CURRICULUM VITAE

Samodha Charaka Fernando

OFFICE ADDRESS

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EDUCATION

2008 – 2011 - Postdoctoral Associate, Massachusetts Institute of Technology, Cambridge, MA Host microbe interactions

Ph.D. 2008 - Oklahoma State University, Stillwater, OK: Animal Nutrition/Microbial Genomics, Ph.D. Advisor: Udaya DeSilva, Dissertation: Meta-functional genomics of the rumen microbiome

M.S. 2004 - Oklahoma State University, Stillwater, OK: Animal Science/ Reproductive Physiology, M.S. Advisor: Udaya DeSilva, Dissertation: Isolation, Characterization, Mapping, and Expression analysis of Porcine Tissue Kallikreins

B.S. 2002 – University of Kelaniya, Sri Lanka: Major Microbiology

RESEARCH EXPERIENCE

Professor, Nutritional Biochemistry, July 2021 – Present; University of Nebraska, Lincoln, NE
Associate Professor, Nutritional Biochemistry, July 2017 – June 2021; University of Nebraska, Lincoln, NE
Assistant Professor, Nutritional Biochemistry, April 2011 – June 2017; University of Nebraska, Lincoln, NE

Courtesy appointments: School of Biological Sciences (Jan 2013 – present) and Food Science and Technology (July 2011 – present); University of Nebraska, Lincoln, NE

Postdoctoral Associate, June, 2008 – March, 2011; Massachusetts Institute of Technology, Cambridge, MA. Postdoctoral Mentor: Janelle R. Thompson.

Graduate Research Assistant, 2002 – 2008; Graduate Research Assistant, Oklahoma State University, Stillwater, OK. Graduate Assistant Mentor: Udaya DeSilva

RESEARCH INTERESTS

I study how gut microbial structure-function relationships affect animal and human nutrition and health. To this end, I study the microbial community as a system, rather than independent genes, using community level metabolic networks to understand system-wide microbial activities, and their impact on their host. Current projects include investigating microbial species composition and activity in the ruminant animal under different dietary conditions to determine how dietary intervention can be used to reduce methane emission in cattle, determining how interactions with microbes controls the balance between shedding and non-shedding phenotypes within the fecal microbiota of cattle to determine the ecological significance and flow of bacterial virulence factors and toxins within the gut

ecosystem, uncovering and understanding the ecological role of viruses within ruminant and non-ruminant livestock, identifying the ecology and emergence of antimicrobial gene reservoirs in livestock species, developing microbial isolate libraries from livestock gut microbiomes and performing functional screening to identify novel direct fed microbials as alternatives to antibiotics and to increase animal health and performance, use bioinformatic genome-centric bioinformatic approaches to understand structure-function relationships in gut microbiomes, and developing a cecum cannulated human gut microbiota associated pig model by inter-species transplantation of gut microbiota from humans to pigs to understand the effect of microbial activity on host function. Our approach is multidisciplinary- molecular (sequencing, single cell genomics, stable isotope probing (SIP), and computational (genomics, transcriptomics, phylogenetics, genome binning). Understanding how microbial populations interact to mediate activities such as virulence, nutrition, health and biogeochemical cycling will improve our ability to model the activities of microbes in the gut environment, monitor their impact on human and animal health, and to develop and design strategies to increase animal performance, well-being and health. To this end, I am interested in:

- Understanding the role of the microbial food chain in methanogenesis and metabolic disorders in ruminants

Among the major sources of methane production, ruminants account for a considerable fraction of the anthropogenic methane produced, where, enteric fermentation by ruminants is considered the single largest source of methane production worldwide. At the heart of anaerobic methane production in ruminants is a microbial food chain. The microscale processes of this microbial food chain are greatly influenced by diet. However, the interactions between diet, microbial community composition, and methane emission are poorly understood. Consequently, we are interested in understanding the interactions between diet, gut microbiota composition and methane emission, to develop science-based dietary intervention strategies to reduce greenhouse gas emission from cattle in intensive and extensive production systems. In addition, we are utilizing culture independent DNA based molecular approaches to understand rumen microbial ecology and structure function relationships.

- Uncovering the gut virome in ruminants and non-ruminants

Viruses are the most numerous biological entities on the planet, yet little is known about their impact on community structuring due to their size, rapid evolution, and the fact that the majority cannot be cultured. The role of viruses in structuring microbial communities has been described using the kill the winner theory, constant diversity dynamics, and periodic selection using simulations. Yet, how viruses' structure bacterial communities in the gut and what role they play in ecosystem efficiency is poorly understood. With contemporary metagenomic approaches the study of viral properties is now a possibility, which has helped in determining the influence of viral populations on complex environments such as the gut microbiome. We are using molecular approaches to better understand the role and functional relationships of viruses, in particular, how prophages influence rumen bacterial communities and ecosystem function, and are testing ecological theories within the gut to predict ecosystem efficiency.

- Developing new animal models to study structure-function relationships in the human microbiome

Recent studies have demonstrated that the human microbiome to play an important role in human health and it has been implicated in conditions such as obesity, inflammatory bowel

disease, diabetes, metabolic syndrome, and autism. The population structural shifts of the gut microbial community in obesity and other diseases are well characterized. Although these studies have helped us understand changes in microbial community structure and the metabolic potential in disease, these studies have failed to illuminate the signals of the gut microbiome that ameliorate the disease phenotype. Partly, this is due to the lack of a good model system that allows meta-transcriptomic analysis and metabolomic analysis of the human microbiome over time at the site of action. We are interested in studying microbial regulation of host genes by developing a novel cecum cannulated human microbiota associated pig model, and evaluating the gut microbial community dynamics, microbial gene expression, and microbial fermentation end products at the molecular and physiological levels in combination with host gene expression to better understand the workings of the human microbiome through meta-transcriptomic analysis.

- Increasing feed efficiency in beef cattle by understanding the interactions between host genotype and rumen microbiome

Complex and diverse microbial communities facilitate the degradation of nutrients within ruminants. The structure of this complex microbial community is shaped by the highly dynamic physical, chemical, and predacious conditions within the rumen, and potentially by genetic factors of the host. In turn, the microbial community controls the environmental conditions within the rumen and the nutrient availability to the host. In light of recent host-microbial studies, a consensus is evolving that species composition of the gastrointestinal microbiota is a polygenic trait governed by interactions between host genetic factors and the environment. To this end, I am collaborating with scientists at US Meat Animal Research Center (USMARC) to improve the efficiency in beef cattle by investigating the interaction between host genetics and rumen microbiota function. We are using a large beef cattle population to phenotype feed efficiency, average daily gain, intake, rumen microbiome composition, rumen functional pangenome and performing genome-wide associations on animals imputed to 770K SNP genotypes to develop a subset of SNPs that can be used for QTL detection.

- Understanding the ecology and emergence of antimicrobial resistance (AMR) and developing direct-fed microbials as alternatives to antibiotics in beef cattle

Many studies have investigated AMR genes in the beef cattle production system. However, these studies have yielded limited success in identifying the antimicrobial gene reservoirs and its ecology, as these studies have failed to investigate the largest reservoir of AMR genes, the plasmidome, virome and other mobile genetic elements which are “hotspots” for “horizontal gene transfer events” and AMR genes. In collaboration with scientists at USMARC, we are investigating the largest reservoir of AMR genes, the plasmidome, virome and other mobile genetic elements, which are referred to as the “mobilome” in beef cattle. To this end, we have developed a novel high throughput sequence-based approach to understand the ecology and evolutionary history of AMR genes and developed novel methods to investigate the rumen viromes and plasmidome. We are also developing novel direct-fed microbials (DFMs) as alternatives to antibiotics.

