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1 Position Responsibility Statement

Position Responsibility Statement
Department of Veterinary Diagnostic and Production Animal Medicine
Iowa State University College of Veterinary Medicine

Dr. Daniel Linhares
Updated February 18, 2019

Dr. Daniel Linhares is a tenure track Assistant Professor in the swine unit of the Food Supply Veterinary Medicine (FSVM) Section of the Department of Veterinary Diagnostic and Production Animal Medicine (VDPAM) in the College of Veterinary Medicine at Iowa State University. Dr. Linhares commits approximately 55% of his time to research, 30% to professional practice and outreach, 10% to teaching and 5% to institutional service. He is expected to demonstrate scholarship in all areas of his PRS. Dr. Linhares will develop an independent and collaborative, extramurally funded research program focused on solving disease and production problems relevant to the US and global swine industries. Responsibilities in teaching include contributing lectures to the VDPAM Livestock Disease Management course, providing lectures and on-farm instruction in the VDPAM Swine Production Medicine course series, contributing business expertise to the VDPAM Practice Management and VDPAM Veterinary Entrepreneurship courses, and contributing to current and/or new VDPAM graduate courses. Responsibilities in professional practice and outreach include developing science-driven information on applied strategies to significantly prevent, detect or manage infectious diseases affecting the Iowa, North American, and International pork industries by working directly with practitioners and producers on applied research programs under field conditions.

All CVM employees have a responsibility to maintain a positive workplace that is free of discrimination and harassment. Collegial interactions with all co-workers in the CVM will be required. Faculty and staff are expected to model safe and fiscally responsible behavior for students. You will be expected to be in compliance with established policies of the CVM and Iowa State University (including the ISU Code of Computer Ethics and Acceptable Use, biosafety regulations, OSPA, purchasing, and other approved policies and procedures). You are also expected to participate in the annual performance evaluation process.

2 Education

- 2009 - 2013** PhD, Veterinary Population Medicine. University of Minnesota, Minneapolis, USA
- 2006 - 2007** Master in Business Administration (MBA). Fundação Getúlio Vargas, Uberlandia, Brazil
- 1999 - 2003** Veterinary Medicine Degree (DVM equivalent). Universidade Federal de Goiás. Goiania, Brazil

3 Professional Experience

- 2020 – to date** Iowa State University, Associate Professor and Director of Graduate Education Department of Veterinary Diagnostic and Production Animal Medicine (VDPAM)
- 2018 – to date** Episui Swine Medicine Consulting – sole proprietor
- 2015 – 2020** Iowa State University, Assistant Professor and Director of Graduate Education Department of Veterinary Diagnostic and Production Animal Medicine (VDPAM)
- 2014 – 2015** Agroceres PIC, Manager for Technical Services, Health Assurance and Product Validation
- 2013 – 2014** Agroceres PIC, Manager for Technical Services and Health Assurance
- 2011 – 2012** Executive board of directors of the U of MN Commonwealth Terrace Cooperative, Treasurer (Budget ~ U\$ 4 million).
- 2009 – 2013** University of Minnesota, Research Assistant and Graduate student
- 2007 – 2009** Agroceres PIC: Production Supervisor: Veterinary Services
- 2004 – 2007** Agroceres PIC: Production Trainee: Veterinary Services and Farm Manager

4 Professional Membership

- 2009 to date:** American Association of Swine Veterinarians: member since 2009 and serving on the PRRS Task Force Committee since 2018.
- 2016 to date:** Iowa Veterinary Medical Association: member

5 Awards

- 2019** ISU-CVM Dean's Faculty Fellowship in Veterinary Medicine: provided through funds from the Juelsgaard Dean's endowment fund to support programmatic activities of selected faculty members, helping to advance CVM's mission.
- 2019** ISU Award for Early Career Achievement in Research: this award is provided once/year to one tenured or tenure-track faculty with a Ph.D. of less than 9 years.
- 2018** ISU CVM Award for Early-Career Achievement in Research (with Gray Fellowship Fund): this award is provided to 1 ISU-CVM faculty per year.
- 2016** Respiratory Disease Research Award by Boehringer Ingelheim Vetmedica, Inc.: this award is given to up to 3 researchers per year.
- 2015** Distinguished Contribution Award by Agroceres PIC

- 2014 Distinguished PhD thesis, University of Minnesota
- 2012 Best Poster Award, Allen D Leman Swine Conference, Saint Paul, MN.
- 2009 Carlos Pijoan Fellowship, University of Minnesota
- 2003 CNPq Fellowship, Universidade Federal de Goias, research project on swine production
- 2002 CNPq Fellowship, Universidade Federal de Goias, research project on veterinary virology
- 2001 CNPq Fellowship, Universidade Federal de Goias, research project on veterinary virology

6 Peer reviewed articles (n=63)

Work marked with * was presented by a student whom I serve(d) as major professor.

6.1 At the Associate Professor rank (n=18)

- 18 TREVISAN G, SHARMA A, GAUGER P, HARMON KM, ZHANG J, MAIN R, ZELLER M, LINHARES LCM, LINHARES DCL. PRRSV2 genetic diversity defined by RFLP patterns in the United States from 2007 to 2019. *J Vet Diagn Invest*. doi: 10.1177/10406387211027221.
- 17 JIAN Y, LI Q, TREVISAN G, **LINHARES DCL**, MACKENZIE C. Investigating the relationship of porcine reproductive and respiratory syndrome virus RNA detection between adult/sow farm and wean-to-market age categories. *PLoS One*. 2021;16(7):e0253429.
- 16 *TREVISAN G, LI G, MOURA CAA, COLEMAN K, THOMAS P, ZHANG J, GAUGER P, ZELLER M, **LINHARES DCL**. Complete coding genome sequence of a novel porcine reproductive and respiratory syndrome virus 2 restriction fragment length polymorphism 1-4-4 lineage 1C variant identified in Iowa, USA. *Microbiol Resour Announc*. 2021; 10(21):1-2.
- 15 *ALMEIDA MN, ZHANG M, ZIMMERMAN JJ, HOLTkamp DJ, **LINHARES DCL**. Finding PRRSV in sow herds: family oral fluids vs. serum samples from due-to-wean pigs. *Preventive Veterinary Medicine*. 2021; 193:105397. doi: 10.1016/j.prevetmed.2021.105397.
- 14 POETA SILVA APS, MAROSTICA TP, MCDANIEL A, ARRUDA BL, ALONSO C, DERSCHIED R, YESKE P, **LINHARES DCL**, GIMÉNEZ-LIROLA L, KARRIKER L, FANO E, ZIMMERMAN JJ, CLAVIJO MJ. Comparison of *Mycoplasma hyopneumoniae* response to infection by route of exposure. *Vet Microbiology*. 2021; 258(109118):1-10.
- 13 HOLTkamp D, TORREMORELL M, CORZO CA, **LINHARES DCL**, ALMEIDA MN, YESKE P, POLSON DD, BECTON L, SNELSON H, DONOVAN T, PITTMAN J, JOHNSON C, VILALTA C, SILVA GS, SANHUEZA J. Proposed modifications to porcine reproductive and respiratory syndrome virus herd classification. *J Swine Health Prod*. 2021;29(5):125-134.
- 12 *RAWAL G, **LINHARES DCL**. Scoping review on the epidemiology, diagnostics, and clinical significance of porcine astroviruses. *Transboundary and Emerging Diseases*. 2021 [in press]. DOI: 10.1111/tbed.14123.
- 11 *ALMEIDA MN, CORZO CA, ZIMMERMAN JJ, **LINHARES DCL**. Longitudinal piglet sampling in commercial sow farms highlights the challenge of PRRSV detection. *Porcine Health Manag*. 2021; 7(31):1-10.
- 10 SANGLARD LP, HICKMANN FMW, HUANG Y, GRAY KA, **LINHARES DCL**, DEKKERS JCM, NIEDERWERDER MC, FERNANDO RL, BRACCINI NETO J, SERÃO NVL. Genomics of response to

PRRSV in purebred and crossbred sows: antibody response and performance following natural infection versus vaccination. *J Anim Sci*. 2021. doi: 10.1093/jas/skab097. [in press]

9 *TORRENTS D, MIRANDA J, GAUGER PC, RAMIREZ A, **LINHARES DCL**. Effect of PRRSV stability on productive parameters in breeding herds of a large swine integrated group in Spain. *Porcine Health Management* 2021; 7(21):1-7.

Role: Discussed the study design and results, secured funding, contributed with data analysis, reviewed the manuscript.

8 *MOURA CAA, PHILIPS R, SILVA GS, RAMIREZ A, GAUGER PC, HOLTkamp DJ, **LINHARES DCL**. Association of wild-type PRRSV detection patterns with mortality of MLV-vaccinated growing pig groups. *Prev Vet Med* 189 (2021) 105270:1-7.

Role: Discussed the study design and results, secured funding, contributed with data analysis, reviewed the manuscript.

7 *TREVISAN G, SHARMA, A, GAUGER, P, HARMON KM, ZHANG J, MAIN RG, ZELLER M, LINHARES LCM, **LINHARES DCL**. PRRSV2 genetic diversity defined by RFLP patterns in the United States from 2007 to 2019; *J Vet Diagn Investigation*. <https://doi.org/10.1177/1040638721102722>.

Role: Discussed the study design and results, secured funding, contributed with data analysis, reviewed the manuscript.

6 *TREVISAN G, LINHARES LCM, SCHWARTZ KJ, BURROUGH ER, MAGALHAES, ES, CRIM B, DUBEY P, MAIN RG, GAUGER P, THURN M, LAGES PTF, CORZO CA, TORRISON J, HENNINGSON J, HERRMAN E, MCGAUGHEY R, CINO G, CLEMENT T, GRESETH J, CHRISTOPHER-HENNINGS J, **LINHARES DCL**. Data standardization implementation and applications within and among diagnostic laboratories: integrating and monitoring enteric coronaviruses. *Journal of Veterinary Diagnostic Investigation*. 2021;33(3):457-468. doi:10.1177/10406387211002163.

Role: Discussed the study design and results, secured funding, contributed with data analysis, reviewed the manuscript.

5 TREVISAN G, SCHWARTZ KJ, BURROUGH ER, ARRUDA B, DERSCHIED R, RAHE M, MAGALHAES, ES, ALMEIDA MN, MAIN RG, **LINHARES DCL**. Visualization and application of disease diagnosis codes for population health management using porcine diseases as a model. *Journal of Veterinary Diagnostic Investigation*. 2021;33(3):428-438. doi:10.1177/1040638721995782.

Role: Discussed the study design and results, secured funding, contributed with data analysis, reviewed the manuscript.

4 SANGLARD LP, FERNANDO RL, GRAY KA, **LINHARES DCL**, DEKKERS JCM, NIEDERWERDER MC, SERÃO NVL. Genetic Analysis of Antibody Response to Porcine Reproductive and Respiratory Syndrome Vaccination as an Indicator Trait for Reproductive Performance in Commercial Sows. *Front Genet* 2020; 11 (1011):1-16.

Role: Discussed the study design, discussed results, and reviewed the manuscript.

3 *RAWAL G, FERREYRA FM, MACEDO NR, BRADNER LK, HARMON KM, ALLISON G, **LINHARES DCL**, ARRUDA BL. Ecology of porcine astrovirus type 3 in a herd with associated neurologic disease. *Viruses*. 2020;12(992):1-12.

Role: Discussed the study design and results, secured part of the funding, contributed with data analysis, reviewed the manuscript.

2 *TREVISAN G, ROBBINS RC, ANGULO J, DUFRESNE L, LOPEZ WA, MACEDO N, **LINHARES DCL**. Relationship between weekly PRRSV exposure in breeding herds and subsequent viral shedding and mortality in the nursery. J Swine Health Prod. 2020;28(5):244-253.

Role: Discussed the study design and results, secured funding, contributed with data analysis, reviewed the manuscript.

1 FERRAZ M, ALMEIDA H, SONALIO K, STORINO G, SOUZA MR, MOURA CAM, COSTA WMT, LUNARDI L, **LINHARES DCL**, OLIVEIRA LG. Lung consolidation caused by *Mycoplasma hyopneumoniae* has a negative effect on productive performance and economic revenue in finishing pigs. Prev Vet Med. 2020; 182(105091):1-6.

Role: Discussed the study design and results, contributed with data analysis, reviewed the manuscript.

6.2 After joining ISU as Assistant Professor (n=39)

39 *LOPEZ-LOPEZ WA, ZIMMERMAN JJ, GAUGER PC, HARMON K, BRADNER L, ZHANG M, GIMENEZ-LIROLA L, RAMIREZ A, CANO JP, **LINHARES DCL**. Practical aspects of PRRSV RNA detection in processing fluids collected in commercial swine farms. Prev Vet Med. 2020; 180(105021):1-5.

Role: Conception of the idea, secured funding, discussed the study design and results, reviewed the manuscript.

38 *TREVISAN G, LINHARES LCM, CRIM B, DUBEY P, SCHWARTZ KJ, BURROUGH ER, WANG C, MAIN RG, SUNDBERG P, THURN M, LAGES PTF, CORZO CA, TORRISON J, HENNINGSON J, HERRMAN E, HANZLICEK GA, RAGHAVAN R, MARTHALER D, GRESETH J, CLEMENT T, CHRISTOPHER-HENNINGS J, MUSCATELLO D, **LINHARES DCL**. Prediction of seasonal patterns of porcine reproductive and respiratory syndrome virus RNA detection in the U.S. swine industry. J Vet Diagn Invest. 2020; 32(3):394-400.

Role: Conception of the idea, secured funding, discussed the study design and results, reviewed the manuscript.

37 *SILVA GS, GRAHAM K, NOVAK V, HOLTKAMP DJ, **LINHARES DCL**. A retrospective investigation of risk factors associated with loads of pigs positive for Senecavirus A at a midwestern US packing plant during the summer of 2017. J Swine Health Prod. 2020; 28(2):87-92.

Role: Conception of the idea, secured funding, discussed the study design and results, reviewed the manuscript.

36 SANGLARD LP, SCHMITZ-ESSER S, GRAY KA, **LINHARES DCL**, YEOMAN CJ, DEKKERS JCM, NIEDERWERDER MC, SERÃO NVL. Vaginal microbiota diverges in sows with low and high reproductive performance after porcine reproductive and respiratory syndrome vaccination. Sci Rep 2020; 10 (3046):1-11.

