## **Auburn University – Dr. Bourassa**

## Peer-Reviewed Publications

Gregg, C.R., O.J. Tejeda, L.F. Spencer, A.J. Calderon, **D.V. Bourassa**, J.D. Starkey, and C.W. Starkey. 2022. Impacts of increasing additions of choline chloride on growth performance and carcass characteristics of broiler chickens reared to 66 days of age. Animals 12:1808. <https://doi.org/10.3390/ani12141808>

Gregg, C.R., O.J. Tejeda, L.F. Spencer, A.J. Calderon, **D.V. Bourassa**, J.D. Starkey, and C.W. Starkey. 2022. Effect of dietary choline chloride supplementation on growth performance and carcass characteristics of broiler chickens reared to 32 days of age. Poultry 1:66-73. <https://doi.org/10.3390/poultry1020007>

Bailey, M.A., **D.V. Bourassa**, J.T. Krehling, L. Munoz, K.S. Chasteen, C. Escobar, K.S. Macklin. 2022. Effects of common litter management practices on prevalence of *Campylobacter jejuni* in broilers. Animals 12:858. <https://doi.org/10.3390/ani12070858>

Pal, A., A.P. Jackson, A. Urrutia, K.S. Macklin, S.B. Price, R.J. Buhr, and **D.V. Bourassa**. 2022. Research Note: Bacterial composition of settled dust during growout of broiler chickens. Poult. Sci. 101:101602. <https://doi.org/10.1016/j.psj.2021.101602>

Pal, A., M.R. Riggs, A. Urrutia, R.C. Osborne, A.P. Jackson, M.A. Bailey, K.S. Macklin, S.B. Price, R.J. Buhr, and **D.V. Bourassa**. 2021. Investigation of the potential of aerosolized *Salmonella* Enteritidis on colonization and persistence in broilers from D 3 to 21. Poult. Sci. 100:101504. <https://doi.org/10.1016/j.psj.2021.101504>

## Peer-Reviewed Abstracts and Proceedings

**Bourassa, D.V.**, R.C. Osborne, A. Pal, A.P. Jackson, and M.R. Riggs. Susceptibility of poultry processing *Salmonella* isolates to low and high pH. World’s Poultry Congress, August 7-11, 2022. Paris, France.

Reina, M., J. Figueroa, A.P. Jackson, C. Escobar, J.I. Vargas Patino, O.B. Fiallos Soto, W.J. Pacheco, and **D.V. Bourassa**. Microbiological assessment of poultry feed through the pelleting process using different conditioning temperatures. PSA Annual Meeting. July 10-14, 2022. San Antonio, TX.

Arthur, W., M. Reina, L. Orellana, A. Urrutia, A.P. Jackson, S. Kitchens, K.S. Macklin, S.B. Price, B.T. Higgins, and **D.V. Bourassa**. Microbiological survey of wastewater and solids from poultry processing plants after dissolved air flotation (DAF) treatment. PSA Annual Meeting. July 10-14, 2022. San Antonio, TX.

Urrutia, A., L. Orellana, M. Reina, J. Figueroa, A.P. Jackson, K.S. Macklin, and **D.V. Bourassa**. Reduction of *Salmonella* Infantis using organic acids and surfactants alone and in combination. PSA Annual Meeting. July 10-14, 2022. San Antonio, TX.

Urrutia, A., L. Orellana, A.P. Jackson, M. Reina, K.S. Macklin, and **D.V. Bourassa**. Reduction of *Salmonella* and *Campylobacter* using photo-active antimicrobials. PSA Annual Meeting. July 10-14, 2022. San Antonio, TX.

Riggs, M.R., R. Hauck, B.I. Baker-Cook, R.C. Osborne, A. Pal, M.T. Bethonico Terra, G. Sims, A. Urrutia, L.A. Orellana Galindo, M. Reina\*, and **D.V. Bourassa**. Meat quality of broiler chickens processed using electrical and controlled atmosphere stunning systems. International Poultry Scientific Forum, January 24, 2022. Atlanta, GA.

## Invited Presentations

**Bourassa, D.V.**, K.S. Macklin, and W.J. Pacheco. *Salmonella* control in poultry flocks. Alabama Poultry Industry Workshop. Guntersville, AL. October 6, 2021.

**Bourassa, D.V.** Broiler processing, product quality, and yield. Midwest Poultry Federation Convention. Minneapolis, MN. March 22-24, 2022.

**Bourassa, D.V.** Optimizing Meat Quality. US Poultry and Egg Processors Workshop. Nashville, TN. November 16-17, 2021.

## Extension Activities and Publications

Bourassa, D.V. and B.A. McCrea. Egg quality and safety. Alabama 4-H Egg Cookery CyberClub. Virtual. March 28, 2022.

Bourassa, D.V. and B.A. McCrea. Egg science. Auburn Troop 34 Science and Technology Meeting, Trail Life USA. Auburn, AL. November 8, 2021.

Bourassa, D.V. Processing a small flock. Sunbelt Ag Expo. Moultrie, GA. October 19-21, 2021.

Bethonico Terra, M.T., D.V. Bourassa, Hauck, R., Macklin, K.S., and Pacheco, W.J. 2022. How to collect chicken droppings for a parasite exam. ACES ANR-2895.

Bourassa, D.V. 2022. Exemptions from USDA inspection for small-scale poultry processors. ACES ANR-2869.

Bourassa, D.V. Electrical stimulation for rigor acceleration. WOGS Newsletter, Vol. 22, No. 6. July 2022.

Bourassa, D.V. Statistical process control for evaluating welfare at the plant. WOGS Newsletter, Vol. 22, No. 5. May 2022.

Bourassa, D.V. *Campylobacter* reduction on transport modules. WOGS Newsletter, Vol. 22, No. 4. Apr 2022.

Bourassa, D.V. Reducing the rate of broken wings at processing. WOGS Newsletter, Vol. 22, No. 1, Jan 2022.

Munoz, L., K.S. Macklin, and D.V. Bourassa. Use of prebiotics and probiotics to reduce bacterial pathogens at poultry processing. WOGS Newsletter, Vol. 21, No. 11, Nov 2021.

Bourassa, D.V. Cleaning and sanitation of poultry transport containers. WOGS Newsletter, Vol. 21, No. 10, Oct 2021.

Bourassa, D.V. Slaughter process and regulations for selling meat. Backyard and Small Flock Poultry Program. Webinar June 7, 2022.

