

Gustavo Machado

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Last updated: May, 2025
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SHORT BIO

Dr. Gustavo Machado is an Associate Professor of Transboundary Disease Epidemiology in the Population Health and Pathobiology department at North Carolina State University (NCSU). She is affiliated with the Biomathematics graduate program and the Center for Geospatial Analytics at NCSU. His research develops mathematical methods using contact networks and population dynamics to develop multiscale disease control strategies to reduce the burden of livestock and poultry endemic and emerging diseases. His work encompasses various aspects of disease modeling, including developing mathematical models fitted to real-world populations, animal/semen, and vehicle movement data. Dr. Machado has experience in the regulatory aspects of disease control, nationally and internationally. He works in close partnership with government, industry, and academic stakeholders nationally and internationally and provides training. Dr. Machado is also the founder and lead manager of the [RABapp™](#) systems.

PROFESSIONAL APPOINTMENTS

- 2023 – present **Associate Professor**
Department of Population Health and Pathobiology
College of Veterinary Medicine
North Carolina State University, USA
- 2018 – 2023 **Assistant Professor**
Department of Population Health and Pathobiology
College of Veterinary Medicine
North Carolina State University, USA
- 2016 – 2017 **Postdoctoral researcher**
Department of Veterinary Population Medicine
College of Veterinary Medicine
University of Minnesota, USA
- 2016 – 2016 **Assistant Professor**
Department of Preventive Veterinary Medicine
Federal University of Rio Grande do Sul, Brazil

EDUCATION

- 2013 – 2016 **Ph.D. in Veterinary Epidemiology**, Federal University of Rio Grande do Sul, Brazil
- 2011 – 2013 **MVSc in Veterinary Epidemiology**, Federal University of Rio Grande do Sul, Brazil
- 2003 – 2010 **DVM Veterinary Medicine**, Federal University of Santa Maria, Brazil

FUNDING

Summary of Funding: 36 Total Funded Projects; Total Funding of \$8.8 million including PI of nationally competitive grants, including national-level competition, seven USDA-NIFA grants, seven USDA-APHIS-NADPRP, one Foundation for Food & Agriculture Research (FFAR) grant, four Swine Health Information Center (SHIC) grants, two international Fundo de Desenvolvimento e Defesa Sanitaria Animal (FUNDESA RS) grants. Total Funding as a PI: \$4.8 million.

Ongoing research support (13)

- 2024 – 2027 **PI: Machado, Gustavo** “A novel multilevel model of swine disease spread to assess the effectiveness and feasibility of African swine fever control and eradication strategies.” **Funded by:** USDA-AFRI Foundational and Applied Science-Data Science for Food and Agricultural Systems (DSFAS)“ *Amount \$591,481.*
- 2024 – 2025 **PI: Machado, Gustavo** “Cost-benefit analysis of vehicle and trailer rerouting to prevent disease propagation” **Funded by:** SHIC/FFAR/NPB Wean-to-Harvest Biosecurity Research Program, Swine Health Information Center (SHIC)“ *Amount \$150,000.*
- 2023 – 2025 **PI: Machado, Gustavo** ‘Extending a Between-Farm African Swine Fever Transmission Model to Estimate the Necessary Number of Sample Collectors in a Highly Swine Dense Region” **Funded by:** Animal and Plant Health Inspection Service (USDA-APHIS)-National Animal Disease Preparedness and Response Program (NADPRP)“ *Amount \$244,274.*
- 2023 – 2026 **PI: Machado, Gustavo** ‘Standardized On-Farm Biosecurity Poultry Producers Plans in a User-Friendly Management Tool for Pennsylvania’ **Funded by:** Animal and Plant Health Inspection Service (USDA-APHIS)-National Animal Disease Preparedness and Response Program (NADPRP)“ *Amount \$537,193.*
- 2023 – 2025 **PI: Ferreira, co-PI: Machado, Gustavo** ‘Evaluation of Decontamination Protocols and Vehicle Movement to Mitigate the Transmission Risk of PED Virus as a Proxy for FAD” **Funded by:** Animal and Plant Health Inspection Service (USDA-APHIS)-National Animal Disease Preparedness and Response Program (NADPRP)“ *Amount \$431,064.*
- 2022 – 2025 **PI: Machado, Gustavo** “Enhancing U.S. Swine Industry Readiness to Foreign Animal Disease at All Production Levels in Missouri By Combining Standardized On-Farm Biosecurity Plans and Animal Movement in a Data Management Tool” **Funded by:** Animal and Plant Health Inspection Service (USDA-APHIS)-National Animal Disease Preparedness and Response Program (NADPRP)“ *Amount \$271,730.*
- 2022 – 2025 **PI: Machado, Gustavo** “Descriptive Analysis of Multiple Swine Movement Networks and The Development of a Network Model to Estimate the Impacts of the Movement Restrictions Under the National African Swine Fever Response Plan” **Funded by:** Animal and Plant Health Inspection Service (USDA-APHIS)-National Animal Disease Preparedness and Response Program (NADPRP)“ *Amount \$312,012.*
- 2020 – 2025 **PI: Machado, Gustavo** “FACT: Near-real time spatiotemporal resource allocation to improve swine health” **Funded by:** USDA-AFRI Foundational and Applied Science. “ *Amount \$500,000.* Award ID: 20206702132462.
- 2021 – 2025 **PI: Machado, Gustavo** “Risk-guided surveillance: analysis of complex networks, strengthening of the sentinel program, population dynamics and identification of areas at risk for the spread of endemic and exotic diseases” **Funded by:** FUNDESA-Fundo de Desenvolvimento e Defesa Animal“ *Amount \$231,000.* Award ID: 2021-0715.

- 2022 – 2026 **Multi-PI:** Tobias, Kaeser and **Machado, Gustavo** | (*Machado, G., \$340,000*) “Predict and protect against PRRSV (Preproprsv): Combine PRRSV forecasting technology with vaccine efficacy prediction to prevent PRRSV outbreak” **Funded by:** USDA-AFRI Foundational and Applied Science-IDEAS“ *Amount \$1,000,000.*
- 2024 – 2026 PI Neault, Michael, **co-PI: Machado, Gustavo** | (*Sub award for Machado, G., \$162,838*) “Mid-Atlantic Secure Milk Supply Plan Project” **Funded by:** Animal and Plant Health Inspection Service (USDA-APHIS)-National Animal Disease Preparedness and Response Program (NADPRP)“ *Amount \$358,532.*
- 2023 – 2026 PI Gustavo, Silva, **co-PI: Machado, Gustavo** “Ongoing automated surveillance of swine livestock productivity data to early detect PRRSV outbreaks” **Funded by:** USDA-AFRI Foundational and Applied Science-CARE“ *Amount \$300,000.*
- 2024 – 2027 PI Alencar, Machado, **co-PI: Machado, Gustavo** “Context-based recommendation for surveillance actions and response to outbreaks of notifiable diseases in animals” **Funded by:** FAPERGS - Research Support Foundation of the State of Rio Grande do Sul“ *Amount R\$74,167.*