Role: Discussed the study design, discussed results, and reviewed the manuscript.

35 *ALMEIDA MN, ROTTO H, SCHNEIDER P, ROBB C, ZIMMERMAN JJ, HOLTKAMP DJ, RADEMACHER CJ, **LINHARES DCL**. Collecting oral fluids samples from due-to-wean litters. Preventive Veterinary Medicine. 2019; 174 (104810):1-5.

Role: Conception of the idea, secured funding, discussed the study design and results, reviewed the manuscript.

34 SANGLARD LP, SCHMITZ-ESSER S, GRAY KA, **LINHARES DCL**, YEOMAN CJ, DEKKERS JCM, NIEDERWERDER MC, SERÃO NVL. Investigating the relationship between vaginal microbiota and host genetics and their impact on immune response and farrowing traits in commercial gilts. *J Anim Breed Genet.* 2020. 137(1):84-102.

Role: Discussed the study design, discussed results, and reviewed the manuscript.

33 *RAWAL G, FERREYRA FM, MACEDO NR, BRADNER LK, HARMON KM, MUELLER A, ALLISON G, **LINHARES DCL**, ARRUDA BL. Detection and cellular tropism of porcine astrovirus type 3 on breeding farms. *Viruses.* 2019; 11(11): 1-11.

Role: Conception of the idea, discussed the study design, discussed results, and reviewed the manuscript.

32 *TORRENTS D, MIRANDA J, PEDRAZUELA R, GAUGER P, RAMIREZ A, **LINHARES DCL**. Implementation of PRRSV status classification system in swine breeding herds from a large integrated group in Spain. *Porcine Health Manag.* 2019 5(16):1-8.

Role: Conception of the idea, discussed the study design, discussed results, and reviewed the manuscript.

31 *TREVISAN G, LINHARES LCM, CRIM B, DUBEY P, SCHWARTZ KJ, BURROUGH ER, MAIN RG, SUNDBERG P, THURN M, LAGES PTF, CORZO CA, TORRISON J, HENNINGSON J, HERRMAN E, HANZLICEK GA, RAGHAVAN R, MARTHALER D, GRESETH J, CLEMENT T, CHRISTOPHER-HENNINGS J, **LINHARES DCL**. Macroepidemiological aspects of porcine reproductive and respiratory syndrome virus detection by major United States veterinary diagnostic laboratories over time, age group, and specimen. *Plos One.* 2019 14(10):e0223544, 1-16.

Role: Conception of the idea, secured funding, discussed the study design and results, reviewed the manuscript.

30 RAMIREZ BC, HONGWEI X, HALBUR P, BEERMANN DH, HANSEN SL, **LINHARES DCL**, PESCHEL JM, RADEMACHER CJ, REECY JM, ROSS JW, SHEPHERD TA, KOLTES JE. At the Intersection of Industry, Academia, and Government: How Do We Facilitate Productive Precision Livestock Farming in Practice?. *Animals.* 2019; 9(635): 1-9.

Role: This is a commentary paper about a workshop on precision livestock farming held in Ames by Iowa State University leaders. I joined the workshop, provided written notes, and joined discussions included in the commentary.

29 *MOURA CAA, TOTTON SC, SARGEANT JM, O'SULLIVAN TL, **LINHARES DCL**, O'CONNOR AM. Evidence of improved reporting of swine vaccination trials in the post-REFLECT statement publication period. *J Swine Health Prod.* 2019; 27(5): 265-277.

Role: Discussed study design, revised the manuscript.

28 BARALDI TG, CRUZ NRN, PEREIRA DA, GALDEANO JVB, GATTO IRH, SILVA AFD, PANZARDI A, **LINHARES DCL**, MATHIAS LA, OLIVEIRA LG. Antibodies against *Actinobacillus pleuropneumoniae*, *Mycoplasma hyopneumoniae* and influenza virus and their relationships with risk factors, clinical signs and lung lesions in pig farms with one-site production systems in Brazil. *Prev Vet Med.* 2019; 171: 1-7 [in press].

Role: Contributed with study design, and data analyses.

27 *TREVISAN GT, JABLONSKI E, ANGULO J, LOPEZ WA, **LINHARES DCL**. Use of processing fluid samples for longitudinal monitoring of PRRS virus in herds undergoing virus elimination. *Porcine Health Manag.* 2019; 5(18):1-5.

Role: Conception of the idea, secured funding, discussed the study design, discussed results, and reviewed the manuscript.

26 *SILVA GSS, MACHADO G, BAKER KL, HOLTKAMP DJ, **LINHARES DCL**. Machine-learning algorithms to identify key biosecurity practices and factors associated with breeding herds reporting PRRS outbreak. *Prev Vet Med.* 2019; 171:104749.

Role: Conception of the idea, secured funding, discussed the study design, discussed results, and reviewed the manuscript.

25 PEREZ A, **LINHARES DCL**, ARRUDA AG, VANDERWAAL K, MACHADO G, VILALTA C, SANHUEZA J, TORRISON J, TORREMORELL M, CORZO C. Individual or common good? Voluntary data sharing to inform disease surveillance systems in food animals. *Frontiers in Vet Sci.* 2019; 6(194): 1-7.

Role: Conception of the idea, helped writing the paper and reviewing the manuscript.

24 MEHLING S, HENAO-DIAZ A, MAURER J, KLUBER E, STIKA R, RADEMACHER C, ZIMMERMAN J, GIMÉNEZ-LIROLA L, WANG C, HOLTKAMP DJ, MAIN R, KARRIKER L, **LINHARES DCL**, BREUER M, GOODELL C, BAUM D. Mortality patterns in a commercial wean-to finish swine production system. *Vet Sci.* 2019; 6(49): 1-11.

Role: Discussed results, and reviewed the manuscript.

23 CANNING P, COSTELLO N, MAHAN-RIGGS E, SCHWARTZ KJ, SKOLAND K, CRIM B, RAMIREZ A, **LINHARES DCL**, GAUGER P, KARRIKER L. Retrospective study of lameness cases in growing pigs associated with joint and leg submissions to a veterinary diagnostic laboratory. *J Swine Health and Production.* 2019; 27(3): 118-124.

Role: Served in the first author's POSC, discussed the study design and the results, and reviewed the manuscript.

22 *MOURA CAA, BAKER S, JOHNSON C, HOLTKAMP DJ, **LINHARES DCL**. Assessment of immediate production impact following attenuated PRRS type 2 virus vaccination in swine breeding herds. *Porcine Health Management Journal.* 2019; 5(13):1-6.

Role: Contributed to conception of the idea, the study design, discussed results, and reviewed the manuscript.

21 *SILVA GS, YESKE P, MORRISON RB, **LINHARES DCL**. Benefit-cost analysis to estimate the payback time and the economic value of two *Mycoplasma hyopneumoniae* elimination methods in breeding herds. *Preventive Veterinary Medicine.* 2019; 168:95-102.

Role: Contributed to conception of the idea, the study design, discussed results, and reviewed the manuscript.

20 SILVA GS, LEOTTI VB, CASTRO SMJ, MEDEIROS AAR, SILVA APSP, **LINHARES DCL**, CORBELLINI LG. Assessment of biosecurity practices and development of a scoring system in swine farms using item response theory. *Preventive Veterinary Medicine.* 2019; 167:128-136.

Role: Co-mentored the first author in his Ph.D., discussed the study design, discussed results, and reviewed the manuscript.

Information below not in Interfolio as of February 10, 2020.

19 CANNING P, VIAL A, O'BRIEN K, MADSON D, SKOLAND K, KRULL A, LINHARES DCL, GAUGER P, RAMIREZ A, KARRIKER L. Determination of reference intervals for fluid analysis and cytologic evaluation variables in synovial fluid samples obtained from carpal and tarsal joints in commercial non lame growing swine. American Journal of Veterinary Research. 2018; 79(8):858-866.

Role: Served in the first author's POSC, discussed the study design and the results, and reviewed the manuscript.

18 *RAWAL G, ARRUDA P, RADEMACHER C, LINHARES DCL. General overview of the detection of *Mycoplasma hyopneumoniae* DNA by quantitative polymerase chain reaction in diagnostic cases submitted to the Iowa State University Veterinary Diagnostic Laboratory from 2004 to 2016. Journal of Swine Health and Production. 2018; 26(6): 309-315

Role: Conception of the idea, discussed the study design, discussed results, and reviewed the manuscript.

17 *SILVA G, CORBELLINI G, LINHARES DCL, BAKER K, HOLTKAMP D. Development and validation of a scoring system to assess the relative vulnerability of swine breeding herds to the introduction of PRRS virus. Preventive Veterinary Medicine. 2018;160:116-122.

Role: Conception of the idea, discussed the study design, discussed results, and reviewed the manuscript.

16 *ALMEIDA MN, ZIMMERMAN JJ, WANG C, LINHARES DCL. Assessment of abattoir based monitoring of PRRSV using oral fluids. Preventive Veterinary Medicine. 2018; 158:137-145.

Role: Conception of the idea, discussed the study design, discussed results, and reviewed the manuscript.

15 ANDERSON AV, FITZGERALD C, BAKER K, STIKA R, LINHARES D, HOLTKAMP DJ. Comparison of shower-in and shower-in plus bench entry protocols for prevention of environmental contamination due to personnel entry in a commercial swine facility. Journal of Swine Health and Production. 2018; 26(4):192-199.

Role: Discussed the study design, discussed results, and reviewed the manuscript.

14 CANNING P, O'BRIEN K, THOMPSON V, MADSON D, SKOLAND K, RAMIREZ A, LINHARES DCL, GAUGER P, KARRIKER L. Suitability of four injectable anesthetic protocols for percutaneous synovial fluid aspiration in healthy swine under field conditions and assessment of lameness seven days post procedure. Journal of Swine Health and Production. 2018; 26(3):130-136.

Role: Served in the first author's POSC, discussed the study design and the results, and reviewed the manuscript.

13 *LOPEZ WA, ANGULO J, ZIMMERMAN JJ, LINHARES DCL. PRRS monitoring in breeding herds using processing fluids. Journal of Swine Health and Production. 2018; 26(3):146-150.

Role: Conception of the idea, discussed the study design, discussed results, and reviewed the manuscript.

12 GATTO IRH, HARMON K, BRADNER L, SILVA P, LINHARES DCL, ARRUDA PH, OLIVEIRA LG. Detection of atypical porcine pestivirus in Brazil in the central nervous system of suckling piglets with congenital tremor. Transboundary and Emerging Diseases. 2018; 65(2):375-380.

Role: Discussed the study design, discussed results, and reviewed the manuscript.

11 GATTO IRH, LINHARES DCL, DE SOUZA ALMEIDA HM, MATHIAS LA, DE MEDEIROS ASR, POLJAK Z, SAMARA SI, OLIVEIRA LG. Description of risk factors associated with the detection of BVDV antibodies in Brazilian pig herds. *Tropical Animal Health and Production*. 2018; 50(4):773-778.

Role: Discussed the study design, discussed results, and reviewed the manuscript.

10 SCHWEER WP, PATIENCE JF, SCHWARTZ K, LINHARES D, RADEMACHER C, ALLEN K, LOVING CL, RAMIREZ A, GABLER NK. A review and evaluation of antibiotic alternatives in the literature. *Journal of Animal Science*. 2017; 95:148.

Role: Discussed the study design, discussed results, and reviewed the manuscript.

9 *SILVA GS, SCHWARTZ M, MORRISON, RB, LINHARES DCL. Monitoring breeding herd production data to detect PRRSV outbreaks. *Preventive Veterinary Medicine*. 2017; (148) 89-93.

Role: Contributed to conception of the idea, the study design, discussed results, and reviewed the manuscript.

8 LINHARES DCL, BETLACH C, MORRISON RB. Effect of immunologic solutions on sows and gilts on time to stability, and production losses in breeding herds infected with 1-7-4 PRRSv. *Preventive Veterinary Medicine*. 2017; (144): 112-116.

Role: Conception of the idea, the study design, discussed results, and wrote the manuscript.

7 BAKER KL, MOWRER C, CANON A, LINHARES DCL, RADEMACHER C, KARRIKER LA, HOLTkamp DJ. Systematic epidemiological investigations of cases of Senecavirus A in US swine breeding herds. *Transboundary and Emerging Diseases*. 2017; 64(1): 11-18.

Role: Discussed the study design, discussed results, and reviewed the manuscript.

6 GUO B, PIÑEYRO PE, RADEMACHER CJ, ZHENG Y, LI G, YUAN J, HOANG H, GAUGER PC, MADSON DM, SCHWARTZ KJ, CANNING PE, ARRUDA BL, COOPER VL, BAUM DH, LINHARES DCL, MAIN RG, YOON K-J. 2016. Novel Senecavirus A in Swine with Vesicular Disease, United States, July 2015. *Emerging Infectious Diseases*. 2016; 22(7):1325-7.

Role: Provided epidemiological and field experience on Senecavirus outbreaks in Brazil, which may have partially contributed to motivating the investigators to search for SVA in the USA.

5 LIROLA LG, RADEMACHER C, LINHARES DCL, HARMON K, ROTOLO M, SUN Y, BAUM D, ZIMMERMAN JJ, PINEYRO P. Serological and Molecular Detection of Senecavirus A Associated with an Outbreak of Swine Idiopathic Vesicular Disease and Neonatal Mortality. *Journal of Clinical Microbiology*. 2016; 54(8): 2082-9.

Role: Discussed the study design, helped collecting field samples, discussed results, and reviewed the manuscript.

4 CANNING P, CANON A, BATES JL, GERARDY K, LINHARES DCL, PINEYRO PE, SCHWARTZ J, RADEMACHER CJ, HOLTkamp D, KARRIKER L. Neonatal mortality, vesicular lesions and lameness associated with Senecavirus A in a U.S. sow farm. *Transboundary and Emerging Diseases* 2016; 63(4): 373-8.

Role: Discussed the study design, discussed results, and reviewed the manuscript.

3 ZHANNG J, PINEYRO P, ZHENG Y, LI G, RADEMACHER C, DERSCHIED R, GUO B, YOON KJ, MADSON D, GAUGER P, SCHWARTZ K, HARMON K, LINHARES DCL, MAIN R. Full-Length Genome Sequences of Senecavirus A from Recent Idiopathic Vesicular Disease Outbreaks in United States Swine. *Genome Announcements*. 2015; 3(6): 1-2.

