

Dr. Erika Ganda
Curriculum Vitae

Updated: December 5, 2020

The Pennsylvania State University
AG - Animal Science
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Education

Postdoctoral Training, Cornell University, College of Agriculture and Life Sciences, Ithaca, NY, USA, 2019.

Major: Food Science

Supporting Areas of Emphasis: Molecular Methods in Food Safety and Quality

Ph D, Cornell University, CALS - College of Agriculture and Life Sciences, Ithaca, NY, USA, 2017.

Major: Animal Science

Supporting Areas of Emphasis: Epidemiology and Microbiology

BS, UFG - Universidade Federal de Goias, College of Veterinary Medicine, Goiania, GO, Brazil, 2012.

Major: Veterinary Medicine

Supporting Areas of Emphasis: Dairy Science

BBA, University of North of Parana, Londrina, Parana, Brazil, 2011.

Major: Business Administration

Professional Positions

Academic

Postdoctoral Associate, Cornell University. (May 2017 - June 2019).

Worked with sequencing technologies for anomaly detection in the food supply chain

PhD Student, Cornell University. (August 2013 - May 2017).

Focused on understanding the role of the microbiome in health and disease and possible ways of manipulating the microbiome to improve productivity and disease prevention.

Developed a chromogenic on-farm culture system for identification of mastitis pathogens

Determined the longitudinal microbial profile of naturally infected mastitic animals and treatment with a third-generation cephalosporin

Surveyed the dynamics of milk microbiome during an experimental challenge and treatment of mastitis with *E. coli*.

Visiting Student, University of Florida. (September 2011 - January 2012).

Assisted on large experimental studies, spent 4 months helping with sample collection and other activities in the laboratory. Wrote and presented a report on the experience acquired as a requirement for completion of Veterinary Degree.

Professional

Research Assistant, Cornell University. (August 2012 - August 2013).

Participated in numerous studies in collaboration with graduate students, was involved in sampling, data collection and laboratory assays, which resulted in several co-authorships of research articles

Professional Memberships

American Society for Microbiology. (2019 - Present).

Multistate research project on Antimicrobial Resistance (NC1206). (2019 - Present).

Penn State Center for Infectious Disease Dynamics. (2019 - Present).

Penn State Microbiome Center. (2019 - Present).

Pennsylvania Consortium for Antimicrobial Stewardship (PCAS). (2019 - Present).

American Dairy Science Association. (2017 - Present).

Consortium for Sequencing the Food Supply Chain. (2017 - Present).

National Mastitis Council. (2016 - Present).

American Association of Bovine Practitioners. (2015 - Present).

Awards and Honors

Harbaugh Faculty Scholars, College of Agricultural Sciences. (2020).

TEACHING

Teaching Experience

Penn State

ANSC 497, Animal Microbiomes, 1 course

Developed new course to expose undergraduate and graduate students to the field of microbiome science, and how it relates to animals. This course provides students with a broad understanding of animal microbiomes, the techniques used to study this new and exciting field, and the potential applications of microbiome science for animal health and productivity.

MCIBS 591, Ethics Rigor Reproducibility, 1 course

PHSIO 600, Thesis Research, 1 course

Non-Credit Instruction

Guest Lecture, On-Line, SOILS 071 - Environmental Sustainability - Animal Associated Microbiomes, Internal to Penn State. Fall (October 19, 2020).

Guest Lecture, Classroom, ANSC 150 S: Animal Science Freshman Seminar. Faculty Research Presentation., Internal to Penn State. Fall (October 5, 2020).

Guest Lecture, On-Line, ANSC 201 H - Animal Science Honors - Animal Microbiomes - Tales on how bacteria allow animals to digest fiber, demarcate territory, and glow in the dark!, Penn State, Internal to Penn State, Academic. Fall (September 21, 2020).

Guest Lecture, On-Line, ANSC 300 - Integrated Animal Biology - Lecture on Animal Microbiomes, University Park, 91 participants, Internal to Penn State, Academic. Spring (April 7, 2020).

