2014 (Faculty Expert).
- NIH T32 Training Grant: Infectious Disease Training In Clinical Research (Primary mentor)
- NIH T35 Training Grant: Veterinary Summer Scholars in Comparative Medicine (Faculty mentor)
- Eco-epidemiology of leptospirosis. Research Experience for Undergraduates (REU) – National Science Foundation 2/1/11 – 9/30/15 \$7,450 (Principal Investigator).
- University of Minnesota Agricultural Safety and Health Center: MRSA colonization and infection in swine veterinarians. NIOSH –CDC. 9/30/11 – 9/29/14 (co-investigator)
- Social ecology of hantavirus in southern Chile. NIH 8/1/12 – 7/30/14 \$160,000 (Principal Investigator)
- Source attribution for human toxoplasmosis in communities from southern Chile. Global Spotlight Program, University of Minnesota. 7/1/12 – 6/30/14 \$96,000 (Principal Investigator)

**Publications**

1. † Muñoz, G., **C. Muñoz-Zanzi**, S. Cerda. 1995. Evaluation of the environmental health status in rural sectors of the province of Nuble, Bio-Bio region, Chile. *Av Med Vet* 10: 59-63.
2. † Muñoz, G., J. Lopez, **C. Muñoz-Zanzi**. 1996. Serological determination of prevalence of Leptospirosis and Brucellosis in people at risk. *Agroc* 12: 169-173.
3. **Muñoz-Zanzi**, C., M. Thurmond, D. Hird. 1999. Effect of weaning time and associated management practices on post-weaning chronic diarrhea in captive rhesus monkeys (*Macaca mulatta*). *Lab Anim Sci* 49:617-21.
4. **Muñoz-Zanzi**, C., W. Johnson, M. Thurmond, S. Hietala. 2000. Pooled-sample testing as a herd-screening tool for detection of bovine viral diarrhea virus (BVDV) persistently infected cattle. *J Vet Diagn Invest* 12: 195-203.
5. † Thurmond, M., **C. Muñoz-Zanzi**, S. Hietala. 2001. Effect of a calfhood vaccination program on bovine viral diarrhea virus (BVDV) transmission under typical drylot conditions and exposures. *J Am Vet Med Assoc* 219: 968-975.
6. Rush, D., M. Thurmond, **C. Muñoz-Zanzi**, S. Hietala. 2001. Risk of bovine viral diarrhea virus post-natal infection in dairy cattle under typical management conditions. *J Am Vet Med Assoc* 219: 1426-1431.
7. **Muñoz-Zanzi**, C., M. Thurmond, S. Hietala, W. Johnson. 2002. Predicted ages of dairy calves when colostrum-derived bovine viral diarrhea virus antibodies would no longer offer protection against disease or interfere with vaccination. *J Am Vet Med Assoc* 221:678-685.
8. Thurmond, M., W. Johnson, **C. Muñoz-Zanzi**, S. Hietala. 2002. A method of probability assignment that applies Bayes theorem for use in serologic diagnostics, using an example of *Neospora caninum* infection in cattle. *Am J Vet Res.* 63: 318-325.
9. † Adaska, J., **C. Muñoz-Zanzi**, S. Hietala. 2002. Evaluation of result variability using a commercial Johne's disease ELISA kit and repeat testing of samples. *J Vet Diagn Invest.* 14:423-426.
10. **Muñoz-Zanzi**, C., S. Hietala, M. Thurmond, W. Johnson. 2003. Quantification, risk factors, and health impact of natural congenital infection with bovine viral diarrhea virus in dairy calves. *Am J Vet Res.* 64: 358-365.
11. **Muñoz-Zanzi**, C., M. Thurmond, S. Hietala. 2004. Effect of bovine viral diarrhea virus infection on fertility for the first pregnancy of dairy heifers. *Theriogenol.* 61:1085-1099.
12. † Maherchandani, S., **C. Muñoz-Zanzi**, D. Patnayak, Y. Malik, S. Goyal. 2004. The effect of pooling sera on the detection of avian pneumovirus antibodies. *J Vet Diagn Invest.* 16: 497-502.
13. † Maherchandani, S., D. Patnayak, **C. Muñoz-Zanzi**, D. Lauer, S. Goyal. 2005. Evaluation of five different antigens in enzyme-linked immunosorbent assay for the detection of avian pneumovirus antibodies. *J Vet Diagn Invest.* 17:16-22.
14. † Hermann, J.R., **C.A. Munoz-Zanzi**, M.B. Roof, K. Burkhart, J.J. Zimmerman. 2005. Probability of porcine reproductive and respiratory syndrome virus infection as a function of exposure route and dose. *Vet Microbiol.*110:7-16.