POSTDOCTORAL TRAINING AS ADVISOR

1) Christopher Anderson 12/01/18 – 04/30/2019

1) Henry Paz 10/01/14 – 02/28/2018

2) Sanjay Anthony Babu 04/01/15 – 12/31/2016

GRADUATE AND UNDERGRADUATE STUDENT TRAINING AS ADVISOR

Graduate Student	Previous Degree	Degree Objective	Graduation/Expected

1) Nirosh Aluthge BS- Univ Keleniya MS December 2014
Thesis Topic – Microbial community changes in Shiga Toxin producing E. coli High and Low shedding animals. Currently pursuing a Ph.D. with me

2) Anna Pesta MS- Univ.Nebraska Ph.D. August 2015
Thesis Topic – Dietary intervention to reduce methane emission in cattle. Currently working as an Equine Nutritionist

3) Christopher Anderson BS- Wesleyan Univ. Ph.D. December 2018
Thesis Topic – Diversity, dynamics and drivers of the rumen microbial ecosystem.

4) Allison Knoell BS- Univ. Nebraska MS May 2016
Thesis Topic – Effect of Diet on the Rumen Microbial Community Composition of Growing Cattle and the Role It Plays in Methane Emissions. Currently pursuing a Ph.D. with me

5) Nirosh Aluthge MS- Univ. Nebraska Ph.D. Spring 2021
Thesis Topic – Cannulated pig model for human microbiome research

6) Wesley Tom BS- Univ. Nebraska Ph.D. December 2021
Thesis Topic – Antimicrobial resistance in beef cattle.

7) Allison Knoell MS- Univ. Nebraska Ph.D. Spring 2021
Thesis Topic – Host Genotype microbiota interactions.

8) Waseem Abbas MS- Univ. of Ag Fisalabad Ph.D. Spring 2021
Thesis Topic – Rumen ecology and liver abscesses.

9) Esther Perisho BS- Univ. of MS Fall 2020
Thesis Topic – Microbial populations and antibiotic resistance in the Platte river.

10) Ema Graham BS- Univ. of New Haven Ph.D. Fall 2022
Thesis Topic – Human viromes for forensic applications.

11) Alison Bartenslager BS- Univ. of Nebraska MS Spring 2020
Thesis Topic – Bovine ocular disease and developing probiotics against liver abscesses.

12) Katherine Connell BS- Univ. of Nebraska MS Spring 2021
Thesis Topic – Developing novel probiotics for swine.

13) Alison Bartenslager MS- Univ. of Nebraska Ph.D. Spring 2024
Thesis Topic – Understanding microbial ecology changes during pathogen colonization.

14) Paula Guastello MS- SDSU Ph.D. Spring 2024
Thesis Topic – Microbial populations and antibiotic resistance in the Platte river and identifying invasive species using eDNA .

15) Grace Watkins BS- Univ. of Nebraska Ph.D. Spring 2025
Thesis Topic – Human viromes for touch object identification.

16) Arena See BS- Univ. of Nebraska MS Spring 2022
Thesis Topic – Developing novel synbiotics for beef cattle as alternatives to antibiotics.

17) Carlos Riera-Ruiz BS- Univ. of Nebraska Ph.D. Spring 2026
Thesis Topic – Human viromes for touch object identification.

17) Siedu Adams BS- Univ. of Nebraska Ph.D. Fall 2026
Thesis Topic – Colonization history and its effect on microbiome establishment.

MS Committees Served/Serving: Chad Kenkins (2014), Nirosh Aluthge (2015), Melissa Jolly (2013), Gabriel Mastromano (2014), Erin McNamara (2015), Allison Knoell (2015), Regan Lee (2016), Chad Bower (2016), Olivia Drehmel (2016), Kelly Moore (2017), Thomas Winders (2017), Mitch Goedeken (2017), Robel Ghebrewold (2017), Shawna Clement (2017), Joshua Knapp (2021), Armando Lerma Fuentes (2020)

Ph.D. Committees Served/Serving: Erin Hinkle (2012), Hugo Ramirez (2013), Anna Pesta (2015), Andrea Watson (2015), Dana Hahn (2013), Maria Ximena Maldonado-Gómez (2016), Abdulrahman Abdulaziz, Christopher Anderson, Yanshuo (Sophi) Lee (2017), Mohamed Abedal-Majed (2017), Kevin Sargent (2016), Wesley Tom (2020), Waseem Abbas (2021), Allison Knoell(2020), Chad Bower (2019), Kenzi Clark (2020), Katherine Ivens (2020), Jared Judy (2018), Sarah Rooks (2021), Dana Van Sambeek (2019), Anna Rose Pilapil (2021), Joyce San Andres (2021), Rebecca Furbeck (2021), Joshua Knapp (2021)

UNDERGRADUATE and HIGH SCHOOL RESEARCH TRAINING AS ADVISOR

1) Christopher Johnson BS-Biology, 2013 UCARE Funding
– The Microbial Battle between Pathogens and the Healthy Microbial Community inside a Chicken's Stomach

2) Mary Klosterman BS-Biology, 2011-2015 UCARE Funding
– Phage Therapy to reduce STEC prevalence in cattle
Currently pursuing Ph.D at UT Southwestern

3) Shelby Gardine BS-Biology, 2014 USDA Funding
– Understanding Diet-microbial interactions
Currently pursuing a MS at UNL – Ruminant Nutrition

4) Andrea McCain BS-Animal Science, 2014 - present USDA Funding
– Understanding rumen microbial population dynamics in beef cattle
Currently pursuing a MS at UNL – Animal Science -Physiology

5) Makala Mueler BS-Animal Science, 2014 –present USDA & UCARE Funding
– Understanding rumen microbial population dynamics in dairy cattle
Currently attending Veterinary School at UNL

6) Morgan Keiser BS-Animal Science, 2014 –present UNL/USDA
– Developing a humanized pig model for human microbiome research
Currently working at Perrigo Animal Health

7) Shakira Kanaganiayagum High school, 2014 summer USDA Funding
– Understanding rumen microbial population dynamics in dairy cattle
Currently attending Goerge Mason University

8) Kyley Burkey High school, 2014 - 2016 USDA Funding
– Understanding rumen microbial population dynamics in dairy cattle
Currently attending University of Kansas

9) Micheala Kremer BS-Animal Science, 2015- 2016 USDA & UCARE
– Understanding the link between microbial population dynamics and reproductive efficiency

10) Sierra Rhodes BS-Animal Science, 2015- 2016 USDA Funding
– Acidosis
Currently at Vet School at Iowa State University

11) Chyanne Horn BS-Animal Science, 2015- 2016 NET Funding

– Microbial protein flow to the Small Intestines
Currently attending graduate School at SDSU (MS program)

12) Kelsey Sorensen BS-Animal Science, 2016 - 2018 NET Funding
– Rumen Ecology
Currently Employed at Zoetis

13) Alison Bartenslager BS-Animal Science, 2016 - 2018 NET & UCARE
– Alternatives to antibiotics
Currently attending graduate School at UNL Animal Science (MS program)

14) Erin Bluchner BS-Animal Science, 2016 - present NET Funding
– Alternatives to antibiotics

15) Taylor Stratman BS-Animal Science, 2017 - present NET Funding
– Alternatives to antibiotics

16) Mackenzie Stoholmann BS-Animal Science, 2018 - present NET Funding
– Alternatives to antibiotics

17) Audra Hessenflow BS-Biology, 2018 - present UCARE Funding
– Gene editing to develop an alternative to antibiotics

18) Lauren Ahlers BS-Animal Science, 2020 - present NET Funding
– Alternative to antibiotics

19) Tien Doan BS-Biology, 2018 - present NBC Funding
– Microbial ecology

18) Fiacre Kubwimana BS-Biochemistry, 2018 - present APHIS Funding
– Microbial ecology

RESEARCH TECHNICIANS

1) Christopher Anderson 11/01/11 - 07/31/2015
2) Andrea McCain 10/01/14 – 12/31/2015
3) Wesley Tom 11/01/14 – 08/01/2015
4) Sierra Rhodes 05/01/16 – 08/01/17

2014- 2015	Mentor, UNL Honors Thesis project
2006- 2007	Graduate mentor, Niblack Research Scholars Program
2005- 2007	Graduate student mentor, Howard-Hughes Medical Institute Undergraduate Education Program for Critical Thinking in Biological Sciences
2005- 2006	Graduate student mentor, Wnetz Research Program