Guest Lecture, Classroom, ANSC 201 H - Animal Science Honors - Animal Microbiomes - Tales on how bacteria allow animals to digest fiber, demarcate territory, and glow in the dark!, Internal to Penn State. Spring (February 3, 2020).

Seminar, Nutritional Sciences Colloquium - Leveraging sequencing technologies in agriculture: The power of Microbiome Research from Animal Health to Food Safety, Penn State HHD, Internal to Penn State, Academic. Spring (January 27, 2020).

Seminar, Center for Infectious Disease Dynamics - Food Animal Microbiomes - Using Sequencing Technologies to Provide Solutions for the Agricultural Industry, Penn State Huck, Academic. Fall (December 9, 2019).

Seminar, Penn State Hershey Research Core Facilities Symposium 2019 - Food Animal Microbiomes: Using Sequencing Technologies to Provide Solutions for the Agricultural Industry, Internal to Penn State, Academic. Fall (December 6, 2019).

Guest Lecture, Classroom, ANSC 201 H - Animal Science Honors - Animal Microbiomes - Tales on how bacteria allow animals to digest fiber, demarcate territory, and glow in the dark!, Internal to Penn State, Academic. Fall (December 3, 2019).

Seminar, Department of Food Science Seminar - Using sequencing technologies to provide solutions to the agricultural industry: Investigating the microbiome in dairy production systems and taking food safety to the next frontier., Penn State, Internal to Penn State, Academic. Fall (November 14, 2019).

Guest Lecture, Classroom, FDSC 1500 - Food Choices and Issues. The gut microbiome: What is it and how does diet affect it?, Cornell University, Ithaca, NY, USA, External to Penn State, Academic. Fall (November 11, 2019).

Seminar, Noll Seminar Series - Using sequencing technologies to provide solutions to the agricultural industry: Investigating the microbiome in dairy production systems and taking food safety to the next frontier, Department of Kinesiology, Internal to Penn State, Academic. Fall (October 11, 2019).

Guest Lecture, Classroom, PPEM 456 - From the Tame to the Wild - Animal Associated Microbiomes, Internal to Penn State. Fall (October 10, 2019).

Directed Student Learning

Postdoctoral Training

Asha Miles, Postdoctoral Mentorship (January 2020 - Present).

Ph.D.

Emily Bean, Penn State, Ph.D. Dissertation Committee Chair (August 2019 - Present).

Natalia Carrillo Gaeta, University of São Paulo, Doctoral Candidacy Committee Member (August 2019 - Present).

Sreenidhi Srinivasan, Penn State, Ph.D. Dissertation Committee Member (November 2019 - February 2020).

Faris Almutiri, Penn State, Ph.D. Dissertation Committee Member (November 2019 - Present).

M.S.

Alyssa Lyons, Penn State, Master's Thesis Committee Member (August 2020 - Present).

Supervised Research

Sophia Kenney, Penn State, Supervised Research (November 2020 - December 2020).

RESEARCH

Intellectual Contributions

Articles Published in Refereed Journals

Gaeta, N. C., Bean, E., Miles, A. M., Carvalho, D. U., Alemán, M. A., Carvalho, J. S., Gregory, L., & Ganda, E. (Author) (2020). A Cross-Sectional Study of Dairy Cattle Metagenomes Reveals Increased Antimicrobial Resistance in Animals Farmed in a Heavy Metal Contaminated Environment. *Frontiers in Microbiology*, 11.

Barden, M., Richards-Rios, P., Ganda, E. (Author), Lenzi, L., Eccles, R., Neary, J., Oultram, J., & Oikonomou, G. (2020). Maternal influences on oral and faecal microbiota maturation in neonatal calves in beef and dairy production systems. *Animal Microbiome*, 2(1).

Weller, D., Brassill, N., Rock, C., Ivanek, R., Mudrak, E., Roof, S., Ganda, E. (Author), & Wiedmann, M. (2020). Complex Interactions Between Weather, and Microbial and Physicochemical Water Quality Impact the Likelihood of Detecting Foodborne Pathogens in Agricultural Water. *Frontiers in Microbiology*, 11.