Completed research support (21)

- 2022 – 2025 **PI: Machado, Gustavo** “Developing a Tool for Standardization for Cataloging, Reviewing, and approving of Secure Beef Supply Plans of Producers on Different Types of Operations in Kansas” **Funded by:** Animal and Plant Health Inspection Service (USDA-APHIS)-National Animal Disease Preparedness and Response Program (NADPRP)“ *Amount \$405,110.*
- 2022 – 2025 **PI: Machado, Gustavo** “Major Enhancement of U.S. swine industry preparedness and responses to large-scale infectious foreign animal diseases through harmonizing biosecurity plans and advancing interpretable machine learning” **Funded by:** Foundation for Food and Agriculture Research (FFAR)-New Innovator Fellowship. “ *Amount \$479,987.*
- 2022 – 2025 PI Linhares, Daniel, **co-PI: Machado, Gustavo** | (*Sub award for Machado, G., \$289,000*) “Integrating data streams for causal inference and forecasting application to foster precision swine health” **Funded by:** USDA-AFRI Foundational and Applied Science-IDEAS“ *Amount \$1,000,000.*
- 2022 – 2024 **PI: Machado, Gustavo** “Develop the Epidemiological Framework Necessary to Reconstruct Vehicle Movement Network” **Funded by:** Swine Health Information Center (SHIC)“ *Amount \$125,000.*
- 2022 – 2024 **PI: Machado, Gustavo** “Rerouting between-farm transportation vehicle movements to minimize the dissemination of endemic and emerging diseases in North America” **Funded by:** Swine Health Information Center (SHIC)“ *Amount \$131,671.*
- 2022 – 2022 **PI: Machado, Gustavo** “National Pork Board API Development Agreement” **Funded by:** National Pork Board“ *Amount \$30,000.* Award ID.
- 2022 – 2023 PI Pairis-Garcia, Monique, **co-PI: Machado, Gustavo** | (*Sub award for Machado, G., \$89,000*) “Refining sample size recommendations for PQA Plus® and CSIA audit tool” **Funded by:** National Pork Board“ *Amount \$179,500.*

- 2021 – 2023 **PI: Machado, Gustavo** “Combining standardized on-farm biosecurity plans with animal movement data in a user-friendly rapid access biosecurity management tool: a multi state study” **Funded by:** Animal and Plant Health Inspection Service (USDA-APHIS)-National Animal Disease Preparedness and Response Program (NADPRP)“ **Amount \$182,301.** Award ID: APP-15216.
- 2019 – 2023 **PI: Machado, Gustavo** “Assessing biosecurity vulnerabilities to predict the risk of new Porcine Reproductive and Respiratory Syndrome outbreaks” **Funded by:** USDA-AFRI Foundational and Applied Science“ **Amount \$300,000.** Award ID: 20196800829910.
- 2021 – 2023 **PI: Machado, Gustavo** “Development of a machine-learning framework to identify risk factors for COVID-19 infection in swine caretakers and estimate the chances of new COVID-19 waves“ **Funded by:** Grant Competition (UGPN)“ **Amount \$30,000.** Award ID: 14.
- 2020 – 2021 **PI: Machado, Gustavo** “Dynamic transmission modeling-the role of feed, feed ingredients in swine disease transmission” **Funded by:** Fats and Proteins Research Foundation“ **Amount \$76,000.** Award ID: 2021-0715.
- 2019 – 2020 **PI: Machado, Gustavo** “High-resolution dynamic risk mapping to guide timely disease interventions- Swine health information center” **Funded by:** SHIC-Swine Health Information **Amount \$89,987.** Award ID: 17-141.
- 2019 – 2020 **PI: Machado, Gustavo** “Network analysis to guide active surveillance” **Funded by:** FUNDESA-Fundo de Desenvolvimento e Defesa Animal“ **Amount \$22,696.** Award ID: 2019-049.
- 2019 – 2020 **PI: Linhares, Co-PI Machado, Gustavo** “Biosecurity screening tool to identify breeding herds’ risk to PRRS outbreak using a short survey Swine health information center” **Funded by:** SHIC-Swine Health Information Center“ **Amount \$75,201.** Award ID: 2019-2601.
- 2019 – 2020 **PI: Goss, Co-PI Machado, Gustavo** “Distribution and activity of Pythium insidiosum in the Chincoteague National Wildlife Refuge” **Funded by:** U.S. Fish and Wildlife Service“ **Amount \$11,292.** Award ID: 2019-2012.
- 2018 – 2020 **PI: VanderWall, Co-PI Machado, Gustavo** “Forecasting the spread of endemic viruses of swine in the United States” **Funded by:** USDA-AFRI Foundational and Applied Science“ **Amount \$300,000.** Award ID: 2018-68008-27890.
- 2019 – 2020 **PI: Machado, Gustavo** “Development of a dissemination platform for temporal, spatial and phylogenetic analysis of Avian Infectious Bronchitis Virus sequences“ **Funded by:** NCSU Research and Innovation Seed Funding Program“ **Amount \$18,750.** Award ID: 2019-2366.
- 2019 – 2020 **PI: Machado, Gustavo** “Identification of key factors enabling PRRSv spatial distribution and the importance of new virus variant introduction on the incidence of PRRSv in North Carolina“ **Funded by:** NCSU College of Veterinary Medicine“ **Amount \$25,000.** Award ID: 14.
- 2019 – 2020 **PI: Machado, Gustavo** “Use of swine movement information to improve risk-based surveillance“ **Funded by:** CVM- Global Health grant program“ **Amount \$19,792.** Award ID: 14.

2021 **PI: Machado, Gustavo** “Foot and mouth disease in Brazil-cattle, swine, small ruminants and poultry (Aya Omar-DVM Student)” **Funded by:** Triangle Community Foundation“ **Amount \$5,000.** Award ID: 3425.

2019 – 2022 **PI: Machado, Gustavo** “Optimizing control interventions for Visceral Leishmaniasis in multiple settings“ **Funded by:** Grant Competition (UGPN)“ **Amount \$30,000.** Award ID: 22.