15. † Reicks, D., **C. Muñoz-Zanzi**, W. Mengeling, J. Christopher-Hennings, K. Lager, D. Polson, S. Dee, K. Rossow. 2005. Timeline of PRRS virus detection in boars during the first six days after infection. *J Swine Health Prod.* 14:35-41.
16. **Muñoz-Zanzi**, C., W. Johnson, M. Thurmond. 2006. Least-cost and overall sensitivity and specificity of pooled-sample testing for low prevalence diseases in food animals. *Prev Vet Med.* 74: 309-322.
17. Hermann J, S. Hoff, **C. Munoz-Zanzi**, K.J. Yoon, M. Roof, A. Burkhardt, J. Zimmerman. 2007. Effect of temperature and relative humidity on the stability of infectious porcine reproductive and respiratory syndrome virus in aerosols. *Vet Res.* 38:81-93.
18. † Reicks, D., **C. Muñoz-Zanzi**, K. Rossow. A new bleeding technique for routine monitoring of boars for PRRS virus using PCR. *J Swine Health Prod.* 2006;14:258-264.
19. Mondaca-Fernández, E., T. Meyns, **C. Muñoz-Zanzi**, C. Trincado, R.B. Morrison. Experimental quantification of the transmission of porcine reproductive and respiratory syndrome virus. *Can J Vet Res* 2007; 71:157-159.
20. \* Rovira, A., D. Reicks, **C. Munoz-Zanzi**. Evaluation of surveillance protocols for detecting porcine reproductive and respiratory syndrome virus infection in boar studs by simulation modeling. *J Vet Diagn Invest.* 2007; 19:492-501.
21. \* Rovira, A. T. Clement, J. Christopher-Hennings, B. Thompson, M. Eagle, D. Reicks, **C. Munoz-Zanzi**. Evaluation of the sensitivity of PCR to detect PRRSV on individual and pooled samples from boars during acute infection. *J Vet Diagn Invest.* 2007; 19:502-509.
22. † Tavornpanich, S., **C. Muñoz-Zanzi**, S. Wells, E. Raizman, I. Gardner. Simulation modeling of testing strategies for initial detection of paratuberculosis-infected herds. *Prev Vet Med.* 2008; 83: 65-82.
23. \* Lukas, J.M., **C. Munoz-Zanzi**, M.L. Kinsel, J.K. Reneau. Bulk tank SCC variation and SPC: Consistency index as a field measure of bulk tank SCC variation. *J Dairy Science.* 2008; 91: 433-441.
24. \* Rovira, A., J.P. Cano, **C. Munoz-Zanzi**. Feasibility of pooled-sample testing for the detection of porcine reproductive and respiratory syndrome virus antibodies on serum samples by ELISA. *Vet Microbiol.* 2008; 130:60-68.
25. \* Schefers, J., **C. Munoz-Zanzi**, J.E. Collins, S. M. Goyal, T.R. Ames. Serological evaluation of precolostral serum samples to detect bovine viral diarrhea virus infections in large commercial dairy herds. *J Vet Diagn Invest* 2008. 20: 625-628.
26. Hermann, J., **C. Munoz-Zanzi**, J. Zimmerman. A method to provide improved dose-response estimates for airborne pathogens in animals: An example using porcine reproductive and respiratory syndrome virus. *Vet Microbiol* 2009. 133:297-302.
27. **Munoz-Zanzi**, C., D. Trampel, T. Hanson, A. Cortinas, S. Goyal, K. Harrison, D. Lauer. Field estimation of the diagnostic specificity of an ELISA for avian pneumovirus antibodies in turkeys. *J Vet Diagn Invest.* 2009; 2: 240-243.
28. \*Rovira A., M. Murtaugh, J. Abrahante, **C. Munoz-Zanzi**. Reverse transcription loop-mediated isothermal amplification for the detection of Porcine reproductive and respiratory syndrome virus. *J Vet Diagn Invest*, 2009; 21: 350-354.