Role: Provided epidemiological and field experience on Senecavirus outbreaks in Brazil, which may have partially contributed to motivating the investigators to search for SVV in the USA.

2 VANNUCCI FA, **LINHARES DCL**, MARTHELER D, BARCELLOS DE. Identification and complete genome of Seneca Valley virus in vesicular fluid and sera of pigs affected with idiopathic vesicular disease, Brazil. *Transboundary and Emerging Diseases*. 2015; 62(6): 589-93.

Role: Contributed to idea concept, collected field samples, helped writing the manuscript.

1 **LINHARES DCL**, JOHNSON C, MORRISON RB. 2015. Economic analysis of vaccination strategies for PRRS control. *PLOS One*. 2015; 10(12):1-10.

Role: Contributed to idea concept, collected data, conducted analysis, wrote the manuscript.

6.3 Before joining ISU as Assistant Professor (n=6)

6 **LINHARES DCL**, TORREMORELL M, CANO JP, MORRISON RB. 2014. Comparison of time to PRRSv-stability and production losses between two exposure programs to control PRRSv in sow herds. *Preventive Veterinary Medicine*. 2014; 116(1-2):111-9.

5 ZANCHIN F, TAKEUTI KL, **LINHARES DCL**, BARCELLOS DE. [Porcine Epidemic Diarrhea: a disease of high economic impact in the global swine industry]. *A Hora Veterinária*. 2013; 33 (195): 36-42.

4 **LINHARES DCL**, TORREMORELL M, JOO HS, MORRISON RB. Infectivity of PRRS virus in pig manure at different temperatures. *Veterinary Microbiology*. 2012; 160(1-2):23-8.

3 DWIVEDI V, MANICKAM C, BINJAWADAGI B, **LINHARES DCL**, MURTAUGH MP, RENUKARADHYA GJ. Evaluation of immune responses to porcine reproductive and respiratory syndrome virus in pigs during early stage of infection under farm conditions. *Virology Journal*. 2012; 9:45.

2 **LINHARES DCL**, ROVIRA A, TORREMORELL M. Evaluation of Flinders Technology Associates cards for collection and transport of samples for detection of Porcine reproductive and respiratory syndrome virus by reverse transcription polymerase chain reaction. *Journal of Veterinary Diagnostic Investigation*. 2012; (24): 328-332.

1 **LINHARES DCL**, CANO JP, WETZELL T, NEREM J, TORREMORELL M, DEE SA. Effect of modified-live porcine reproductive and respiratory syndrome virus (PRRSv) vaccine on the shedding of wild-type virus from an infected population of growing pigs. *Vaccine*. 2012; (30): 407-413.

7 Invited Oral Presentations (n=106)

7.1 International meetings (n=76)

7.1.1 At the Associate Professor rank (n=27)

LINHARES, DCL. Star Trek & Disease Monitoring. July 21, 2021. The Pig Farm 5.0 Revolution Web-Conference. [content delivered virtually].

LINHARES, DCL. [Applying field epidemiology to improve health & productivity of swine populations]. Aug 5, 2021. Congreso Nacional e Internacional Asociación Mexicana de Veterinarios Especialistas en Cerdos A.C. (AMVEC). Mexico [content delivered virtually].

LINHARES, DCL. Update on US cases of highly pathogenic PRRSv infections during late 2020 and early 2021. June 25, 2021. 3rd Annual Veterinary Diagnostics Conference. Hangzhou, China [content delivered virtually].

LINHARES, DCL. Methods for PRRS prevention and control. International Swine Reproduction Symposium. April 15, 2021. Virtual meeting moderated by Dr. Frank Liu, University of Minnesota.

LINHARES, DCL. Update on PRRSV 1-4-4 Lineage 1C variant. International Swine Reproduction Symposium. April 15, 2021. Virtual meeting moderated by Dr. Frank Liu, University of Minnesota..

LINHARES, DCL. Applicatin of classic and novel analytical methods for field studies. Agroceres PIC workshop on Health Services. Dec 11, 2020. Virtual meeting.

LINHARES DCL. [Importance of fomites and vectors in biosecurity programs] Academia Suina BRF. Nov 17, 2020. Ames, IA. [Portuguese].

LINHARES DCL & CORZO CA. [Prevention, Epidemiology, and Control of PRRSV from farrow to finish] PIC webinar series Latin America. Nov 10, 2020. Ames, IA. [Spanish].

LINHARES DCL. Measuring the economic impact of swine diseases under field conditions. 333 Experience Congress 2020. Nov 8, 2020. Live webinar.

LINHARES DCL. [Transport biosecurity: importance and application] Boehringer Ingelheim Swine Academy Español. Oct 28, 2020. Ames, IA. [Spanish].

LINHARES DCL. [Area Regional Control Programs (ARC) Reloaded] Boehringer Ingelheim Swine Academy Español. Oct 28, 2020. Ames, IA. [Spanish].

LINHARES DCL. [Evolving biosecurity in North America in response to emerging pathogens] Boehringer Ingelheim Swine Academy Español. Oct 27, 2020. Ames, IA. [Spanish].

LINHARES DCL. [Implementing biosecurity programs: concepts and applications]. Boehringer Ingelheim Swine Academy Español. Oct 21, 2020. Ames, IA. [Spanish]

LINHARES DCL. Applied tools and methods for PRRSv control in breeding herds. Boehringer Ingelheim Swine Academy Gold. Oct 21, 2020. Ames, IA.

LINHARES DCL. Applied tools and methods for PRRSv control in growing pig populations. Boehringer Ingelheim Swine Academy Gold. Oct 21, 2020. Ames, IA.

LINHARES DCL. Regional control programs and precision swine health and production management. Boehringer Ingelheim Swine Academy Gold. Oct 21, 2020. Ames, IA.

LINHARES DCL. Key PRRS molecular biology for disease control programs. Boehringer Ingelheim Swine Academy Gold. Oct 14, 2020. Ames, IA.

LINHARES DCL. Key PRRS immunology concepts for disease control programs. Boehringer Ingelheim Swine Academy Gold. Oct 14, 2020. Ames, IA.

LINHARES DCL. Macroepidemiology of swine diseases. Boehringer Ingelheim Swine Academy Gold. Oct 14, 2020. Ames, IA.

LINHARES DCL. Monitoring and surveillance systems for breeding herds. Boehringer Ingelheim Swine Academy Gold. Oct 14, 2020. Ames, IA.

LINHARES DCL. Surveillance methods to detect PRRSv at low prevalence. Boehringer Ingelheim Swine Academy Gold. Oct 14, 2020. Ames, IA.

LINHARES DCL. [Precision Swine Health Management]. FarmaTalks Conference, Brazil. Oct 13, 2020. Live webinar.

LINHARES DCL. Swine disease monitoring, management, and forecasting. SwineTalks conference. Oct 7, 2020. Live webinar.

LINHARES, DCL. [Swine Health Management in times of crisis]. SuínoTalks Conference. Sep 16, 2020. Virtual event [portuguese].

LINHARES DCL. [Talking about biosecurity: main changes implemented by the North-American swine industry to deal with pathogens of high economic impact]. Workshop Brazilian Association of Swine Producers (ABCS). Aug 26, 2020. Live webinar.

LINHARES, DCL. [Advances on biosecurity in response to economically significant emerging pathogens]. Panel Discussion organized by Brazilian Association of Swine Producers (ABCS). Aug 26, 2020. Virtual event.

LINHARES, DCL. [Strategies to prevent, detect, and manage PRRSV infections]. FarmaTalks Conference. Aug 12, 2020. Virtual event.

7.1.2 After joining ISU as Assistant Professor (n=31)

LINHARES DCL. [Precision Swine Health Management: strategies to measure disease impact in the field]. FarmaTalks, Brazil. Streamed live via on May 5, 2020. Available at <http://twixar.me/YzkT>. Accessed on July 29, 2020 (1.2 million views).

LINHARES, DCL. [Precision Swine Health Management: strategies to measure the impact of infectious diseases under field conditions]. FarmaTalks Webinar. May 05, 2020. Virtual event.

LINHARES, DCL. [Precision Swine Health Management: strategies to measure the impact of infectious diseases under field conditions]. FarmaTalks Webinar. May 05, 2020. Virtual event.

LINHARES DCL. Tools and strategies to measure impact of diseases and health interventions on whole-herd performance. 2020 K-State Swine Profitability Conference. Feb 4, 2020. Manhattan, KS.

LINHARES, DCL. Field studies on best PRRS management practices. 13th Annual Fall meeting of the Ontario Association of Swine Veterinarians. Nov 9, 2019. Collingwood, ON – Canada.

LINHARES, DCL. The Swine Disease Reporting System. 13th Annual Fall meeting of the Ontario Association of Swine Veterinarians. Nov 9, 2019. Collingwood, ON – Canada.

LINHARES, DCL. [Overview and applications of population-based monitoring protocols for PRRSv detection in breeding herds]. VII Reunión de Asesores PIC en Porcicultura. July 22nd, 2019. Guadalajara, Mexico.

LINHARES, DCL. Applications for comprehensive and/or simplified biosecurity scoring systems in swine breeding herds. II American PRRSpective meeting. April 25th, 2019. Playa del Carmen, Mexico.

LINHARES, DCL. [Patterns of pathogen detection over time, region, and age group in pigs]. XIX Reunión Anual en Producción Porcina. April 03rd, 2019. Cd. Obregon, Mexico.

LINHARES, DCL. Applications for comprehensive and/or simplified biosecurity scoring systems in swine breeding herds. Annual meeting of the Association des vétérinaires en industrie animale du Québec (AVIA). February 25th, 2019. Montreal, Canada.

LINHARES, DCL. LINHARES, DCL. Overview and applications of population-based monitoring protocols for PRRSv detection in breeding herds. Annual meeting of the Association des vétérinaires en industrie animale du Québec (AVIA). February 25th, 2019. Montreal, Canada.

Information below not in Interfolio as of February 10, 2020.

LINHARES, DCL. Towards the best testing protocol to classify a farm as PRRS stable. Allen D Leman Swine Conference. Sep 18, 2018. Saint Paul, MN.

LINHARES DCL. Fluidos de procesamiento para detección de PRRS a baja prevalencia en lechones neonatos mediante ensayos de PCR en tiempo real. 2018 Congreso Nacional de Asociación Mexicana de Veterinarios Especialistas en Cerdos (AMVEC). Jul 17-20 2018. Merica, Yucatan – Mexico.

LINHARES, DCL. [Diagnostics and control of PRRS in swine herds: actions recommended for Brazil]. XI Sinsui. May 22, 2018. Porto Alegre, RS - Brazil.

LINHARES, DCL. [Understanding factors associated with grow-finish mortality: how to minimize losses in your production system]. XI Sinsui. May 22, 2018. Porto Alegre, RS - Brazil.

LINHARES DCL. Monitoring and measuring PRRS impact: ISU update. 2017 North American PRRS symposium. Dec 2, 2017, Chicago, IL.

LINHARES DCL. Detecting PRRS virus in farms, production systems and countries, and keeping Brazil free of PRRS. Agrocercos PIC, Brazil. October 7, 2017 [delivered online].

LINHARES DCL & YESKE P. A field study on economics of *M. hyopneumoniae* elimination. Allen D Leman Swine Conference, September 18, 2017, Saint Paul, MN.

LINHARES DCL. MSHMP – ISU collaborations on epidemiological studies. Allen D Leman Swine Conference, September 16, 2017, Saint Paul, MN.

LINHARES DCL. PRRS virus detection in breeding herds. Second Sino-U.S. Forum on Swine Industry. June 19, 2017. Nanjing, China.

LINHARES DCL. Strategies to achieve PRRS stability in breeding herds. Second Sino-U.S. Forum on Swine Industry. Jun 21, 2017. Nanjing, China.

LINHARES, DCL. [*Detecting PRRSv in breed-to-wean herds*]. Asociación de Especialistas en Producción Porcina de Cajeme, A.C. 05/18/2017. Cd. Obregon, Mexico.

LINHARES DCL. Update on PRRS stability studies and flash updates on PRRS detection and biosecurity studies. North American PRRS Symposium. December 3, 2016. Chicago, IL

LINHARES DCL, BETLACH C, BALDREY H, MORRISON R 'Exploring practices to reduce time to PRRS stability'. 2016. Allen D Lemman Swine Conference, September 18, 2016. Saint Paul, MN.

LINHARES DCL. [Preventing, detecting and controlling emerging infectious diseases in the swine industry]. 2016. 12th Agroceres PIC International symposium of swine health and production. Sep. 16, 2016. Rio de Janeiro, Brazil.

LINHARES DCL. [Logrando la estabilidad al virus PRRS – experiencia de campo en EUA]. XXI AMVECAJ meeting. Feb 03, 2016. Jalisco, Mexico.

LINHARES DCL. Senecavirus A – associated diseases. Autumn Pig Veterinary Society Meeting. November 19-20th, 2015. Edinburgh, Scotland.

LINHARES DCL & TEIXEIRA R. Description of factors associated with Epidemic Transient Neonatal Losses, Brazil. 2015 Allen D Lemman Swine conference. Saint Paul, MN.

LINHARES DCL, RADEMACHER C, VANNUCCI F, BARCELLOS D. Seneca-Associated Diseases: Clinical Presentation and Epidemiological Distribution. 2015. A D Lemman Swine Conference. St Paul, MN.

LINHARES DCL, LEVIS I, WEDEL K, BETLACH C, MORRISON B. Assessing impact of PRRSv 1-7-4 on wean to finish pig health. 2015 Allen D Lemman Swine Conference. Saint Paul, MN.

7.1.3 Before joining ISU as Assistant Professor (n=18)

LINHARES, DCL. Opportunities on biosecurity in Brazil. 2014. Allen D. Lemman Swine Conference. St Paul, MN.

LINHARES, DCL. [Control and elimination of PRRSV using herd closure]. Asociación de Especialistas en Producción Porcina de Cajeme, A.C. Nov, 2014. Cd. Obregon, Mexico.

LINHARES DCL, RADEMACHER C, VANNUCCI FA, BARCELLOS D. Seneca-Associated Diseases: Clinical Presentation and Epidemiological Distribution. Allen D. Lemman Swine Conference. St Paul, MN.

LINHARES, DCL; LEVIS, I.; WEDEL, K.; MORRISON, R.B. Assessing impact of 1-7-4 on wean to finish pig health. 2014. Allen D. Lemman Swine Conference. St Paul, MN.