Consulting roles

2023 – 2025 **PI: Michael Sanderson** (Kansas State University) **Consultant: Machado, Gustavo** “Longitudinal Surveillance and Biosecurity Practice in an FMD Outbreak” **Funded by:** Animal and Plant Health Inspection Service (USDA-APHIS)-National Animal Disease Preparedness and Response Program (NADPRP)“ **Amount \$192,047.**

AWARDS & HONORS

2024 – present University Faculty Scholars at NC State University

2022 – 2025 Goodnight Early Career Innovators Award, **Amount \$66,000**

2022 – 2025 Foundation for Food and Agriculture Research (FFAR)-New Innovator Fellowship, **Amount \$479,987**

2013 – 2016 Brazilian Ministry of Education CAPES **PhD Research Scholarship, 3 years of funding**

2011 – 2013 Brazilian Ministry of Education CAPES **Masters Research Scholarship, 3 years of funding**

2006 – 2007 MAST International | MAST International at University of Minnesota (US) **International exchange student**

2009 – 2011 Brazilian Ministry of Education CAPES **DVM Research Scholarship**

PUBLICATIONS

Summary of Publications: Total Publications in Refereed Journals or Accepted for Publication: 166; Total Citations: 3094 (Google Scholar); h-index: 29 (Google Scholar); * Denotes Student or Researcher Advisee.






PREPRINT

2025 Fleming, C., Mills, K., Cardenas, N., Galvis, J.A., and **Machado, Gustavo*** Enhancing U.S. swine farm preparedness for infectious foreign animal diseases with rapid access to biosecurity information.


- Preprint: [📄 Link](#)

2025 Cardenas, N.C., dos Santos, D.V., Lima, D.M., Gutierrez, H.O.D., Vaca, D.R.G., and **Machado, Gustavo*** Simulating foot-and-mouth dynamics and control in Bolivia.

- Preprint: [📄 Link](#)

- 2025 Sykes, A.L., Galvis, J.A., O’Hara, K.C., Holmstrom, L., Corzo, C., and **Machado, Gustavo*** Identifying control strategies to eliminate African swine fever from the United States swine industry in under 12 months.
• Preprint:  [Link](#)
- 2024 Fountain-Jones, N., Appaw, R., Alkhamis, M., Baker, S., Clark, N., Powell-Romero, F., Mayer, M., and **Machado, Gustavo*** Advancing ecological community analysis with MrIML 2.0: Unravelling taxa associations through interpretable machine learning.
• Preprint:  [Link](#)
- 2024 Safari, M., Fleming, C., Galvis, J.A., Deka, A. Sanchez, F., **Machado, Gustavo***, Yeh., C. Modeling the impact of optimized airflow and sick pen management on the spread of infectious diseases in swine barns.
• Preprint:  [Link](#)
- 2024 Galvis, J.A., **Machado, Gustavo*** Mitigating between-farm disease transmission through simulating vehicle rerouting and enhanced cleaning and disinfection protocols.
• Preprint:  [Link](#)
- 2022 da Costa, J.M.N., Cobellini, L.G., Cardenas, N.C., Groff, F.H.S., **Machado, Gustavo***. Assessing epidemiological parameters and dissemination characteristics of the 2000 and 2001 foot-and-mouth disease outbreaks in Rio Grande do Sul, Brazil.
• Preprint:  [Link](#)

BOOK AND BOOK CHAPTERS

- 2023 **Machado, Gustavo**, Jason O. A. Galvis, Allyson Freeman, Felipe Sanchez, Xena Hong, Abagael Sykes, Christian Fleming, et al. 2023. “The Rapid Access Biosecurity (RAB) App™ Handbook.” OSF Preprints. January 13. doi:10.17605/OSF.IO/Z5WBJ.
• Preprint:  [Link](#)

PEER-REVIEWED

- [173] Nicolas C. Cardenas, Taís C. de Menezes, Amanda M. Countryman, Francisco P.N. Lopes, Fernando H.S. Groff, Grazziane M. Rigon, Marcelo Gocks, and **Machado, Gustavo**. “Integrating epidemiological and economic models to estimate the cost of simulated foot-and-mouth disease outbreaks in Brazil”. In: *Preventive Veterinary Medicine* (2025), p. 106558. ISSN: 0167-5877. DOI: [10.1016/j.prevetmed.2025.106558](https://doi.org/10.1016/j.prevetmed.2025.106558).
- [172] Aniruddha Deka, Jason A. Galvis, Christian Fleming, Maryam Safari, Chi-An Yeh, and **Machado, Gustavo**. “Modeling the transmission dynamics of African swine fever virus within commercial swine barns: Quantifying the contribution of multiple transmission pathways”. In: *Epidemics* (2025), p. 100828. ISSN: 1755-4365. DOI: [10.1016/j.epidem.2025.100828](https://doi.org/10.1016/j.epidem.2025.100828).
- [171] Leandro Fadel, Rodrigo Cardoso Rabelo, Denise Tabacchi Fantoni, **Machado, Gustavo**, Marina Candido Duarte, Gabriela da Cruz Schaefer, Mariana Pires Oliveira, Jessica de Oliveira Lara Castanheira Fadel, Kamila dos Santos Moraes, Glaucia Bueno Pereira-Neto, and Fernanda Vieira Amorim da Costa. “Assessment of shock index in healthy cats and in cats presenting to an emergency room with shock”. In: *Journal of Veterinary Emergency and Critical Care* (2025). DOI: [10.1111/vec.13446](https://doi.org/10.1111/vec.13446).
- [170] Jason A. Galvis, Muhammed Y. Satici, Abagael L. Sykes, Kathleen C. OHara, Lisa Rochette, and David Roberts **Machado, Gustavo***. “Estimating sampling and laboratory capacity for a simulated