29. Sharkey, L., R. Davies, S. Torres, K. Gjevre, **C. Muñoz-Zanzi**. Breed-associated variability in serum biochemical analytes in four large breed dogs. *Vet Clin Pathol.* 2009; 38:375-380.
30. \* Lukas, J., J. K. Reneau, R. Wallace, D. Hawkins, **C. Muñoz-Zanzi**. A novel method of analyzing daily milk production and electrical conductivity to predict disease onset. *J. Dairy Sci.* 2009; 92:5964–5976.
31. Jacobs, A.C., J.R. Hermann, **C. Muñoz-Zanzi**, J.R. Prickett, M.B. Roof, K.-J. Yoon, J.J. Zimmerman. Stability of porcine reproductive and respiratory syndrome virus at ambient temperatures. *J Vet Diagn Invest.* 2010; 22:257-260.
32. **Muñoz-Zanzi, C.**, P. Fry, B. Lesina, D. Hill. *Toxoplasma gondii* oocyst-specific antibodies and source of infection. *Emerg Inf Dis.* 2010; 16:1591-1593.
33. \* Sepúlveda, M., **C. Muñoz-Zanzi**, C. Rosenfeld, C. Jara, K. Pelican, D. Hill. *Toxoplasma gondii* in feral American minks at the Maullin river, Chile. *Vet Parasitol.* 2011; 175:60-65.
34. Hill, D., C. Coss, J. P. Dubey, K. Wroblewski, M. Sautter, T. Hosten, **C. Muñoz-Zanzi**, E. Mui, S. Withers, K. Boyer, G. Hermes, J. Coyne, F. Jagdis, A. Burnett, P. McLeod, H. Morton, D. Robinson, R. McLeod and Toxoplasmosis Study Group. Identification of a sporozoite-specific antigen from *Toxoplasma gondii*. *J Parasitol.* 2011; 97:328-337
35. \* Raizman, EA, S. Wells, **C. Muñoz-Zanzi**, S. Tavornpanich. Estimated within-herd prevalence of *Mycobacterium avium* subsp *paratuberculosis* in a sample of Minnesota dairy herds using bacterial culture of pooled fecal samples. *Can J Vet Res.* 2011; 75:112-116.
36. **Muñoz-Zanzi, C.**, Tamayo R., Balboa, J., Hill, D. Detection of oocyst-associated toxoplasmosis in swine from Southern Chile. *Zoonoses Public Health.* 2012; 59:389-392.
37. Davies, P., B. Alexander, J. Bender, J. Deen, C. Dewey, J. Funk, **C. Muñoz-Zanzi**, M. O’Sullivan, R. Singer, S. Sreevatsan, K. Stark, M. Stevenson. Livestock density ad risk factor for livestock-associated methicillin-resistant *Staphylococcus aureus*, The Netherlands. *Emerging Infectious Diseases.* 2013;19:1551-1552.
38. **Muñoz-Zanzi, C.**, J. Williams-Nguyen. E. Belongia. Sero-prevalence of leptospirosis and toxoplasmosis in children from Wisconsin. *BMC Public Health.* 2013; 13:837
39. **Munoz-Zanzi, C.** M. Mason, C. Encina, M Gonzalez, S. Berg. Socio-demographic and environmental factors associated with rodent abundance and *Leptospira* infection in rural and urban communities from southern Chile. *Am J Trop Med Hyg.* 2014; 90:497-506
40. Jancloes, M.; E. Bertherat, C. Schneider, S. Belmain, **C. Muñoz-Zanzi**, R. Hartskeerl, F. Costa, J. Denis. Towards a “One Health” Strategy against Leptospirosis. *Planet@Risk.* In Press.
41. Brown, P., **C. Muñoz-Zanzi**, M. Chang, P. Allwood. Knowledge, perceptions, and environmental risk factors among Jamaican households with a history of leptospirosis. *J Infection Public Health.* *In Press.*
42. \* Sepulveda, M., M. Seguel, M. Alvarado-Ryback, C. Verdugo, **C. Muñoz-Zanzi**, R. Tamayo. Post Mortem Findings in a South American Sea Lion (*Otaria byronia*) Urban Colony". *J Wildlife Dis.* *Submitted.*
43. **Muñoz-Zanzi, C.**, M. Mason, C. Encina, A. Astroza, A. Romero. *Leptospira* contamination in household and environmental water in rural communities from southern Chile. *J Environmental Research and Public Health.* *Submitted*
44. \* Lelu, M., B. Higgins, R. Galloway, S. Berg, M. Gonzalez, C. Muñoz-Zanzi Eco-epidemiology of

leptospirosis in dogs from rural and slum communities of Los Rios Region, Chile. Vet Res. Submitted.

45. \* Espejo, L., FJ. Zagmutt, H. Groenendaal, **C. Muñoz-Zanzi**, SJ Wells. Evaluation of performance of bacterial culture of feces and serum ELISA across stages of Johne's disease in cattle using a Bayesian latent class model. Submitted.