TEACHING

Advanced Ruminant Nutrition (ASCI 922); Fall 2012 - Present, University of Nebraska, Lincoln, NE
Biochemistry of Nutrition (ASCI 949); Spring 2014 - Present, University of Nebraska, Lincoln, NE
Microbial Diversity (BIOS 421/821 and MBIO 421); Spring 2016, Spring 2018 – Guest Lecture, University of Nebraska, Lincoln, NE
Problems In Animal Science (ASCI 996) - *Approaches to investigate microbiomes;* Spring 2020 – Present, University of Nebraska, Lincoln, NE

Microbial Diversity (BIOS 421/821 and MBIO 421); Spring 2016, Spring 2018, Spring 2020, Spring 2022 – Guest Lecture, University of Nebraska, Lincoln, NE
Genome Analysis (ASCI 432/832); Spring 2016, Spring 2018, Spring 2020 – Guest Lecture, University of Nebraska, Lincoln, NE
Management of Aquatic Systems (NRES 965); Spring 2019 – Guest Lecture, University of Nebraska, Lincoln, NE
Veterinary Nutrition (VMED550); Fall 2016 – Guest Lecture, University of Nebraska, Lincoln, NE
Teaching Assistant, ANSI 3423 Animal Genetics (Fall); 2002 – 2007, Oklahoma State University, Stillwater, OK
Teaching Assistant, ANSI 4843 Applied Biotechniques in Animal Science (Spring); 2002 – 2007, Oklahoma State University, Stillwater, OK

TEACHING WORKSHOPS

Peer Review of Teaching Program – Fall 2013 – Spring 2014
In this year-long workshop, I developed a course and evaluated course objectives and student learning. As a result of this workshop, I developed an inquiry portfolio for the Biochemistry of Nutrition course.

Peer Interaction – Fall 2014
In this semester long workshop, I discussed how peer interaction improves student learning and how we can use peer interaction in our classrooms to increase student learning.

GRANTS Funded

Federal Grants Funded

- *Dept of Agriculture-AFRI, Climate Change and Variability, $749,941. (August 1, 2012 - July 31, 2017).* ***Fernando, S. (PI)****, Co-PIs - Erickson, G., Klopfenstein, T., Rasby, R., Luebbe, M., Jenkins, K., Title " Dietary intervention and microbial community analysis towards methane mitigation"*
- *Dept of Agriculture-NIFA, Sponsor – Sinte Gleska University (sub-contract), $61,736. (June 2, 2013 - August 31, 2014). Kelling, C., (PI),* ***Co-PIs - Fernando, S.****, Cortinas, M., Hardin, D., Randel, R., Rupp, G., Smith, D., Topliff, C., Title " Evidence-Based Strategies to Optimize Range Bison Herd Health and Well-Being" – Received 10% of total funds*
- *Dept of Agriculture-NIFA, Pre-doctoral fellowship $78,874. (October 1, 2015 – December 31st, 2018). Anderson C., (PI),* ***Co-PIs - Fernando, S.****, Title " Identifying ruminant methanogen populations and associated metabolic processes through single cell genomics, stable isotope probing, and viral-methanogen interactions" – Received 100% of total funds to my lab as my student received the fellowship*
- *National Department of Justice $698,382. (January 1, 2018 – December 31, 2019) Adamovicz, M. (PI),* ***Co-PI – Fernando, S.****, Clarke, J., Herr, J. Title "The Human virome as trace evidence in forensic investigation" – Received 60% of total funds*
- *Dept of Agriculture-AFRI, - Foundational Grant program, $499,999. (March 1, 2018 - December 31, 2021).* ***Fernando, S. (PI)****, Co-PIs - Spangler, M. Morota, G., Hales, K., Wells, J., Kuhen, L., "Moving beyond rumen microbiota composition to identify interactions between host genotype and rumen function towards identifying genetic markers and microbial functions that influence feed efficiency"*

- *Dept of Agriculture-AFRI, - Antimicrobial resistance, $830,751. (January 1, 2018 - December 31, 2021).* ***Fernando, S. (PI),*** *Co-PIs - M. Morota, G., Hales, K., Wells, J., Snow, D., Barltlet-Hunt, S., Mosser, T., Stowell, R., Schmit, A. Loy, J., "Investigating mobile genetic elements and resistance gene reservoirs towards understanding the emergence and ecology of antimicrobial resistance in beef cattle production systems"*
- *DHHS- National Institute of Drug Abuse, $3,029,162. (June 15, 2019 – February 29, 2024).* ***Multi-PI grant****, Charles Wood (Lead), Kirk Bombrowski,* ***Samodha Fernando,*** *Kathy Chiou, Roberto Abadie, Bilal Khan, John West, Devan Crawford., "Biomarkers for dysbiosis-related HIV-associated cognitive disorders among persons who inject drugs in Puerto Rico" – Received 15% of total funds*
- *National Department of Justice $447,423. (January 1, 2020 – December 31, 2021) Adamovicz, M. (PI),* ***Co-PI – Fernando, S.****, Clarke, J., Herr, J. Title "Application of the human virome to touch objects and hair shafts" – Received 60% of total funds*
- *Department of Agriculture – APHIS $230,153. (April 1, 2020 – March 31, 2021)* ***Fernando, S. (PI)****, Co-PI – Loy, D., and Pederson, J. Title "Sequence-based real-time identification of NAHLN scope viral diseases and emerging viral diseases using long read approaches"*
- *National Department of Justice $146,805. (January 1, 2020 – December 31, 2022) Graham, E. (PI) (PI),* ***Co-PI – Fernando, S.****, Adamovicz, M., Clarke, J., Herr, J. Title "Development of a Human Virome Based Microarray as a Forensic Tool" – Pre-doctoral Fellowship. – Received 100% of total funds to my lab as my student received the fellowship*
- *Dept of Agriculture-AFRI, $299,999. (May 15, 2020 - May 14, 2023). Mulliniks, T., (PI),* ***Co-PIs - Fernando, S.****, Stephenson, M., "Impact Of Milk Production On Cow-Calf Productivity, Grazing Behavior, And Profitability" – Received 10% of total funds*
- *Dept of Agriculture-AFRI, - Antimicrobial resistance, (subaward from Texas Tech University) $332,437 (Total award 1,000,000). (August 1, 2020 - July 30, 2025).* ***Fernando, S. (PI-UNL)****, Co-PIs - Schmit, A. "Investigating the Emergence and Ecology of Antimicrobial Resistance in High Risk Beef Cattle"*
- *Dept of Agriculture-AFRI, - $500,000 ((January 1, 2023 - December 31, 2026).* ***Fernando, S. (PI)****, Co-PIs - Wells, J. "Risks associated with genetically engineered microbes in beef cattle production: Evaluation of persistence, transmission and ecological consequences "*
- *Dept of Agriculture-AFRI, - $999,981 ((Aug1, 2023 - April 30, 2027).* ***Fernando, S. (PI)****, Co-PIs - Miller, P., Burkey, T., Schmit, A., Wells, J., Oliver, W. "Identifying AMR gene reservoirs and bacterial host-AMR gene associations to identify bacterial host range of AMR genes in swine production systems"*
- *Dept of Agriculture-AFRI, - $649,998 ((May 1, 2023 - April 30, 2027). Ciobanu, D (PI),* ***Co-PIs – Fernando, S.,*** *Loy, D., Katchman, S. "Understanding Host X Pathogen Associations In Swine Infectious Diseases"*
- *Dept of Agriculture-AFRI, - $5,000,000 ((May 1, 2023 - April 30, 2027). Kononoff, P (PI),* ***Co-PIs – Fernando, S.,*** *Spangler M., Erickson, G., Stowell, R., Watson, A., Sperberg, J., Barndel-Brown, T., "Understanding Host, Microbial, Environmental, and Management Factors Towards Methane Mitigation in Ruminants"* ***Have been informed that the grant was awarded.***