- African swine fever outbreak in the United States”. In: *Preventive Veterinary Medicine* (2025), p. 106529. ISSN: 0167-5877. DOI: [10.1016/j.prevetmed.2025.106529](https://doi.org/10.1016/j.prevetmed.2025.106529).
- [169] Natalia Elena Martinez Munoz, Cesar A Corzo, and **Machado, Gustavo** and Ekiri, Abel and Deza-Cruz, Inaki and Prada, Joaquin M. “Truck Cleaning and Disinfection, and the Risk of Prsv Dissemination in Multi-Site Pig Production Systems in the United States: A Network-Epidemiological Model Approach”. In: *Preventive Veterinary Medicine* (2025). ISSN: 0167-5877. DOI: [10.1016/j.prevetmed.2025.106539](https://doi.org/10.1016/j.prevetmed.2025.106539).
- [168] Taylor B. Parker, Kelly A. Meiklejohn, **Machado, Gustavo**, Michael Rahe, Bradford Sean Darrow, and Juliana Bonin Ferreira. “Evaluation of porcine epidemic diarrhea virus RNA contamination on swine industry transportation vehicles”. In: *Preventive Veterinary Medicine* 237 (2025), p. 106447. ISSN: 0167-5877. DOI: [10.1016/j.prevetmed.2025.106447](https://doi.org/10.1016/j.prevetmed.2025.106447).
- [167] Magnus R Campler, Marissa Hall, Kelsey R Mills, Jason Ardila Galvis, **Machado, Gustavo**, and Andreia Goncalves Arruda. “Description of swine producer biosecurity planning for foreign animal disease preparedness using the Secure Pork Supply framework”. In: *Frontiers in Veterinary Science* 11 (2024), p. 1380623. DOI: [10.3389/fvets.2024.1380623](https://doi.org/10.3389/fvets.2024.1380623).
- [166] Nicolas C. Cardenas, Arthur Valencio, Felipe Sanchez, Kathleen C. O’Hara, and **Machado, Gustavo***. “Analyzing the intrastate and interstate swine movement network in the United States”. In: *Preventive Veterinary Medicine* (2024), p. 106264. ISSN: 0167-5877. DOI: [10.1016/j.prevetmed.2024.106264](https://doi.org/10.1016/j.prevetmed.2024.106264).
- [165] Nicolas Cespedes Cardenas, Francisco Paulo Nunes Lopes, Alencar Machado, Vinicius Maran, Celio Trois, Felipe A Machado, and **Machado, Gustavo***. “Modeling foot-and-mouth disease dissemination in Rio Grande do Sul, Brazil and evaluating the effectiveness of control measures”. In: *Frontiers in Veterinary Science* 11 (2024), p. 1468864. DOI: [10.3389/fvets.2024.1468864](https://doi.org/10.3389/fvets.2024.1468864).
- [164] Jason Galvis and **Machado, Gustavo***. “The role of vehicle movement in swine disease dissemination: novel method accounting for pathogen stability and vehicle cleaning effectiveness uncertainties”. In: *Preventive Veterinary Medicine* (2024), p. 106168. DOI: [10.1016/j.prevetmed.2024.106168](https://doi.org/10.1016/j.prevetmed.2024.106168).
- [163] Eva Janoušková, Jennifer Rokhsar, Manuel Jara, Mahbod Entezami, Daniel L. Horton, Ricardo Augusto Dias, **Machado, Gustavo***, and Joaquín M. Prada. “Quantifying Spillover Risk with an Integrated Bat-Rabies Dynamic Modeling Framework”. In: *Transboundary and Emerging Diseases* 2023 (June 20, 2023). Ed. by Daniel Diaz. Publisher: Hindawi, p. 2611577. ISSN: 1865-1674. DOI: [10.1155/2023/2611577](https://doi.org/10.1155/2023/2611577).
- [162] Felipe Sanchez, Jason A Galvis, Nicolas C Cardenas, Cesar Corzo, Christopher Jones, and **Machado, Gustavo***. “Spatiotemporal relative risk distribution of porcine reproductive and respiratory syndrome virus in the United States”. In: *Frontiers in Veterinary Science* 10 (2023). DOI: [10.3389/fvets.2023.1158306](https://doi.org/10.3389/fvets.2023.1158306).
- [161] Abagael L Sykes, Jason A Galvis, Kathleen C O’Hara, Cesar Corzo, and **Machado, Gustavo***. “Estimating the effectiveness of control actions on African swine fever transmission in commercial swine populations in the United States”. In: *Preventive Veterinary Medicine* (2023), p. 105962. DOI: [10.1016/j.prevetmed.2023.105962](https://doi.org/10.1016/j.prevetmed.2023.105962).
- [160] Mathieu Andraud, Pachka Hammami, Brandon Hastings Hayes, Jason Ardila Galvis, Timothée Vergne, **Machado, Gustavo**, and Nicolas Rose. “Modelling African swine fever virus spread in pigs using time-respective network data: Scientific support for decision-makers”. In: *Transboundary and Emerging Diseases* (2022). DOI: [10.1111/tbed.14550](https://doi.org/10.1111/tbed.14550).
- [159] Nicolas C Cardenas, Felipe Sanchez, Francisco PN Lopes, and **Machado, Gustavo***. “Coupling spatial statistics with social network analysis to estimate distinct risk areas of disease circulation to improve risk-based surveillance”. In: *Transboundary and Emerging Diseases* 69.5 (2022), e2757–e2768. DOI: [10.1111/tbed.14627](https://doi.org/10.1111/tbed.14627).

- [158] Nicolas C. Cardenas, Abagael L. Sykes, Francisco P. N. Lopes, and **Machado, Gustavo***. “Multiple species animal movements: network properties, disease dynamics and the impact of targeted control actions”. In: *Veterinary Research* (2022). DOI: [10.1186/s13567-022-01031-2](https://doi.org/10.1186/s13567-022-01031-2).
- [157] Jason A. Galvis, Cesar A. Corzo, and **Machado, Gustavo***. “Modelling and assessing additional transmission routes for porcine reproductive and respiratory syndrome virus: Vehicle movements and feed ingredients”. In: *Transboundary and Emerging Diseases* (2022). DOI: [10.1111/tbed.14488](https://doi.org/10.1111/tbed.14488).
- [156] Jason A. Galvis, Cesar A. Corzo, Joaquín M. Prada, and **Machado, Gustavo***. “Modeling between-farm transmission dynamics of porcine epidemic diarrhea virus: characterizing the dominant transmission routes”. In: *Preventive Veterinary Medicine* (2022), p. 105759. ISSN: 0167-5877. DOI: [10.1016/j.prevetmed.2022.105759](https://doi.org/10.1016/j.prevetmed.2022.105759).
- [155] Umanga Gunasekera, Jitendra Kumar Biswal, **Machado, Gustavo**, Rajeev Ranjan, Saravanan Subramaniam, Manoranjan Rout, Jajati Keshari Mohapatra, Bramhadev Pattnaik, Rabindra Prasad Singh, Jonathan Arzt, Andres Perez, and Kimberly VanderWaal. “Impact of mass vaccination on the spatiotemporal dynamics of FMD outbreaks in India, 2008–2016”. In: *Transboundary and Emerging Diseases* (2022). DOI: [10.1111/tbed.14528](https://doi.org/10.1111/tbed.14528).
- [154] Espinola Julia, **Machado, Gustavo**, Diehl Gustavo, Santos Lucila, Vargas Agueda, and Gressler Leticia. “Culturable microbial population from the upper respiratory tract of 1,010 clinically healthy horses in Southern Brazil”. In: *Journal of Equine Veterinary Science* (2022). DOI: [10.1016/j.jevs.2022.103946](https://doi.org/10.1016/j.jevs.2022.103946).
- [153] Parker Trostle, Cesar A. Corzo, Brian J. Reich, and **Machado, Gustavo***. “A discrete-time survival model for porcine epidemic diarrhea virus”. In: *Transboundary and Emerging Diseases* (2022). DOI: [10.1111/tbed.14739](https://doi.org/10.1111/tbed.14739).
- [152] Cameron Ellington, Claude Hebron, Rocio Crespo, and **Machado, Gustavo***. “Unraveling the Contact Network Patterns between Commercial Turkey Operation in North Carolina and the Distribution of Salmonella Species”. In: *Pathogens* (2021). DOI: [10.3390/pathogens10121539](https://doi.org/10.3390/pathogens10121539).
- [151] Nicholas M Fountain-Jones, Christopher P Kozakiewicz, Brenna R Forester, Erin L Landguth, Scott Carver, Michael Charleston, Roderick B Gagne, Brandon Greenwell, Simona Kraberger, Daryl R Trumbo, and **Machado, Gustavo**. “MrIML: Multi-response interpretable machine learning to model genomic landscapes”. In: *Molecular Ecology Resources* (2021). DOI: [10.1111/1755-0998.13495](https://doi.org/10.1111/1755-0998.13495).
- [150] Jason A Galvis, Chris M Jones, Joaquin M Prada, Cesar A Corzo, and **Machado, Gustavo***. “The between-farm transmission dynamics of porcine epidemic diarrhoea virus: A short-term forecast modelling comparison and the effectiveness of control strategies”. In: *Transboundary and Emerging Diseases* (2021). DOI: [10.1111/tbed.13997](https://doi.org/10.1111/tbed.13997).
- [149] Jason A. Galvis, Cesar A. Corzo, Joaquin M. Prada, and **Machado, Gustavo***. “Modelling the transmission and vaccination strategy for porcine reproductive and respiratory syndrome virus”. In: *Transboundary and Emerging Diseases* (2021). DOI: [10.1111/tbed.14007](https://doi.org/10.1111/tbed.14007).
- [148] Manuel Jara, Rocio Crespo, David Roberts, Ashlyn Chapman, Alejandro Banda, and **Machado, Gustavo***. “Development of a dissemination platform for spatiotemporal and phylogenetic analysis of avian infectious bronchitis virus”. In: *Frontiers in veterinary science* 8 (2021), p. 259. DOI: [10.3389/fvets.2021.624233](https://doi.org/10.3389/fvets.2021.624233).
- [147] Manuel Jara, Kevin Holcomb, Xuechun Wang, Erica M Goss, and **Machado, Gustavo***. “The Potential Distribution of *Pythium insidiosum* in the Chincoteague National Wildlife Refuge, Virginia”. In: *Frontiers in veterinary science* 8 (2021), p. 114. DOI: [10.3389/fvets.2021.640339](https://doi.org/10.3389/fvets.2021.640339).
- [146] Manuel Jara, David A Rasmussen, Cesar A Corzo, and **Machado, Gustavo***. “Porcine reproductive and respiratory syndrome virus dissemination across pig production systems in the United States”. In: *Transboundary and Emerging Diseases* 68.2 (2021), pp. 667–683. DOI: [10.1111/tbed.13728](https://doi.org/10.1111/tbed.13728).

