John B. Cole

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Contents

Education

2014	**Georgetown University, Washington, DC** Certificate in Legislative Studies
2003	**Louisiana State University, Baton Rouge, LA** Ph.D. in Animal, Dairy, and Poultry Science
1996	**Louisiana State University, Baton Rouge, LA** M.S. in Animal and Dairy Science (Minor: Applied Statistics)
1994	**Louisiana State University, Baton Rouge, LA** B.S. in Animal Systems (Dairy Production) (Minor: Microbiology)
1990	**Louisiana School for Math, Science, and the Arts, Natchitoches, LA** Humanities Focus

Employment

March 2024–Present	**Chief Research & Development Officer**, Council on Dairy Cattle Breeding, Bowie, MD
January 2021–February 2024	**PEAK Sr. VP of Research & Development**, URUS Group LP, Madison, WI
January 2016–December 2020	**Acting Research Leader**, Animal Genomics and Improvement Laboratory, Henry A. Wallace Beltsville Research Center, Agricultural Research Service, USDA, Beltsville, MD
January 2013–Present	**Courtesy Sustaining Professor**, Department of Animal Sciences, University of Florida, Gainesville
May 2014–December 2015	**Research Geneticist (Animals)**, Animal Genomics and Improvement Laboratory, Henry A. Wallace Beltsville Research Center, Agricultural Research Service, USDA, Beltsville, MD
January 2011–Present	**Adjunct Professor**, Department of Animal Science, North Carolina State University, Raleigh.
January 2011–December 2011	**Legislative Fellow**, Office of Senator Mark L. Pryor (AR), United States Senate, Washington, DC (Training detail from USDA)
December 2003–April 2014	**Research Geneticist (Animals)**, Animal Improvement Programs Laboratory, Henry A. Wallace Beltsville Research Center, Agricultural Research Service, USDA, Beltsville, MD
June 2002–December 2003	**Data Manager**, Southern Regional Climate Center, Louisiana State University, Baton Rouge, LA
June 2000–June 2002	**Computer Analyst 2**, College of Education, Louisiana State University, Baton Rouge, LA
1998, 1999	**Seminar Coordinator,** University of Minnesota (Life Sciences Summer Undergraduate Research Program), St. Paul, MN
August 1996–May 2000	**Graduate Assistant,** University of Minnesota (Department of Animal Science), St. Paul, MN
June 1994–May 1996	**Graduate Research Assistant,** Louisiana State University (Department of Dairy Science), Baton Rouge, LA

Extramural Funding

2020

NIFA Agriculture and Food Research Initiative proposal “Genetic Mechanism of Reproductive Heterosis in Dairy Cattle” for $500,000 (Y. Da et al.; Proposal #: 2019-05312; recommended for funding on 01/03/2020).

NIFA Agriculture and Food Research Initiative proposal “Big-data Genomic Investigation to Improve Dairy Cattle Health” for $500,000 (L. Ma et al.; Proposal #: 2019-05928; recommended for funding on 02/26/2020).

2019

Minnesota Agricultural Experiment Station Rapid Agricultural Response Fund grant “Reducing Mastitis in the Dairy Cow by Increasing the Prevalence of Beneficial Polymorphisms in Genes Associated with Mastitis Resistance” for $233,324 (Crooker et al.; 07/01/2019–06/30/2021)

NIFA Food and Agriculture Cyberinformatics and Tools Initiative Program grant “Enhanced Prediction of Dairy Cattle Performance Combined with a Tool to Improve Replacement and Breeding Decisions” for $500,000 (De Vries et al.; 09/01/2019–08/31/2023)

NIFA Animal Breeding and Functional Annotation of Genomes (A1201) grant “Enabling Tools for Microbiome-Based Trait Selection in Dairy Cows” for $500,000 (Proposal #: 2019-05592; Suen et al.; recommended for funding on 10/09/2019).