Non-Federal External Grants Funded

- *National Cattlemen's Beef Association, $25,900. (August 15, 2012 - May 31, 2013).* ***Fernando, S. (PI)****, Co-PIs - Erickson, G., Klopfenstein, T., Tile " Phage Therapy To Control E. Coli 0157 and Other Non-0157:H7 Shiga-toxin Producing E. Coli (STEC) In Beef Cattle"*
- *National Cattlemen's Beef Association $32,711. (August 15, 2012 - May 31, 2013).* ***Fernando, S. (PI)****, Co-PIs - Erickson, G., Klopfenstein, T., Smith, D. Title " A new approach to control E. coli 0157 and Other non-0157:H7 Shiga-toxin producing E. Coli (STEC) in beef cattle using natural bacterial competitors – Phase II*
- *Novus International $38,407. (July 1, 2013 - June 30, 2014), Kononoff, P. (PI).* ***Co-PIs - Fernando, S.****, "Evaluation of the Effects of Alimet on Microbial Protein Production in Lactating Dairy Cows with Different Levels of Rumen Degradable and Undegradable Protein". – Received 20% of total funds*
- *Nebraska Beef Council $44,000. (October 1, 2011 - September 30, 2012).* ***Fernando, S. (PI)****, Co-PIs - Erickson, G., Klopfenstein, T., "A new approach to control E. coli 0157 and Other non-0157:H7 Shiga-toxin producing E. Coli (STEC) in beef cattle using natural bacterial competitors".*
- *Nebraska Beef Council, $25,900. (October 1, 2012 - September 30, 2013).* ***Fernando, S. (PI)****, Co-PIs - Erickson, G., Klopfenstein, T., "Phage Therapy To Control E. Coli 0157 and Other Non-0157:H7 Shiga-toxin Producing E. Coli (STEC) In Beef Cattle"*
- *Nebraska Beef Council $32,711. (October 1, 2012 - September 30, 2013).* ***Fernando, S. (PI)****, Co-PIs - Erickson, G., Klopfenstein, T., Smith, D., "A new approach to control E. coli 0157 and Other non-0157:H7 Shiga-toxin producing E. Coli (STEC) in beef cattle using natural bacterial competitors – Phase II"*
- *National Pork Board, $30,318. (September 1, 2012 - August 31, 2013) Miller, P. (PI), Co-PIs - Fernando, S., Burkey, T., Ciobanu, D., "Development of a Nutrition x Health Interaction Model to Study Nursery Pig Performance". – Received 10% of total funds*
- *Nebraska Corn Board $42,277. (July 1, 2012 - June 30, 2013), Kononoff, P. (PI).* ***Co-PIs - Fernando, S.****, "Avoiding milk fat depression by feeding reduced fat DDGS (RFDDGS) to lactating dairy cows and understanding the associated rumen metagenome". – Received 30% of total funds*
- *Nebraska Center for Energy Sciences Research, $74,916. (January 1, 2013 – December 31 2013). Erickson, G. (PI),* ***Co-PIs – Fernando S****., "Developing a Breakthrough in Methane Production from Anaerobic Digestion of Open Lot Feedlot Manure". – Received 30% of total funds*
- *Nebraska Corn Board $41,349. (July 1, 2013 - June 30, 2014), Kononoff, P. (PI).* ***Co-PIs - Fernando, S.****, "Avoiding milk fat depression by feeding reduced fat DDGS (RFDDGS) to lactating dairy cows and understanding the associated rumen metagenome". – Received 30% of total funds*
- *Nebraska Beef Council $57,960. (October 1, 2013 - September 30, 2014).* ***Fernando, S. (PI)****, Co-PIs - Erickson, G., "A New Approach to Control Pathogenic Salmonella in Beef Cattle using Natural Bacterial Competitors".*
- *Nebraska Center for Energy Sciences Research, $74,916. (January 1, 2014 – December 31, 2014). Erickson, G. (PI),* ***Co-PIs – Fernando S.****, "Developing a Breakthrough in Methane Production from Anaerobic Digestion of Open Lot Feedlot Manure". – Received 30% of total funds*

- *Nebraska Beef Council $63,945. (October 1, 2014 - September 30, 2015).* ***Fernando, S. (PI)****, Co-PIs - Erickson, G., "A New Approach to Control Pathogenic Salmonella in Beef Cattle using Natural Bacterial Competitors – Phase II".*
- *National Pork Board, $32,000. (September 1, 2014 - August 31, 2015) Burkey, T. (PI),* ***Co-PIs - Fernando, S.****, Miller, P., Ciobanu, D., "Development of a Nutrition x Health Interaction Model to Study Nursery Pig Performance". – Received 10% of total funds*
- *Nebraska Center for Energy Sciences Research, $161,948. (January 1, 2015 – December 31, 2016). Erickson, G. (PI),* ***Co-PIs – Fernando S.****, Ge, Y., Schmidt, A., "Integrating agricultural, algal, and bioenergy systems for Nebraska: Fruition of the SUPER Loop ". – Received 10% of total funds*
- *Iowa State University-Egg Industry Center, $35,000. (January 1, 2015 – September 01 2016). Miller, P. (PI).* ***Co-PIs –Fernando, S.****, Burkey, T., "The Effects of Egg Yolk on Piglet Growth, Health, and Gut Microbial Populations" – Received 10% of total funds*
- *Nebraska Environmental Trust, $168,424, (July 1, 2015 – June 30, 2016).* ***Fernando S. (PI).*** *Co-PIs – Kononoff, P., Erickson, G., "Improving air quality by reducing methane emission from cattle"*
- *Nebraska Beef Council $59,450. (October 1, 2014 - September 30, 2015).* ***Fernando, S. (PI)****, "Bacteriophage therapy to control pathogenic Salmonella in beef".*
- *Nebraska Corn Board $64,633 (July 1, 2015 - June 30, 2016), Kononoff, P. (PI).* ***Co-PIs - Fernando, S.****, "Investigations of Nutritive Entities Contained in Corn Distillers Grains and Testing the Influence on Methane Production in the Rumen". – Received 25% of total funds*
- *Elanco Animal Health $33,786. (December 01,2015 – December 1, 2016). MacDonald, J. (PI).* ***Co-PIs – Fernando S.****, Erickson, G., Watson, A., "Hammer Targeting Streptococcus bovis" – Received 20% of total funds*
- *Nebraska Environmental Trust, $110,074, (July 1, 2016 – June 30, 2017).* ***Fernando S. (PI)****. Co-PIs – Kononoff, P., Erickson, G., "Improving air quality by reducing methane emission from cattle"*
- *Nebraska Environmental Trust, $69,800, (July 1, 2017 – June 30, 2018).* ***Fernando S. (PI)****. Co-PIs – Kononoff, P., Erickson, G. "Improving air quality by reducing methane emission from cattle"*
- *Nebraska Beef Council and National Cattleman's Beef Association $59,361. (October 1, 2016 - September 30, 2017).* ***Fernando, S. (PI)****, "Alternatives to Antibiotics".*
- *Nebraska Beef Council $59,574. (October 1, 2017 - September 30, 2018).* ***Fernando, S. (PI)****, "Identifying Alternatives to Antibiotic use".*
- *Nebraska Beef Council $50,000. (October 1, 2017 - September 30, 2018). Hales, K. (PI),* ***Co-PIs – Fernando, S.****, Wells, J., "Determining if conventional beef cattle production practices contribute to the development of antimicrobial resistance in the animal and the environment". – Received 35% of total funds*
- *Nebraska Environmental Trust, $191,304, (July 1, 2018 – June 30, 2019).* ***Fernando S. (PI)****. Co-PIs – Pegg M., "Improving Water quality and Fish Health in the Platte River and Tributaries"*
- *Nebraska Beef Council $63,384. (October 1, 2018 - September 30, 2019).* ***Fernando, S. (PI)****, "Probiotics as Alternatives to Antibiotics to Reduce Antibiotic Resistance in Beef Cattle Production".*
- *Sunseo Omega 3 Inc., $121,000 (January 1, 2019 – March 31 2020) Miller, P. (PI).* ***Co-PIs – Fernando, S.****, Burkey, T. "Evaluation of Feeding GREEN GRASS to*