\* indicates papers from advisees. † indicates paper as a coauthor with major contribution in statistical analysis and manuscript writing.

**Invited presentations (first author)**

- April, 2002 USDA/NADC - IICAB Meeting: Detecting and Controlling BVDV infections. Ames, Iowa. "Assessment of bovine viral diarrhea congenital infection in dry-lot dairy cattle under field management conditions".
- October, 2002 83<sup>rd</sup> Fall Conference for Veterinarians. Continuing Education and Extension Program. College of Veterinary Medicine, University of Illinois at Urbana-Champaign, Urbana, IL. "Diagnosis, impact, and control of bovine viral diarrhea virus in US herds".
- April, 2004 Bovine Viral Diarrhea Virus in the Americas. A Symposium for Researchers, Veterinary Practitioners, and Dairy Producers. University of California, Davis, CA. "Quantification, risk factors, and health impacts of congenital infection with bovine viral diarrhea virus in dairy herds".
- September, 2004 2004 Leman Conference (Continuing education of swine practitioners), Minneapolis, MN. "Sampling strategies and serology challenges pre-PRRS eradication".
- September, 2004 2004 Leman Conference (Continuing education of swine practitioners), Minneapolis, MN. "Investigation and impact of PRRS ELISA false positive results – what to do?"
- November, 2004 "Porcine Reproductive and Respiratory Disease: Methods for the integrated control, prevention and elimination of PRRS in United States Swine Herds (NC229)". Chicago, IL. "Pathogen transmission in populations: Principles and applications".
- November, 2004 13th Chilean Conference in Veterinary Medicine. Valdivia, Chile. "Role of the veterinary diagnostic laboratory in animal disease control"
- December, 2005 PRRS International Symposium, St. Louis MO. "Modeling the within-herd dynamics of PRRS infection: early detection of infection and evaluation of herd immunity".
- October, 2006 AAVLD pre-conference symposium "Sampling for detection of disease". October 12, 2006. Minneapolis, MN. "A pooling approach to sampling"
- December 2007 AAVLD annual meeting, Epidemiology Section, Reno, NV. "Use of pooling in disease diagnosis".
- April 2011 Research and Policy for Infectious Disease Dynamics, Program Pathogen Emergence Working Group: Transmission dynamics of leptospirosis. Los Angeles, CA. "Role of the environment and animal interface in dynamics of *Leptospira* infection".
- September 2011 7<sup>th</sup> Meeting of the International Leptospirosis Society, Merida, Mexico. "Eco-epidemiology of leptospirosis in Latin America".
- March 2012 NSF/NIH Evolution and Ecology of Infectious Diseases, Berkeley, CA.



- “Human and animal seroprevalence of leptospirosis in rural and slum communities from southern Chile”.
- August 2012 Marshfield Clinic Research Foundation, Epidemiology Research Center. Marshfield, WI. “Source attribution and health impact of toxoplasmosis”.
- August 2012 PAHO Meeting of Central American countries with frequent leptospirosis outbreaks. Managua, Nicaragua. “Studies on the eco-epidemiology of leptospirosis”.
- March 2013 Global Leptospirosis Action Network – WHO/PAHO, Brasilia, Brazil. “Systematic literature review of leptospirosis outbreaks” and “Eco-epidemiology of leptospirosis in Latin America”.
- April 2013 College of Veterinary Medicine Seminar Series, University of Minnesota. St. Paul, MN. “The eco-epidemiology of leptospirosis, a neglected disease”.
- April 2013 Conservation Ecology Graduate Program Seminar Series, University of Minnesota, St. Paul, MN. “Zoonotic disease transmission in distinct socio-ecological systems; leptospirosis as an example”.
- August 2013 XVI XLIX Congress of the Brazilian Society of Tropical Medicine. Campo Grande, Brazil. Leptospirosis Special Symposium. “Eco-epidemiology of leptospirosis in rural Chile”.
- December 2013 International Conference Climate Services 3. Special session: The role of climate in disease decision support systems. Montego Bay, Jamaica. “Leptospirosis as a global threat for both animals and humans: The GLEAN Story”.
- January 2014 Tropical and Travel Medicine Series. Special Session on One Health. Medical School, University of Minnesota. “Global Leptospirosis Environmental Action Network: A One Health Story”.