Bourassa, D.V. and J. Britcher. EP 48: Achieving stunning quality in poultry processing. MeatingPod Podcast. MeatingPlace Magazine. December 27, 2021. https://www.meatingplace.com/Industry/Podcasts/Details/102299

## **Auburn University – Dr. Macklin**

## Peer-Reviewed Publications

1. Fatemi, S.A., K.E.C. Elliot, **K.S. Macklin**, A. Bello and E.D. Peebles. 2002. Effects of the in ovo injection of vitamin D3 and 25-Hydroxyvitamin D3 in Ross 708 broilers subsequently challenged with coccidiosis: II immunological and inflammatory responses and small intestine histomorphology. Animals 12(8), 1027. <https://doi.org/10.3390/ani12081027>
2. Bailey, M.A., D.V. Bourassa, J.T. Krehling, \*L. Munoz, K.S. Chasteen, \*C. Escobar and **K.S. Macklin.** 2022. Effect of common litter management practices on the prevalence of *Campylobacter jejuni* in broilers. Animals 12(7), 858. <https://doi.org/10.3390/ani12070858>
3. Smith, R., R. Hauck, **K. Macklin**, S. Price, T. Dormitorio and C. Wang. 2021. A review of the lesser mealworm beetle (Alphitobius diaperinus) as a reservoir for poultry bacterial pathogens and antimicrobial resistance. Worlds Poultry Science. <https://doi.org/10.1080/00439339.2022.2003172>
4. Pacheco, W., D.B. Patino, J.I. Vargas, J.P. Gulizia, **K. Macklin**, T.J. Biggs. 2021. Effect of partial replacement of inorganic zinc with zinc methionine and manganese methionine on live performance and breast myopathies of broilers. Journal of Applied Poultry Research. 30(4) <https://doi.org/10.1016/j.japr.2021.100204>
5. Beckmann, J.F., T. Dormitorio, S.O. Oladipupo, M.T. Bethonico, K. Lawerence, **K. Macklin** and R. Hauck. 2021. *Heterakis gallinarum* and *Histomonas meleagridis* DNA persists in chicken houses years after depopulation. Journal of Veterinary Parasitology. 298 <https://doi.org/10.1016/j.vetpar.2021.109536>
6. Brooks, L.A., M.A. Bailey, J.T. Krehling, K.S. Chasteen and **K.S. Macklin**. 2021. A comparison of colonizing ability between *Salmonella* Enteritidis and *Salmonella* Heidelberg in broiler chickens challenged through feed administration. Foodborne Pathogens and Disease. 18(11) <https://doi.org/10.1089/fpd.2021.0016>

## Peer-Reviewed Abstracts and Proceedings

1. Cesar Escobar Lobo, **Ken Macklin**, Wilmer Pacheco, Ruediger Hauck. 2022. Survey of feed mills around United States for select bacterial pathogens Abstract M43 presented at the IPSF Annual Meeting, Jan 24-25, 2022.
2. Luis Munoz, Matthew Bailey, James Krehling, Aidan Talorico, Kaicie Chasteen, Cesar Escobar, Sam Talorico, Maria Elliot, **Kenneth Macklin**. 2022 Effects of dietary mannan oligosaccharide supplementation on Campylobacter jejuni inoculated broilers Abstract M129 presented at the IPSF Annual Meeting, Jan 24-25, 2022.

## Conference Papers, Posters, and Presentations

1. **Macklin, K., \***LA Books, JT Krehling, \*KS Chasteen and \*BA Singh. 2021. A comparison of *Salmonella* Enteritidis colonization in broiler chickens challenged on day 14 with either an ocular or oral challenge In: Proceedings of the XXVI World’s Poultry Congress virtual meeting

**University of Arkansas – Dr. Liang and Dr. Costello**

## Peer-Reviewed Publications

## Liang, Y., M. Janorschke, and C. E. Hayes. 2022. Low-cost solar collectors to pre-heat ventilation air in broiler houses. *Energies* 2022, 15, 1468. https://doi.org/10.3390/en15041468

## Peer-Reviewed Abstracts and Proceedings

## Nguyen, A.P., T. Truong, M. Huang, Y. Liang, N. Le, K. Luu. 2022. 'Self-supervised Domain Adaptation in Crowd Counting. Paper ID 2781, *29th IEEE International Conference on Image Processing*. IEEE.

Nguyen, A.P., T. Truong, M. Huang, Y. Liang, N. Le, K. Luu. 2022. 'Self-supervised Domain Adaptation in Crowd Counting. *2nd U.S. Precision Livestock Farming Conference*, University of Tennessee.

Moon, J., J. Wells, Y. Liang and G.T. Tabler, 2022. Effects of sprinkler technology combined with a cool cell system on cooling water usage, bird performance, and indoor environment of broiler houses, *2nd U.S. Precision Livestock Farming Conference*, University of Tennessee.

## Conference Papers, Posters, and Presentations

Liang, Y. and T.A. Costello. 2022. Case studies of renewable generation on electricity consumption of two Arkansas poultry farms. *Conference of Sustainable Energy for Sustainable Future*. Costa Rica.

## Invited Presentations

## Liang, Y. “Going Solar to Improve Sustainability” (virtual). 2022. Ross Asia Technical Conference, Bangkok, Thailand (October 18, 2022)

## Liang, Y. “How Sprinkler and Cool Cells Meet the Demand of Broiler Cooling?” 2022. Water Conservation in Poultry Production and Sustainability, University of Arkansas Center of Excellence for Poultry Science, Fayetteville, AR (May 25th, 2022)

## Extension Activities and Publications

Tabler, T., Y. Liang, J. Urrutia, S. Hawkins, P. Maharjan, Y. Zhao. 2022. How and why evaporative systems work. Publication 167, University of Tennessee Institute of Agriculture.

Tabler, T., V. Ayres, Y. Liang, P. Maharjan, J. Moon and J. Wells. 2022. Manage litter quality for better paw quality. Publication 173, University of Tennessee Institute of Agriculture.

Liang, Y. Making Sense of Your Utility Bills with Demand. Factsheet 1101. University of Arkansas Division of Agriculture.

**University of Arkansas – Dr. Weimer and Dr. Orlowski**

## Peer-Reviewed Publications

## Weimer, S. L., R. F. Wideman, C. G. Scanes, A. Mauromoustakos, K. D. Christensen, and Y. Vizzier-Thaxton. 2021. Impact of experimentally induced bacterial chondronecrosis with osteomyelitis (BCO) lameness on health, stress, and leg health parameters in broilers. Poultry Science. 100:101457. DOI: 10.1016/j.psj.2021.101457.

## Weimer, S. L., S. Zuelly, M. Davis, D. M. Karcher, and M. A. Erasmus. 2022. Differences in carcass composition and meat quality of conventional and slow-growing broiler chickens raised at 2 stocking densities. Poultry Science. 101:101833. DOI: 10.1016/j.psj.2022.101833.

## Snyder, A. M., S. P. Riley, C. I. Robison, D. M. Karcher, C. L. Wickware, T. A. Johnson, and S. L. Weimer. 2022. Behavior and immune response of conventional and slow-growing broilers to Salmonella Typhimurium. Frontiers in Physiology. 13:890848. DOI:10.3389/fphys.2022.890848.

Emami, N.K., L. L. Schreier, E. Greene, T. Tabler, S. K. Orlowski, N. B. Anthony, M. Proskowiec-Weglarz, S. Dridi. 2022. Ileal microbial composition in genetically distinct chicken lines reared under normal or high ambient temperatures. Animal Microbiome. 4:1-16.

Lee, K. P., N. B. Anthony, S. K. Orlowski and D. D. Rhoads. 2022. SNP-based breeding for broiler resistance to ascites and evaluation of correlated production traits. Hereditas. 159.1-15.

Greene, E. S., E. Adeogun, S. K. Orlowski, K. Nayani, S. Dridi. 2022. Effects of heat stress on cyto (chemo) kine and inflammasome gene expression and mechanical properties in isolate red and white blood cells from 4 commercial broiler lines and their ancestor jungle fowl. Poult. Sci. 101.

## Brugaletta, G., E. S. Greene, A. Ramser, C. W. Maynard, T. W. Tabler, F. Sirri, N. B. Anthony, S. K. Orlowski and S. Dridi. 2022. Effect of cyclic heat stress on hypothalamic oxygen homeostasis and inflammatory state in the jungle fowl and three broiler-based research lines. Front in Vet Sci. 9.