LINHARES, DCL. Economic model to evaluate projects of pathogen elimination from breeding herds. 2014. IPVS Meeting. Cancun, Mexico.

LINHARES, DCL. Current Myco and PCV2 situation in Brazil. 2014. MSD Animal Health pre-IPVS Conference. 06/08/2014. Cancun, Mexico.

LINHARES DCL, TORREMORELL M, MORRISON RB. Quantifying the production impact in farms going through load-close-expose programs for PRRS virus. 2013. Annual American Association of Swine Veterinarians Meeting. San Diego, CA.

LINHARES, DCL. What else have we learned regarding the impact of MLV or LVI in the L-C-E protocol for Breeding Herd Stabilization. 2013. Boehringer Ingelheim Vetmedica PRRSv symposium. Chicago, IL.

LINHARES DCL, CANO JP, TORREMORELL M, MORRISON RB. What have we learned using Load Close Expose to produce PRRSv-negative pigs from positive breeding herds? 2013. Lemn Swine Conference. St Paul, MN.

LINHARES, DCL, TORREMORELL, M, MORRISON, RB. Time to produce PRRSv-negative pigs from infected breeding sites. 2013. Allen D. Lemn Swine Conference. St Paul, MN.

LINHARES DCL, JOO HS, TORREMORELL M, MORRISON RB. PRRSv half-life in manure. 2013. Annual American Association of Swine Veterinarians Meeting. San Diego, CA.

LINHARES DCL, CANO JP, TORREMORELL M, MORRISON RB. Time to produce PRRSv-negative pigs from infected breeding sites. 2012. Annual American Association of Swine Veterinarians Meeting, Denver, CO.

LINHARES DCL, CANO JP, TORREMORELL M, MORRISON RB. Comparison of whole herd exposure programs to produce PRRSv negative offspring from infected breeding herds. 2012. Annual American Association of Swine Veterinarians Meeting, Denver, CO.

LINHARES DCL, CANO JP, TORREMORELL M, MORRISON RB. Comparison of whole herd exposure programs to produce PRRSv negative offspring from infected breeding herds. 2012. Annual American Association of Swine Veterinarians Meeting, Denver, CO.

LINHARES DCL, TORREMORELL M, MORRISON RB. How long does it take for a breeding herd to produce PRRSv-negative piglets?. 2012. Allen D. Lemn Swine Conference, p. 95-96. Saint Paul, MN.

LINHARES DCL, JOO HS, TORREMORELL M, MORRISON RB. Infectivity of PRRSv in pig manure and in cell culture media at different temperatures. 2012. Allen D. Lemn Swine Conference, p. 202. Saint Paul, MN.

LINHARES DCL, NEREM J, TORREMORELL M, DEE SA. Evaluation of PRRS modified-live virus vaccine on viral shedding. 2010. Allen D. Lemn Swine Conference, p. 49-50. Saint Paul, MN.

LINHARES DCL, ROVIRA A, TORREMORELL M. Feasibility of using FTA cards to transport samples for PRRSV testing. 2010. Allen D. Lemn Swine Conference, p. 173. Saint Paul, MN.

7.2 National meetings (n=21)

7.2.1 At the Associate Professor rank (n=1)

LINHARES DCL. Overview of studies on PRRSV monitoring and control under field conditions. NC-229 Regional Research Annual Meeting. Dec 5th, 2020. Virtual meeting.

7.2.2 After joining ISU as Assistant Professor (n=3)

LINHARES DCL. Update on field studies on PRRS at Iowa State University. 28th Annual Carthage Veterinary Service Swine Conference. Aug 28th, 2018. Macomb, IL.

LINHARES DCL. MOSS 2.0 – individual vs. population-based systems. ISU James D. McKean Swine Disease Conference Workshop on Disease Surveillance. Oct 31th, 2018. Ames, IA.

LINHARES DCL. PRRS: preventing, detecting and reaching stability. ISU James D. McKean Swine Disease Conference. Nov 4th, 2016. Ames, IA.

7.2.3 Before joining ISU as Assistant Professor (n=17)

LINHARES, DCL. [*Keeping Brazil free from foreign animal diseases*]. 2015. Brazilian Pig Symposium – Sinsui, 05/12/2015. Porto Alegre, Brazil.

LINHARES, DCL. [*Economic value of animal health*]. 2015. Simposio Internacional de Produção Suína, 06/11/2015. Foz do Iguaçu, Brazil.

LINHARES, DCL. [*Economic value of key growing pig performance parameters*]. 2015. Rali Agroceres, 04/15/2015. Toledo, Brazil.

LINHARES, DCL. [PEDV: what have we learned with this episode]. I Simpork. 05/30/2015. Jaboticabal, Brazil.

LINHARES, DCL. [PEDV: Origin, routes of dissemination, and methods for prevention]. Invited Lecture at UNESP University. 08/12/2014. Jaboticabal, Brazil.

LINHARES, DCL. [Swine enteric coronaviruses: PEDv, DCoV, TGEv]. 2014. Regional meeting with health officials from the Brazilian Ministry of Agriculture. 11/11/2014. Belo Horizonte, Brazil.

LINHARES, DCL. [Porcine reproductive and respiratory virus infection review]. 2014. Regional meeting with health officials from the Brazilian Ministry of Agriculture. 11/11/2014. Belo Horizonte, Brazil.

LINHARES, DCL. [Origin of pathogens and necessary contingencies for the pig industry]. 2014 (Pork Expo meeting, Brazil)

LINHARES, DCL. [PEDV: Origin, routes of dissemination, and methods for prevention]. VII Simposio Brasil-Sul de Suinocultura. 10/05/2014. Chapeco, Brazil.

LINHARES, DCL. [PEDV: etiology, production impact, and transmission routes]. Associação Brasileira de Veterinários Especialistas em Suínos de Minas Gerais (ABRAVES MG) meeting. 07/15/2014. Encantado, Brazil.

LINHARES, DCL. [PEDV: what is it, and how to prevent it]. VIII Feira Mineira de Suinocultura. 07/30/2014. Ponte Nova, Brazil.

LINHARES, DCL. [*Economic value of key breeding herd productivity parameters*]. 2013. Rali Agroceres, 11/27/2013. Patos de Minas, Brazil.

LINHARES, DCL. *Update on PEDv in North America*. 2013. (Brazilian Pig Symposium – Sinsui, Brazil)

LINHARES, DCL. [*Transport biosecurity: concepts and implementation*]. Brazilian Pig Symposium – Sinsui, 7/10/2013. Porto Alegre, Brazil.

LINHARES, DCL. [*Principles of swine infectious diseases epidemiology*]. 2013. Invited lecture, UFRGS University.10/24/2013. Porto Alegre, Brazil.

LINHARES, DCL, MORRISON, RB. Role of transport trucks and pig movement on pathogen dissemination: new concepts. 2013. (Brazilian Pig Symposium – Sinsui, [Brazil](#)).

LINHARES, DCL. [*Tools to control swine infectious diseases*]. 2013. Brazilian Association of Swine Veterinarians Annual Meeting – Abraves Workshop. Cuiaba, MT – [Brazil](#).

7.3 Regional meetings (n=9)

7.3.1 After joining ISU as Assistant Professor (n=9)

LINHARES, DCL. PLF applications on swine health and productivity. Precision Livestock Farming Workshop. December 6th, 2018. Ames, IA.

LINHARES DCL. New surveillance methods to detect PRRS at low prevalence. 2018 Iowa Swine Day. Jun 28, 2018. Ames, IA

LINHARES DCL. Novel monitoring systems to detect pathogens in swine herds. 2018 Iowa Veterinary Medical Association Winter Conference. Altoona, IA 02/14/2018.

LINHARES DCL. Applied solutions for PRRS monitoring programs. 2017 Boehringer Ingelheim Vetmedica Swine Academy 'BISA GOLD'. Ames, IA 09/20/2017.

LINHARES DCL. Applied tools and metrics for PRRS prevention, detection, and control-elimination projects. 2017 Boehringer Ingelheim Vetmedica Swine Academy 'BISA Classic Ames, IA 10/09/2017.

LINHARES DCL. Prevention, Detection & Control of PRRS Virus. 2016 Iowa Veterinary Medical Association Winter Conference. Feb 08, 2017, Altoona, IA.

LINHARES DCL. PRRSv control and elimination strategies. 2016 Iowa Pork Congress. Jan 28, 2016, Des Moines, IA.

LINHARES DCL. Interventions to mitigate PRRSv impact in breeding herds and growing pigs. 2016 Iowa Veterinary Medical Association Winter Conference. Feb 10, 2016, Altoona, IA.

LINHARES DCL. Practical PRRSv management strategies. 2016 Iowa Pork Regional Conferences: Sheldon, IA (Feb 22) Carroll, IA (Feb 23); Nashua, IA (Feb 24); Iowa City (Feb 25).

8 Proceedings papers, abstracts, and web publications (n=213)

Work marked with * was presented by a student whom I serve(d) as major professor.

8.1 International meetings (n=56)

8.1.1 At the Associate Professor rank (n=9)

HOLTKAMP DJ, RUSTON C, **LINHARES DCL**, BAKER KL, NEAT R, CLAVIJO MJ, ANDERSON AV, MORWER C. Science of biosecurity: understanding the mechanisms of pathogen entry into pig populations, and how to implement effective biosecurity improvement programs. 2020 *International Pig Veterinary Society Congress Proceedings*. P37-42. Rio de Janeiro, Brazil.

SILVA APSP, MCDANIEL A, ALONSO C, ARRUDA B, **LINHARES DCL**, YESKE P, GIMENEZ-LIROLA L, DERSCHIED R, KARRIKER L, ZIMMERMAN JJ, CLAVIJO MJ. Comparison of *Mycoplasma hyopneumoniae* exposure methods for gilt acclimation. 2020 *International Pig Veterinary Society Congress Proceedings*. P365. Rio de Janeiro, Brazil.

*MAGALHAES ES, THOMAS P, TREVISAN G, MOURA CAA, HOLTkamp D, RADEMACHER CJ, ZIMMERMAN J, **LINHARES DCL**. Impact of health status and productivity of sow farms on subsequent wean-to-finish mortality. 2020 *International Pig Veterinary Society Congress Proceedings*. P461. Rio de Janeiro, Brazil.

*ALMEIDA MN, ZIMMERMAN JJ, **LINHARES DCL**. Oral fluid sampling at the abattoir – an alternative to on-farm sampling? 2020 *International Pig Veterinary Society Congress Proceedings*. P584. Rio de Janeiro, Brazil.

*TREVISAN G, MAGALHAES ES, LINHARES L, CRIM B, DUBEY P, SCHWARTZ KJ, BURROUGH E, GAUGER P, MAIN RG, THURN M, LAGES P, CORZO C, TORRISON J, GRESETH J, CLEMENT T, CHRISTOPHER-HENNINGS J, MCGAUGHEY R, HERRMAN E, CINO G, HENNINGSON J, SUNDBERG P, **LINHARES DCL**. Field and research applications for pathogen monitoring in the United States by PCR at veterinary diagnostic laboratories. 2020 *International Pig Veterinary Society Congress Proceedings*. P677. Rio de Janeiro, Brazil.

*TREVISAN G, LOPEZ WAL, ALMEIDA, M, MOURA CAA, **LINHARES DCL**. Field applications of population sampling methods to monitor and surveil PRRSV. 2020 *International Pig Veterinary Society Congress Proceedings*. P676. Rio de Janeiro, Brazil.

*ALMEIDA MN, CORZO CA, **LINHARES DCL**. PRRSV detection using population samples over time in different age groups in breeding herds attempting to consistently wean PRRSV-negative piglets. 2020 *International Pig Veterinary Society Congress Proceedings*. P760. Rio de Janeiro, Brazil.

*MOURA CAA, DOOLITTLE K, ZIMMERMAN S, GIMENEZ-LIROLA L, MAGTOTO R, **LINHARES DCL**. Use of PRRS ELISA to measure antibody response on oral fluids of PRRSV-vaccinated growing pig groups and to associate with mortality. 2020 *International Pig Veterinary Society Congress Proceedings*. P839. Rio de Janeiro, Brazil.

*ALMEIDA MN, TREVISAN G, MAGALHAES E, MOURA E, **LINHARES DCL**. PRRS: medidas para minimizer o risco de introdução desta doença no rebanho. In: Stingelin GM, Oliveira LG, Franceschini VM. Sanidade e Produção Suína: atualização, inovação e tecnologia. Jaboticabal, SP - Brazil: Funep; 2020:45-51.

8.1.2 After joining ISU as Assistant Professor (n=37)

SILVA AP, MAROSTICA T, MCDANIEL A, ARRUDA B, **LINHARES DCL**, YESKE P, GIMENEZ-LIROLA L, ALONSO C, DERSCHIED R, KARRIKER L, ZIMMERMAN JJ, CLAVIJO M. Comparison of three methods of gilt exposure to *M. hyopneumoniae* In: 2019 Conference of Research Workers in Animal Disease (CRWAD), Chicago, Illinois, USA.

* MAGALHAES ES & **LINHARES DCL**. Drivers of wean-to-finish mortality and the impact of disease status. North American PRRS symposium. November 2-3, 2019. Chicago, IL.

* MOURA CAA & **LINHARES DCL**. Controlling PRRS in growing pigs and dynamics of virus infection. November 2-3, 2019. Chicago, IL.

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*TREVISAN G, LINHARES LCM, CRIM B, DUBEY P, SCHWARTZ KJ, BURROUGH E, MAIN R, SUNDBERG P, THURN M, LAGES PTF, CORZO CA, TORRISON J, MCGAUGHEY R, HENNINGSON J, HERRMAN E, HANZLICEK G, RAGHAVAN R, MARTHALER D, GUPTA S, GRESETH J, CLEMEN T, CHRISTOPHER-HENNINGS J, **LINHARES DCL**. Aggregating results and summarizing findings from multiple veterinary diagnostic laboratories in the US on a near real-time basis. 2019 USAHA-AAVLD Annual Meeting. Providence, RI. Oct 26-30, 2019. Pg. 75.

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* MAGALHAES ES, THOMAS P, MOURA CAA, RADEMACHER C, **LINHARES DCL**. Whole-herd drivers of wean-to-finish mortality in a USA swine production system. Allen D Lemman Swine Conference. September 15, 2019. Saint Paul, MN.