2018

NIH and USDA-NIFA Dual Purpose R01 grant “Physiological and Genetic Insights into Pregnancy Loss” for $1,851,398 (Accession #: 4097656; T.E. Spencer et al.; 07/01/2018–06/30/2023)

2017

AFRI Competitive Grant “Moving Livestock Research Forward” for $50,000 (Grant #: 2017-67015-26907; Reecy et al.; 08/15/2017–08/14/2019)

2016

AFRI Foundational grant “Sequence-Based Big Data Genomic Discovery and Application to Improve Dairy Fertility” for $350,000 (Grant #: 2016-67015-24886; L. Ma, et al.; 02/15/2016–02/14/2019)

2014

Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) “Ciências sem Fronteiras” grant “Genomic Selection for Dairy Cattle in Brazil” for $174,000 (Grant #: 301025/2014-2; M.V.G.B. da Silva and J.B. Cole; 2014–2017)

NSF grant “ABI Innovation: An Integrative Approach to Identifying Highly Heritable Subtypes of Complex Phenotypes” for $585,717 (Grant #: 1356655; J. Bi et al.; 07/02/2014–04/01/2016)

2013 AFRI Integrated grant “Improving Fertility of Dairy Cattle Using Translational Genomics” for $3,000,000 (Grant #: 2013-68004-20365; T.E. Spencer, et al.; 01/01/2013–12/31/2015)

2011 Southeast Milk, Inc. Milk Checkoff Program grant “Development of tools to select cattle that are genetically resistant to heat stress” for $18,000 (P.J. Hansen, S. Dikmen, and J.B. Cole, 7/1/2011–6/30/2012)

2010 AFRI Integrated grant “Improving Fertility During Heat Stress in Lactating Dairy Cows” for $1,000,000 (Grant #: 2010-85122-20623; P.J. Hansen et al.; 03/01/2010–02/28/2014)

2008 NRI grant “Genome Signature of Artificial Selection and Genome-Wide Association Analysis in Holstein Cows” for $450,000 (Grant #: 2008-35205-18846; Y. Da et al.; 04/01/2008–08/31/2010)

2001 The Seeing Eye, Inc. grant “Genetic Analysis in a Colony of Guide Dogs” for $500 (J.B. Cole; 2001-2002)

Awards

2022 **100 Most Highly Cited Papers (2019-2022),** “Genetics, genome-wide association study, and genetic improvement of dairy fertility traits” (Ma et al.; co-author), Journal of Dairy Science, August 2021.

Editor’s Choice Article of the Month, Production: Genetics and Genomics (Lozada-Soto et al.; co-author), Journal of Dairy Science, November 2022.

2021 **100 Most Highly Cited Papers (2018-2021),** “Symposium review: Possibilities in an age of genomics: The future of selection indices” (Cole and VanRaden; corresponding author), Journal of Dairy Science, August 2021.

100 Most Highly Cited Papers (2018-2021), “Invited review: Genetics and claw health: Opportunities to enhance claw health by genetic selection” (Heringstad et al.; co-author), Journal of Dairy Science, August 2021.

100 Most Highly Cited Papers (2018-2021), “Symposium review: Genetics, genome-wide association study, and genetic improvement of dairy fertility traits” (Ma et al.; co-author), Journal of Dairy Science, August 2021.

2020 **Peer Research Award**, National Association of Animal Breeders

	100 Most Highly Cited Papers (2017-2020), "Invited review: Genetics and claw health: Opportunities to enhance claw health by genetic selection" (Heringstad et al.; co-author), Journal of Dairy Science, August 2020.
	Editor's Choice Article of the Month, Production: Genetics and Genomics (corresponding author), Journal of Dairy Science, November 2020
2019	**Editor's Choice Article of the Month**, Production: Breeding, Genetics, and Genomics (corresponding author), Journal of Dairy Science, December 2019
	Editor's Choice Article of the Month, Production: Breeding, Genetics, and Genomics (co-author), Journal of Dairy Science, June 2019
	Editor's Choice Article of the Month, Production: Breeding, Genetics, and Genomics (co-author), Journal of Dairy Science, May 2019
2018	**Outstanding Service Award**, National Dairy Herd Information Association
2017	**Editor's Choice Article of the Month,** Production: Management and Economics (co-author), Journal of Dairy Science, June 2017
	Editor's Choice Article of the Month, Production: Breeding, Genetics, and Genomics (co-author), Journal of Dairy Science, May 2017
	Editor's Choice Article of the Month, Production: Breeding, Genetics, and Genomics (co-author), Journal of Dairy Science, April 2017
2016	**Editor's Choice Article of the Month**, Genetics and Breeding (co-author), Journal of Dairy Science, October 2016
	Editor's Choice Article of the Month, Genetics and Breeding (corresponding author), Journal of Dairy Science, September 2016
2015	**Jay L. Lush Award in Animal Breeding and Genetics**, American Dairy Science Association, for outstanding research in animal breeding with the potential for improvement of dairy cattle
	Award of Recognition, Council on Dairy Cattle Breeding, for international development of genomic predictions for dairy cattle (group award)
2014	**Editor's Choice Article of the Month**, Our Industry Today (co-author), Journal of Dairy Science, July 2014
	Editor's Choice Article of the Month, Genetics and Breeding (corresponding author), Journal of Dairy Science, May 2014