- [145] **Machado, Gustavo**, Luis Gustavo Corbellini, Alba Frias-De-Diego, Gustavo Nogueira Dieh, Diego Viali Dos Santos, Manuel Jara, and Eduardo de Freitas Costa. “Impact of changes of horse movement regulations on the risks of equine infectious anemia: A risk assessment approach”. In: *Preventive Veterinary Medicine* 190 (2021), p. 105319. DOI: [10.1016/j.prevetmed.2021.105319](https://doi.org/10.1016/j.prevetmed.2021.105319).
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- [16] Andréia Spanamberg, **Machado, Gustavo**, Renata Assis Casagrande, Gabriela Miller Sales, Cibele Floriano Fraga, Luís Gustavo Corbellini, David Driemeier, and Laerte Ferreira. “Aspergillus fumigatus from normal and condemned carcasses with airsacculitis in commercial poultry”. In: *Pesquisa Veterinária Brasileira* 33 (2013), pp. 1071–1075. DOI: [10.1590/S0100-736X2013000900004](https://doi.org/10.1590/S0100-736X2013000900004).
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- [9] Helio Langoni, Juliana Cristina Cardoso Citadella, **Machado, Gustavo** Puglia, Patricia Yoshida Faccioli, Simone Baldini Lucheis, and Aristeu Vieira da Silva. “Cytological and microbiological aspects of milk on goat’s subclinical mastitis/Aspectos microbiológicos e citológicos do leite na mastite caprina subclínica/Aspectos microbiológicos y citológicos de la leche en mastitis caprina subclínica”. In: *Veterinaria e Zootecnia* 19.1 (2012), pp. 115–123.
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- [5] **Machado, Gustavo**, Leticia Trevisan Gressler, Jackeline Karsten Kirinus, and Geder Paulo Herrmann. “Caseous lymphadenitis in sheep slaughtered under federal inspection in the state of Rio Grande do Sul-estimation of losses.” In: *Acta Scientiae Veterinariae* 39.2 (2011).
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- [1] Juliano Bolson, João Eduardo Wallau Schossler, **Machado, Gustavo**, and Fernanda Boligon Zembrzusi. “Pino ósseo homólogo conservado em glicerina a 98% e hemicerclagem com fio poliglactina 910 na osteossíntese umeral de pombos domésticos”. In: *Ciência Rural* 38 (2008), pp. 1925–1931. DOI: [10.1590/S0103-84782008000700019](https://doi.org/10.1590/S0103-84782008000700019).

OPEN-SOURCE SOFTWARE

- 2021 – present **MrIML**
Multivariate (multi-response) interpretable machine learning
- Role: Creator and core developer
 - Code:  [nfj1380/mrIML/](https://github.com/nfj1380/mrIML/)
 - Website: nfj1380.github.io/mrIML/index.html
- 2020 – present **Research laboratory Jekyll site (Ruby)**
Research laboratory
- Role: Creator, main developer, project leadership
 - Website: machado-lab.github.io

SUPERVISION AND MENTORING

RESEARCH SCHOLARS

- 2023 – present Dr. Jason Galvis
NC State University
- 2023 – present Dr. Nicolas Cardenas
NC State University

POSTDOCTORAL RESEARCHERS

- 2025 – present Dr. Muhammed Yusuf Satici
NC State University
- 2024 – present Dr. Chunlin Yi
NC State University
- 2023 – present Dr. Aniruddha Deka
NC State University
- 2021 – 2023 Dr. Nicolas Cardenas
NC State University
- 2020 – 2023 Dr. Jason Galvis
NC State University
- 2022 – 2023 Dr. Arthur Valencio
NC State University

2018 – 2020 Dr. Manuel Jara
NC State University

P.H.D

2024 – present Christian Fleming (Chair)
NC State University-CGA

2023 – 2024 Faith Kennedy (Chair)
NC State University-Biomathematics

2023 – present Maryam Safari (Co-Chair)
NC State University-Mechanical and Aerospace Engineering

2023 – present Muhammed Yusuf Satici (Co-Chair)
NC State University-Computer Sciences