* MOURA CAA, HOLTKAMP DJ, **LINHARES DCL**. Production and economic benefit of a full PRRS MLV dose compared to a partial dose vaccination program on nursery pigs. Allen D Lemman Swine Conference. September 15, 2019. Saint Paul, MN.

* MOURA CAA, SILVA GS, **LINHARES DCL**. Effect of wild-type PRRSV detection dynamics on the mortality of vaccinated growing pig groups from two regions of USA. Allen D Lemman Swine Conference. September 15, 2019. Saint Paul, MN.

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8.2 National meetings (n=67).

8.2.1 At the Associate Professor Rank (n=7)

*ALMEIDA MN & **LINHARES DCL**. PRRSV breeding herd surveillance. ISU James D. McKean Swine Disease Conference; Nov 5, 2020; Pg. 20-23; Ames.

*TREVISAN G, MAGALHAES ES, LINHARES L, CRIM B, DUBEY P, SCHWARTZ KJ, BURROUGH E, GAUGER P, PYNEYRO P, SIEPKER C, MAIN RG, THURN M, LAGES P, CORZO C, TORRISON J, MCGAUGHEY R, HENNINGSON J, HERRMAN E, POGRANICHNIY R, PALINSKI R, GRESETH J, CLEMENT T, CHRISTOPHER-HENNINGS J, **LINHARES DCL**. Getting More Competitive and Prepared: Lessons Learned from the Swine Disease Reporting System. ISU James D. McKean Swine Disease Conference; Nov 5, 2020; Pg. 24-26; Ames.

*MAGALHAES ES, THOMAS P, TREVISAN G, SCHWARTZ KJ, **LINHARES DCL**. Measuring the association of disease diagnostic data on wean-to-finish mortality of pigs marketed in a large US swine production system. Proceedings of the Allen D. Lemman Swine Conference. Sep 14, 2020. Poster 53. Saint Paul, MN.

*ALMEIDA MN, CORZO CA, **LINHARES DCL**. PRRSV detection over time in different age groups in breeding herds attempting to produce PRRSV-negative piglets at weaning. Proceedings of the Allen D. Lemman Swine Conference. Sep 14, 2020. Poster 34. Saint Paul, MN.

*ALMEIDA MN, ZHANG M, VILALTA C, ZIMMERMAN JJ, **LINHARES DCL**. Sampling strategies for PRRSV detection in serum from due-to-wean piglets. Proceedings of the Allen D. Lemman Swine Conference. Sep 14, 2020. Poster 47. Saint Paul, MN.

*ALMEIDA MN, ZHANG M, SANHUEZA J, ZIMMERMAN JJ, **LINHARES DCL**. Population homogeneity, spatial clustering, and the detection of PRRSV viremic piglets in breeding herds. Proceedings of the Allen D. Lemman Swine Conference. Sep 14, 2020. Poster 50. Saint Paul, MN.

*ALMEIDA MN, GAVIS JA, MACHADO G, ZIMMERMAN JJ, **LINHARES DCL**. PRRSV farrowing room surveillance - what do negative PCRs really mean? Proceedings of the Allen D. Lemman Swine Conference. Sep 14, 2020. Poster 69. Saint Paul, MN.

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*MOURA CAAM, PHILIPS R, SILVA G, **LINHARES DCL**. Effect of two PRRS MLV doses compared to a single dose vaccination program on the wild-type virus shedding and mortality of growing pigs from endemic sources. Annual Meeting of the American Association of Swine Veterinarians. Mar 7-10, 2020. Atlanta. P20-23.

*TREVISAN G, ANGULO J, JOHNSON C, JENSEN M, UTRERA V, MAROSTICA T, GAUGER P, **LINHARES DCL**. Increasing the functionality of your processing fluid tool box beyond PRRSV monitoring: PCV2, PEDV, and PDCoV. Annual Meeting of the American Association of Swine Veterinarians. Mar 7-10, 2020. Atlanta. P27-28.

*MAUCH BW, SILVA G, MACHADO G, HOLTKAMP DJ, **LINHARES DCL**. Screening the vulnerability of porcine reproductive and respiratory syndrome virus (PRRSV) introduction in breeding herds using a short survey. Annual Meeting of the American Association of Swine Veterinarians. Mar 7-10, 2020. Atlanta. P79-80.

*MAGALHAES ES, THOMAS P, MOURA CAA, TREVISAN G, RADEMACHER C, **LINHARES DCL**. Identifying parameters associated with wean-to-finish mortality in a swine production system Proceedings of the 51st Annual Meeting of the American Association of Swine Veterinarians. Mar 7-10, 2020. Atlanta. P294-295.

*TREVISAN G, SHARMA A, GAUGER P, HARMON KM, ZHANG J, MAIN R, **LINHARES DCL**. Genetic diversity of prevalent PRRSV RFLP patterns within and between US states during 2007-2019: implications for epidemiological investigations and control programs. Annual Meeting of the American Association of Swine Veterinarians. Mar 7-10, 2020. Atlanta. P312.

*LOPEZ WA, **LINHARES DCL**, ZIMMERMAN JJ, MAGTOTO RL, GIMENEZ-LIROLA L. Use of an adapted commercial serum antibody enzyme-linked immunosorbent assay (ELISA) for the detection of anti-PRRSV

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RUSTON C, HOLTKAMP DJ, **LINHARES DCL**. Evaluation of a staged loading procedure for the load-out of market pigs to prevent the transfer of swine pathogen-contaminated particles from livestock trailers to the barn. Annual Meeting of the American Association of Swine Veterinarians. Mar 7-10, 2020. Atlanta. P382-383.

*ALMEIDA MN & **LINHARES DCL**. Update on longitudinal sampling of sow farms undergoing virus elimination. ISU James D. McKean Swine Disease Conference. November 7, 2019. Ames, IA. P. 28.

*TREVISAN G, LINHARES LCM, CRIM B, DUBEY P, SCHWARTZ KJ, BURROUGH E, SHARMA A, GAUGER P, HARMON K, ZHANG J, MAIN R, MAGALHAES E, SUNDBERG P, THURN M, LAGES PTF, CORZO CA, TORRISON J, MCGAUGHEY R, HENNINGSON J, HERRMAN E, HANZLICIEK G, MARTHALER D, GUPTA S, GRESETH J, CLEMENT T, CHRISTOPHER-HENNINGS J, **LINHARES DCL**. Veterinary Laboratory Diagnostic Data on PRRSV: Lessons and Applications. ISU James D. McKean Swine Disease Conference. November 7, 2019. Ames, IA. P. 29-31.

* MAGALHAES ES, THOMAS P, MOURA CAA, TREVISAN G, RADEMACHER C, **LINHARES DCL**. Health status, seasonality, and site information as predictors of mortality in a U.S. swine production system. ISU James D. McKean Swine Disease Conference. November 7, 2019. Ames, IA. P. 32-34.

* MOURA CAA, SILVA GS, PHILIPS R, FANO E, **LINHARES DCL**. Association of dynamics of wild-type PRRSV-2 detection with mortality of vaccinated growing pig populations raised in two United States regions. ISU James D. McKean Swine Disease Conference. November 7, 2019. Ames, IA. P. 35-38.

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- *RAWAL G, RADEMACHER C, **LINHARES DCL**. Comparison of production impact in breeding herds following PRRS clinical outbreaks adopting killed or attenuated PRRS virus vaccination protocols. Proc 50th American Association of Swine Veterinarians Annual Meeting. Lake Buena Vista, FL. March 9-12, 2019. P43.
- *MOURA CAA, PHILIPS R, SILVA GS, MONDACA E, SCHEIDT A, KJAER J, **LINHARES DCL**. Economic and production benefit of 2 PRRS MLV doses compared to a single dose vaccination program on growing. Proc 50th American Association of Swine Veterinarians Annual Meeting. Lake Buena Vista, FL. March 9-12, 2019. P44-46.
- *LOPEZ WA, GAUGER P, HARMON K, BRADNER L, CANO JP, SILVA GS MACEDO N, ANGULO J, **LINHARES DCL**. Modeling the dilution effect of PRRSV RNA in processing fluid field samples on the probability of virus detection by qRT-PCR. Proc 50th American Association of Swine Veterinarians Annual Meeting. Lake Buena Vista, FL. March 9-12, 2019. P47-49.
- *TREVISAN G, LINHARES LCM, CRIM B, DUBEY P, SCHWARTZ KJ, BURROUGH E, MAIN R, SUNDBERG P, THURN M, LAGES PTF, VANDERWAAL K, PEREZ A, TORRISON J, HENNINGSON J, HERRMAN E, HANZLICIEK G, RAGHAVAN R, MARTHALER D, GRESETH J, CLEMENT T, CHRISTOPHER-HENNINGS J, **LINHARES DCL**. Use of aggregated veterinary diagnostic laboratory PCR results to monitor the activity of pathogens in the US swine industry. Proc 50th American Association of Swine Veterinarians Annual Meeting. Lake Buena Vista, FL. March 9-12, 2019. P323-324.
- *MOURA CAA, PHILIPS R, SILVA GS, MONDACA E, SCHEIDT A, KJAER J, **LINHARES DCL**. Assessment of the effect of different dynamics of wild-type PRRSV detection overtime on the mortality of vaccinated pigs raised at high pig dense area. Proc 50th American Association of Swine Veterinarians Annual Meeting. Lake Buena Vista, FL. March 9-12, 2019. P311-312.
- *RAWAL G, FERREYRA FM, MUELLER A, ALLISON G, HEDBERG W, MACEDO N, BRADNER L, HARMON K, **LINHARES DCL**, ARRUDA BW. Porcine astrovirus type 3 is an emerging cause of atypical neurologic disease: Diagnostic cases and infection dynamics on affected flows. Proc 50th American Association of Swine Veterinarians Annual Meeting. Lake Buena Vista, FL. March 9-12, 2019. P318-319.
- *TORRENTS D, MIRANDA J, PEDRAZUELA R, RAMIREZ A, **LINHARES DCL**. Effect of breeding herd PRRS status on productivity. Proc 50th American Association of Swine Veterinarians Annual Meeting. Lake Buena Vista, FL. March 9-12, 2019. P322.
- * LOPEZ WA, ALMEIDA MN, SILVA GS, TREVISAN G, **LINHARES DCL**. Evolution of PRRSV monitoring: 3 decades of advance and improvement. Proc 50th American Association of Swine Veterinarians Annual Meeting. Lake Buena Vista, FL. March 9-12, 2019. P366-69.
- * TREVISAN G, ROBBINS R, ANGULO J, LOPEZ WA, ALMEIDA MN, MACEDO N, EIZMENDI M, **LINHARES DCL**. Field applications for population-based sampling in breeding herds. Proc 50th American Association of Swine Veterinarians Annual Meeting. Lake Buena Vista, FL. March 9-12, 2019. P370-371.
- * ALMEIDA MN, GIMENEZ-LIROLA L, LINHARES DCL, LOPEZ WA, MOURA CAA, PANYASING Y, POONSUK K, ROTOLO M, TREVISAN G, ZIMMERMAN J. Update on population-based diagnostics. Proc 50th American Association of Swine Veterinarians Annual Meeting, Diagnostics Seminar. Lake Buena Vista, FL. March 9-12, 2019. P10-11.

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*MOURA CAA, SILVA GS, **LINHARES DCL**. Ongoing automated production data screening for PRRSV detection. ISU James D. McKean Swine Disease Conference Workshop on Disease Surveillance. Oct 31, 2018. Ames, IA.

*TREVISAN G, and **LINHARES DCL**. Applications of processing fluids for herds undergoing PRRS elimination. ISU James D. McKean Swine Disease Conference Workshop on Disease Surveillance. Oct 31, 2018. Ames, IA.

*ALMEIDA MN, ALLISON G, SILVA GS, HOLTKAMP D, ZIMMERMAN J, **LINHARES DCL**. Summary of field studies on family oral fluids for PRRSv surveillance. ISU James D. McKean Swine Disease Conference. P26-29. Nov 1, 2018. Ames, IA

*LOPEZ WA, GAUGER P, HARMON K, BRADNER L, MACEDO N, SILVA GS, **LINHARES DCL**. To pool or not to pool processing fluids for PRRSV testing by PCR: that is the question. ISU James D. McKean Swine Disease Conference. P30-31. Nov 1, 2018. Ames, IA

*MOURA CAA, SILVA GS, **LINHARES DCL**. Production benefit of two PRRS MLV doses compared to a single dose vaccination program on nursery pigs. ISU James D. McKean Swine Disease Conference. P32-34. Nov 1, 2018. Ames, IA

*RAWAL G, RADEMACHER C, **LINHARES DCL**. Description of herd-outbreaks using killed PRRSV vaccine with an attempt to boost immune response. ISU James D. McKean Swine Disease Conference. P35-38. Nov 1, 2018. Ames, IA

*SILVA GS, MACHADO G, BAKER K, HOLTKAMP D, **LINHARES DCL**. Benchmarking biosecurity vulnerability of swine sites using a short survey. ISU James D. McKean Swine Disease Conference. P39-42. Nov 1, 2018. Ames, IA

*TREVISAN G, LINHARES L, CRIM B, DUBEY P, SCHWARTZ K, BURROUGH E, MAIN R, SUNDBERG P, THURN M, LAGES P, VANDERWAAL K, PEREZ A, TORRISON J, HENNINGSON J, HERRMAN E, HANZLICEK G, RAGHAVAN R, MARTHALER D, GRESETH J, CLEMENT T, CHRISTOPHER-HENNINGS J, **LINHARES DCL**. Swine Disease Reporting System: real-time aggregated results from major U.S. veterinary diagnostic laboratories. ISU James D. McKean Swine Disease Conference. P43-44. Nov 1, 2018. Ames, IA

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8.3 Non-peer reviewed papers (n=80).

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8.4.2 After joining ISU as Assistant Professor (n=7)

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9 Book, and book chapters

9.1 Book (n=1):

Linhares DCL, Assayag-Jr MS, Almeida MN. 2013. [PRRS: what is it, how to diagnose, control and eliminate it and why Brazilians should be concerned about it]. Brazilian Association of Swine Veterinarians. Sao Paulo, Brazil (Book published in Portuguese).