Hiltz, J. Z., S. K. Orlowski, L. N. Harrington, C. W. Maynard, T. W. Tabler, and N. B. Anthony. 2021. Applied Research Note: Development of a novel low flow water monitoring system in poultry/agriculture systems. JAPR 30.

## Peer-Reviewed Abstracts and Proceedings

Kong, B. C., S. K. Orlowski, W. Keunzel, and C. M. Owens, 2022. Metabolite markers in blood plasma for woody breast. PAG.

## Conference Papers, Posters, and Presentations

McMillian, A. Magnaterra, A. Snyder, G. Martin, J. Moyle, and S. Weimer. Evaluating the effect of circulation fans on broiler footpad dermatitis severity in commercial houses. International Poultry Scientific Forum meeting in Atlanta, GA. January 24-25, 2022. (*poster*)

Khong, M., A. Snyder, A. Magnaterra, M. Young, N. Barbieri, and S. Weimer. Antimicrobial resistance and characterization of Escherichia coli isolated from poultry litter. International Poultry Scientific Forum meeting in Atlanta, GA. January 24-25, 2022. (*oral*)

Rinehart, H. A. Magnaterra, Z. McMillian, and S. Weimer. Comparison of the effect of enrichments on behaviors of broilers in commercial and experimental housing systems. International Poultry Scientific Forum meeting in Atlanta, GA. January 24-25, 2022. (*oral*)

Mendoza, A., S. Weimer, and Z. Williams. The effects of ultraviolet light on laying hen movement in laying hens in an aviary housing system. International Poultry Scientific Forum meeting in Atlanta, GA. January 24-25, 2022. (*oral*)

Mendoza, A., S. Weimer, and Z. Williams. Effectiveness of ventilation shutdown in an aviary housing system. Poultry Science Association meeting in San Antonio, TX. July 11-14, 2022. (*oral*)

McMillian, Z., J. Moyle, and S. Weimer. Decreasing contact dermatitis with circulation fans in commercial broiler houses. Poultry Science Association meeting in San Antonio, TX. July 11-14, 2022. (*poster*)

Wooming, B., A. M. Stiewert, G. S. Archer, M. Erasmus, and S. Weimer. A comparison of various euthanasia devices and method. s in turkey hens. American Association of Avian Pathologists meeting in Philadelphia, PA. July 29-August 2, 2022. (*oral*)

Kang, S. W., K D. Christensen, M. Kidd, Jr. S. Orlowski, C. James. 2022. Effect of variable light intensity lighting program on brain activity of commercial broilers. International Poultry Scientific Forum meeting in Atlanta, GA. January 24-25, 2022.

Maqueda, M., K. Shafer, T. W. Tabler and S K. Orlowski. 2022. Investigating the effect of genetic selection on growth performance and intestinal density in three random bred broiler populations. International Poultry Scientific Forum meeting in Atlanta, GA. January 24-25, 2022.

Shafer, K., G. Mullenix, M. Maqueda, T, Tabler, K. Lassiter, W. Bottje, M. Kidd, and S. K. Orlowski, 2022. The effect of spirulina platensis inclusion on live performance and meat quality of commercial broilers subjected to cyclic heat stress. International Poultry Scientific Forum meeting in Atlanta, GA. January 24-25, 2022.

Tabler, T. E. S. Greene, N. B. Anthony, S. Dridi and S. K. Orlowski. 2022. Evaluating growth performance, intestinal barrier integrity, and meat quality of random bred broiler populations and a common ancestor under heat stress conditions. International Poultry Scientific Forum meeting in Atlanta, GA. January 24-25, 2022.

## Brugaletta, G., E. S. Greene, A. Ramser, C. W. Maynard, T. W. Tabler, F. Sirri, N. B. Anthony, S. K. Orlowski and S. Dridi. 2022. Effect of cyclic heat stress on hypothalamic oxygen homeostasis and inflammatory state in the jungle fowl and three broiler-based research lines. International Poultry Scientific Forum meeting in Atlanta, GA. January 24-25, 2022.

Lozana, A., M. Franco, S. Orlowski and K. Tarrant. 2022. Comparison of leg parameters in embryonic chicks from three broiler lines and an inbred Junglefowl line. International Poultry Scientific Forum meeting in Atlanta, GA. January 24-25, 2022.

S. K. Orlowski. 2022. Divergent selection for water conversion ratio in commercial broilers. World’s Poultry Congress in Paris, FR. August 7-11, 2022.

Tabler, T. W., J. Z. Hiltz, N. B. Anthony and S. K. Orlowski. 2022. Evaluation of water intake, feed intake and processing traits of four commercial broiler lines using a low flow water monitoring system. World’s Poultry Congress in Paris, FR. August 7-11, 2022.

## Invited Presentations

Weimer:

The Poultry Industry: Animal Welfare and Sustainability. Mississippi Poultry Association Breeder and Hatchery Virtual Workshop. August 10, 2021.

Genetics and Animal Welfare Research at the University of Arkansas. Aviagen. Sallisaw, OK. August 15, 2022.

Orlowski:

Overview of the Poultry Industry. Domestic Poultry Field Virtual Training. May 16, 2022

Poultry Hatcheries. Domestic Poultry Field Virtual Training. May 17, 2022.

Divergent Selection for Water Conversion Ratio in Broilers. University of Arkansas, POS Research Day. May 25, 2022.

Genetics and Animal Welfare Research at the University of Arkansas. Aviagen. Sallisaw, OK. August 15, 2022.

## Extension Activities and Publications

McMillian, Z. and S. Weimer. 2021. Relationships between chicken vocalizations and health, behavior, and welfare. University of Maryland Extension. FS-1177.

Snyder, A., J. Moyle, and S. Weimer. 2021. Sickness behavior in chickens. University of Maryland Extension. FS-1178.

Magnaterra, A. and S. Weimer. 2021. Leg health in chickens. University of Maryland Extension. FS-1179.

Euthanasia and Depopulation Methods. The Roost. Podcast hosted by Zac Williams. August 17, 2022.

Embryology and hatchery residue breakout. S. K. Orlowski.U of A Trio Talent Search. May 19, 2022.

Genetics research at the University of Arkansas. S. K. Orlowski. iLead Arkansas. June 16, 2022.

Water Efficiency research at the U of A. S. K. Orlowski. Division Podcast. June 29, 2022.

Divergent Selection for Water Efficiency. S. K. orlowski. USDA Radio. July 19, 2022.

S. K. Orlowski. 2022. Washington and Benton County Pullet Chain Workshop. August 16. 2022.

## Dissertation and Thesis

Magnaterra, A. K. 2021. The impact of platform and spotlight enrichments on conventional broiler performance, tibia morphology, and welfare. MS Thesis. University of Maryland. (Weimer Chair)

Rinehart, H. 2022. The effect of environmental enrichments on the behavior of broilers in commercial versus experimental housing. Undergraduate Honor’s Thesis. University of Maryland. (Weimer Chair)

McMillian. Z. N. 2022. Circulation fans and broiler welfare in commercial broiler houses. MS Thesis. University of Maryland. (Weimer Chair)

Hiltz, J. Z. 2021. “Divergent selection for water conversion ratio in broiler populations.” Ph.D. University of Arkansas (Orlowski Chair)

Feuerborn. H. 2022. “Effects of sunrise/sunset lighting on corticosterone levels in Coturnix quail (Coturnix coturnix). Undergraduate Honor’s Thesis. (Orlowski Chair)

**Michigan State University – Dr. Siegford**

Peer-Reviewed Publications

Stratmann, A., D. Guggisberg, C. Benavides-Reyes, J. Siegford, and M. J. Toscano. 2022. Providing ramps in rearing aviaries affects laying pullet distribution, behavior and bone properties. J. Appl. Poult. Res. 31:4, 100283. doi:10.1016/j.japr.2022.100283.