Growing/Finishing Pigs on Growth Performance, Gastrointestinal Microbiome, Carcass Characteristics, Tissue Fatty Acid Profile, Meat Quality, and Sensory Characteristics" – Received 15% of total funds

- *Nebraska Environmental Trust, $169,524, (July 1, 2019 – June 30, 2020).* ***Fernando S. (PI).*** *Co-PIs – Pegg S., "Improving Water quality and Fish Health in the Platte River and Tributaries"*
- *Jeneil Biotech Inc/Quorum Innovations LLC, $69,290, (May 1, 2019 – September 30, 2020). Burkey, T. (PI).* ***Co-PIs – Fernando, S.****, Miller, P., "Lactobacillus fermentum LfQi6 as a Probiotic in Weaning and Weaned Piglets" – Received 5% of total funds*
- *Nebraska Beef Council and National Cattleman's Beef Association $66,533. (October 1, 2019 - September 30, 2020).* ***Fernando, S. (PI).*** *Title "Developing a "Super Microbe" as an alternative to antibiotic use in beef cattle production".*
- *Nebraska Beef Council and National Cattleman's Beef Association $62,714. (October 1, 2020 - September 30, 2021).* ***Fernando, S. (PI).*** *Title "Synbiotics, a promising alternative to reduce antibiotic use in beef cattle".*
- *Nebraska Beef Council $57,730. (October 1, 2020 - September 30, 2021). Sullivan, G. (PI).* ***Co-PI – Fernando, S.*** *Title "Impact of Antimicrobial Interventions on Spoilage and Microbial Communities of Beef during Extended Storage to Simulate Export".*
- *Nebraska Environmental Trust, $147,998, (July 1, 2020 – June 30, 2022). Pegg, M., (PI)* ***Co-PI – Fernando, S.*** *"Using eDNA to Detect Low Abundance Fish Species Across Nebraska and South Dakota*
- *National Cattleman's Beef Association, (subaward from Texas Tech University) $110,004 (Total award 200,000). (Jan 1, 2021 - Dec 31, 2022).* ***Fernando, S. (PI)****, "Evaluation of the spatial and longitudinal distribution of antimicrobial resistance genes and occurrence of potential horizontal gene transfer in high-risk cattle"*
- *Nebraska Beef Council $63,008. (October 1, 2021 - September 30, 2022).* ***Fernando, S. (PI)****, "Reducing Greenhouse Gas Emissions (GHG) through microbiome manipulation in beef cattle".*
- *Nebraska Beef Council $63,008. (October 1, 2022 - September 30, 2023).* ***Fernando, S. (PI),*** *Co-PI – Kononoff, P., "Methane Mitigation Towards Reducing the Environmental Impact of Beef Cattle Production".*
- *MS Biotec $27,449. (November 1, 2022 - October 31, 2023).* ***Fernando, S. (PI),*** *Co-PI – MacDonald, J., "Analyzing rumen samples and Hungate tubes for Megasphaera elsdenii and volatile fatty acids".*
- *Nebraska Beef Council $49,200. (October 1, 2023 - September 30, 2024).* ***Fernando, S. (PI),*** *"Early Microbiome Seeding to Establish Better Microbiomes to Improve Animal Health and Reduce Methane Emission".*
- *Phileo by Lesaffre $110,586. (December 1, 2023 – November 30, 2025). MacDonald, J. (PI),* ***Co-PI – Fernando, S.*** *"Evaluation of a Proprietary Blend of 4 Bacillus sp. on Feedlot Performance and Carcass Characteristics, Methane Production, and Rumen Microbial Community Structure"*

University of Nebraska

- *NU Foundation $59,601 (July 1, 2012 - June 30, 2014) Purdum, S. (PI),* ***Co-PIs - Fernando, S.*** *Title, "Nutritional Strategies to Control Salmonella Enteridis and*

Subsequent Effects on the Chickens Gut Microbiome and Virome". – Received 30% of total funds

- *Hatch Equipment funds, $24,298. (July 2, 2012 - September 28, 2012) Erickson, G. (PI), **Co-PIs - Fernando, S.**, Kelling, C., Kononoff, P., Klopfenstein, T., Jenkins, K., Luebbe, M., Stalker, L., Calkins, C., "Funding for the purchase of a Gas Chromatograph". – Received no funds to the lab*
- *Layman Award – $19,900 (July 1, 2013 – June 30, 2014) "Development of a cecum cannula humanized pig model to investigate the human microbiome". **Fernando, S. (PI)**. Co-PIs – Hostetler, D., Miller, P., Burkey, T.*
- *ARDC Multistate Enhancement funds – $491,962 (October 1, 2013 – September 30, 2018) "Evaluating genotype by microbiome interactions towards identifying genetic markers to increase feed efficiency". **Fernando, S. (PI)**. Co-PIs – Spangler, M., Erickson G., MacDonald, J.*
- *Hatch Equipment funds, $43,264 (July 2, 2013 - September 28, 2013) **Fernando, S. (PI)**, Co-PIs - Erickson, G., Spangler, M., Ciabanu, D., Raimer-Tait, A., Zempleni, J., Su, Qiaozhu " Equipment request for an epMotion liquid handler to boost ongoing research increase and generate preliminary data".*
- *ARD Strategic (Miscellaneous) Funding, $30,000 (September 1, 2014 – August 31, 2015) **Fernando, S. (PI)**, " Request for a full-time person to run the Ion Torrent PGM and funds for service contracts".*
- *ARD Strategic (Miscellaneous) Funding, $140,345 (July 11, 2014 – August 31, 2014) Erickson, G. (PI) **Co-PIs - Fernando, S.**, Spangler, M., McDonald, J. Drewnoski, M. "Beef growing and finishing research equipment request". – Received no funding to the lab*
- *IANR ARD & US MARC collaborative research Funding, $100,000 (October 1, 2014 – September 30, 2016) **Fernando, S. (PI)**, Co-PIs - Spangler, M., "Understanding genotype-microbiome interactions towards identifying new genetic markers to increase feed efficiency".*
- *Nebraska Center on the Prevention of Obesity Diseases through Dietary Molecules (NPOD), $99,795 "(January 1, 2015 – December 31, 2016) **Fernando S. (PI)**, Co-PIs - Burkey, T., Hostetler, D., Miller, P. "A novel cecum cannulated human gut microbiota associated pig gastrointestinal model to study signals produced by the gut microbiome that interact with host gene expression leading to a lean or obese phenotype".*
- *IANR ARD & US MARC collaborative research Funding, $69,769 (January 1, 2017 – December 31, 2018) **Fernando, S. (PI),** Co-PIs - Spangler, M., "Understanding genotype-microbiome interactions towards identifying new genetic markers to increase feed efficiency".*
- *ARDC Multistate Enhancement funds – $325,536 (October 1, 2017 – September 30, 2022) Wood, J., (PI), **Co-PIs – Fernando, S.**, Cupp, A., "Effects of Gut Microbiome on Oocyte Quality and Reproductive Performance in Beef Cows" – Received 7.5% of total funds*
- *ARDC Multistate Enhancement funds – $200,000 (October 1, 2021 – September 30, 2025) **Fernando S., (PI)**, Co-PIs – Spangler, M., Loy D., "Vertical transmission of the bovine microbiome from dams to calves: Towards improving feed utilization and animal health in beef production systems".*

PATENTS

- *Novel probiotic bacterial strains each with the ability to inhibit growth of Streptococcus bovis and Fusobacterium necrophorum in cattle that are linked to acidosis and liver abscesses. – Currently patent pending*
- *GRAS approved probiotic bacterial strain with the ability to inhibit growth of Streptococcus bovis and Fusobacterium necrophorum in cattle that are linked to acidosis and liver abscesses. – Currently patent pending*