Vasquez, A. K., Ganda, E. (Author), Capel, M. B., Eicker, S., Virkler, P. D., Bicalho, R. C., & Nydam, D. V. (2019). The microbiome of Escherichia coli and culture-negative nonsevere clinical mastitis: Characterization and associations with linear score and milk production. *Journal of Dairy Science*, 102(1), 578-594.

Zinicola, M., Korzec, H., Teixeira, A. G.V., Ganda, E. (Author), Bringhenti, L., Tomazi, A. C.C.H., Gilbert, R. O., & Bicalho, R. C. (2018). Effects of pegbovigrastim administration on periparturient diseases, milk production, and reproductive performance of Holstein cows. *Journal of Dairy Science*, 101(12), 11199-11217.

Ganda, E. (Author), Gaeta, N., Sipka, A., Pomeroy, B., Oikonomou, G., Schukken, Y. H., & Bicalho, R. C. (2017). Normal milk microbiome is reestablished following experimental infection with Escherichia coli independent of intramammary antibiotic treatment with a third-generation cephalosporin in bovines. *Microbiome*, 5(1), 74.

Lima, S. F., Teixeira, A. G.V., Lima, F. S., Ganda, E. (Author), Higgins, C. H., Oikonomou, G., & Bicalho, R. C. (2017). The bovine colostrum microbiome and its association with clinical mastitis. *Journal of Dairy Science*, 100(4), 3031-3042.

Oultram, J. W.H., Ganda, E. (Author), Boulding, S. C., Bicalho, R. C., & Oikonomou, G. (2017). A metataxonomic approach could be considered for cattle clinical mastitis diagnostics. *Frontiers in Veterinary Science*, 4(MAR).

Gaeta, N. C., Lima, S. F., Teixeira, A. G., Ganda, E. (Author), Oikonomou, G., Gregory, L., & Bicalho, R. C. (2017). Deciphering upper respiratory tract microbiota complexity in healthy calves and calves that develop respiratory disease using shotgun metagenomics. *Journal of Dairy Science*, 100(2), 1445-1458.