## Stratmann A, Siegford J, Toscano M. 2022. Laying hen chicks make earlier use of elevated areas and perform more intertier transitions when provided with ramps in the rearing aviary. Proc. 55th Congr. Intl. Soc. Appl. Ethol. 55:92.

## Grebey, T., J. Han, J. Steibel, and J. Siegford. 2022. Measuring the amount of vertical space needed for laying hens to flap their wings. Proc. 14th ISAE N. Am. Reg. Mtg. 14:64.

## Invited Presentations

Siegford, J. 2021. Introduction to wearable sensors for poultry monitoring. University of Georgia-Evonik Training. October 2021.

**Mississippi State University – Dr. Adhikari**

## Peer-Reviewed Publications

1. **Adhikari, P.,** F. L. Castro, G. Liu and W. K. Kim. 2022. Effects of total sulfur amino acids on growth performance, immunity, and meat yield in broilers fed diets with and without antibiotics. Front. Vet. Sci. 9:903901.
2. Poudel, I., A. S. Kiess, M. M. Beck, **P. Adhikari.** 2022. The effect of blue and red LED light on the growth, egg production, egg quality, behavior, and hormone concentration of Hy-Line W-36 laying hens. J. Appl. Poult. Res. 31(2):100248.
3. Poudel, I., C. D. McDaniel, M. W. Schilling, D. Pflugrath and **P. Adhikari**. 2022. Role of conventional and split feeding of various limestone particle size ratios on the performance and egg quality of Hy-Line W-36 in the late production phase. Anim. Feed Sci. Technol. 283: 115-153.
4. Sharma, M. K., A. S. Kiess, B. Loar and **P. Adhikari.** 2021. Effect of housing environment and hen strain on egg production and egg quality as well as cloacal and eggshell microbiology in laying hens. Poult. Sci. 101 (2):101595.
5. Sharma, M. K., D. White, C. Chen, W. K. Kim, and **P. Adhikari**. 2021. Effects of housing environment and laying hen strain on tibia and femur bone properties of different laying phases of Hy-Line hens. Poult. Sci. 100 (3):100933

## Peer-Reviewed Abstracts and Proceedings

## I. Poudel, A. S. Kiess, and **P. Adhikari**. Colonization of *Salmonella* Enteritidis in vaccinated and unvaccinated laying hen using oral inoculation. World Poultry Congress, Paris, France. August 7-10, 2022.

* Ovi, F., K. E. C. Elliott, D. Wilson, L. Zhang and **P. Adhikari.** Evaluating the accuracy of five virulent genes in predicting the virulence of an *Escherichia coli* isolates using embryo lethality assay. World Poultry Congress, Paris, France. August 7-10, 2022
* Self, R., I. Poudel and **P. Adhikari.** Behavior, welfare, and production effects of late-stage cage raised laying hens in a cage-free environment. 2022. Poult. Sci. (E.-Suppl. 1).
* Waters, C., K. Wamsley, M. Elliot, M. Bedford, C. Wyatt, and **P. Adhikari.** Effect of limestone ratios and phytase levels on egg quality and bone quality of 40-60 weeks single cycle Hy-Line W-36 laying hens. 2022. Poult. Sci. (E.-Suppl. 1).
* Ovi, F., L. Zhang, R. Ramachandran and **P. Adhikari** Evaluation of antimicrobial and heavy-metal resistance patterns of avian pathogenic *Escherichia coli* associated with colibacillosis and symptom-free laying hen tissue samples. 2022. Poult. Sci. (E.-Suppl. 1).
* Duong, T., R. Adhikari, **P. Adhikari**, I. Poudel, B. Lumpkins and S. Liamas-Moya. Administration of a postbiotic mitigated experimental subclinical necrotic enteritis in broiler chickens. 2022. Poult. Sci. (E.-Suppl. 1).
* Joseph, J., C. Magee, L. Jia, L. Zhang, **P. Adhikari** and R. Ramachandran. Phenotypic virulence characterization of avian pathogenic *Escherichia coli* isolates from broiler breeders with colibacillosis in Mississippi. 2022. Poult. Sci. (E.-Suppl. 1).
* Devkota, P., S. Poudel, L. Zia, X. Zhang, A. T. Sukumaran, A. S. Kiess. J. Evans. **P. Adhikari** and L. Zhang. Investigation of virulence factors in avian pathogenic *Escherichia coli* isolated from asymptomatic and diseased broilers. 2022. Poult. Sci. (E.-Suppl. 1): *Accepted*.
* Nabors, H., L. Jia, X. Zhang, R. Ramachnadran, **P. Adhikari** and L. Zhang. Effect of commercially available water acidifiers on the inhibition of avian pathogenic *Escherichia coli.* 2022. Poult. Sci. (E.-Suppl. 1).
* Ovi, F., L. Zhang and **P. Adhikari.** Evaluating the accuracy of virulent genes model in predicting the source of extraintestinal *Escherichia coli* isolates, collected from colibacillosis infected or healthy layer chicken. 2022. Poult. Sci. (E.-Suppl. 1).
* Poudel, I., A. J. Calvert and **P. Adhikari.** *In-vitro* digestive assay to understand the effect of probiotics, prebiotics, and essential oil combination on *Salmonella Enteritidis.* Internatl. Poult. Sci. Forum. 2022. 2022. Poult. Sci. (E.-Suppl. 1).

## Invited Presentations

1. January 27, 2022, Atlanta, GA. **Invited Speaker** for *Tech Talks* at International Poultry Processing Expo. Organized by USPOULTRY. Title ‘Effect of feeding varying levels of amino acids supplemented with protease enzyme in laying hens’
2. September 21-23, 2021, Mankato, MN. **Invited Speaker** for *Minnesota Nutrition Conference*. Title ‘Assessment of feeding protease in laying hens’.

**Mississippi State University – Dr. Wamsley**

## Peer-Reviewed Publications

## Brown, A. T., Lee, J., Adhikari, R., Haydon, K., & Wamsley, K. G. S. (2022). Determining the optimum digestible isoleucine to lysine ratio for Ross 708 x Ross YP male broilers from 0 to 18 d of age. *Journal of Applied Poultry Research*, *31*(1), 100217.

## Hirai, R. A., Dennehy, D. G., Mejia, L., Coto, C., McDaniel, C. D., & Wamsley, K. G. S. (2022). Evaluating the digestible lysine requirements of male Cobb MV× Cobb 500 broilers during the first fourteen days of age and the carryover effect of feeding varying levels of digestible lysine on performance and processing. *Journal of Applied Poultry Research*, *31*(3), 100274.

## Peer-Reviewed Abstracts and Proceedings

## Dennehy, D., Millican, J., Lee, J., Adhikari, R., & Wamsley, K. G. S. (2022). Determining the optimum digestible isoleucine to lysine ratio for Ross 708 x Ross YP male broilers from 42 to 56 d of age. *Poult Sci.*

## Conference Papers, Posters, and Presentations

## Dennehy, D., Millican, J., Lee, J., Adhikari, R., & Wamsley, K. G. S. (2022). Determining the optimum digestible isoleucine to lysine ratio for Ross 708 x Ross YP male broilers from 42 to 56 d of age. *Poult Sci.*

**North Carolina State University – Dr. Vukina**

## Peer-Reviewed Publications

Oh, S. E. and T. Vukina. “The price of cage-free eggs: Social cost of Proposition 12 in California.” American Journal of Agricultural Economics 104 (4) (2022): 1293–1326. <https://doi.org/10.1111/ajae.12279>

## Peer-Reviewed Abstracts and Proceedings

List here.