AWARDS AND HONORS

- IANR's Omtvedt Innovation Award for Research (2019)
- IANR's Junior Faculty for Excellence in Research Award (2015)
- IANR Dinsdale Family Faculty Award (2015)
- American Society of Animal Science Early Career Achievement Award (2015) – Awarded at the American Association of Animal Science National Meeting in Orlando, FL.
- Oklahoma State University Research Excellence Award for outstanding research contribution in Biological Sciences (2008) - Awarded at Graduate Commencement
- Phoenix Award for exemplary achievement in leadership, scholarship, professional involvement and university and community service at Oklahoma State University, Runner-up (2008)
- Outstanding Ph.D. Student in the Department of Animal Science (2008)
- Outstanding Research in Biological Sciences, First Prize, Oral Presentation. Biochemistry and Molecular Biology Graduate Student Association (2007)
- Joe V. Whiteman Award for Outstanding graduate student scientific paper in Animal Science (2007)
- Sitlington Graduate Fellowship Award (2005-2007)
- Best Poster in Biological Science, Oklahoma State University Research Symposium (2006)
- Outstanding Research in Biological Sciences, First Prize, Poster Presentation. Biochemistry and Molecular Biology Graduate Student Association (2005)
- Williams Outstanding Thesis Award, College of Agricultural Sciences and Natural Resources, Oklahoma State University (2005)
- Outstanding Research in Biological Sciences, First Prize, Oral Presentation. Biochemistry and Molecular Biology Graduate Student Association (2004)

PROFESSIONAL SERVICE

- Invited expert in microbiome research for the "*USDA genome to phenome 10-year strategic planning*" workshop held in Washington D.C. (2017)
- Editor for the Journal Frontiers in Microbiology and Journal of Animal Science
- Search committee member in Multiple faculty hires including the chair of the Animal Science Department at UNL (2016)
- Member of the UNL Institutional Review Board for Human subject research (August 2015- August 2018)
- Secretory, W2010 Multistate Project (2015)
- Chair, W2010 Multistate Project (2016)
- Reviewer for Journal of Applied and Environmental Microbiology (2015 – Present)
- Reviewer, Ad Hoc Reviewer, Australian Antarctic Science Program, Kingston, Tasmania. (January 20, 2012 - February 1, 2012).
- Reviewer for Environmental Microbiology (2010 – Present)
- Reviewer for PLOS ONE (2013 – Present)
- Reviewer for Frontiers in Microbiology (2015 – Present)

- Reviewer for Anaerobe (2013 – Present)
- Reviewer for Scientific Reports (2013 – Present)
- Reviewer for Journal of Applied Microbiology (2013 – Present)
- Reviewer for Pathogens (2010 – Present)
- Reviewer for Journal of Animal Science (2013 – Present)
- Reviewer for Journal of Dairy Science (2014)
- Contributed as one of the scientific experts in rumen microbiology for the BBC Horizon: 'Should I eat Meat? How to Feed the Planet' that was transmitted in the UK on Wednesday, 20th August, at 9pm, on BBC 2.

LEADERSHIP AND COMMUNITY INVOLVEMENT

- Conducted 2 half day workshops at Eagle and Waverly elementary schools on microbes in the rumen. (April 14, 2017)
- Conducted a week-long workshop at the Lincoln- Children's Museum named "Mad Scientist and Marvelous Microbes" teaching about microbes and their importance (June 15- 19, 2015)
- Conducted a week-long workshop at the Lincoln- Children's Museum named "Yuckology" teaching about microbes and their importance (July 21- 25, 2014)
- Executive Committee Member, Nebraska Gateway to Nutrigenomics. (August 1, 2012 - Present)
- Faculty Advisor, Animal Science Graduate Students Association, University of Nebraska, (January 1, 2012 - Present).
- Graduate student representative for the Oklahoma State University library advisory committee (2007-2008)
- Department of Animal Science representative for the Graduate Professional Student Government Association, Oklahoma State University (2006-2008)
- Annual Research Symposium committee member and moderator, Oklahoma State University (2007)
- Officer of the Oklahoma State University Animal Science Graduate Student Association (2005 2007)
- Judge and Moderator of the Annual Oklahoma 4-H Youth Development Program Public Speaking Competition (2006)
- Member of the Phi Kappa Phi National Honor Society (2003)
- Member of the American Society of Microbiology (2010 - Present)
- Member American Society of Animal Science (2011- Present)
- ORED advisory board member 2021-2023
- Department of Animal Science Promotion and Tenure committee member 2023-present
- Chair of the UNL Research Council 2023-2024
- UNL research Council member 2021-2024
- Completed the UNL research Leader's program
- SNR academic program review committee member 2022
- Member of the INVIBE steering committee and UNL research data task force 2023-2024
- Animal Science departmental internal advisory board 2022- present

INVITED TALKS (most recent first)

- University of Nebraska Virology Seminar Series, Nov 2023 (Lincoln, NE). **"Microbiomes and ecological theory"**.

- Axiota Feedlot forum, October 2023 (Omaha NE). **"Early rumen microbial colonization and microbial adaptations to high starch diets"**
- Midwest animal Science Meeting keynote session, March 2023 (Wisconsin, Madison). **"Microbiomes from theory to application"**
- University of Nebraska Biotechnology Seminar Series October 2018 (Lincoln, NE). **"Understanding structure-function relationships in the rumen microbiome"**.
- University of Nebraska Virology Seminar Series July 2018 (Lincoln, NE). **"Role of the rumen viome and uncovering novel viruses"**.
- The International Research Symposium on Pure and Applied Sciences (IRSPAS) October 2017 (Kelaniya, Sri Lanka). **"Rumen microbiome: Exploring the adaptive roles of viruses and bacteria in the rumen"**.
- University of Nebraska Medical Center, Department of Obstetrics and Gynecology. April 2017 (Omaha, NE) **"A cannulated humanized pig model for human microbiome investigations"**
- Beef Improvement Federation Annual Meeting 2016 June 14th – 16th (Manhattan KS) **"The rumen virome and its role in rumen ecosystem function"**
- University of Nebraska, School of Veterinary Medicine and Biomedical Sciences Departmental Seminar 2015 **"What roles do viruses play in the rumen?"**
- American Society of Animal Science – **"What roles do viruses play in the rumen?"** as part of the American Society of Animal Science Early Career Achievement Award – July 2015
- American Society of Microbiology - Joint Meeting of the Missouri Valley and Missouri Branches of the American Society for Microbiology. March 2015. "**Understanding the rumen virome through community approaches and metabolic networks"**
- The Ohio State University, Animal Science Department. 2015 "**The unforgotten part of the rumen microbiome"**
- University of Nebraska, Animal Science Departmental Seminar 2014 "The **rumen Virome: what is its role in nutrient digestion"**
- University of Nebraska, Food science and technology, Departmental Seminar 2014 "**The rumen Virome: what is its role in nutrient digestion"**
- University of Nebraska, Livestock Metagenomics: Joint UNL and USMARC Workshop. 2014 **"Understanding the rumen microbiome: Structure function relationships"**
- University of Nebraska, National Institute of Animal Agriculture program. 2014 **"Molecular techniques to understand microbial populations the rumen"**
- University of Nebraska, School of Biological Sciences. 2013 **"A glimpse into the rumen microbial landscape"**
- University of Nebraska, Department of Animal Science Genetic Seminar. 2013 **"An ecological view of the microbial structure-function relationships in the rumen"**
- University of Nebraska, Nebraska Gateway to Nutrigenomics Seminar Series, University of Nebraska. **2011 "Meta-functional genomics: Towards improving ruminant health and nutrition"**
- University of Nebraska Husker Nutrition Conference, Department of Animal Science. 2011 **"Molecular techniques to advance ruminant nutrition by investigating rumen microbes"**
- University of Nebraska, Department of Animal Science. 2010
- Massachusetts Institute of Technology, Parsons Microbial Systems Seminar Series, Department of Civil and Environmental Engineering. 2009 **"Meta-functional genomics of the bovine rumen"**
- National Institute for Microbial Forensics & food and Agricultural Biosecurity (NIMFAB), Oklahoma State University 2009

