FEDERICO CUNHA

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EDUCATION

University of Florida, Gainesville, FL
PhD Animal Molecular and Cellular Biology 2020- 2023
Area of Concentration: bacteriology, genomics, infection models

University of Florida, Gainesville, FL
Doctor of Veterinary Medicine 2016 - 2020
Area of Concentration: Food Animal Medicine
Certificate: Aquatic Animal Health

University of Florida, Gainesville, FL
M.S. Veterinary Science 2014 - 2016
Area of Concentration: Microbiology

University of Florida, Gainesville, FL
B.S. Animal Science 2009 - 2013
Area of Concentration: Animal Biology
Minor: Spanish Language and Literature

RESEARCH EXPERIENCE

Postdoctoral Fellow August 2023 – Present
Investigating the resistome of bacteria associated with metritis using whole genome sequencing to find alternative antimicrobial treatments. Also investigating the origin and progression of the uterine microbiome in cattle. Supervised by Klibs Galvão, DVM, PhD. I supervise two graduate level researchers and coordinate collaboration between five interdisciplinary academic laboratories.

Clinical Research Associate April 2016 – September 2016
Investigating the use of chitosan microparticles to treat metritis in lactating dairy cows. Clinical trial conducted by Klibs Galvão, DVM, PhD. My role in this project was to organize and coordinate field work protocols, process laboratory samples, diagnose uterine disease, and perform intrauterine infusions in dairy cows. I supervised ten bachelor and graduate level research assistants.

Clinical Research Associate April 2014 – August 2014
USDA-funded multi-state study to predict health traits using high-density SNP panel in Holstein cattle. Supervised by Jose Santos, DVM, PhD and Klibs Galvão, DVM, PhD. My role in this project was to coordinate field and laboratory work, diagnose disease, perform ovarian ultrasound, pregnancy diagnosis, and fetal sexing in dairy cows. I collected and maintained data from trial and from dairy management software. I supervised four bachelor level research assistants.

Research Assistant July 2013 – April 2014
Investigating the use of avian antibodies against lipopolysaccharides to improve gastrointestinal function in early lactation dairy cows and Investigating risk factors for transmission of bovine leukemia virus (BLV) in dairy herds. Projects being conducted by Lucas Ibarbia, DVM and supervised by Art Donovan, DVM. My role in these projects was to give oral treatments to dairy cows, collect blood samples, perform laboratory work, collect, and maintain clinical data from trials and from dairy management software.

TEACHING EXPERIENCE

Teaching Assistant 2014-2015
Assisted Carlos Risco, Klibs Galvao, and Maarten Drost from the Department of Large Animal Clinical Sciences, College of Veterinary Medicine, University of Florida, Gainesville, FL with the class "Theriogenology VEM5778". Responsibilities included giving lectures to veterinary students, organizing and teaching practical sessions including bovine reproductive anatomy, obstetrics, semen collection, and palpation training.

Teaching Assistant 2013
Assisted Dr. Karim Asghari from the Department of Microbiology and Cell Science, University of Florida, Gainesville, FL with the class "Basic Biology of Microorganisms; BSC3020" with exam development, holding office hours, and grading.

Teaching Assistant 2010
Assisted Dr. Timothy Olson from the Department of Animal Sciences, University of Florida, Gainesville, FL with the class "Companion Animal Biology and Management; ANS4905" with lecture development, holding office hours, and grading.

CLINICAL EXPERIENCE

One Health Veterinary Services
Lead Veterinarian 2020-present
Providing ambulatory preventative veterinary care for companion animals in underserved areas of north Florida and Georgia. Primarily focused on canine and feline vaccination and parasite prevention interventions.

Wisconsin Department of Natural Resources, Madison, WI
Veterinary Extern 2020
Performing fish necropsy and diagnostics, inspecting trout hatcheries, reviewing biosafety protocols, assisting with surgical implantation of tracking devices on wild fish.

Gainesville Animal Hospital, Gainesville, FL
Senior Veterinary Technician 2013-2014
Training technicians, performing laboratory work, surgery preparation and assistance, radiology, and treatment of hospitalized patients.

Countryside Animal Hospital, Alachua, FL
Veterinary Technician 2010-2013
Performing laboratory work, surgery preparation and assistance, radiology, and treatment of hospitalized patients.