## Conference Papers, Posters, and Presentations

Moschini, G., S.E. Oh and T. Vukina. “Animal Welfare Initiatives and the Vote-Buy Gap.” 21th Journées Louis-Andre Gerard-Varet, International Conference in Public Economics; Marseille, France, June 6-8, 2022.

**University of California – Davis – Dr. Blatchford, Dr. Makagon, Dr. Yang**

## Peer-Reviewed Publications

* Makagon, M.M. & Riber, A.B. Setting research driven duck-welfare standards: a systematic review of Pekin duck welfare research. Poultry Science 101: 101614
* Wood, B.N., Rufener, C.R., Makagon, M.M., & Blatchford, R.A. The utility of scatter feeding as enrichment: Do broiler chickens engage with scatter-fed items? Animals, 11: 3478
* Pullin, A.N., Farrar, V.S., Loxterkamp, J.W., Jones, C.T., Calisi, R.M, Horback, K, Lein, P.J., & Makagon, M.M. Providing height to pullets does not influence hippocampal dendritic morphology or brain-derived neurotrophic factor at the end of the rearing period. Animals (Submitted)

## Peer-Reviewed Abstracts and Proceedings

* Makagon, M.M, Lee, B., & Broadus, L.J. (Accepted) Consequences of mixed sex rearing on reproductive behavior and physiology of sexually mature drakes, and flock fertility. Proceedings of the International Congress of the International Society for Applied Ethology.

## Conference Papers, Posters, and Presentations

* Conference Poster. Accepted for presentation at the 2022 International Congress of the International Society for Applied Ethology. Presentation title: Consequences of mixed sex rearing on reproductive behavior and physiology of sexually mature drakes, and flock fertility. Authors: Makagon, M.M, Lee, B., & Broadus, L.J.
* Conference Presentation. Presented orally at the 2021 Animal Behavior Soceity Conference. Title: Changes to Pekin drake reproductive behaviors as a consequence of physical access to imprinting hens. Title: The effect of pullet rearing on the distribution of adult hens in multi-tiered aviaries. Authors: Broadus, L.J, Lee, B., & Makagon, M.M.
* Conference Poster. Presented at the 2021 Iowa Egg Industry Symposium, Ames, IA. Title: The effect of pullet rearing on the distribution of adult hens in multi-tiered aviaries Authors: Pullin A.N., Rufener C.B., Millman S.T., Tarlton J., Toscano M., Blatchford R.A., Makagon M.M.
* Conference Presentation. Presented orally at the 2021 International Poultry Scientific Forum, Atlanta, GA. Title: The role of pullet rearing and hen age on the distribution of layers in multi-tiered aviaries. Authors: Pullin, A.N., Rufener, C.B., Millman, S.T., Tarlton, J., Toscano, M., Blatchford, R.A., & Makagon, M.M.

## Conference Presentation. Presented at the AMSA 75th Reciprocal Meat Conference, Des Moines, IA. Title: Antibiotic resistance pattern of bacteria isolated from a small-scale poultry facility.

## Invited Presentations

* Invited Talk. 2022 Midwest Poultry Federation Congress. Title: The Role of Early Experience on the Behavior and Bone Integrity of Hens Housed in Cage-free Aviaries. Authors: Makagon, M.M & Pullin, A.N.

## Invited Talk. 2022 Poultry Science Association Annual Meeting Symposium. Title: A bird’s eye view: The importance of the laying hen’s experience in a successful enrichment program. Author: R.A. Blatchford

## Dissertation and Thesis

Broadus, Lindsey J. Investigating How Factors Experienced during Early Life Affect Adult Behavioral and Physiological Responses in Multiple Species of Anitidae. PhD Dissertation. Animal Behavior Graduate Group, University of California Davis (Filed 06/27/2022)

Pullin, Allison N. The Effect of Rearing Environments on the Spatial Abilities of Laying hens. PhD Dissertation. Animal Behavior Graduate Group, University of California, Davis (Filed 06/30/2022)

Graham, Elisha. Resource utilization by laying hen pullets when reared with access to varying heights. Animal Biology Graduate Group, University of California, Davis (Filed 03/18/2022)

**University of Connecticut – Dr. Amalaradjou, Dr. I. Upadhyaya, Dr. A. Upadhyaya, Dr. Venkitanarayanan**

* Reddyvari, R; Amalaradjou M.A. Controlling Salmonella on eggs using probiotics and postbiotics. Northeast SARE. 2022-2024. $15,000.
* Amalaradjou, MA; Upadhyaya, I; Boney, J. A; Darre, M. A comprehensive probiotic-based approach to promote layer performance, layer health and egg safety for small and midsize farms. USDA NIFA. 2021-2025. $500,000.
* Amalaradjou, MA; Upadhyaya, I. In ovo and early probiotic supplementation to control *Salmonella* in broilers. USDA NIFA SARE. 2021-2024. $150,000.
* Venkitanarayanan, K., Darre, M., Amalaradjou, MA., Upadhyay, A., Upadhyay, I., Luo, Y., Martin, G., Boney, J., Lillehoj, H., Porter, T., Weimer., S., Moyle, J., Thakur, S., Ashwell, C., Kolar, P., Boyes, K., Pairis-Garcia, M., Borst, R., Liang, K., Fasina, Y., Fanatico, A., Czarick, M., Fairchild, B., Ramos, J., Rojas, M., Donoghue, A,, Moore, P., Ashworth, A., Lyte, J., Dridi, S., Arsi, K., Bramwall, S., Kommalapati, R., Mooyottu, S., Tangudu, C., Johny, A. Systems-based integrated program for enhancing the sustainability of antibiotic-restricted poultry production. USDA NIFA. 2020-2025. $10,000,000.
* Sartini, B; Upadhyay, A; Upadhyaya, I. Developing Evidence-based Handling Guidelines for Improving the Safety of Free- range Poultry Eggs. USDA-NIFA-AFRI. 05/2021- 04/2023. $200,000.
* Upadhyay, A., Upadhyaya, I., Ghimire, S. Enhancing the Safety of Eggs and Fresh Produce by Novel Ultra-fine Bubble Technology and Farmer Training. NE-SARE. 03/2020 – 02/2023. $150,000.
* Amalaradjou, MA; Darre, M; Reed, S., Mandoiu, I. Effects of in-ovo probiotic supplementation on muscle growth and performance in broilers. USDA NIFA. 2020-2022. $200,000.
* Upadhyay, A., Fiala, N., Luo, Y., Mishra, N., (University of Connecticut); Arsi, K., Wagle, B., (University of Arkansas); Robinson, K., Donoghue, A., (USDA-ARS, Fayetteville, AR). Developing plant-based drinking water supplements for controlling *Salmonella* and *Campylobacter jejuni* in broiler chickens. USDA NIFA AFRI (A1332 program). 01/2021-01/2026. $455,000.
* Upadhyay, A., Fiala, N., Ghimire, S., Darre, M., (University of Connecticut); Fanatico, A., (Appalachian State University); Gekara, O., (Cal Poly Pomona), Arsi, K., (University of Arkansas); Donoghue, A., (USDA-ARS, Fayetteville, AR). Novel microbubble technology to reduce contamination of poultry products and fresh produce for small and medium veteran farmers. USDA NIFA AFRI. 07/2020 - 06/2024. $500,000.