**Presentations at scientific conferences (as first author)**

- October, 1999 American Association of Veterinary Laboratory Diagnosticians. 42<sup>nd</sup> Annual Meeting. San Diego, CA.  
“Detection of Bovine Viral Diarrhea Virus (BVDV) persistently infected cattle using pooled-sample testing”.
- November, 1999 Conference of Research Workers in Animal Diseases. 80<sup>th</sup> Annual Meeting. Chicago, IL.  
“Development of cost-efficient pooled-sample testing protocols to detect Bovine viral diarrhea virus persistently infected cattle”.
- August, 2000 IX International Symposium of Veterinary Epidemiology and Economics. Breckenridge, CO.  
“Pooled-sample testing to diagnose low prevalence diseases: sensitivity and specificity issues”.
- October, 2000 American Association of Veterinary Laboratory Diagnosticians. 43<sup>rd</sup> Annual Meeting. Birmingham, AL.  
“A simulation model to assess the effect of age at vaccination on transmission of bovine viral diarrhea virus in dairy heifers”.  
“Sensitivity and specificity of pooled sample testing for diagnosis of low prevalence diseases”.

- November, 2000 Conference of Research Workers in Animal Diseases. 81<sup>st</sup> Annual Meeting. Chicago, IL.  
“Modeling of post-natal transmission of bovine viral diarrhea virus in dairy heifers and effect of age at vaccination”.
- November 2001 American Association of Veterinary Laboratory Diagnosticians. 44<sup>th</sup> Annual Meeting. Hershey, Pennsylvania.  
“Characterization of bovine viral diarrhea virus congenital infection in dairy herds under field conditions”.
- April 2002 USDA/NADC - IICAB Meeting: Detecting and Controlling BVDV infections. Ames, Iowa.  
“Field evaluation of serum virus isolation, RT-PCR, and immunohistochemistry to detect BVDV PI animals”.
- November, 2002 Conference of Research Workers in Animal Diseases. 83<sup>rd</sup> Annual Meeting. Saint Louis, MO.  
“Field performance and cost effectiveness of skin biopsy IHC, RT-PCR, and serum virus isolation to detect BVD virus persistently infected animals”.
- October, 2003 American Association of Veterinary Laboratory Diagnosticians. 46<sup>th</sup> Annual Meeting. San Diego, California.  
“Epidemiological evaluation of the performance of assay for detection of bovine viral diarrhea virus infection”.
- November, 2003 10<sup>th</sup> International Symposium of Veterinary Epidemiology and Economics. 17<sup>th</sup> – 21<sup>st</sup> November, Viña del Mar, Chile.  
“Bayesian update of expert opinion on the performance of assays for identification of bovine viral diarrhea infected animals.”
- October, 2004 American Association of Veterinary Laboratory Diagnosticians. 47<sup>th</sup> Annual Meeting. Greensboro, North Carolina.  
“Cost-effectiveness of sampling and testing strategies for detection of Johne’s infected dairy herds”.
- December 2008 First International Conference on Infectious Disease Dynamics, Monterey, California.  
“Evaluation of the effectiveness of screening programs for congenital toxoplasmosis using simulation modeling”.
- September 2009 Sixth Conference of the International Leptospirosis Society, Cochin, India.  
“Estimation of sensitivity and specificity of screening tests for leptospirosis in traditionally low risk populations”
- March 2010 NIH/NSF Ecology and Evolution of Infectious Diseases, Atlantic City, New Jersey.  
“Eco-epidemiology of leptospirosis in Latin America: Pilot study results”.
- July 2010 International Conference of Emerging Infectious Diseases. Atlanta, GA.  
“Source attribution of *Toxoplasma gondii* infection by detection of oocyst-specific antibodies”.
- March 2011 NIH/NSF Evolution and Ecology of Infectious Diseases, Madison, WI.  
“Eco-epidemiology of leptospirosis in Latin America: Study populations”.
- March 2012 NIH/NSF Evolution and Ecology of Infectious Disease, Berkeley, CA.  
“*Leptospira* contamination of the peri-domestic environment in households from rural and slum communities in southern Chile”.

- March 2012 NIH/NSF Evolution and Ecology of Infectious Disease, Berkeley, CA.  
“Human and animal sero-prevalence of leptospirosis in rural and slum communities from southern Chile”.
- October 2013 8<sup>th</sup> Meeting International Leptospirosis Society. Fukuoka, Japan .  
“*Leptospira* contamination in water from the peri-domestic environment in rural and slum communities from Chile”.
- November 2013 2<sup>nd</sup> One Health Summit, Global Risk Forum. Davos, Switzerland.  
“Drivers of leptospirosis transmission at the human-animal interface in distinct community types”.