- Ganda, E. (Author), Bisinotto, R. S., Lima, S. F., Kronauer, K., Decter, D. H., Oikonomou, G., Schukken, Y. H., & Bicalho, R. C. (2016). Longitudinal metagenomic profiling of bovine milk to assess the impact of intramammary treatment using a third-generation cephalosporin. *Scientific Reports*, 6.
- Ganda, E. (Author), Bisinotto, R. S., Vasquez, A. K., Teixeira, A. G.V., Machado, V. S., Foditsch, C., Bicalho, M., Lima, F. S., Stephens, L., Gomes, M. S., Dias, J. M., & Bicalho, R. C. (2016). Effects of injectable trace mineral supplementation in lactating dairy cows with elevated somatic cell counts. *Journal of Dairy Science*, 99(9), 7319-7329.
- Ganda, E. (Author), Bisinotto, R. S., Decter, D. H., & Bicalho, R. C. (2016). Evaluation of an on-farm culture system (Accumast) for fast identification of milk pathogens associated with clinical mastitis in dairy cows. *PLoS ONE*, 11(5).
- Bicalho, M. L.S., Lima, F. S., Machado, V. S., Meira, E. B., Ganda, E. (Author), Foditsch, C., Bicalho, R. C., & Gilbert, R. O. (2016). Associations among Trueperella pyogenes, endometritis diagnosis, and pregnancy outcomes in dairy cows. *Theriogenology*, 85(2), 267-274.
- Foditsch, C., Oikonomou, G., Machado, V. S., Bicalho, M. L., Ganda, E. (Author), Lima, S. F., Rossi, R., Ribeiro, B. L., Kussler, A., & Bicalho, R. C. (2016). Lameness prevalence and risk factors in large dairy farms in upstate New York. Model development for the prediction of claw horn disruption lesions. *PLoS ONE*, 11(1).
- Foditsch, C., Van Vleck Pereira, R., Ganda, E. (Author), Gomez, M. S., Marques, E. C., Santin, T., & Bicalho, R. C. (2015). Oral administration of Faecalibacterium prausnitzii decreased the incidence of severe diarrhea and related mortality rate and increased weight gain in preweaned dairy heifers. *PLoS ONE*, 10(12).
- Lima, F. S., Oikonomou, G., Lima, S. F., Bicalho, M. L.S., Ganda, E. (Author), de Oliveira Filho, J. C., Lorenzo, G., Trojancanec, P., & Bicalho, R. C. (2015). Prepartum and postpartum rumen fluid microbiomes: Characterization and correlation with production traits in dairy cows. *Applied and Environmental Microbiology*, 81(4), 1327-1337.
- Machado, V. S., Oikonomou, G., Ganda, E. (Author), Stephens, L., Milhomem, M., Freitas, G. L., Zinicola, M., Pearson, J., Wieland, M., Guard, C., Gilbert, R. O., & Bicalho, R. C. (2015). The effect of intrauterine infusion of dextrose on clinical endometritis cure rate and reproductive performance of dairy cows. *Journal of Dairy Science*, 98(6), 3849-3858.
- Machado, V. S., De Souza Bicalho, M. L., De Souza Meira, E. B., Rossi, R., Ribeiro, B. L., Lima, S., Santos, T., Kussler, A., Foditsch, C., Ganda, E. (Author), Oikonomou, G., Cheong, S. H., Gilbert, R. O., & Bicalho, R. C. (2014). Subcutaneous immunization with inactivated bacterial components and purified protein of Escherichia coli, Fusobacterium necrophorum and Trueperella pyogenes prevents puerperal metritis in holstein dairy cows. *PLoS ONE*, 9(3).
- Oikonomou, G., Trojancanec, P., Ganda, E. (Author), Bicalho, M. L.S., & Bicalho, R. C. (2014). Association of digital cushion thickness with sole temperature measured with the use of infrared thermography. *Journal of Dairy Science*, 97(7), 4208-4215.
- Bicalho, M. L.S., Lima, F. S., Ganda, E. (Author), Foditsch, C., Meira, E. B.S., Machado, V. S., Teixeira, A. G.V., Oikonomou, G., Gilbert, R. O., & Bicalho, R. C. (2014). Effect of trace mineral supplementation on selected minerals, energy metabolites, oxidative stress, and immune parameters and its association with uterine diseases in dairy cattle. *Journal of Dairy Science*, 97(7), 4281-4295.

Preprint, bioRxiv

Ganda, E. (Author), Beck, K. L., Haiminen, N., Kawas, B., Cronk, B., Anderson, R. R., Goodman, L. B., & Wiedmann, M. DNA extraction and host depletion methods significantly impact and potentially bias bacterial detection in a biological fluid. Cold Spring Harbor Laboratory.

Note, Journal

Oikonomou, G., Boulding, S., Ganda, E. (Author), & Bicalho, R. C. (2015). The use of next generation sequencing of the 16s rRNA gene in dairy cattle mastitis diagnostics. *Cattle Practice*, 23(2), 206.

Research Reports to Sponsor

Ganda, E., *Animal Microbiomes in a One-Health Perspective: Leveraging technology to work towards sustainable and safe production of animal-based foods*. Progress Report, NIFA - Hatch - PEN04752 - 1023328. (October 2020).

Ganda, E., *Antimicrobial Resistance*. Progress Report, NIFA - Multistate NC1206 - PEN04731 - 1022444. (October 2020).

Editorial and Advisory Boards

Frontiers in Animal Science, Editorial Board. (2020 - Present).

Guest Editor: Animals Special Issue, Editor. (2020 - Present).

Peer Reviewer of Grant Proposals.

USDA NIFA, Panel Member. (October 2020).
Panel member, assigned reviewer of 11 proposals.