2021 – 2024 Abagael Sykes (Chair)
NC State University-CBS

2021 – present Felipe Sanchez (Chair)
NC State University-CGA

2021 – 2022 Parker Trostle (co-chair)
NC State University-STA

2021 – 2022 João Marcos N. da Costa (co-chair)
Universidade Federal do Rio Grande do Sul (International)

2021 – 2023 Anna Isabel Suñé (co-chair)
Universidade Federal do Rio Grande do Sul (International)

MASTER

2021 – 2023 Christian Fleming (Chair)
NC State University-CGA

2021 – 2022 Cameron Ellington (co-chair)
NC State University-resident

2020 – 2020 Kelsey Mills (Chair)
NC State University-CGA

2020 – 2020 Heather Paxson (advisor)
NC State University-CGA

2020 – 2020 Patrícia Warzensaky Gottardo Balestrin (Co-chair)
UDESC-Brazil

DVM-STUDENTS

2021 – 2022 Alyssa Valentine
NC State University

2021 – 2023 Elizabeth Farren Walsh
NC State University

- 2020 – 2020 Aya Omar
NC State University
- 2018 – 2021 Stephanie Krasteva
NC State University
- 2019 – 2020 Jamie Madigan
NC State University
- 2019 – 2020 Jack Lee Miller
NC State University

UNDERGRADUATE

- 2020 – 2022 Allyson Freeman
NC State University
- 2021 – 2022 Madison Joyce
NC State University
- 2021 – 2021 Alyssa White
NC State University
- 2021 – 2021 Grace Winesett
NC State University
- 2019 – 2020 Victoria J. Reynolds
NC State University
- 2020 – 2020 Brittany Lee
NC State University
- 2018 – 2018 Bridget Knapp
NC State University

HIGH SCHOOL

- 2023 – 2024 Piper Walls
North Carolina School of Science and Mathematics
- 2023 – 2024 Ojas Bharadwaj
North Carolina School of Science and Mathematics

MS AND PH.D. THESIS COMMITTEES

- 2023 – 2024 Lindsey Britton, Animal Science M.S. Program
NC State University
- 2018 – 2020 Dr. Trevor Farthing, CBS – Infectious Diseases Epidemiology
NC State University
- 2020 – 2022 Dr. Cameron Ellington, MS Poultry Epidemiology
NC State University

TEACHING

DVM-LEVEL

- 2022 – present VMP 973 Special Topics in Epidemiology.
- 2022 – present VMP 993 Extramural in Epidemiology, Public Health, and Public Policy.
- 2021 – present VMP 979 Clinical Epidemiology.
- 2021 – present VMP 971 Food Animal Diagnostics for Disease Diagnosis, Control, and Population Surveillance.
- 2020 – 2022 VMP 979 Epidemiology, Public Health, and Public Policy.
- 2020 – 2022 VMP-991-151 Trade and Globalization (Guest lecturer).
- 2018 – present VMP 991 Special Topics in PHP, Transboundary Disease, and Spatial Epidemiology.
- 2019 – present VMP 904 Swine Industry (Guest lecturer).
- 2018 – 2018 VMP 945 Epidemiology and Public Health.

GRADUATE-LEVEL

- 2021 – present CBS 595 Epidemiology I.
- 2021 – present CBS 775 (001) Designing population-based research.
- 2019 – present CBS 650/565 Fundamentals of biomedical sciences.
- 2019 – 2022 CBS 595 Independent studies in epidemiology.
- 2019 – present VMP 904 Swine Industry (Guest lecturer).

INVITED PRESENTATIONS

- 2025 **Machado, Gustavo** Understanding FMD Epidemiology and Ecology to Identify Priorities for U.S. Risk Assessment and Research) *Symposium on Foot-and-Mouth Disease(FMD)*, Manhattan, KS.
- 2025 **Machado, Gustavo** Practical Approaches for TransportationBiosecurity) *SHIC/AASV*, Online.
- 2024 **Machado, Gustavo** II Simpósio Internacional de Inovação em Ciências Veterinárias (SIINOVET) *Advancing disease control and biosecurity*, Mato Grosso do Sul, Brazil.
- 2024 **Machado, Gustavo** Food Animal Initiative *Hidden Gems Initiative, 2024 Research Week at NC State*, Raleigh, NC.
- 2024 **Machado, Gustavo** Rapid Access to On-Farm Biosecurity and Between-Farm Animal Movements *Swine Health Symposium and Trade Show*, Columbia, MO.
- 2024 **Machado, Gustavo** RABapp™ for Cattle – new resource, developed with Kansas Department of Agriculture *SBS Quarterly Info Sharing Meeting*, Online.
- 2024 **Machado, Gustavo** Rapid Access to On-farm Biosecurity Expedites Responses to Disease Challenges *NC Turkey Industry Days*, Wilmington, NC.

- 2024 **Machado, Gustavo** FACT: Near-Real Time Spatiotemporal Resource Allocation to Improve Swine Health *Agricultural and Food Research Initiative, 2024 Project Director's Meeting*, Manhattan, KS.
- 2024 **Machado, Gustavo** Analyzing the intrastate and interstate swine movement network in the United States *Society for veterinary epidemiology and preventive medicine 2024 annual conference*, Uppsala, Sweden.
- 2024 **Machado, Gustavo** Rerouting Between-farm Transportation Vehicle Movements to Minimize the Dissemination of Endemic and Emerging Diseases in North America *Advanced Self-Powered Systems of Integrated Sensors and Technologies (ASSIST) Center ERC*, Raleigh, NC.
- 2024 **Machado, Gustavo** Rerouting Between-farm Transportation Vehicle Movements to Minimize the Dissemination of Endemic and Emerging Diseases in North America *US SHIP*, Bloomington, MN.
- 2023 **Machado, Gustavo** Rerouting Between-farm Transportation Vehicle Movements to Minimize the Dissemination of Endemic and Emerging Diseases in North America *2023 NAPRRS/NC229: International Conference of Swine Viral Diseases*, Chicago, IL.
- 2023 **Machado, Gustavo** How on-farm biosecurity, pig, and vehicle movement explain between-farm disease dissemination? *COST (European Cooperation in Science and Technology) BETTER webinar*, Online.
- 2023 **Machado, Gustavo** Advanced precision technologies for enhancing swine disease prevention, *Food Animal Innovation Summit*, Raleigh, NC.
- 2023 **Machado, Gustavo** The role of different truck movements and effectiveness of vehicle cleaning and disinfection in swine disease spread *Western Canadian Association of Swine Veterinarians, 2023 Conference*, Saskatoon, Saskatchewan-Canada.
- 2023 **Machado, Gustavo** Rapid access to on-farm biosecurity and between-farm animal movements to expedite the U.S. swine industry's response to and recovery from large-scale infectious diseases *Western Canadian Association of Swine Veterinarians, 2023 Conference*, Saskatoon, Saskatchewan-Canada.
- 2023 **Machado, Gustavo** An introduction to RABapp™ *Southern Animal Health Association (NAHA)*, Charlottesville, VA.
- 2023 **Machado, Gustavo** Enhancement of U.S. swine biosecurity & an ASF mathematical transmission model to simulate control options, *Swine Innovation Forum*, Goldsboro, NC.
- 2023 **Machado, Gustavo** Modelagem matemática da disseminação da febre aftosa no Brasil e avaliação da eficácia das medidas de controle, *Sociedad Iberoamericana de Epidemiología Veterinaria y Medicina Preventiva*, Sociedad Iberoamericana de Epidemiología Veterinaria y Medicina Preventiva (SIEVMP), Online.
- 2023 **Machado, Gustavo** Gentle introduction to RABapp™, *Northeast US Animal Health Association (NEUSAHA)*, Portsmouth, NH.
- 2023 **Machado, Gustavo** Major Enhancement of U.S. Swine Industry Biosecurity, *Cross-Border Threat Screening and Supply Chain Defense (CBTS) Center of Excellence (COE), Distinguished Speaker Series*, Online, Texas.