PEER REVIEWED PUBLICATIONS *(most recent first)*

*Students/Postdocs from my group

1) Tom WA, Judy JV, Kononoff PJ, **Fernando SC**. 2024. Influence of empirically derived filtering parameters, ASV, and OTU pipelines on assessing rumen microbial diversity. J Dairy Sci. 2024 Jun 28:S0022-0302(24)00961-5. doi: 10.3168/jds.2023-24479. Online ahead of print.
2) Starr K, Montesanto F, Perisho E, Aluthge N, Pegg M, **Fernando SC**. 2024. Gut Microbial Composition of *Cyprinella lutrensis* (Red Shiner) and *Notropis stramineus* (Sand Shiner): Insights from Wild Fish Populations. Microb Ecol. 2024 May 22;87(1):75. doi: 10.1007/s00248-024-02386-z.
3) Ribeiro FA, Lau SK, Furbeck RA, Herrera NJ, Henriott ML, Bland NA, **Fernando SC**, Subbiah J, Pflanzer SB, Dinh TT, Miller RK, Sullivan GA, Calkins CR. 2024. Effects of relative humidity on dry-aged beef quality. Meat science, 2024 Jul;213:109498. doi: 10.1016/j.meatsci.2024.109498. Epub 2024 Mar 18.
4) Alison C. Neujahr*, Duan S. Loy, John Dustin Loy, Bruce Brodersen, and **Samodha C. Fernando**. 2024. Rapid detection of high consequence and emerging viral pathogens in pigs. Frontiers in Veterinary Science Feb 7, 11: 1341783. doi: 10.3389/fvets.2024.1341783. eCollection 2024.
5) Hoffman A.A, **Fernando, S.C.**, Wells, J.E., Woerner, D.R., Manahan, J.L., Long, N.S., McDaniel, Z S., Smock, T.M., Caroll J.A., Burdick Sanchez N.C., Broadway, P.R., and Hales, K.E. 2023. The use of a novel direct-fed microbial as an alternative for tylosin phosphate to control liver abscesses and decrease antimicrobial use in finishing beef steers. Applied Animal Science. 40:307-316
6) Bennett, S. J., C. A. Davila, Z. Reyes, A. Valentín-Acevedo, K. Gocchi Carrasco, R. Abadie, M. C. Marlin, M. Beel, A. G. Chapple, and **S. Fernando**. 2023. Immune profiling in Puerto Rican injection drug users with and without HIV-1 infection. Journal of Leukocyte Biology :qiad045.
7) Graham, E. H. *, W. A. Tom, A. C. Neujahr, M. S. Adamowicz, J. L. Clarke, J. R. Herr, and **S. C. Fernando**. 2023. The persistence and stabilization of auxiliary genes in the human skin virome. Virology Journal 20(1):49.
8) Kittana, H., J. C. Gomes-Neto, K. Heck, A. F. Juritsch, J. Sughroue, Y. Xian, S. Mantz, R. R. Segura Muñoz, L. A. Cody, R. J. Schmaltz, Christopher L. Anderson*, Rodney A. Moxley, Jesse M Hostetter, **Samodha C. Fernando**, Jennifer Clarke, Stephen D Kachman, Clayton E Cressler, Andrew K Benson, Jens Walter, Amanda E. Ramer-Tait. 2023. Evidence for a Causal Role for Escherichia coli Strains Identified as Adherent-Invasive (AIEC) in Intestinal Inflammation. Msphere 8(2):e00478-00422.
9) Long, N. S., K. E. Hales, E. D. Berry, J. F. Legako, D. R. Woerner, P. R. Broadway, J. A. Carroll, N. C. Burdick Sanchez, **S. C. Fernando**, and J. E. Wells. 2023. Antibimicrobial Susceptibility of Trimethoprim–Sulfamethoxazole and 3rd-Generation Cephalosporin-Resistant Escherichia coli Isolates Enumerated Longitudinally from Feedlot Arrival to Harvest in High-Risk Beef Cattle Administered Common Metaphylactic Antimicrobials. Foodborne Pathogens and Disease. 20(7):252-260.

10) Watson, S. C., R. A. Furbeck, **S. C. Fernando**, B. D. Chaves, and G. A. Sullivan. 2023. Spoilage Pseudomonas survive common thermal processing schedules and grow in emulsified meat during extended vacuum storage. Journal of food Science DOI:10.1111/1750-3841.16557

11) Abadie, R., Habecker, P., Carrasco, K. G., Chiou, K., **Fernando, S.,** Bennett, S. J., Valentin-Acevedo, A., Dombrowski, K., West, J., Wood, C. (2022). Employing Respondent Driven Sampling (RDS) to recruit people who inject drugs (PWID) and other hard-to-reach populations during COVID-19: Lessons learned. Frontiers in Psychiatry, 2022 Oct 3;13:990055. doi: 10.3389/fpsyt.2022.990055.

12) Furbeck, R. A., Stanley, R. E., Bower, C. G., **Fernando, S.,** Sullivan, G. (2022). Longitudinal effects of sodium chloride and ingoing nitrite concentration and source on the quality characteristics and microbial communities of deli-style ham. LWT-Food Science and Technology, 162, 1 June 2022. https://doi.org/10.1016/j.lwt.2022.113391

13) Long, N. S., Wells, J., Berry, E., Legako, J. F., Woerner, D. R., Loneragan, G. H., Broadway, P. R., Carroll, J. A., Sanchez, Nicole, C. Burdick, **Fernando, S.,** Bacon, C. M., Helmuth, C. L., Smock, T. M., Manahan, J. L., Hoffman, A. A., Hales, K. E. (2022). Metaphylactic antimicrobial effects on occurrences of antimicrobial resistance in Salmonella enterica, Escherichia coli and Enterococcus spp. measured longitudinally from feedlot arrival to harvest in high-risk beef cattle. Journal of Applied Microbiology, 133(3), 1940-1955. doi: 10.1111/jam.15691.

14) Coppin, C. M., Smock, T. M., Helmuth, C. L., Manahan, J. L., Long, N. S., Hoffman, A. A., Carroll, J. A., Broadway, P. R., Burdick Sanchez, Nicole C., Wells, J., **Fernando, S.,** Hales, K. E. (2022). The effects of administering different metaphylactic antimicrobials on growth performance and health outcomes of high-risk, newly received feedlot steers. Translational Animal Science, 6(4). doi: 10.1093/tas/txac140.

15) Ema Helene Graham*, **Samodha Fernando**, Jennifer Clarke, Joshua R Herr, Michael Adamowicz (2022). The Application of The Skin Virome for Human Identification. Forensic Science International Genetics, 57.

16) Ema H Graham*, Michael S Adamowicz, Peter C Angeletti, Jennifer L Clarke, **Samodha C Fernando**, Joshua R Herr (2022). Novel Feline Papillomavirus Isolate P20 Assembled from Metagenomic Data Isolated from the Human Skin of a House Cat Owner. Microbiology Resource Announcement, 2022 Jul 21;11(7), doi: 10.1128/mra.01070-21.

17) Yanshuo S Li, Joice V San Andres, Melanie D Trenhaile-Grannemann, Dana M van Sambeek, Kelly C Moore, Shana M Winkel, **Samodha C Fernando**, Thomas E Burkey, Phillip S Miller (2021). Effects of mannan oligosaccharides and Lactobacillus mucosae on growth performance, immune response, and gut health of weanling pigs challenged with Escherichia coli lipopolysaccharides. Journal of Animal Science, Volume 99, Issue 12, December 2021, skab286, https://doi.org/10.1093/jas/skab286

18) Kelsey L Batson, Alison C Neujahr*, Thomas Burkey, **Samodha C Fernando**, Mike D Tokach, Jason C Woodworth, Robert D Goodband, Joel M DeRouchey, Jordan T Gebhardt, Hilda I Calderón (2021). Effect of fiber source and crude protein level on nursery pig performance and fecal microbial communities. Journal of Animal Science, Volume 99, Issue 12, December 2021, skab343, https://doi.org/10.1093/jas/skab343

19) Christopher L. Anderson*, and **Samodha C. Fernando** (2021). Insight into rumen microbial biosynthetic gene cluster diversity through genome resolved metagenomics (2020). Nature Communication Biology. Communication Biol. 2021 Jun 29;4(1):818. doi: 10.1038/s42003-021-02331-7.