**Presentations at scientific conferences (as co-author)**

- October, 2004 American Association of Veterinary Laboratory Diagnosticians. 47<sup>th</sup> Annual Meeting. Birmingham, AL.  
S. Tavornpanich, **C. Muñoz-Zanzi**, I. Gardner, E. Raizman, S. Wells. “Cost-effectiveness of sampling and testing strategies for detection of Johne’s infected dairy herds”.
- November, 2005 American Association of Veterinary Laboratory Diagnosticians. 48<sup>th</sup> Annual Meeting. Hershey, PA.  
Rovira, A. **C. Munoz-Zanzi**. “Evaluation of sampling and testing strategies for monitoring PRRS infection in boar studs”.
- November, 2006 International PRRS Symposium, 2006. Chicago, IL, USA  
A. Rovira, T. Clement, J. Christopher-Hennings, **C. Munoz-Zanzi**, K. Rossow, N. Loskutoff, E. Nelson, B. Thompson, M. Engle, D. Reicks, M. Murtaugh, J. Lunney. “PRRSV surveillance, elimination and immunity in boars and boar semen”.
- March 2007 2007 International PRRS symposium, Orlando, FL.  
A. Rovira, T. Clement, J. Christopher-Hennings, **C. Munoz-Zanzi**, K. Rossow, N. Loskutoff, E. Nelson, B. Thompson, M. Engle, D. Reicks, M. Murtaugh, J. Lunney. “Evaluation of the sensitivity of PCR to detect PRRSV acute infection in boars”.
- March 2007 American Association of Swine Veterinarians, Orlando, FL.  
Hermann J, **Muñoz-Zanzi CA**, Yoon K-J, Zimmerman J. “Susceptibility of young pigs to PRRSV infection by aerosol route of exposure. “
- November 2009 10<sup>th</sup> International Mammal Congress, Mendoza, Argentina.  
M. Sepulveda, R. Jara, C. Rosenfeld, D. Gonzalez-Acuna, **C. Munoz-Zanzi**, K. Pelican. “Disease and ecological aspects in alien American mink (*Neovison vison*) at the Maullin River, Chile”
- July 2010 21<sup>st</sup> International Pig Veterinary Society Congress, Vancouver, Canada.  
J. Cano, S. Dee, A. Rovira, **C. Munoz-Zanzi**, S. Anil, R. Morrison. “Targeted sampling for enhancing the detection of PRRS virus infection in suckling piglets”.
- July 2010 21<sup>st</sup> International Pig Veterinary Society Congress, Vancouver, Canada.  
J. Cano, S. Dee, A. Rovira, **C. Munoz-Zanzi**, S. Anil, R. Morrison. “PRRS virus vertical transmission dynamics in a sow herd”.
- September 2010 College of Veterinary Medicine Research Days: 2009 Summer Scholars. L. Hornickel, **C. Muñoz-Zanzi**, L. Neils, E. Belongia. “Evaluation of diagnostic tests and estimation of sero-prevalence for *Leptospira* antibodies in humans in traditionally low risk populations”.
- November 2010 XXVI World Buiatrics Congress 2010. Santiago, Chile.

**Claudia Muñoz-Zanzi**

P. Gadicke, G. Maldonado, G. Monti, **C. Muñoz-Zanzi**. “Role of common infectious diseases in pregnancy loss of heifers from large intensively managed dry-lot dairies.