FFAR, Reviewer. (July 2020).
Reviewed 4 proposals.

USDA NIFA, Panel Member. (July 2020).
Panel member, assigned reviewer of 16 proposals.

USDA NIFA, Panel Member. (November 2019).
Panel member, assigned reviewer of 15 proposals.

Peer Reviewer of Manuscripts.

Journal of Dairy Science, Reviewer. (2020). 3 reviews.

Research in Veterinary Science, Reviewer. (2020). 1 review.

Scientific Reports. (2020). 2 reviews.

Journal of Animal Breeding and Genetics, Reviewer. (2019). 1 review.

Journal of Dairy Science, Reviewer. (2019). 1 review.

Microbiome, Reviewer. (2019). 1 review.

Scientific Reports, Reviewer. (2019). 2 reviews.

Frontiers in Microbiology, Reviewer. (2018). 1 review.

Journal of Dairy Science, Reviewer. (2017). 1 review.

Presentations Given

Ganda, E. (October 2020). "Food Animal Microbiomes: Using Sequencing Technologies to Provide Solutions for the Agricultural Industry," ICDS Industry Symposium, Penn State Institute for Computational and Data Sciences.

Ganda, E. (October 2020). "Milk Microbiomes throughout the Dairy Value Chain: Implications on Food Safety," IAFP 2020, A Virtual Annual Meeting, International Association for Food Protection, Invited. International.

Ganda, E. (October 2019). "Using sequencing technologies to provide solutions to the agricultural industry: Investigating the microbiome in dairy production systems, from animal health to food safety," NY Department of Agriculture and Markets, Division of Food Laboratory, Albany, NY, USA. Regional.

Ganda, E. (September 2019). "NGS Technologies in Agriculture and Food Production," Consortium for Sequencing the Food Supply Chain Annual Symposium, IBM, San Jose, CA, USA, 30 in attendance, Invited. National.

Ganda, E. (August 2019). "Applying NGS Technologies In Animal-Based Agriculture and Food Production – an Introduction to the Microbiome Center," Penn State Microbiome Center, University Park, PA, USA. Local.

Contracts, Grants, and Sponsored Research

Grant

Ganda, E. (Principal Investigator), Grant, 100% credit, "A Systems Approach to Improve Quality of Shelf Life of Organic Dairy Products for Domestic and Export Markets," Cornell University, Universities and Colleges. Total requested: \$120,000.00. (submitted: April 2019, awarded: June 2020).

Ganda, E. (Principal Investigator), Grant, 100% credit, "Developing a microbiome-driven precision ag initiative.," College of Agricultural Sciences, Penn State. Total requested: \$10,000.00. (submitted: September 30, 2020, date funding awarded: November 2020).

Ganda, E., 100% credit, "Gift to Support Research," Millenkamp Cattle LLC, Private. Total requested: \$26,000.00. (submitted and awarded in 2019).

Other

Ganda, E. (Principal Investigator), Kovac, J., 50% credit, "Real-time and comprehensive antimicrobial resistance profiling," HUCK Institutes for the Life Sciences - HITS, Penn State. Total requested: \$194,192.00. (submitted: November 15, 2020).

Ganda, E. (Principal Investigator), 50% credit, "Development and application of a comprehensive and cost-effective antimicrobial resistance gene profiling method," National Institutes of Health, Federal Agencies. Total requested: \$395,439.00. (submitted: October 15, 2020).

Ganda, E. (Co-Investigator), 40% credit, "Dynamics of the Respiratory Resistome in the Pre-and Postweaning Dairy Calf," COP: Department of Agriculture, Commonwealth of Pennsylvania. Total requested: \$22,080.00. (submitted: September 14, 2020).

Ganda, E. (Principal Investigator), 50% credit, "Early life cross-bred calf gut microbiota & impact on production traits," USDA National Institute of Food and Agriculture, Federal Agencies. Total requested: \$165,000.00. (submitted: August 12, 2020).