20) Alison C. Bartenslager*, Nirosh D. Althuge *, John D. Loy, Matthew M. Hille, Matthew L. Spangler, and **Samodha C. Fernando**. Longitudinal assessment of the bovine ocular microbiota (2021). Animal Microbiome. 2021 Jan 30;3(1):16. doi: 10.1186/s42523-021-00079-3.

21) Amachawadi RG, Tom WA*, Hays MP, **Fernando SC**, Hardwidge PR, Nagaraja TG. (2021). Bacterial community analysis of purulent material from liver abscesses of crossbred cattle and Holstein steers fed finishing diets with or without tylosin. Journal of Animal Science, 2021 Apr 1;99(4):skab076. doi: 10.1093/jas/skab076.

22) P. Polepole, A Bartenslager*, Y Liu, TM Petro, **S Fernando**, L Zhang (2021) Epstein-Barr virus-immortalized B lymphocytes exacerbate experimental autoimmune encephalomyelitis in xenograft mice. Journal of Medical Virology 93 (6), 3813-3823

23) Pooja Yadav, Sanjay Antony Babu, Erin Hayes, Olivia Healy, Donald Pan, Wendy Yang, Whendee Silver, Christopher Anderson*, Adam Voshall, **Samodha Fernando**, Etsuko Moriyama, Joshua Herr, and Karrie Weber (2021). Complete high-quality genome of Geobacter sp. strain FeAm09, a moderately acidophilic soil bacterium. Microbiol Resour Announc. 2021 Jan 14;10(2):e00979-20. doi: 10.1128/MRA.00979-20.

24) Ribeiro FA, Lau SK, Furbeck RA, Herrera NJ, Henriott ML, Bland NA, **Fernando SC**, Subbiah J, Sullivan GA, Calkins CR. (2021). Ultimate pH effects on dry-aged beef quality. Meat Sci. 2021 Feb;172:108365. doi: 10.1016/j.meatsci.2020.108365.

25) Nirosh D. Aluthge*, Wesley A. Tom*, Alison C. Bartenslager*, Thomas E. Burkey, Phillip S. Miller, Kelly D. Heath, Craig Kreikemeier-Bower, Hatem Kittana, Robert J. Schmaltz, Amanda E. Ramer-Tait, **Samodha C. Fernando** (2020). Differential longitudinal establishment of human fecal bacterial communities in germ-free porcine and murine models. Nature Communications biology 3:1-14.

26) Waseem Abbas*, Jeremy T. Howard*, Henry A. Paz*, Kristin E. Hales, James E. Wells, Larry A. Kuehn, Galen E. Erickson, Matthew L. Spangler+, **Samodha C. Fernando**+. Influence of host genetics in shaping the rumen microbiome in beef cattle (2020). Scientific Reports, 10:1-14 * denotes these authors equally contributed and + denotes co-corresponding authors

27) Waseem Abbas*, Brittney N. Keel, Stephan D. Kachman, **Samodha C. Fernando**, James E. Wells, Kristin E. Hales, Amanda K. Lindholm-Perry. Rumen epithelial transcriptome and microbiome profiles of beef cattle with liver abscess (2020). Journal of Animal Science, 98:skaa359

28) Ribeiro FA, Lau SK, Furbeck RA, Herrera NJ, Henriott ML, Bland NA, **Fernando SC**, Subbiah J, Sullivan GA, Calkins CR. 2020. Ultimate pH effects on dry-aged beef quality. Meat Science 172:108365.

29) Winders TM, Boyd BM, Hilscher FH, Stowell RR, **Fernando SC**, Erickson GE. 2020. Evaluation of methane production manipulated by level of intake in growing cattle and corn oil in finishing cattle. Translational Animal Science 4:txaa186.

30) C. J. R. Jenkins, **S. C. Fernando**, C.L. Anderson*, N. D. Aluthge*, E. Castillo-Lopez, G. I. Zanton, and P. J. Kononoff. The effects of 2-hydroxy-4-methylthio-butanoic acid (HMTBA) supplementation on the rumen microbial population and duodenal flow of microbial nitrogen. (2020). Journal of Dairy Science, J Dairy Sci 103:10161-10174

31) Pascal Polepole, Alison Bartenslager*, Yutong Liu, Thomas M Petro, **Samodha Fernando**, Luwen Zhang. Epstein Barr virus-immortalized B lymphocytes exacerbate experimental autoimmune encephalomyelitis in xenograft mice (2020). Journal of Medical Virology, 16 June 2020, https://doi.org/10.1002/jmv.26188

32) Jordan T Gebhardt, Katelyn A Thomson, Jason C Woodworth, Steve S Dritz, Michael D Tokach, Joel M DeRouchey, Robert D Goodband, Cassandra K Jones, Roger A Cochrane, Megan C Niederwerder, **Samodha Fernando**, Waseem Abbas*, Thomas E Burkey. Effect of dietary medium-chain fatty acids on nursery pig growth performance, fecal microbial composition, and mitigation properties against porcine epidemic diarrhea virus following storage. 2020 Journal of Animal Science 23 November 2020. https://doi.org/10.1093/jas/skz358

33) Hatem Kittana, João C Gomes-Neto, Kari Heck, Jason Sughroue, Yibo Xian, Sara Mantz, Rafael R Segura Muñoz, Liz A Cody, Robert J Schmaltz, Christopher L Anderson*, Rodney A Moxley, Jesse M Hostetter, **Samodha C Fernando**, Jennifer Clarke, Stephen D Kachman, Clayton E Cressler, Andrew K Benson, Jens Walter, Amanda E Ramer-Tait. Establishing the phenotypic basis of adherent-invasive Escherichia coli (AIEC) Pathogenicity in intestinal inflammation (2019). Cold Spring Harbor laboratory bioRxiv. doi: https://doi.org/10.1101/772012

34) Fang Zhou, Henry A. Paz*, Jiang Shu, Mahrou Sadri, Juan Cui, **Samodha C. Fernando**, Janos Zempleni. Dietary bovine milk exosomes elicit changes in bacterial communities in C57BL/6 Mice. American Journal of Physiology and Gastrointestinal Liver Physiology (2019) Sep 11. doi: 10.1152/ajpgi.00160.2019.

35) Nirosh D Aluthge*, Dana M Van Sambeek, Erin E Carney-Hinkle, Yanshuo S Li, **Samodha C Fernando**, Thomas E Burkey. BOARD INVITED REVIEW: The pig microbiota and the potential for harnessing the power of the microbiome to improve growth and health. (2019). Journal of Animal Science, 97(9): 3741-3757, https://doi.org/10.1093/jas/skz208

36) Mohammad Mazharul Islam, **Samodha C. Fernando**, Rajib Saha. Metabolic Modeling Elucidates the Transactions in the Rumen Microbiome and the Shifts upon Virome Interactions. (2019) Oct 22;10:2412. Frontiers in Microbiology. doi: 10.3389/fmicb.2019.02412. eCollection 2019.

37) Klein, C., D. Gonzalez, C. Kahesa, J. Mwaiselage, N. Aluthge*, **S. Fernando**, J. T. West, C. Wood, and P. C. Angeletti. The Relationship Between the Cervical Microbiome, HIV Status, and Pre-Cancerous Lesions (2019). Journal mBio, Vol 10; 1 e02785 – 18. DOI: 10.1128/mBio.02785-18

38) JV Judy, GC Bachman, TM Brown-Brandl, **SC Fernando**, KE Hales, KJ Harvatine, PS Miller, PJ Kononoff. Increasing the concentration of linolenic acid in diets fed to Jersey cows in late lactation does not affect methane production (2019). J Dairy Sci. 2019 Jan 3. https://doi.org/10.3168/jds.2018-14608.

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