Other products:

Abstracts: (\* Indicates corresponding author).

1. Yuying Ren, Mairui Gao, Ragini Reddyvari, Si Lu, **Mary Anne Amalaradjou\*.** 2022. Sustained probiotic supplementation promotes growth and performance in broiler chickens. 2022 PSA Annual Meeting, July 10-15, 2022.
2. Ragini Reddyvari, Rose Si Lu, Praveen Raja Kosuri and **Mary Anne Amalaradjou\*.** 2022. Incorporation of probiotics in wash water to helps control *Salmonella* Enteritidis on shell eggs. 2022 PSA Annual Meeting, July 10-15, 2022.
3. Mairui Gao, Yuying Ren, Ragini Reddyvari, Si Lu, **Mary Anne Amalaradjou\*.** 2022. Early probiotic application improves hatchability and hatchling quality of broiler chicks. 2022 PSA Annual Meeting, July 10-15, 2022.
4. Trushenkumar Shah, Chen Zhu, Brindhalakshmi Balasubramanian, **Abhinav Upadhyay, A**\*. 2022. Application of Trans-cinnamaldehyde nanoemulsion as a natural sanitizer for inactivating *Salmonella* Enteritidis in poultry drinking water system. Institute of Food Technologists (IFT) Annual Meeting, July 2022. (Note: The abstract was awarded 2nd place at the Z. John Ordal Food Microbiology Division Graduate Student Oral Competition at the Institute of Food Technologist Annual Conference, Chicago, July 2022).
5. Jodie Allen, Brindhalakshmi Balasubramanian, Kimberly Rankin, Trushenkumar Shah, T., Annie Donoghue, Indu Upadhyaya, Yangchao Luo, **Abhinav Upadhyay\*.**2022.Trans-cinnamaldehyde nanoemulsions reduces *Salmonella* Enteritidis survival and trans-shell migration on eggs without affecting egg color or embryo development. 2022 PSA Annual Meeting, July 10-15, 2022.

Peer-reviewed publications:

1. **Upadhyaya**, I., K. Arsi, A. Fanatico, B. Wagle, S. Shrestha, A. Upadhyay, C. N. Coon, C. Owens-Hanning, B. Mallman, J. Caldas-Cueva, J. Trushenski, M. N. Riaz, M. B. Farnell, D. J. Donoghue, A. M. Donoghue (2022). Impact of feeding bigheaded carp fish meal on meat quality and sensory attributes in organic meat chickens. ***Journal of Applied Poultry Research***, <https://doi.org/10.1016/j.japr.2021.100224>.

**University of Georgia - Dr. Chai**

1. Chai, L., Y. Zhao (Eds). Housing Environment and Farm Animals' Well-Being. MPDI Books. ISBN 978-3-0365-4585-1. 212 pages, June 2022. <https://www.mdpi.com/books/pdfview/book/5695>
2. Qiao, Y., L. Chai, D. He, D. Su (Eds). 2022. Advances in Sensors, Big Data and Machine Learning in Intelligent Animal Farming. MPDI Books. ISBN 978-3-0365-4036-8. 230 pages, May 2022.

<https://www.mdpi.com/books/pdfview/book/5492>.

1. Chai, L\*, Y. Zhao, H. Xin, and B. Richardson (2022). Heat treatment for disinfecting egg transport tools. *Applied Engineering in Agriculture*, 38 (2), 343-350.
2. Chai, L\*, S. Aggrey, A. Oladeinde, C. Ritz, T. Applegate (2022). An Automated Approach to Monitoring Poultry Floor Distribution. *UGA Extension Bulletin*. In Press.
3. Yang, X., L Chai, R.B. Bist, S. Subedi, Z. Wu. 2022. A Deep Learning Model for Detecting Cage-Free Hens on the Litter Floor. *Animals* 12(15), 1983.
4. Guo, Y., S. Aggrey, A. Oladeinde, J. Johnson, G. Zock. L. Chai (2021). A Machine Vision-Based Method Optimized for Restoring Broiler Chicken Images Occluded by Feeding and Drinking Equipment. *Animals*.11 (1), 123.
5. Oladeinde, A, Z. Abdo, M. Press, --------, L. Chai, C. Ritz (2021). Horizontal gene transfer is the main driver of antimicrobial resistance in broiler chicks infected with Salmonella enterica serovar Heidelberg. *mSystems*, 6 (4): e00729-21.
6. Wan, Y., R. Ma, A. Khalid, L. Chai, et al. (2021). Effect of the pellet and mash feed forms on the productive performance, egg quality, nutrient metabolism, and intestinal morphology of two laying hen breeds. *Animals*. 11 (3): 107.
7. Johnson, J., B. Zwirzitz, A. Oladeinde, M. Milfort, T. Looft, L. Chai, G. Zock, M. Sommers, S. Tunim, and S. E. Aggrey. 2021. Succession patterns of the bacterial community in poultry litter after bird removal and sodium bisulfate application. *Journal of Environmental Quality*. 50:923–933.
8. Subedi S., S. Koirala, L. Chai (2021). COVID-19 in Animals: Host Susceptibility and Farm Prevention Strategies. *Animals*, 11 (3), 640.

## Peer-Reviewed Abstracts and Proceedings

1. Bist, R. L. Chai\*, X. Yang, S. Subedi. 2022. Air quality in cage-free hen houses during pullets production. 2022 ASABE Annual International Meeting. Paper# 2200329 (doi:10.13031/aim.202200329).
2. Qiao, Y., Y. Guo, D. He, L. Chai. 2022. Deep Learning-based Autonomous cow body detection
3. for smart livestock farming. 2022 ASABE Annual International Meeting. Paper#202200120 (doi:10.13031/aim.202200120).
4. Yang, X., L. Chai\*, R. Bist, and S. Subedi. 2022. Litter quality in cage-free houses. 2022 ASABE Annual International Meeting. Paper# 2200925.(doi:10.13031/aim.202200925).
5. Chai, L. 2022. Developing next-gen data management strategies for smart poultry farms. 2022 Poultry Science Association Annual Meeting (abstract#493S).
6. Bist, R., L. Chai\*, P. Regmi, D. Karcher, Y. Guo, C. Ritz, W. Kim, D. Jones, A. Singh. 2022. Bedding Management for Suppressing Particulate Matter in Cage-free Layer Houses. 2022 Poultry Science Association Annual Meeting (abstract#71).
7. Subedi, S., L. Chai\*, R. Bist, X. Yang. 2022. Tracking Pecking Behaviors and Damages with Machine Vision in Cage-free Hen Houses. 2022 Poultry Science Association Annual Meeting (abstract#21).
8. Yang, X., L. Chai\*, R. Bist, S. Subedi. 2022. A deep learning model for detecting hens on litter floor of cage-free houses. 2022 Poultry Science Association Annual Meeting (abstract#22).
9. Chai, L. 2022. Mitigating Ammonia Emissions from Litter of Cage-free Laying Hens. 2022 GGAA June 5-9, Orlando, Florida, USA (Abstract).
10. Ramesh, B., L. Chai, X. Yang, S. Subedi 2022 UGA Poultry Science Graduate Research Forum. Bedding management for dust control. May 4, 2022 (Poster).
11. Subedi, S., Ramesh, B., X. Yang, and L. Chai. 2022. Tracking Pecking Behaviors and Damages with Machine Vision in Cage-free Hen Houses. UGA Poultry Science Graduate Student Seminar. May 4, 2022. Poster.
12. Chai, L. Mitigating greenhouse gas emission from poultry production. 8th International Greenhouse Gas & Animal Agriculture Conference (Abstract accepted). June 5-9, 2022.
13. Bist, R., X. Yang, S. Subedi, Y. Guo, M. Sharma, A. Singh, W. Kim, C. Ritz, D. Jones, P. Regmi, L. Chai\*. 2022. Effects of pullets age and activities on air quality in the cage-free house. 2022 International Poultry Scientific Forum (IPSF), Jan. 24-25, 2022. M118.
14. Guo, Y., A. Oladeinde, R. Rekaya, A. Ghareeb, J.Foutz, G. Zock, R. Bist, S. Aggrey\*, L. Chai\*. 2022. A Thermal Imaging Method for Evaluating Broiler Growth Parameters. 2022 International Poultry Scientific Forum (IPSF) Jan. 24-25, 2022. P213.
15. Yang, X., R. Bist, S. Subedi, Guo, Y., C. Ritz, L. Chai\*. 2022. Monitoring litter quality in cage-free facilities with W-36 pullets. 2022 International Poultry Scientific Forum (IPSF) Jan. 24-25, 2022. P280.
16. T. Looft, L. Chai, G. Zock. (2021). Succession patterns of poultry litter microbiota after bird removal and PLT® application. 2021 International Poultry Scientific Forum. Abstract # M25, page 9.
17. Zock, G., L. Chai, A. Oladeinde, S. Aggrey, J. Johnson, Y. Guo. (2020). Broiler house particulate matter, aerobiome and antibiotic resistant E. coli under “raised without antibiotics” production. *Poultry Science* 99 (E-suppl. 1), 125. (2020 Poultry Science Association Meeting abstract)
18. Guo, Y., L. Chai, S. Aggrey, A. Oladeinde, J. Johnson, G. Zock. (2020). A machine vision-based method for monitoring broiler floor distribution in feeding and drinking zones. *Poultry Science* 99 (E-suppl. 1), 19. (2020 Poultry Science Association Meeting abstract)