9.2 Book chapters (n=3):

Sobestiansky J, Linhares GFL, **Linhares DCL**, Moreno AM, Matos MPC. 2007. [Ectoparasite diseases], p 413-431. In: [Swine Diseases], 2nd edition. Canone editorial, Goiania – Brazil, 960p (Book published in Portuguese)

Linhares GFL, Sobestiansky J, **Linhares DCL**, Barcellos D, Moreno AM, Matos MPC. 2007. [Endoparasite diseases], p 432-466. In: [Doencas dos Suinos], 2nd edition. Canone editorial, Goiania – Brazil, 960p (Book published in Portuguese).

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10 Grants and Contracts

10.1 Summary of awards and contracts received to date:

in 2015:	3 grants/contracts (0 as PI) for \$274,999
in 2016:	9 grants/contracts 6 as PI) for \$831,311 (\$426,590 as PI)
in 2017:	9 grants/contracts (7 as PI) for \$677,907 (\$542,724 as PI)
in 2018:	8 grants/contracts (7 as PI) for \$500,276 (\$435,738 as PI)
in 2019:	14 grants/contracts (6 as PI) for \$3,008,685 (\$497,870 as PI)
in 2020:	8 grants/contracts (7 as PI) for \$682,375 (\$522,823 as PI)
All time:	51 grants/contracts (33 as PI) for \$5,975,554 (\$2,425,745 as PI)

10.2 Grant Proposals - awarded

Summary table:

	Amount (\$)	Proposals (n)
Total as PI	\$2,425,745	33
Total as Co-Investigator	\$3,549,808	18
Grand total	\$5,975,554	51

Role*	Investigators	Title	Funding Agency	Amount	Start Date	Duration
PI: developed idea and wrote the proposal	Machado, Linhares, Holtkamp	Assessing Biosecurity Vulnerabilities To Predict The Risk Of New Porcine Reproductive And Respiratory Syndrome (Prrs) Outbreaks	North Carolina State University	\$99,690	1/10/20	3 Yr.
PI: contributed with idea and helped writing the proposal	Linhares, Magalhaes, Trevisan	Measuring The Effect Of Diseases On Productivity Of Growing Pigs Raised On Field Conditions	American Association Of Swine Veterinarians Foundation	\$23,256	7/1/20	1 Yr.
COI: discussed study design, reviewed proposal.	Holtkamp, Linhares, Dion	Prospective Case-Control And Case-Crossover Study To Determine The Events Associated With The Introduction Of Prrsv And Pedv/Pdcov/Tge Into Groups Of Growing Pigs	Swine Health Information Center	\$159,552	5/1/20	1.5 Yr.
PI: contributed with idea and helped writing the proposal	Linhares, Trevisan, Main	The Domestic Swine Disease Surveillance: Improvement Sustainability And Providing Monthly Updates Until May Of 2021	Swine Health Information Center	\$152,877	6/1/20	1.5 Yr.
PI: developed idea and helped writing the proposal	Linhares, Trevisan, Holtkamp, Linhares, Mian	Swine Disease Management Information Program	National Pork Board	\$72,000	9/1/20	1.5 Yr.

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Role*	Investigators	Title	Funding Agency	Amount	Start Date	Duration
PI: contributed with idea and helped writing the proposal	Linhares, Almeida, Trevisan, Moura, Magalhaes, Lopez	Effect Of Pooling Of Family Oral Fluids (Fof) On The Probability Of Detection Of Prrsv Rna By Pcr	ILHAC	\$25,000	2/18/20	1 Yr.
PI: developed idea and helped writing the proposal	Linhares, Magalhaes, Thomas, Trevisan, Rademacher, Holtkamp, Zimmerman	Forecasting Swine Performance Under Field Conditions In Iowa Based On Ongoing Automated Integration Of Data Streams	ISU VPR	\$50,000	11/17/20	1 Yr.
COI: Discussed study design, reviewed the proposal.	Holtkmap, Clavijo, Linhares	Development of a web-based application for rapid response epidemiological investigations, risk assessments and bio-security bench marking	Swine Health Information Center	\$ 47,589	5/2/19	1 Yr.
COI: Discussed study design, reviewed the proposal.	Holtkmap, Linhares	Evaluation of a staged loading procedure for the load out of market pigs to prevent the transfer of swine pathogen contaminated particles from livestock trailers to the barn	Swine Health Information Center	\$ 25,967	5/2/19	1 Yr.
COI: Discussed study design, reviewed the proposal.	Karriker, Holtkamp, Ramirez, Rademacher, Linhares	Telehealth for swine medicine: tools to support shortage situations, expand surge capacity, and teach students with less biosecurity risk	USDA - NIFA	\$ 250,000	9/1/2019	3 Yr.
PI: Developed the idea, revised proposal.	Linhares, Trevisan, Yeske, Robbins, Corzo, Almeida, Li	Field investigation of the effect of PRRSV genetic variability on time-to-stability	National Pork Board	\$ 107,783	11/1/2019	1 Yr.
PI: Developed the idea, collaborated designing the study, wrote the proposal	Linhares, Trevisan, Main	Swine disease reporting system 2.0: incorporation of <i>Mycoplasma hyopneumoniae</i> , prediction bands, and HL-7 data from multiple VDLs	Swine Health Information Center	\$90,088	6/1/19	1 Yr.
PI: Developed the idea, collaborated designing the study, wrote the proposal	Linhares, Silva, Machado, Holtkamp	Biosecurity screening tool to identify breeding herd risk to PRRS outbreak using a short survey	Swine Health Information Center	\$74,999	6/1/19	1 Yr.

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Role*	Investigators	Title	Funding Agency	Amount	Start Date	Duration
COI: Discussed study design, reviewed the proposal.	Peschel, Butters-Johnson, Linhares, Rademacher	Health prediction of individual animals in swine operation through automated visual sensing and behavioral sensemaking	Iowa Pork Producers Association	\$57,000	10/15/18	9 Yr.
PI: Developed the idea, collaborated designing the study, wrote the proposal	Linhares, Zimmerman, Rademacher	PRRSv detection over time in different age groups in breeding herds attempting to produce PRRSv-negative piglets at weaning: part 2: suckling pigs population	National Pork Board	\$78,811	10/1/18	1 Yr.
COI: Discussed study design, reviewed the proposal.	Ross, Butters-Johnson, Chipman, Linhares, Gabler, Hartline, Keating, Patience, Rademacher, Schmitz-Esser, Schulz, Schwartz, Stalder	An integrated approach to improve whole herd pig survivability	National Pork Board & Foundation for Food and Agriculture Research	\$1,999,772	10/1/18	7 Yr.
PI: Developed the idea, collaborated designing the study, wrote the proposal.	Linhares, Almeida, Zimmerman	Family oral fluids-based PRRSv monitoring in due-to-wean piglets	Iowa Pork Producers Association	\$25,000	9/1/18	1 Yr.
PI: Developed the idea, collaborated designing the study, wrote the proposal	Linhares, Zimmerman, Rademacher	Herd sensitivity of a population sampling method to detect PRRS virus in swine breeding herds undergoing virus elimination	USDA NIFA via ISU-CVM seed program	\$25,000	9/1/18	1 Yr.
COI: Discussed study design, reviewed the proposal.	Clavijo, Arruda, Linhares, Gimenez-Lirola	Gilt acclimation strategies for m. Hyopneumoniae control: evaluation of exposure protocols and development of a dual matrix antibody assay	National Pork Board	\$91,434	9/1/18	2 Yr.
COI: Discussed study design, reviewed the proposal.	Holtkamp, Linhares, Zhang	Efficacy of ultraviolet C disinfection for inactivating Senecavirus A on contaminated surfaces in swine farms and points of animal concentration.	National Pork Board	\$29,546	9/1/18	4 Yr.

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Role*	Investigators	Title	Funding Agency	Amount	Start Date	Duration
PI: Developed the idea, collaborated designing the study, wrote the proposal	Linhares, Main	Monitoring ISU-VDL data for signs of emerging diseases	National Pork Board	\$25,000	9/1/18	6 Yr.
COI: Discussed study design, reviewed the proposal.	Holtkamp, Linhares	Senecavirus A outbreak data analysis	Swine Health Information Center	\$9,507	8/3/18	3 Yr.
PI: Developed the idea, collaborated designing the study, wrote the proposal.	Linhares, Moura, Holtkamp	Effect of attenuated PRRSv vaccination of subsequent downstream mortality	American Association of Swine Veterinarians Foundation	\$12,582	6/1/18	1 Yr.
PI: Developed the idea, collaborated designing the study, wrote the proposal.	Linhares, Trevisan, Linhares, Main	Monitoring ISU-VDL data for signs of emerging diseases	American Association of Swine Veterinarians Foundation	\$8,418	6/1/18	1 Yr.
COI: Discussed study design, reviewed the proposal.	Arruda, Clavijo, Linhares, Derscheid, Schwartz, Wang, Zimmerman	Estimation of the diagnostic sensitivity and specificity of oral fluids and tracheal swabs for early detection of <i>M. hyopneumoniae</i> and evaluation of the predictive association between oral fluid or tracheal swabs	Iowa Pork Producers Association	\$64,538	6/1/18	1 Yr.
PI: Developed the idea, designed the study, wrote the proposal.	Linhares	Data driven applications for the swine industry	Zoetis	\$195,927	4/1/18	2 Yr.
COI: Discussed study design, reviewed the proposal.	Ross, Butters-Johnson, Linhares, Gabler, Millman, Keating, Patience, Rademacher, Schwartz, Stalder	Identification of putative factors contributing to pelvic organ prolapse in sows	National Pork Board	\$108,595	11/15/17	2 Yr.
PI: Developed the idea, collaborated designing the study, wrote the proposal.	Linhares, Lopez, Gauger, Gimenez-Lirola, Li, Zimmerman	Evaluation, optimization, and application of "processing fluids" for PRRSv monitoring in commercial swine herds	National Pork Board	\$95,520	10/1/17	1 Yr.

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Role*	Investigators	Title	Funding Agency	Amount	Start Date	Duration
PI: Developed the idea, collaborated designing the study, wrote the proposal.	Linhares, Holtkamp, Main	Development and implementation of a domestic swine bio-surveillance monitoring and surveillance system. Part 1: establishing a swine disease reporting system in the USA	Swine Health Information Center	\$90,088	10/1/17	1 Yr.
COI: Discussed study design, reviewed the proposal.	Holtkamp, Linhares, Karriker	Development of PRRS outbreak investigation and data management and analysis program for breeding herds in regional PRRSv projects in Iowa	Iowa Pork Producers Association	\$26,588	7/26/17	1 Yr.
PI: Developed the idea, collaborated designing the study, reviewed the proposal.	Linhares, Moura, Holtkamp	Effect of attenuated PRRSv on short-term and long-term whole herd productivity	American Association of Swine Veterinarians Foundation	\$11,824	4/1/17	1 Yr.
PI: Developed the idea, designed the study, reviewed the proposal.	De-Sousa-e-Silva, Holtkamp, Linhares	Description of biosecurity aspects of herds with low or high PRRS incidence and comparison within and between production systems	Swine Health Information Center	\$40,619	9/26/16	1 Yr.
COI: Discussed study design, reviewed the proposal.	Holtkamp, Linhares, Karriker, Rademacher, Ramirez	Development and support of an industry rapid response program for epidemiological investigations of emerging, transboundary and endemic swine diseases with known etiology	Swine Health Information Center	\$191,353	8/5/16	1 Yr.
COI: Discussed study design, reviewed the proposal.	Holtkamp, Linhares, Karriker	Development of PRRS outbreak investigation and data management and analysis program for breeding herds in regional PRRSv projects in Iowa	Iowa Pork Producers Association	\$200,868	7/20/16	1 Yr.
PI: Contributed with development of the idea, helped designing the study, revised the proposal.	Linhares, Baum, Gimenez-Lirola, Nunes-De-Almeida, Zimmerman	Assessment of slaughter surveillance based on oral fluid samples	Swine Health Information Center	\$130,971	6/9/16	1 Yr.
COI: Discussed study design, reviewed the proposal.	Holtkamp & Linhares	Comparison of a standard entry and a bench entry protocol for prevention of environmental contamination from personnel entry in a commercial swine facility	American Association of Swine Veterinarians Foundation	\$12,500	1/28/16	1 Yr.
PI: Developed the idea, designed the study, wrote the proposal.	Linhares, Holtkamp, Rademacher, Zimmerman	Herd sensitivity of PRRSv-monitoring schemes on sow herds undergoing virus elimination	Boehringer Ingelheim Vetmedica, Inc.	\$35,000	1/13/16	1 Yr.

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Role*	Investigators	Title	Funding Agency	Amount	Start Date	Duration
COI: Discussed study design, reviewed the proposal.	Gabler, Linhares, Patience, Rademacher, Ramirez, Schwartz	Development and validation of a standardized scientific protocol evaluating antibiotic alternatives in growing pigs	National Pork Board	\$153,241	12/15/15	1 Yr.
COI: Discussed study design, reviewed the proposal.	Holtkamp, Linhares	Monitoring and updating the value of productivity losses due to porcine reproductive and respiratory syndrome virus.	National Pork Board	\$84,264	11/23/15	1 Yr.
COI: Discussed study design, reviewed the proposal.	Rademacher, Linhares, Pineyro, Karriker	Duration of Seneca A virus, shedding from clinically affected and non-affected sows and piglets after a breeding herd infection	Swine Health Information Center	\$37,494	10/28/15	1 Yr.

* Roles: COI: Co-investigator; COPI: Co-principal investigator; PI: principal investigator.