- March 2011 NSF/NIH Evolution and Ecology of Infectious Diseases, Madison, WI. M. Mason, **C. Muñoz-Zanzi**, H. Chu, L. Petersen, L. Hornickel. “Evaluation of the diagnostic accuracy of serologic assays for diagnosis of leptospirosis in low-prevalence populations”.
- March 2011 NSF/NIH Evolution and Ecology of Infectious Diseases, Madison, WI. B. Higgins, **C. Muñoz-Zanzi**, M. Mason. “Association of household characteristics and presence of pathogenic *Leptospira* in the environment”
- October 2011 American Public Health Association’s 139th Annual meeting, Washington DC. M. Mason, **C. Muñoz-Zanzi**. “Identification of *Leptospira* strains and modeling of interaction between animal and human hosts and the environment”.
- October 2011 American Public Health Association’s 139th Annual meeting, Washington DC. M. Mason, H. Chu, **C. Muñoz-Zanzi**. “Diagnostic accuracy of MAT and ELISA assays in the detection of *Leptospira* in two, low-prevalence, populations”.
- November 2011 XXIX Jornadas Chilena de Salud Publica. Santiago, Chile. D. Pinones, **C. Muñoz-Zanzi**, R. Tamayo. “Sero-prevalence of toxoplasmosis in cats from Valdivia, Chile”.
- March 2012 International Conference of Emerging Infectious Diseases, Atlanta, GA. M. Mason, M. Gonzalez, C. Encina, G. Acosta, **C. Muñoz-Zanzi**. “Household characteristics associated with rodent presence and *Leptospira* infection in three communities setting in Chile”.
- March 2012 International Conference of Emerging Infectious Diseases, Atlanta, GA. J. Williams-Nguyen, **C. Muñoz-Zanzi**. “Seroprevalence of leptospirosis and toxoplasmosis in children from Wisconsin”.
- March 2012 International Conference of Emerging Infectious Diseases, Atlanta, GA. M. Rolfes, F. Guerra, P. Fry, R. Tamayo, **C. Muñoz-Zanzi**. “Knowledge and risk factors of congenital infection among Chilean women”
- June 2012 45<sup>th</sup> Annual Society for Epidemiologic Research Meeting, Minneapolis, MN. M. Mason, M. Gonzalez, C. Encina, G. Acosta, **C. Muñoz-Zanzi**. “Household characteristics associated with rodent presence and *Leptospira* infection in three communities setting in Chile”.
- March 2013 NIH/NSF Evolution and Ecology of Infectious Diseases Annual Meeting, Athens, GA. S. Berg, M. Gonzalez, M. Diuk-Weisser, **C. Muñoz-Zanzi**. “Spatial epidemiology of leptospirosis in urban communities from Los Rios, Chile”.
- March 2013 NIH/NSF Evolution and Ecology of Infectious Diseases Annual Meeting, Athens, GA. M. Mason, C. Encina, S. Srivatsaan, M. Gonzalez, **C. Muñoz-Zanzi**. “Leptospirosis in the peri-domestic environment”.
- October 2013 8<sup>th</sup> Meeting International Leptospirosis Society. Fukuoka, Japan. M. Lelu, B. Higgins, R. Galloway, M. Gonzalez, G. Heyl, **C. Muñoz-Zanzi**. “Sero-epidemiology of canine leptospirosis in rural and slum communities from southern Chile”

**Teaching**

1. Veterinary Public Health (DVM curriculum). Instructor. College of Veterinary Medicine, University of Concepcion, Chillan, Chile. 2<sup>nd</sup> semester, 1994.

2. Principles of epidemiology (Graduate level course). Co-instructor. College of Veterinary Medicine, University of Illinois. Fall 2002.
3. Veterinary Clinical Epidemiology (CVM 6220, DVM curriculum). Co-instructor and course coordinator. College of Veterinary Medicine, University of Minnesota. Fall 2004 and 2005.
4. Diagnostic Epidemiology of Infectious Diseases (VMED 5082). Instructor. University of Minnesota. Spring 2006.
5. Diagnostic Epidemiology. First International School of Public Health and Food Safety. Universidad Austral de Chile, Valdivia, Chile. January 2007. One-week course on epidemiologic methods for diagnosis of infectious diseases in populations.
6. Long-distance learning for doctorate students. Quantitative methods in epidemiology: Logistic regression module. Universidad Austral de Chile, Valdivia, Chile. July 2006, July 2009.
7. Epidemiology Methods II (PubH 6342). Co-instructor. University of Minnesota. Spring 2008-2014.
8. Global Health Course, School of Medicine, University of Minnesota. Lecturer. Summer 2008-2010.
9. Epidemiologic and Modeling Methods for Infectious Diseases (PubH 6390). Co-instructor. University of Minnesota. May Session 2009.

**Student advising**

**Currently active**

<b>Advisee name</b>	<b>Degree</b>	<b>Major</b>	<b>Advisor role</b>	<b>Expected</b>
Amanda Beaudoin	Post-doc	T32 ID Program	Co-mentor	September 2016
Maud Lelu	Post-doc	Epidemiology	Mentor	September 2014
Meghan Mason	PhD	Epidemiology	PhD advisor	December 2014
Bozena Morawski	PhD	Epidemiology	PhD advisor	June 2015
Ashley Bekolay	MPH	Environmental Health	Project advisor	June 2014
Hannah Fox	MPH	Community Health	Project advisor	June 2014
Chris Campbell	MPH	Epidemiology	Project advisor	August 2014
Matt McFalls	MPH	Epidemiology	Project advisor	July 2014
Hannah Fox	MPH	Maternal and Child Health	Project advisor	June 2014
Andres Diaz	PhD	Veterinary Medicine, Epidemiology minor	Committee member	June 2015
Melissa McMahon	MPH	Epidemiology	Committee member	June 2014
Karen Hamre	PhD	Epidemiology	Committee member	June 2015
Nandita Mirajkar	PhD	Veterinary Medicine, Public Health minor	Committee member	June 2016
Nidhi Ghildayal	PhD	Health Decision Sciences	Committee member	June 2015
Annastasia Gross	MPH	Epidemiology	Academic advisor	June 2014
Gabrielle Quiggle	MPH	Epidemiology	Academic advisor	June 2014
Alexandra Boland	MPH	Epidemiology	Academic advisor	June 2015
Ogechukwu Etudo	MPH	Maternal and Child Health	Academic advisor	June 2015