- 2023 **Machado, Gustavo** Enhancement of U.S. swine industry preparedness and responses to endemic and large-scale infectious FAD through harmonizing biosecurity plans, *The Graduate Program in Veterinary Medicine, PPGMV*, Online, Brazil.
- 2022 **Machado, Gustavo** Major Enhancement of U.S. swine industry biosecurity: what does this mean for a production system, and how on-farm biosecurity, pig movement data, can help explain the between-farm disease dissemination?, *2022 NAPRRS/NC229: International Conference of Swine Viral Diseases*, Chicago, IL.
- 2022 **Machado, Gustavo** U.S. swine industry preparedness for emerging diseases, *GIS Week Lightning Talk(NCSU)*, Raleigh, NC.
- 2022 **Machado, Gustavo** PEDV and PRRSV spread dynamics: how to minimize between-farm dissemination, *NC Veterinary Conference*, Raleigh, NC.
- 2022 **Machado, Gustavo** Artificial intelligence predictions and explanations, *Cochran Fellowship Training*, Sait Paul, MN.
- 2022 **Machado, Gustavo** Major enhancement of U.S. swine industry preparedness and responses to FADs harmonizing biosecurity and advancing disease transmission modeling, *Allen D. Leman Swine Conference-Greeks to Greeks*, Sait Paul, MN.
- 2022 **Machado, Gustavo** Advanced disease transmission modeling to enhance U.S. swine industry preparedness for emerging diseases, *Advancing sustainable management of pests and pathogens to enhance agricultural productivity-Pests and Pathogens Research Showcase*, Online.
- 2022 **Machado, Gustavo** Evaluation of the effectiveness of foot-and-mouth disease control measures using modeling in the state of Rio Grande do Sul, Brazil, *Regular meeting of the South American commission for the fight against foot-and-mouth (FMD) disease-COSALFA-49*, Online.
- 2022 **Machado, Gustavo** Major Enhancement of U.S. swine industry preparedness and responses to ASF through harmonizing biosecurity plans and advancing disease transmission modeling, *NC Swine Veterinarians Meeting*, Kenansville, NC.
- 2022 **Machado, Gustavo** Modelling and assessing additional transmission routes for PRRSV: vehicle movements and feed ingredients, *Morrison Forum for Advancing Swine Production Medicine*, Mankato, MN.
- 2022 **Machado, Gustavo** Modelling transmission dynamics of routes for porcine reproductive and respiratory syndrome virus: vehicle movements and feed ingredients, *Swine Debate Group at Iowa State University*, Online.
- 2022 **Machado, Gustavo** Introduction to RABapp[™], *US SHIP Site Biosecurity Plans Tier 1 Working Group*, Online.
- 2022 **Machado, Gustavo** Modeling for Infectious Bronchitis and Salmonella, *Sensor Data and Analytics for Poultry Health, Welfare, and Food Safety, 2022 ACPV Workshop*, Vancouver, BC Canada.
- 2021 **Machado, Gustavo** Modeling African swine fever spread in networks and effectiveness of control strategies, *Allen D. Leman Swine Conference-Greeks to Greeks*, Online.

- 2021 **Machado, Gustavo** SPS app, database and modeling – endemic and FADs diseases, *National NASAHO ASF Working Group*, Online.
- 2021 – **Machado, Gustavo** SPS app, database and modeling, Online. <https://machado-lab.github.io/rabapp/>
National Pork Board,
Illinois Department of Agriculture,
Texas Department of Agriculture,
Oklahoma Department of Agriculture,
Minnesota Department of Agriculture,
North Carolina Department of Agriculture,
Michigan Department of Agriculture,
Virginia Department of Agriculture,
South Carolina Department of Agriculture,
Nebraska Department of Agriculture,
South Dakota Department of Agriculture,
Wyoming Department of Agriculture,
Arkansas Department of Agriculture,
Pennsylvania Department of Agriculture,
Pennsylvania Farm Bureau and Pennsylvania Pork Producers Council.
- 2020 **Machado, Gustavo** PRRSV outbreaks at the farm-level based on which–biosecurity practices, *Zoetis Asia*, Online.
- 2020 **Machado, Gustavo** On the ability to predict PRRSV outbreaks at the farm-level based on biosecurity practices, *Keynote at Allen D. Leman Swine Conference, for the Carlos Pijoan SDEC Symposium: Tightening Biosecurity in Swine Farms* , Online.
- 2020 **Machado, Gustavo** Modeling PRRSV: Transmission and vaccination strategies, *Boehringer Ingelheim*, Online.
- 2020 **Machado, Gustavo** Introduction to ML with application to disease ecology, *Virginia Tech*, Online.
- 2020 **Machado, Gustavo** How technology could help predict future PEDv outbreaks, *ANITOX*, Raleigh, USA.
- 2019 **Machado, Gustavo** Disease epidemiology applied to zoonotic diseases, *ASTMH American Society of Tropical Medicine Hygiene*, Washington DC, USA.
- 2019 **Machado, Gustavo** Swine biosecurity, *24th NC Veterinary Conference*, Raleigh, USA.
- 2018 **Machado, Gustavo** Multiscale eco-epidemiological, *DARPA PREEMPT*, Washington DC, USA.