Ganda, E. (Co-Investigator), 30% credit, "Comparison of a Conventional Antibiotic and Non-Antibiotic Treatment on Fertility and Microbiome in Dairy Cows Diagnosed with Clinical Metritis," USDA National Institute of Food and Agriculture, Federal Agencies. Total requested: \$496,154.00. (submitted: April 30, 2020).

Development Activities Attended

"Frontiers Editors' Summit," Frontiers Publishing, Frontiers Publishing, 2 credit hours. University Park, Pennsylvania, United States. (December 2, 2020).

"AI Immersion," Institute for Computational and Data Sciences, Nittany AI Alliance and Penn State IT, 2 credit hours. University Park, PA, USA. (November 14, 2020).

"Community Ecology," Francisco Dini Andreote, Penn State, ECLGY 597, Section 001, 12 credit hours. University Park, PA, USA. (August 25, 2020 - November 10, 2020).

"Utilizing Metatranscriptomic Analysis to Better Understand Changes in the Gut Microbiome," Dr. Robert Nichols, Penn State Microbiome Center, 2 credit hours. University Park, Pennsylvania, United States. (November 6, 2020).

"NARMS Public Meeting," CDC FDA USDA, FDA. University Park, PA, United States. (October 13, 2020 - October 14, 2020).

"Pennsylvania Poultry Sales and Service Conference," The Pennsylvania State University. University Park, PA, United States. (September 15, 2020 - September 16, 2020).

"How to be your own best mentor," Carolee Bull, The Pennsylvania State University, 4 credit hours. University Park, PA, United States. (August 24, 2020).

"Functional basis of microb[iom]e annotation, theory to practice," Yana Bromberg and Chengsheng Zhu, Penn State Microbiome Center, 8 credit hours. University Park, Pennsylvania, United States. (March 5, 2020 - March 6, 2020).

"CATS IACUC Researcher Training," IACUC. (2019).

"Biosensing Workshop." (December 10, 2019).

"One Health Workshop." (December 9, 2019).

"QIIME Workshop," James Morton, Penn State Microbiome Center, 3 credit hours. University Park, Pennsylvania, United States. (October 25, 2019).

"Inclusive Mentoring Workshop." (October 15, 2019).

"Digital Fluency Symposium: The Future of Teaching, Learning and Research in a Digital World," a seed grant provided by the College of Agricultural Sciences and in partnership with Teaching and Learning with Technology and the Donald P. Bellisario College of Communications., Penn State University, Erika Ganda. University Park, PA, USA. (October 2, 2019).

"New Faculty Briefing with Grants and Contracts." (September 2019).

"Introduction to Python and Jupyter." (September 24, 2019).

"New User Training for ICS-ACI." (September 16, 2019).

"Crucial Conversations," Carolee Bull. State College, PA, USA. (August 2019).

"Principal Investigator Orientation - EH&S," Alissa Hanshew, Penn State, 2 credit hours. University Park, Pennsylvania, United States. (August 21, 2019).

"Compositional Data Analysis Methods," Penn State, 20th Annual Conference of the International Association for Mathematical Geosciences, 4 credit hours. State College, Pennsylvania, United States. (August 10, 2019 - August 16, 2019).

SERVICE

Service to the University

Campus

Committee Work

Integrative and Biomedical Physiology Steering Committee, Member. (August 2019 - Present).

Contribution to Programs to Enhance Equal Opportunity/Cultural Diversity

Faculty Mentor. (October 2019).
Participation in STEM Open House - Recruitment of minority students for the IGDP in Integrative and Biomedical Physiology

Participation in Recruitment and Retention Activities

Microbiome Center Kickstart, Member. (August 2020).
Participated as a faculty assistant in the week-long activities.

Department

Peer Evaluator

Peer Evaluator for ANSC 301. (2019).

Service to the Disciplines and to the Profession

External Evaluator - Appointment procedure for filling a W2 professorship

University of Bonn, Faculty. Bonn Germany. (January 9, 2020).
Acted as external evaluator for the appointment procedure for filling a W2 professorship -
Dr. Ricarda Schmithausen.