## Conference Papers, Posters, and Presentations

1. Chai, L., C. Dunkley, C. Ritz. Air Quality in Commercial Broiler Breeder Houses. (2021) ASABE Annual International Meeting paper. Paper # 2100141.
2. Guo, Y, L. Chai. (2021). Monitoring Animal Group Distribution Index with the Machine Vision-Based Technology in the Poultry House. 2021. ASABE Annual International Meeting paper. # 2101234.
3. Guo, Y., L. Chai, D. He. 2020. Detection of broiler chicken population and distribution on pen floor using machine vision-based technology. 2020 ASABE Annual International Virtual Meeting-2000198 (doi:10.13031/aim.202000198).
4. Chai, L, B. Jia, Y. Guo, G. Zock. Imaging Techniques for Chicken Products Detection. 2020 ASABE Annual International Virtual Meeting-2000127 (doi:10.13031/aim.202000127).

## Invited Presentations

1. Chai, L. 2022. Air management in cage-free houses. 2022 ASABE Meeting, July 17-20, 2022, Houston, TX.
2. Chai, L. 2022. Litter quality management in cage-free houses during pullet rearing. 2022 ASABE Meeting, July 17-20, 2022, Houston, TX.
3. Chai, L. 2022. Developing next-gen data management strategies for smart poultry farms. 2022 Poultry Science Association Annual Meeting, July 12, 2022 (Invited speaker).
4. Chai, L. 2022. Precision Poultry Farming and Data Management. Invited talk by Nanjing Agricultural University, July, 8, 2022 (invited talk).
5. Chai, L. 2022. Mitigating Ammonia Emissions from Poultry Houses. 8th International Greenhouse Gas & Animal Agriculture Conference, June 6, 2022, Orlando, Florida, USA.
6. Chai, L (2022). Data Science in Precision Poultry Farming. UGA College of Agricultural and Environmental Science Data Science Seminar (February 18, 2022). (Invited).
7. Chai, L (2022). AI Technologies for Precision Poultry Farming. UGA Brian Driven AI Research Seminar (February 14, 2022). (Invited Talk).
8. Chai, L. (2021). Air Quality Management in Poultry Houses. 2021 ASABE Annual Meeting. Plant, Animal and Facility System Distinguished Lecture. July 14, 2021 (Invited Talk).
9. Chai, L. 2021. Data Science in Poultry Production. UGA College of Agricultural and Environmental Science Data Science Seminar (April 9, 2021). (Invited Talk).
10. Chai, L. 2021. Poultry House Environmental Management. Department of Animal Science Seminar at University of Tennessee (March 10, 2021). (Invited Talk).

## Extension Activities and Publications

1. Coordinator, 2022 Georgia Layer Conference -Virtual. September 26, 2022.

(150 registered participants by September 20).

1. Coordinator, 2022 Georgia Precision Poultry Conference -Virtual. May 3, 2022.

(Initiated by Chai; the 2nd annual conference had 335 registered participants globally from 33 different countries).

1. Coordinator, 2021 Georgia Precision Poultry Conference -Virtual. May 4, 2021.

(Initiated by Chai; the conference had 322 registered participants globally from over 30 different countries).

1. Facilitator of Layer Production Module, 2021 Georgia International Poultry Training. Feb. 16-18, 2021. (192 registered participants for the Layer Production Module).
2. Coordinator, 2020 Georgia Layer Conference-Virtual. September 21, 2020.

Extension publications:

1. Chai, L. (2022). Robots for poultry and egg production. UGA Precision Poultry Farming Newsletter. August 24, 2022.

<https://site.caes.uga.edu/precisionpoultry/2022/08/robots-for-precision-poultry-and-egg-production/>

1. Dunkley, C., C.Ritz, L. Chai (2022). Using Container Composters to Dispose Poultry Mortality. UGA Extension Bulletin. B1550. In press.
2. Chai, L. (2022). Thermal imaging and smart cooling for laying hens in commercial cage-free houses. UGA Precision Poultry Farming Newsletter. July 22, 2022.

<https://site.caes.uga.edu/precisionpoultry/2022/07/thermal-imaging-and-smart-cooling-for-laying-hens-in-commercial-cage-free-houses/>

1. Chai, L. (2021). Sprinkling cooling for cage-free hens. UGA Poultry Extension Tips, July 2021. <https://site.extension.uga.edu/poultrytips/2021/07/sprinkling-cooling-for-cage-free-hens/>
2. Chai, L (2021). Cage-free Hen House Floor Egg Management. UGA Poultry Extension Tips. January 2021. <https://site.extension.uga.edu/poultrytips/2021/01/cage-free-hen-house-floor-egg-management/>

**University of Minnesota - Dr. Johny**

## Peer-Reviewed Publications

1. Shijinaraj Manjankattil, Divek V. T. Nair, Claire Peichel, Sally Noll, Timothy J. Johnson, Ryan B. Cox, Annie M. Donoghue, Anup Kollanoor Johny. 2021. Effect of caprylic acid alone or in combination with peracetic acid against multidrug-resistant *Salmonella* Heidelberg on chicken drumsticks in a soft scalding temperature-time setup. *Poult. Sci.* 100:101421 <https://doi.org/10.1016/j.psj.2021.101421>
2. Grace Dewi, Shijinaraj Manjankattil, Claire Peichel, Shiliang Jia, Zata Vickers, Timothy Johnson, Carol Cardona, Sally Noll, Anup Kollanoor Johny. 2021. Effect of plant-derived antimicrobials against multidrug-resistant *Salmonella* Heidelberg in ground Turkey. Poult. Sci. 101:101581. <https://www.sciencedirect.com/science/article/pii/S0032579121006027>
3. Grace Dewi, Anup Kollanoor Johny. 2022. *Lactobacillus* in Food Animal Production—A Forerunner for Clean Label Prospects in Animal-Derived Products. Front. Sust. Food Syst. 6:831195. <https://www.frontiersin.org/articles/10.3389/fsufs.2022.831195/full>