10.3 Active Awards

Summary table:

	Amount (\$)	Proposals (n)
Total as PI:	\$605,605	8
Total as Co-Investigator:	\$409,552	2
Grand total	\$1,015,157	10

Role*	Investigators	Title	Funding Agency	Amount	Start Date	End Date
PI	Linhares, Silva, Machado, Holtkamp	Biosecurity Screening Tool To Identify Breeding Herd Risk To PRRS Outbreak Using A Short Survey	Swine Health Information Center	\$74,999	6/1/19	5/30/20
COI	Karriker, Holtkamp, Rademacher, Ramirez	Telehealth For Swine Medicine: Tools To Support Shortage Situations, Expand Surge Capacity, And Teach Students With Less Biosecurity Risk	Usda-Nifa	\$250,000	9/1/19	3 Yr.
PI	Linhares, Trevisan, Ganwu	Field Investigation Of The Effect Of PRRSV Genetic Variability On Time-To-Stability	National Pork Board	\$107,783	10/1/19	1 Yr.
PI	Machado, Linhares, Holtkamp	Assessing Biosecurity Vulnerabilities To Predict The Risk Of New Porcine Reproductive And Respiratory Syndrome (PRRS) Outbreaks	North Carolina State University	\$99,690	1/10/20	3 Yr.
PI	Linhares, Magalhaes, Trevisan	Measuring The Effect Of Diseases On Productivity Of Growing Pigs Raised On Field Conditions	American Association Of Swine Veterinarians Foundation	\$23,256	7/1/20	1 Yr.
COI	Holtkamp, Linhares, Dion	Prospective Case-Control And Case-Crossover Study To Determine The Events Associated With The Introduction Of PRRSV And PEDV/PDCoV/TEGV Into Groups Of Growing Pigs	Swine Health Information Center	\$159,552	5/1/20	1.5 Yr.
PI	Linhares, Trevisan, Main	The Domestic Swine Disease Surveillance: Improvement Sustainability And Providing Monthly Updates Until May Of 2021	Swine Health Information Center	\$152,877	6/1/20	1.5 Yr.
PI	Linhares, Trevisan, Holtkamp, Linhares, Mian	Swine Disease Management Information Program	National Pork Board	\$72,000	9/1/20	1.5 Yr.
PI	Linhares, Almeida, Trevisan, Moura, Magalhaes, Lopez	Effect Of Pooling Of Family Oral Fluids (FOF) On The Probability Of Detection Of PRRSV RNA by PCR	ILHAC	\$25,000	2/18/20	1 Yr.
PI	Linhares, Magalhaes, Thomas, Trevisan, Rademacher, Holtkamp, Zimmerman	Forecasting Swine Performance Under Field Conditions In Iowa Based On Ongoing Automated Integration Of Data Streams	ISU VPR	\$50,000	11/17/20	1 Yr.

* Roles: COI: Co-investigator; COPI: Co-principal investigator; PI: principal investigator.

10.4 Contracts

	Amount (\$)	Contracts (n)
Total as PI	\$955,292	11
Total as Co-Investigator	-	-
Grand total	\$955,292	11

Role*	Investigators	Title	Funding Agency	Amount	Start Date	End Date
PI: designed study, secured funding	Linhares	Fellowship in Management of PRRS virus in Swine	Boehringer Ingelheim Vetmedica, Inc.	100,000	1/1/20	12/31/20
PI: Developed the idea, designed the study, wrote the proposal, and interacted with sponsor.	Linhares	III Fellowship for applied field-based research on PRRS	Boehringer Ingelheim Vetmedica, Inc.	\$90,000	9/1/19	12/30/20
PI: Contributed with development of the idea, interacted with the sponsor, and reviewed the agreements.	Halbur & Linhares	Carthage Veterinary Services Fellowship	Carthage Veterinary Services	\$110,000	3/1/19	2/28/20
PI: Developed the idea, designed the study, wrote the proposal, and interacted with sponsor.	Linhares	II Fellowship for applied field-based research on PRRS	Boehringer Ingelheim Vetmedica, Inc.	\$90,000	8/1/18	12/30/20
PI: Developed the idea, designed the study, wrote the proposal, and interacted with sponsor.	Linhares	Funds to cover diagnostic costs of Dr. Cesar Moura's research	Boehringer Ingelheim Vetmedica, Inc.	\$150,000	8/1/17	12/31/19
PI: Developed the idea, designed the study, wrote the proposal, and interacted with sponsor.	Linhares	Funds to cover diagnostic costs of processing fluids-based research (via stomp accounts at ISU-VDL)	Zoetis	\$45,365	8/1/17	12/31/17
PI: Contributed with development of the idea, helped designing the study, interacted with sponsor, and helped writing the proposal.	Linhares & Rademacher	Retrospective observational analysis between MJ vaccine solution and live immunization protocols in terms of TTNP, TTBP, and total losses.	Phibro Animal Health	\$69,927	6/1/17	5/31/18
COPI: Developed the idea, designed the study, wrote the proposal, and interacted with sponsor.	Linhares & Ramirez	Funds to cover international tuition, and research expenses for 1 distant master student	Laboratorios Hipra	\$80,000	1/1/17	5/30/19
PI: Developed the idea, designed the study, wrote the proposal, and interacted with sponsor.	Linhares	Fellowship for PRRS research	Zoetis	\$100,000	8/1/16	8/1/18

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Role*	Investigators	Title	Funding Agency	Amount	Start Date	End Date
PI: Developed the idea, designed the study, wrote the proposal, and interacted with sponsor.	Linhares	Fellowship for applied field-based research on PRRS	Boehringer Ingelheim Vetmedica, Inc.	\$80,000	8/1/16	8/1/18
PI: Developed the idea, designed the study, wrote the proposal, interacted with sponsor.	Linhares & Rademacher	Pilot retrospective study on MJ-PRRSV grouping system as tool to predict outcomes when lvi or mlv was used for PRRSV control and/or elimination.	Phibro Animal Health	\$40,000	6/25/16	10/31/16

* Roles: COI: Co-investigator; COPI: Co-principal investigator; PI: principal investigator.

10.5 Grant Proposals – submitted, not funded

Summary table:

	Amount (\$)	Proposals (n)
Total as PI	\$1,368,675	15
Total as Co-Investigator	\$7,200,404	12
Grand total	\$8,569,079	27

Role*	Investigators	Title	Funding Agency	Amount	Submission date
PI: contributed to idea and grant writing	Linhares, Moura, Almeida, Trevisan, Magalhaes	Sow Farm Productivity And Piglet Viral Load Comparison Following Different Sow PRRSV Vaccination Protocols	Boehringer Ingelheim Animal Health Usa Inc	\$35,000	1/13/20
PI: contributed to idea and grant writing	Linhares, Moura, Almeida, Trevisan, Magalhaes	Assessment The Therapeutic Effect Of Piglet MLV Vaccination In The Face Of PRRS Outbreak	Boehringer Ingelheim Animal Health Usa Inc	\$35,000	1/13/20
PI: contributed to idea and grant writing	Linhares & Trevisan	Using A Wild Type-PRRSV Exposure Classification Scheme To Forecast Subsequent Viral Shedding And Mortality At The Nursery	American Association Of Swine Veterinarians Foundation	\$30,000	1/16/20
PI: contributed to idea and grant writing	Linhares & Holtkamp	Post-DVM Graduate Education On Development And Evaluation Of Strategies To Prevent, Detect, Or Manage Infectious Diseases In Swine Populations Under Field Conditions	National Pork Board	\$150,000	2/24/20
COI: revised the proposal	Ross, Linhares, Serao	Novel Phenotypes And Big Data To Improve Swine Performance	National Pork Board	\$120,000	2/25/20
COI: revised the proposal	Derscheid, Arruda, Clavijo, Linhares	PhD In Veterinary Diagnostic And Production Animal Medicine At Iowa State University Studying Improvement Of <i>Mycoplasma hyopneumoniae</i> Diagnostic Techniques	National Pork Board	\$60,000	2/24/20
COI: revised the proposal	Serao, Linhares, Dekkers	Creating PRRS Vaccine-Ready Gilts With Improved Reproductive Efficiency	Iowa Pork Producers Association	\$68,574	5/5/20
PI: contributed to idea and grant writing	Linhares, Magalhaes, Baum, Burrough, Holtkamp, Karriker, Rademacher, Ramirez	Integrating Data Streams And Developing Predictive Methodologies To Foster Precision Swine Health & Production Management	Usda-National Institute Of Food & Agriculture (Nifa)	\$999,999	5/21/20

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Role*	Investigators	Title	Funding Agency	Amount	Submission date
PI: Developed the idea, discussed study design, revised the proposal.	Moura, Rahe, Baum, Gimenez-Lirola, Holtkamp, Linhares	Predictive value of patterns of ELISA S/P values on mortality in growing pig groups following natural challenge with wild-type PRRSv	National Pork Board	\$ 48,123	5/21/19
COI: Discussed study design, reviewed the proposal.	Trajcevski, Linhares, Dong, Gong, Kamal, Khokhar, Mochel, Nait-Abdesselam, Plummer, Reecy, Ross, Sapp	CNS core: large: collaborative research: multi-context data abstractions and analytics in dynamic heterogeneous IoT systems	NSF - National Science Foundation	\$1,974,104	6/1/19
COI: Helped developing the idea, discussed the design of the study, reviewed the proposal.	Linhares, Holtkamp, Silva, Machado	The use of applied machine learning tools to evaluate biosecurity aspects patterns and porcine reproductive and respiratory syndrome virus (PRRSV)	United States Department of Agriculture	\$119,333	5/1/19
COI: Discussed study design, reviewed the proposal.	Peschel, Butters-Johnson, Linhares, Rademacher, Ramirez, Ross	Improving animal health management and production efficiency through automated visual sensing to monitor grow-finish pigs	National Pork Board	\$229,376	4/1/19
COI: Discussed study design, reviewed the proposal.	Trajcevski, Linhares, Dong, Gong, Kamal, Khokhar, Mochel, Nait-Abdesselam, Plummer, Reecy, Ross, Sapp	CPS: frontier: CAHMAH: context-aware health management in animal husbandry	NSF - National Science Foundation	\$4,358,778	1/1/19
PI: Developed the idea, designed the study, wrote the proposal.	Linhares, Nunes-de-Almeida, Holtkamp, Zimmerman	Family oral fluids for PRRSV monitoring in due-to-wean litters	Boehringer Ingelheim Vetmedica Inc	\$35,000	1/12/18
PI: Developed the idea, designed the study, wrote the proposal.	Linhares, Moura, Holtkamp	Within and between comparison of predictors of grow to finish mortality	Boehringer Ingelheim Vetmedica Inc	\$35,000	1/12/18
C COI: Discussed study design, reviewed the proposal.	Holtkamp, Zhang, Linhares	Efficacy of ultraviolet C disinfection for inactivating Senecavirus a on contaminated surfaces in swine farms and points of animal concentration.	National Pork Board	\$29,546	11/14/17

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Role*	Investigators	Title	Funding Agency	Amount	Submission date
COI: Discussed study design, reviewed the proposal.	Clavijo, Arruda, Linhares, Yeske, Gimenez-Lirola, Alonso, Derscheid	Gilt acclimation strategies for <i>M. hyopneumoniae</i> control: evaluation of exposure protocols and development of a dual matrix antibody assay	National Pork Board	\$91,434	11/13/17
COI: Discussed study design, reviewed the proposal.	Clavijo, Linhares, Derscheid, Schwartz, Chong Wang, Zimmerman	Estimation of the diagnostic sensitivity and specificity of oral fluids and tracheal swabs for early detection of <i>M. hyopneumoniae</i>	Iowa Pork Producers Association	\$64,538	10/9/17
PI: Developed the idea, designed the study, wrote the proposal.	Linhares, Holtkamp, Main	Development and implementation of a domestic swine bio-surveillance monitoring and surveillance system. Part 1: establishing a swine disease reporting system in the USA	Swine Health Information Center	\$90,088	9/7/17
COI: Discussed study design, reviewed the proposal.	Holtkamp, Linhares, Karriker	Development of PRRS outbreak investigation and data management and analysis program for breeding herds in regional PRRSV projects in Iowa	Iowa Pork Producers Association	\$26,588	7/26/17
PI: Developed the idea, designed the study, wrote the proposal.	Linhares, Gauger, Gimenez-Lirola, Ganwu Li, Zimmerman	Evaluation, optimization, and application of "processing fluids" for PRRSV monitoring in commercial swine herds	National Pork Board	\$111,520	5/23/17
COI: Discussed study design, reviewed the proposal.	Vergara-Lopes-Serao, Linhares	Improving performance in breeding sows with porcine reproductive and respiratory syndrome (PRRS) using genomics and vaccination, while investigating the role of the vaginal microbiome on reproduction	National Pork Board	\$79,909	5/23/17
PI: Developed the idea, designed the study, wrote the proposal.	Linhares, Brown, Main, Holtkamp, Karriker, Zimmerman Wang	Building precision disease management solutions for veterinary population sciences	Foundation for Food And Agriculture Research	\$600,000	4/21/17
PI: Developed the idea, designed the study, wrote the proposal.	Linhares, Nunes-de-Almeida, Zimmerman	Correlating PRRSV, IAV and <i>Mycoplasma hyopneumoniae</i> seroconversion patterns with wean to finish health and productivity parameters	Boehringer Ingelheim Vetmedica, Inc.	\$35,000	3/1/17
PI: Developed the idea, designed the study, wrote the proposal.	Linhares, Holtkamp	Effect of attenuated PRRSV on short term and long term whole herd productivity	American Association of Swine Veterinarians Foundation	\$11,824	1/17/17

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Role*	Investigators	Title	Funding Agency	Amount	Submission date
PI: Developed the idea, designed the study, wrote the proposal.	Linhares, Nunes-De-Almeida, Zimmerman	Correlating PRRSV, PEDV, and IAV seroconversion patterns with wean to finish health and productivity parameters	Boehringer Ingelheim Vetmedica, Inc.	\$35,000	1/13/17
PI: Developed the idea, designed the study, wrote the proposal.	Linhares	Comparison of immune management strategies to acclimate gilts to PRRSV	Boehringer Ingelheim Vetmedica, Inc.	\$35,000	1/13/17
COI: Discussed study design, reviewed the proposal.	Holtkamp, Linhares, Ganwu Li	Assessment of biosecurity interventions associated with personnel entry and livestock trailers using a fluorescent powder	Boehringer Ingelheim Vetmedica, Inc.	\$35,000	1/13/17
PI: Developed the idea, designed the study, wrote the proposal.	Linhares & Morrison	Comparison of immune management strategies to acclimate gilts to PRRSV	Boehringer Ingelheim Vetmedica, Inc.	\$35,000	1/3/17
PI: Developed the idea, designed the study, wrote the proposal.	Linhares, Holtkamp, Zimmerman	Assessment of effect of gilt acclimation protocols on dynamics of PRRSV infection in the breeding herd	National Pork Board	\$81,550	5/13/16
PI: Developed the idea, helped designing the study, helped to write the proposal.	Linhares & Ramirez	Assessment of <i>Mycoplasma hyopneumoniae</i> dynamics of infectiousness in naturally infected gilts	National Pork Board	\$91,059	5/1/16
CO-PI: Developed the idea, helped designing the study, helped to write the proposal.	Ramirez, Derscheid	Reproducing <i>Mycoplasma hyopneumoniae</i> field transmission under controlled condition as an attempt to building a long-term herd immunity	Iowa Pork Producers Association	\$31,350	3/10/16
PI: Developed the idea, helped designing the study, and wrote the proposal.	Linhares & Holtkamp	Measuring biosecurity and forecasting recovery from outbreaks	American Association of Swine Veterinarians Foundation	\$30,000	1/28/16
PI: Developed the idea, designed the study, wrote the proposal.	Linhares, Levis, Gauger, Rademacher, Holtkamp	Developing an Influenza vaccination decision tree for breeding herds	National Pork Board	\$94,511	11/25/15
COI: Discussed study design, reviewed the proposal.	Holtkamp, Rademacher, Karriker, Linhares	Systematic epidemiological investigations of cases of Seneca Valley Virus in United States swine breeding herds	Swine Health Information Center	\$24,422	9/23/15
COI: Discussed study design, reviewed the proposal.	Yoon, Rademacher, Derscheid, Linhares, Zhang	Pathogenicity of contemporary US Senecavirus a in pigs and factors influencing outcome of infection	Swine Health Information Center	\$162,614	9/23/15

* Roles: COI: Co-investigator; COPI: Co-principal investigator; PI: principal investigator.