## Former

Name	Degree	Role	Completion
Sarah Blau <sup>1</sup>	BS, Global Health Concentration	REU Mentor/Project advisor	May 2014
Francisco Mimica <sup>3</sup>	MSc Epidemiology	Co-advisor	April 2014
Krithika Rupna	MPH	Project advisor	Dec 2013
Farides Saavedra	MSc Microbiology	Committee member	Dec 2013
Melissa Wolfes	PhD, Epidemiology	Advisor	October 2013
Aderonke Gbadebo	MPH, Epidemiology	Academic advisor	October 2013
Leticia Monteiro	MSc Veterinary Medicine	Committee member	August 2013
Dongsul Kim	MPH Epidemiology	Project advisor	August 2013
Laura Grangaard	MPH Epidemiology	Academic advisor	July 2013
Lauren Lamers	MPH Epidemiology	Academic advisor	July 2013
Max Sepulveda	PhD Veterinary Medicine	Committee member	July 2013
Claude Betene	MPH	Academic advisor	June 2013
Brooke Higgins	B.S. College Biological Sciences	Honors thesis advisor	May 2013
Pratha Muthia	MPH Community Health Promotion	Academic advisor	May 2013
Emily Hallberg	MPH Epidemiology	Academic advisor	May 2013
Stephanie Shulman	MPH Epidemiology	Academic advisor	November 2012
Cesar Bauza <sup>2</sup>	DVM	Thesis external advisor	November 2012
Danika Vercimak	MPH Epidemiology	Academic advisor	September 2013
Casey Gradick	MPH Epidemiology	Project advisor	August 2012
Jessica Williams-Nguyen	MPH Epidemiology	Project advisor	June 2012
Luis Espejo	PhD Veterinary Medicine, Epidemiology minor	Committee member	January 2012
Brooke Higgins	B.S. CBS	UROP advisor	January 2012
Susan Vargas	MPH Veterinary Public Health	Committee member	July 2011
Dayan Pinones <sup>2</sup>	DVM	Thesis co-advisor	March 2011
Cyndy Adams	MPH, Veterinary Public Health	Project advisor	February 2011
Anil Sukumaran	MPH Epidemiology	Academic advisor	January 2011
Jorge Balboa <sup>2</sup>	DVM	Thesis co-advisor	March 2011
Katie Tastad	MPH Epidemiology	Project advisor	October 2010
Kristin Shaw	MPH Epidemiology	Project advisor	September 2010
Oge Alozie	MPH Epidemiology	Committee member	August 2010
Kristofer Hall	MPH Epidemiology	Academic advisor	May 2010
Mary Mauzy	MPH Epidemiology	Project advisor	April 2010
Chris Tate	MPH Epidemiology	Project advisor	November 2009
Paula Gadicke <sup>2</sup>	DSc Veterinary Medicine	Committee member	September 2009
Lindsey Hornickel	DVM	NIH T35 mentor	September 2009
Seth Baker	MPH Veterinary Public Health	Academic advisor	June 2009
Sudhir Kumar	MPH Epidemiology	Committee member	April 2009

**Claudia Muñoz-Zanzi**

Trisha McDonald	MPH Epidemiology	Project advisor	December 2008
Naomi Loges	MPH Epidemiology	Project advisor	December 2008
Katherine Harrison	MPH Epidemiology	Project advisor	September 2008
Albert Rovira	Post-doc	Mentor	September 2008
Jeremy Smith	MPH Epidemiology	Project advisor	May 2008
Joanna Lukas	PhD Animal Science	Committee member	May 2008
Kristen Harrison	MPH Epidemiology	Project advisor	June 2008
Zhenyu Pan	MSc Biostatistics	Committee member	June 2008
Albert Rovira	PhD Veterinary Medicine	PhD advisor	October 2007
Natalia Cernicchiaro	MSc Veterinary Medicine	Committee member	December 2006

<sup>1</sup>Macalester College <sup>2</sup>Austral Universidad, Chile <sup>3</sup> Universidad Catolica de Chile