## Peer-Reviewed Abstracts and Proceedings

1. Shijinaraj Manjankattil, Grace Dewi, Claire Peichel, Medora Creek, Peter Bina, Kay Lerohl, Kerem Deniz, Luna Akhtar, Robert Porter Jr., Tim Johnson, Sally Noll, and Anup Kollanoor Johny. 2022. Effects of a turkey-originated *Lactobacillus salivarius* probiotic and a live attenuated *Salmonella* Typhimurium vaccine on the cecal colonization and internal organ dissemination of emerging multidrug-resistant *Salmonella* in growing turkeys. Poultry Science Annual meeting, Texas.

2. Claire Peichel, Shijinaraj Manjankattil, Grace Dewi, Luna Akhtar, Peter Bina, Medora Creek, Kerem Deniz, John Hobbs, Elaina Wichmann, Emma Feist, Mikayla Schlosser, Timothy J. Johnson, Sally Noll, and Anup Kollanoor Johny. Reduction of *Salmonella* Reading using a dairy-originated probiotic bacterium, *Propionibacterium freudenreichii,* in combination with a live attenuated *Salmonella* Typhimurium vaccine in growing turkeys. ASAS Annual Meeting, Oklahoma.

3. C. Peichel, S. Manjankattil, G. Dewi, T. Johnson, S. Noll, C. Cardona, and A. Kollanoor Johny. 2021. Effects of Lemongrass and Pimenta Essential Oils on *Salmonella* Reading in Ground Turkey. Institute of Food Technologists Annual Meeting.

4. C. Peichel\*, S. Manjankattil, G. Dewi, T. Johnson, S. Noll, and A. Kollanoor Johny. 2021. Effect of a live attenuated *Salmonella* Typhimurium-vaccine against emerging *Salmonella* Reading in poults. PSA Annual Meeting.

5. C. Peichel, S. Manjankattil, G. Dewi, A. Amann, P. Bina, M. Creek, L. Akhtar, T. Johnson, S. Noll, C. Cardona, and A. Kollanoor Johny. 2021. Reduction of cecal colonization and internal organ dissemination of emerging *Salmonella* enterica serovar Reading using a turkey-derived probiotic and a *Salmonella* Typhimurium vaccine in growing turkeys. PSA Annual Meeting.

6. D. V. T. Nair, S. Manjankattil, C. Peichel, A. Donoghue, K. Venkitanarayanan, A. Kollanoor Johny. 2021. Antimicrobial efficacy of a plant-derived compound, carvacrol, against *Salmonella* Enteritidis on organic chicken carcasses. 2021 Poultry Science Association Annual meeting.

7. G. Dewi, S. Manjankattil, C. Peichel, T. Johnson, S. Noll, C. Cardona, and A. Kollanoor Johny. 2021. Effect of turkey-derived *Lactobacillus* probiotics and *trans*-cinnamaldehyde against multidrug-resistant *Salmonella* Heidelberg in turkey poults. J. Food Prot. 84: 45 (Suppl. A). Accessed at <https://www.foodprotection.org/upl/downloads/library/iafp-2021-abstract-book.pdf>

8. S. Manjankattil, G. Dewi, C. Peichel, T. Johnson, S. Noll, C. Cardona, and A. Kollanoor Johny. 2021. Effect of pimenta essential oil against multidrug-resistant *Salmonella* Agona and *Salmonella*Saintpaul in non-processed turkey breast meat and ground turkey. PSA Annual Meeting.

## Conference Papers, Posters, and Presentations

1. Shijinaraj Manjankattil, Claire Peichel, Grace Dewi, Anup Kollanoor Johny. 2022. Targeted preharvest interventions against *Salmonella* in turkeys. Midwest Poultry Federation Convention.

2. Shijinaraj Manjankattil, Claire Peichel, Divek V. T. Nair, Grace Dewi, Anup Kollanoor Johny. 2022. Plant-based antimicrobials against *Salmonella* in turkey processing. Midwest Poultry Federation Convention.

## Invited Presentations

1. Kollanoor Johny. 2022. Addressing emerging *Salmonella* in turkeys using vaccination and probiotics. MTGA Summer Summit, Alexandria, MN.
2. Kollanoor Johny. 2022. Targeted preharvest interventions against *Salmonella* in turkeys. Midwest Poultry Federation Convention.
3. Kollanoor Johny. 2022. Plant-based antimicrobials against *Salmonella* in turkey processing. Midwest Poultry Federation Convention.
4. Kollanoor Johny. 2021. Preharvest strategies to control multiple *Salmonella* serovars in turkeys. Minnesota Nutrition Conference.
5. Kollanoor Johny. 2021. Exploring sustainable alternatives for poultry food safety. South Dakota State University – Des Moines District Food Safety Summit.

**University of Minnesota – Dr. Noll**

## Peer-Reviewed Publications (duplicative MN publications not listed)

Boukherroub, K., and S. L. Noll. 2022. Gamebird Physiology. In “Gamebird Medicine and Management”, Editors R. Porter and T. Morishita. Elsevier (*In Press*)

## Peer-Reviewed Abstracts and Proceedings

Furo, G., Li, Y., C. Cardona, S. Noll. 2021. Is turkey welfare evaluated? – Validation of  
footpad scoring systems to improve turkey welfare. Poult. Sci. 100 (E-Suppl 1) p6

Theis, E., W. Martin, S. Noll, R. Porter, C. Carlson, M. Olson, A. Schuft. 2021. An online

webinar series to teach backyard flock owners about poultry viral respiratory diseases. Poult. Sci. 100 (E-Suppl 1) p14

Piotter\*, D., G. Furo, J. Brannon, D. Karcher, S.L. Noll. 2021. Epiphyseal and diaphyseal bone mineral density comparison of turkey Femurs. Poult. Sci. 100 (E-Suppl 1) p 179.

\*Dalton received a certificate of excellence for his abstract and poster as an undergraduate student.

## Conference Papers, Posters, and Presentations

Noll, S. L. 2021. Nutritional and management aspects of early poult performance. Minnesota Nutrition Conference. <https://mnnutritionconf.umn.edu/sites/mnnutritionconf.umn.edu/files/2021-09/NRN%209%20MAN%20Noll%20Final_0.pdf>

## Invited Presentations

Noll, S. 2021. Research update – Soybean meal and turkey nutrition. Minnesota Turkey Growers Association Summer Meeting for members.

## Extension Activities and Publications

Furo, G., A. Schuft, S. Noll. 2021. Footpad dermatitis in turkeys. University of Minnesota Extension <https://www.youtube.com/watch?v=tWTKyW3trxE>

Noll, S. 2021. Presentation “Turkey Case Study - Rapid deterioration of litter conditions shortly after transfer from brooder to finish barn”. MultiState Poultry Health and Management School; Proceedings article – p 70 of the PHMS booklet

Noll, S. 2021 Presentation – Anatomy of the Respiratory System, Extension series on respiratory disease for small flock owners <https://www.youtube.com/watch?v=PXZxpCrkkw4>