11 Faculty recruitment

11.1 Faculty search committees:

- 2018: (Chair) Research Assistant Professor (Bacteriology)
- 2019: Clinical Assistant/Associate Professor (Serology)
- 2020: (co-Chair) Assistant Professor (Epidemiology)

12 Faculty mentoring

- Dr. Patrick Gorden, Associate Professor at the Iowa State University College of Veterinary Medicine (2020 to date).

13 Student mentoring

13.1 Undergraduate students

- Samuel Baker, summer 2016, spring and summer 2017
- Avery Kornis, first year honor student program, spring 2017
- Madeline E. Herring, summer 2017
- Cassie Xu (China), summer 2017
- Paxton Grey, summer 2017

13.2 Veterinary students

- Broc Mauch (ISU): funded and co-advised for a 2019 summer project (submitted abstract to the annual AASV meeting).
- Christopher Deegan (U of Minnesota): co-advised with Dr. Alejandro Ramirez on a summer project (2016): presented (oral) and awarded at AASV for 1,500 scholarship award.
- Michael Madersen (ISU): co-advised with Dr. Derald Holtkamp on a summer project (2016). He was selected and presented at the AASV annual meeting and received a \$2,500 scholarship award.
- Rachel Schulte (ISU): provided advise on data analysis, interpretation and assisted on developing the oral presentation for the 2016 AASV annual meeting. She received a \$500 award for her oral presentation.
- Mark Mouw (ISU): 2017 summer project

13.3 Graduate students and postdoc associates: ongoing

13.3.1 Major or co-major advisor (n=8):

- Swaminathan Jayaraman, MS student, ISU VPM
- Rodrigo Paiva, MS student, ISU VPM
- Giovanni Trevisan (major advisor), Postdoc Associate, ISU VDPAM.
- Kate Dion (major advisor), MS student, ISU VPM
- Onyekachukwu Osemeke Henry (major advisor), PhD student, ISU POPSC
- Edison S. Magalhães (major advisor), PhD student, ISU VPM

- Daniel Moraes (major advisor), MS student, ISU VPM
- Jack Lipeng (major advisor), MS student, ISU VPM

13.3.2 Plan of study and committee (n=3):

- Alexandra Buckley, POSC, PhD student. Major professor: Drs. Cathy Miller, ISU and Kelly Lager, USDA.

13.4 Graduate students: completed

13.4.1 Major or co-major advisor (n=7):

- Edison Magalhaes (major advisor), Spring 2021, MSc on Veterinary Preventive Medicine (ISU VDPAM). Currently PhD student..
- Marcelo N. Almeida (major advisor), Fall 2020, PhD on Population Sciences in Animal Health (ISU VDPAM). Currently Faculty member @ ISU.
- Cesar A. A. Moura (major advisor), Fall 2020, PhD on Population Sciences in Animal Health (ISU VDPAM). Currently with Iowa Select Farms.
- Will Lopez (major advisor). Spring 2020, PhD on Population Sciences in Animal Health (ISU). Spring 2020. Currently with PIC North America.
- Giovani Trevisan (major advisor). 2020 PhD on Population Sciences in Animal Health (ISU). Spring 2020. Currently working as Postdoc associate in VDPAM.
- Daniel Torrents: co-major with Dr. Alejandro Ramirez. MS on Veterinary Preventive Medicine. Summer 2019. Currently with Laboratorios Hipra.
- Gaurav Rawal: co-major with Dr. Bailey Arruda at ISU-VDPAM. MS on Veterinary Preventive Medicine. Summer 2019. Currently working on PhD in VDPAM.
- Gustavo Silva:
 - Co-major with Dr. Luis Corbellini. PhD degree at UFRGS (Brazil). Spring 2018.
 - Postdoc Associate, ISU VDPAM. 2017-2018. Currently with Carhtage Veterinary Services team.
- Swaminathan Jarayaman: co-major with Dr. Jim Davis on a Master of Science on Management Information Systems at ISU. Completed on Summer 2019. Currently working in the ISU-VDL Information Technologies team.
- Santhi Buddabathini: co-major with Dr. Jim Davis on a Master of Science on Management Information Systems at ISU on 2018. Thesis title: Automation of Prospective Statistical Process Control Chart Method for Early Detection of Outbreaks.

13.4.2 Plan of study and committee (n=4):

- Kimberlee Baker, POSC, MS student (defended 2020). Major professor: Dr. Derald Holtkamp, ISU.
- Gregory T Krahn, POSC, PhD student (defended 2019). Major professor: Dr. Tom Baas, ISU.
- Paisley Canning, POSC, PhD student (defended in 2017). Major professors: Drs. Alejandro Ramirez and Locke Karriker, ISU.
- João Xavier O. Filho, POSC, PhD student (defended in 2013). Major professor: Dr. David Barcellos, at Universidade Federal do Rio Grande do Sul (UFRGS), Brazil.

13.4.3 External reviewer of thesis defense (n=2):

- Talita Pilar Resende, Master thesis (defended in 2014). Advised by Dr. Roberto Guedes at Universidade Federal de Minas Gerais (UFMG), Brazil.

- Juliana Bonin Ferreira, Doctor of Veterinary Sciences degree, co-advised by Drs. Robert Friendship and Zvonimir Poljak at University of Guelph Ontario Veterinary School (09/27/2016).

14 Reviews: peer reviewed manuscripts (n=71)

At the current (Associate Professor, 2020 to date) rank (n=11):

- Served as reviewer for the following scientific journals :
 - Preventive Veterinary Medicine (n=3); Journal of Swine Health and Production (n=5), Transboundary and Emerging Diseases Journal (n=1), Porcine Health and Production Management (n=2).

At the Assistant Professor rank (2015-2020) (n=60):

- Served as reviewer for the following scientific journals :
 - Swine Innovation Porc corporation (Canada); Preventive Veterinary Medicine; PLOS ONE journal; Pork Checkoff; Journal of Swine Health and Production, Journal of Veterinary Medical Science, Deutsche Tierärztliche Wochenschrift, Journal of Small Animal Practice, Transboundary and Emerging Diseases Journal, Acta Scandinavica, Animal Health Research Reviews, Ciência Rural, and Canadian Journal of Veterinary Research, Veterinary Microbiology.

15 Reviews: awards, fellowships and grant proposals (13 programs)

At the current (Associate Professor, 2020 to date) rank (n=4 programs):

- Served as reviewer for the following grant proposals:
 - 2021: ISU Early Achievement in Research Award (10 applications)
- Served as reviewer for the following grant proposals:
 - 2020: CVM ILHAC proposals
 - 2020: ISU CVM Russ and Lora Talbot Fellowship applications
 - 2020: ISU Graduate College: Miller Scholarship applications (n=36)

At the Assistant Professor rank (2015-2020) (n=9 programs):

- Served as reviewer for the following grant proposals:
 - 2019: ISU Graduate College: Miller Scholarship applications (n=18)
 - 2019: ISU CVM USDA Capacity Seed Grants (n=4)
 - 2019: ISU CVM Seed Grants (n=6)
 - 2019: Ontario Agri-Food Innovation Alliance (formerly, OMAFRA-University of Guelph Partnership)
 - 2018: Minnesota Pork Board (n=3)
 - 2018: National Pork Board (n=3)
 - 2017: Swine Innovation Porc corporation (Canada, n=2);

- 2014: National Pork Board (n=2)
- 2013: National Pork Board (n=2)

16 Teaching

16.1 Current Teaching classes/lectures

- *Iowa State University VDPAM 560X (Ecology of Infectious Diseases): instructor in charge (3 credits).*
- *Iowa State University VDPAM 487 (Livestock Disease Prevention): 'Field Epidemiology' and 'Causal inference' lectures.*
- *Iowa State University VDPAM 414 (Veterinary Practice Entrepreneurship): Strategic Planning lecture*
- *Iowa State University VDPAM 445 (Production Animal Clinical Medicine): Porcine reproductive and respiratory syndrome, and Senecavirus A and porcine epidemic diarrhea virus lectures.*

16.2 Previous Lectures:

Universidade Estadual de São Paulo (2013)

- *PRRSv Etiology, Epidemiology, Diagnostics, Control & Elimination*
- *Coronaviruses of pigs*

Universidade Federal do Rio Grande do Sul (2013)

- *Epidemiology of Swine Infectious Diseases*

Universidade Federal de Goiás (2008)

- *Farm biosecurity*
- *Infectious Disease Control Methods*
- *Overview of Swine Industry*

17 Appointments to Committees or Boards (ISU, and non-ISU)

17.1 ISU Veterinary Diagnostic and Production Animal (VDPAM) Department

- (Chair) VDPAM Research and Graduate Studies Committee: September 2015 – to date
- VDPAM Information technology committee: May 2016 – January 2019.
- (Chair) VDPAM ad hoc committee for VDPAM PhD program: September 2016 – to date.
- VDPAM Strategic Planning committee: April 2019 – to date.

17.2 ISU College of Veterinary Medicine (CVM)

- Research Advisory Committee (RAC): July 2016 – to date.
- Graduate Curriculum Committee: July 2017 – June 2019.
- (Chair) Graduate Curriculum Committee: July 2019 to date.

17.3 ISU Graduate College

- (Chair) Graduate Curriculum Committee: September 2018 – December 2020.
- Graduate Curriculum Committee: January 2021 to date.

17.4 Non-ISU committees

- Swine Health Information Center (SHIC)'s Monitoring and Analysis working group: October 2015 – to date.
- American Association of Swine Veterinarians' PRRS Task Force: March 2018 to date.

17.5 Editorial boards

- Editorial board member for the Journal of Swine Health and Production: February 2018 to date.

18 Appointments to planning committees of scientific meetings (n=17)

At the current (Associate Professor) rank:

2020-2021: Research committee – search for ISU’s Digital & Precision Agriculture Bio-sciences Platform Chief Technology Officer.

2020: Organized a workshop entitled “Precision Swine Health and Productivity Management”, delivered at the 2021 Annual [virtual] AASV Meeting.

At the Assistant Professor rank:

2019-20: Scientific committee for the International Pig Veterinary Society (IPVS). Rio de Janeiro, Brazil, June 2-5 2020.

2015-2020: Planning committee for the James McKean Swine Disease Conference. Ames, IA.

2017: Organized and chaired the ‘Monitoring and Surveillance 2.0’ session as part of the American Association of Swine Veterinarians Annual Meeting Pre-Conference, which attracted 111 participants. 03/03/2018. San Diego, CA.

2017: Invited for planning committee for the 49th American Association of Swine Veterinarians Annual Meeting (to take place in San Diego, California USA on March 3-6, 2018)

2017; Invited for planning committee for the XVII Brazilian Association of Swine Veterinarians (ABRAVES) Annual Meeting (taking place in October 2017 in Goiania, GO, Brazil)

2017; Organized and chaired the ‘Biosecurity’ session as part of the American Association of Swine Veterinarians Annual Meeting Pre-Conference, which attracted 98 participants. 02/25/2017. Denver, CO.

2016; Invited for planning committee for the 48th American Association of Swine Veterinarians Annual Meeting (to take place in Denver, Colorado USA on February 2017)

Prior to joining Iowa State University:

2014: Creation of the first National working group to develop a Brazilian contingency plan against exotic diseases (group including health officials, and pork production and export associations)

2014: Organization of event: 1st Brazilian Workshop on PEDv: update and preventive measures

19 Leadership and Outreach

- Serving as the VDPAM Swine Medicine Section Leader (July 2018 to date).
- Invited by The Hanor Company to visit their production system and discuss strategic plans on

swine health and productivity of their operations. Enid, OK, November 13-15, 2017.

- Invited by Phibro Animal Health to join the Veterinary Advisory Board meeting with 8 key opinion leaders of the US swine industry. Dallas, TX, July 24-26, 2017.
- Invited by Zoetis Inc. to attend their global technical meeting and provide an update of field based research and opportunities for PRRS virus detection, control and elimination. Lincoln, NE, July 20-21, 2016.
- Invited by PIC North America to discuss PRRSv prevention, control and elimination strategies with key customers and opinion leaders from Mexico. Nashville, Feb 11, 2016.
- Invited by Swine Information Center (SHIC) to join a conference call with swine industry leaders to discuss detection and epidemiology of "Senecavirus A infection in pigs" (08/14/2015 and 09/01/2015).
- Invited by Boehringer Ingelheim Vetmedica to speak about "Immune management tools for breeding herd stability" with selected customers and opinion leaders at Iowa. Des Moines, IA Sep 16, 2015.
- Invited by PIC North America to join a meeting to discuss "Current knowledge on clinical diseases associated with Senecavirus A". PIC summit in Chicago, IL (09/04/2015).
- Invited by Pipestone Veterinary Services to join a meeting to discuss "Clinical diseases associated with Senecavirus A" via webinar. (09/17/2015).
- Invited by Dr. Robert Morrison at University of Minnesota for recording a podcast entitled "Case study goes in depth on Seneca Valley virus". SwineCast 0883, At the meeting, <http://www.swinecast.com/at-the-meeting-with-the-morrison-group>, accessed on 10/01/2015 at 09:00h. Podcast participants: Linhares D, Vannucci FA, Rademacher C, Spronk G, Wetzell T, Morrison RB.
- Member of Swine Health Information Center's committee: Swine Health Monitoring and Analysis Working Group from August 2015 to date.