- 2018 **Machado, Gustavo** Investigation of Bayesian spatiotemporal models with a case study, *EpiQ research group*, Saint Paul, USA.
- 2018 **Machado, Gustavo** Epidemiology for the swine industry, *NC Swine Company*, Raleigh, USA.
- 2018 **Machado, Gustavo** Infectious diseases biogeography: the ecological niche modeling approach, *Web lecture to Brazilian audience at the Universidade de São Paulo*, Online.
- 2018 **Machado, Gustavo** Spatio-temporal cluster detection for Urban and Rural Leptospirosis in Brazil, *Grupo de trabajo en Leptospirosis SVS MS Brasil y PHE OPS*, Washington DC, USA.
- 2018 **Machado, Gustavo** Epidemiological tools and Poultry health, *Poultry day*, Raleigh, USA.
- 2017 **Machado, Gustavo** Mapping hotspots of infectious diseases in the animal-human-ecosystem interface, *ENDESA Encontro Nacional de Defesa Sanitária Animal*, Manaus, Brazil.

OUTREACH

1. I maintain the Rapid Access Biosecurity (RAB) app to standardize Secure Pork Supply (SPS) biosecurity plans and create maps to visualize the biosecurity infrastructure of individual farms across multiple states - Current states utilizing **RABapp™**: In total 15 State Animal Health Official (SAHO) are currently using the **RABapp™** or at final arrangements/agreements to utilize the **RABapp™**. The **RABapp™** is technology licensed under NCSU software innovation number (2021-137).
2. R package:MHASpread: A multi-host Animal Spread Stochastic Multilevel Model(version 0.1.0)

Workshops

- 2024 Capacity building in how to use the MHASpread: A Multi-Host Animal Spread Stochastic Multilevel Model to Animal Health Officials from Chile and Panama, with observes from USDA-APHIS and The Organismo Internacional Regional de Sanidad Agropecuaria (OIRSA), Santiago, Chile—>**Participants:** 4 Chile, 1 Panama, 1 El Salvador, and 1 United States
- 2023 Capacity building in how to use the MHASpread: A Multi-Host Animal Spread Stochastic Multilevel Model to Animal Health Officials of Mato Grosso do Sul, Brazil—>**Participants:** 10 Brazil
- 2023 Capacity building in how to use the MHASpread: A Multi-Host Animal Spread Stochastic Multilevel Model to Animal Health Officials of Rio Grande do Sul, Brazil—>**Participants:** 26 Brazil
- 2023 Capacity building in how to use the MHASpread: A Multi-Host Animal Spread Stochastic Multilevel Model to Animal Health Officials of the Sanidad Agropecuaria e Inocuidad Alimentaria (SENASAG), Santa Cruz de la Sierra, Bolivia—>**Participants:** 10 Bolivia
- 2023 Capacity building in how to use the MHASpread: A Multi-Host Animal Spread Stochastic Multilevel Model to from five countries at PANAFTOSA, Rio de Janeiro, Brazil—>**Participants:** 7 Brazil, 2 Ecuador, 2 Paraguay, 1 Argentina, and 1 Uruguay
- Website: <https://machado-lab.github.io/PANAFTOSA-Workshop-Rio2023/>

- 2022 **Five-day workshop:** Capacity building in how to use the MHASpread: A Multi-Host Animal Spread Stochastic Multilevel Model to from five countries at PANAFTOSA, Rio de Janeiro, Brazil—>**Participants:** 2 Brazil, 3 Ecuador, 1 Paraguay, 1 Peru, and 2 Uruguay
 • Website: <https://machado-lab.github.io/PANAFTOSA-Workshop-Rio2023/>
- 2022 **Five-day workshop:** Capacity building using the MHASpread: A Multi-Host Animal Spread Stochastic Multilevel Model to 45 Animal Health Officials from four states and PAHO members, Porto Alegre, Brazil

LEADERSHIP EXPERIENCE AND TRAINING

- 2024 The Faculty LEAD (Leadership Education and Development) program at NCSU

GRANT REVIEW ACTIVITIES

- 2020 USDA-NIFA-Critical Agricultural Research and Extension (CARE) (A1701)
- 2020 The Dutch Research Council (NWO) funds
- 2019 Foundation for Food and Agriculture Research
- 2019 MRC: Medical Research Council

ACADEMIC SERVICE

- 2024 – present Member of the Clinical Year Focus Area Leader Implementation Committee.
 • Development curriculum for the Epidemiology focus area and led all courses under the epidemiology concentration area.
Achievements – 1. Offering of new student courses in epidemiology and public health 2. Engagement with students majoring in epidemiology and food animals.
- 2024 – present Concentration area leader Population and Global Health Comparative Biomedical Sciences Graduate Program (CBS-NCSU-CVM)
- 2021 – present Focus Area Leader– Epidemiology, Public Health, and Public Policy at CVM NCSU

SERVICE

- 2025 – present Platform Director for the Digital Animal Agriculture Platform - North Carolina Food Animal Initiative (FAI)
- 2024 – present Member, US Swine Health Improvement Plan (US SHIP), Traceability Working Group
- 2024 – present Member, NC Pork Council Board of Directors
- 2024 – present Member, North Carolina Food Animal Initiative Working Group
- 2024 – present The steering committee, Animal Health & Nutrition Intellectual Exchange Group
- 2023 – 2024 Member, US Swine Health Improvement Plan (US SHIP), Biosecurity Working Group

- 2023 – 2024 Member, US Swine Health Improvement Plan (US SHIP), Market Haul Sanitation Working Group
- 2023 NCSU Library Representative Committee
- 2023 Member, search committee for Associated Dean of Research, NC State, College of Veterinary Medicine
- 2022 – present Chair, AAVLD/USAHA Subcommittee on Information Standards

AFFILIATIONS

- 2024 – present American Veterinary Medical Association (AVMA)
- 2022 – present Associate editor-Frontiers in Veterinary Science
- 2020 – present United States Animal Health Association Order Confirmation – USAHA, co-chair of AAVLD/USAHA Subcommittee on Information Standards
- 2020 – present United States Animal Health Association Order Confirmation – USAHA, board member
- 2019 – present American Association of Swine Veterinarians (AASV)
- 2018 – present Ecological Society of America
- 2018 – present NC Veterinary Medical Association

EDITORIAL ACTIVITIES(AD-HOC REFEREE)

- Pathology, Research, and Practice
- Comparative Clinical Pathology
- Microbial Pathogenesis
- Parasitology (Cambridge)
- Scientific Reports
- Frontiers in Microbiology
- Frontiers in Veterinary Science
- The American Journal of Tropical Medicine and Hygiene
- Research in Veterinary Science
- International journal of experimental pathology
- Preventive Veterinary Medicine
- Journal of Wildlife Diseases
- Oxford Research Encyclopedia of Global Public Health
- PLOS Neglected Tropical Diseases
- Zoonosis
- Nature Communications
- Zoonoses and Public Health
- Epidemics
- Animal
- Ciencia Rural
- Scientific Data
- Journal of the Royal Society Interface
- PLOS One
- Scientific Data

- Journal of Swine Health & Production
- PCI Animal Science
- Chaos An Interdisciplinary Journal of Nonlinear Science
- Proceedings of the Royal Society B
- PNAS