GRANTS

Spring Consolidated Research Development Award, University of Florida 2022 ($12,000)
Spring Consolidated Research Development Award, University of Florida 2019 ($12,000)
Florida Veterinary Scholars Award, University of Florida 2017 ($5,000)

AWARDS

William C. and Bertha M. Cornett Fellowship 2021 ($2,000)
College of Agriculture and Life Sciences Dean's Award 2020 ($30,000/year)
Paul Nicoletti FARMS Scholarship 2020 ($1,500)
Paul Nicoletti Public Health Scholarship 2020 ($3,000)
Zoetis Veterinary Student Scholarship Award 2018 ($5,000)

Florida Academic Scholars Scholarship Recipient 2009-2012 ($24,000)

LANGUAGES

Spanish – speak, read, and write with proficiency.
Portuguese – read and comprehend with basic competence.

PUBLICATIONS

Cunha, F., Casaro, S., Jones, K. L., Bisinotto, R. S., Kariyawasam, S., Brown, M. B., & Galvão, K. N. (2023). Sequencing and characterization of Helcococcus ovis: a comprehensive comparative genomic analysis of virulence. BMC genomics, 24(1), 501.

Cunha, F., Burne, A., Casaro, S., Brown, M. B., Bisinotto, R. S., & Galvão, K. N. (2023). Establishing Galleria mellonella as an invertebrate model for the emerging multi-host pathogen Helcococcus ovis. Virulence, 14(1):2186377.

Dado-Senn B, Field S.L., Davidson B.D., Casarotto L.T., Marrero M.G., Ouellet V., **Cunha F.**, Sacher M.A., Rice C.L., Maunsell F.P., Dahl G.E., Laporta J. Late-Gestation in utero Heat Stress Limits Dairy Heifer Early-Life Growth and Organ Development. Front. Anim. Sci., 2021 Nov 17; 2021.750390.

Jones K, **Cunha F**, Jeon SJ, Pérez-Báez J, Casaro S, Fan P, Liu T, Lee S, Jeong KC, Yang Y, Galvão KN. Tracing the source and route of uterine colonization by exploring the genetic relationship of Escherichia coli isolated from the reproductive and gastrointestinal tract of dairy cows. Vet Microbiol. 2022 Jan 25; 266:109355.

Silva T.V., de Oliveira E.B., Pérez-Báez J., Risco C.A., Chebel R.C., **Cunha F.**, Daetz R., Santos J.E.P., Lima F.S., Jeong K.C., Galvão K.N. (2021) Economic comparison between ceftiofur-treated and nontreated dairy cows with metritis. Journal of Dairy Science, 104(8).

Pérez-Báez J., Silva T.V., Risco C.A., Chebel R.C., **Cunha F**., De Vries A., Santos J.E.P., Lima F.S., Pinedo P., Schuenemann G.M., Bicalho R.C., Gilbert R.O., Rodrigez-Zas S., Seabury C.M., Rosa G., Thatcher W.W., Galvão K.N. (2021) The economic cost of metritis in dairy herds. *Journal Dairy Science*, 104(3).

Jeon, S. J., **Cunha, F**., Daetz, R., Bicalho, R. C., Lima, S., Galvão, K. (2021) Ceftiofur reduced Fusobacterium leading to uterine microbiota alteration in dairy cows with metritis. *Animal Microbiome*, 3(1).

Oliveira, E., **Cunha, F**., Daetz, R., Figueiredo, C., Chebel, R., Santos, J. E.; Risco, C., Jeong, K. C., Galvão K. N. (2020) Using chitosan microparticles to treat metritis in lactating dairy cows. *Journal of Dairy Science,* 103(8).

Galvão, K. N., Oliveira, E., **Cunha F.**, Daetz, R., Jones, K., Ma, K., Jeong, K. C., Bicalho, R., Higgins, C., Rodrigues, M., Gonzales Moreno, C., Jeon, S.J. (2020) Effect of chitosan microparticles on the uterine microbiome of dairy cows with metritis. *Applied Environmental Microbiology,* 86(18).

Cunha, F., Jeon, S. J., Jeong, K. C., & Galvão, K. N. (2019). Draft Genome Sequences of Bacteroides pyogenes Strains Isolated from the Uterus of Holstein Dairy Cows with Metritis. *Microbiology Resource Announcements*, *8*(41).

Cunha, F., Jeon, S. J., Kutzer, P., Jeong, K. C., & Galvão, K. N. (2019). Draft genome sequences of helcococcus ovis strains isolated at time of metritis diagnosis from the uterus of holstein dairy cows. *Microbiology Resource Announcements*, *8*(22).

Francis, A. M., Jeon, S. J., **Cunha, F**., Casey Jeong, K., & Galvão, K. N. (2019). Draft genome sequences of two fusobacterium necrophorum strains isolated from the uterus of dairy cows with metritis. *Microbiology Resource Announcements*, *8*(17).

Cunha, F., Jeon, S. J., Daetz, R., Vieira-Neto, A., Laporta, J., Jeong, K. C., Galvão, K. N. (2018). Quantifying known and emerging uterine pathogens, and evaluating their association with metritis and fever in dairy cows. *Theriogenology*, *114*, 25–33.

Jeon, S. J., **Cunha, F**., Vieira-Neto, A., Bicalho, R. C., Lima, S., Bicalho, M. L., & Galvão, K. N. (2017). Blood as a route of transmission of uterine pathogens from the gut to the uterus in cows. *Microbiome*, *5*(1), 109.

Jeon, S. J., **Cunha, F**., Ginn, A., Jeong, K. C., & Galvão, K. N. (2017). Draft genome sequences of Escherichia coli strains isolated at calving from the uterus, vagina, vulva, and rectoanal junction of a dairy cow that later developed metritis. *Genome Announcements*, *5*(11).

Daetz, R., **Cunha, F**., Bittar, J. H., Risco, C. A., Magalhaes, F., Maeda, Y, Galvão, K. N. (2016). Clinical response after chitosan microparticle administration and preliminary assessment of efficacy in preventing metritis in lactating dairy cows. *Journal of Dairy Science*, *99*(11), 8946–8955.

Jeon, S. J., **Cunha, F**., Ma, X., Martinez, N., Vieira-Neto, A., Daetz, R., Galväo, K. N. (2016). Uterine microbiota and immune parameters associated with fever in dairy cows with metritis. *PLoS ONE*, *11*(11).

PRESENTATIONS, PROCEEDINGS, AND PAPERS

Helcococcus ovis: Occurrence, Virulence, and Comparative Genomics of an Emerging Pathogen. 2023 Animal Molecular and Cellular Biology seminar series. **F. Cunha**

Metagenomics of dairy cow uterine disease: a systematic review. Conference paper. 20th Animal Molecular and Cellular Biology symposium. 2022. **F.Cunha**

Helcococcus ovis genome analysis and establishment of an invertebrate *Galleria mellonella* infection model. 2022 LACS Spring Seminar Series in Reproduction and Production Medicine. **F. Cunha**

Assessment of presence of a uterine microbiome at birth and at 60 days of life in cattle. Conference Paper. 2021 Conference of Research Workers in Animal Diseases. **F. Cunha**, K.N. Galvao, K. Jones, R.S. Bisinotto, L. Oliveira, J. Laporta, K.C. Jeong.

Tracing the source and route of uterine colonization in dairy cows. Poster Presentation. 2021 Conference of Research Workers in Animal Diseases. K. Jones, **F. Cunha,** S.J. Jeon, J. Pérez-Báez, S. Casaro, P. Fan, T. Liu, S. Lee, K.C. Jeong, Y. Yang, K.N. Galvão.

Fusobacterium is key to alter uterine microbiota structure and function in metritic cows. Conference Paper. 2021 Conference of Research Workers in Animal Diseases. S.J. Jeon, **F. Cunha,** K.N. Galvao.

Metagenomics-guided isolation and virulence testing of pathogens associated with metritis in dairy cows. 2021 Animal Molecular and Cellular Biology seminar series. **F. Cunha**

Using chitosan microparticles to treat metritis in lactating dairy cows. Conference Paper. 2019 ADSA Annual Meeting. E. de Oliveira, **F. Cunha**, R. Daetz, R. Chebel, C. Risco, J. Santos, K. Jeong, and K. Galvão

Isolation and quantification of Helcococcus ovis associated with metritis in dairy cows. Poster Presentation. 2017 Florida Veterinary Scholars Program Conference. **F. Cunha**, Soo Jin Jeon, Kwang C. Jeong, and Klibs N. Galvão.

Droplet digital PCR quantification of uterine bacteria associated with metritis in lactating dairy cows. Conference Paper. 2016 UFCVM Research and PHI ZETA Conference. **F. Cunha**, Soo Jin Jeon, Anthony F. Barbet, Kwang C. Jeong, Carlos A. Risco, and Klibs N. Galvão.

Use of avian antibodies against lipopolysaccharides to improve gastrointestinal function in early lactation Dairy cows. Conference Paper. 2014 ADSA-ASAS-CSAS Joint Annual Meeting. L. Ibarbia, **F. Cunha**, K. N. Galvão, N. Dilorenzo.

INVITED LECTURES

The uterine microbiome and the development of reproductive diseases in dairy cows. Applied microbiome in dairy bovines 2021. Facultad de Veterinaria UDELAR. Montevideo, Uruguay.

Saltwater Crocodiles: novel conservation approaches. SeaVet Clinical Training 2018. University of Florida College of Veterinary Medicine. Gainesville, Forida, USA.