High-Impact Research Publication (one of eight publications selected, co-author), Institute of Food and Agricultural Sciences, University of Florida

2013 **Editor's Choice Article of the Month**, Genetics and Breeding (co-author), Journal of Dairy Science, February 2013

2010 **USDA Secretary's Honor Award**, Cattle Genomics Consortium, for helping America promote sustainable agricultural production and biotechnology exports as America works to increase food security (group award)

2008 **President's Volunteer Service Award**, Silver Award

1994 **Southern ADSA-SAD Undergraduate Paper Presentation Contest**, Production, 3rd Place

1993 **Southern ADSA-SAD Undergraduate Paper Presentation Contest**, Manufacturing, 1st Place

1990 **Recipient of the J. B. Frye, Jr. Scholarship in Dairy Science**

Peer-Reviewed Publications

2024 Cai, Wentao, **John B. Cole**, Iona M. MacLeod, Hans D. Daetwyler, Michael E. Goddard, Shuisheng Hou, Junya Li, Shengli Zhang, and Jiuzhou Song. 2024. Deciphering genetic architecture of milk production traits and genomic predictions using mammary multi-omics data in Holstein dairy cattle. Proceedings of the Royal Society B: Biological Sciences. (Submitted 09/30/2023.)

Cole, J.B. 2024. Are there too many traits in selection indices? Journal of Dairy Science. (In preparation.)

Cole, J.B. 2024. Perspective: Can we actually do anything about inbreeding? Journal of Dairy Science. 107:643–648. https://doi.org/10.3168/jds.2023-23958.

Hoorn, Quinn A., Maria B. Rabaglino, Thiago F. Amaral, Tatiane Silva Maia, Fahong Yu, **John B. Cole**, and Peter J. Hansen. 2023. Machine learning to identify endometrial biomarkers predictive of pregnancy success following artificial insemination in dairy cows. Biology of Reproduction. (Accepted 04/03/2024.) https://doi.org/10.1093/biolre/ioae052.

Lozada-Soto, Emmanuel, Christian Maltecca, Jicai Jiang, **John Cole**, Paul VanRaden, and Francesco Tiezzi. 2024. Effect of germplasm exchange strategies on genetic gain, homozygosity, and genetic diversity in dairy stud populations: A simulation study. Journal of Dairy Science. (Submitted 04/01/2024.)

2023

Brink, Amber A., Wanda J. Weber, John D. Lippolis, **John B. Cole**, Aaron K. Rendahl, Luciano Caixeta, Sandra M. Godden, Anthony J. Seykora, and Brian A. Crooker. 2023. Short communication: Effect of Holstein genotype on *ex-vivo* interleukin-1β response to lipopolysaccharide (LPS), lipoteichoic acid (LTA) and heat-killed Gram-negative and Gram-positive bacteria. Veterinary Immunology and Immunopathology. 258:110573. https://doi.org/10.1016/j.vetimm.2023.110573.

Cole, John B., Bayode O. Makanjuola, Christina M. Rochus, Nienke van Staaveren, and Christine Baes. 2023. The effects of breeding and selection on lactation in dairy cattle: Pros and cons. Animal Frontiers. 13:55–63. https://doi.org/10.1093/af/vfad044.

Guinan, Fiona Louise, George Wiggans, Duane Norman, João Dürr, **John Cole**, Curtis Van Tassell, Ignacy Misztal, and Daniela Lourenço. 2023. Changes in genetic trends in US dairy cattle since the implementation of genomic selection. Journal of Dairy Science. 106:1110–1129. https://doi.org/10.3168/jds.2022-22205.

Neupane, M., J.L. Hutchison, **J.B. Cole**, C.P. Van Tassell, and P.M. VanRaden. 2023. Genomic evaluation of late term abortion recorded through Dairy Herd Improvement test plans. JDS Communications. 4:354–357. https://doi.org/10.3168/jdsc.2022-0341.

Schmidt, Patrícia Iana, Lucio Flavio Macedo Mota, Larissa Fernanda Simielli Fonseca, Danielly Beraldo dos Santos Silva, Gabriela Bonfá Frezzarim, Leonardo Machestropa Arikawa, Daniel Jordan de Abreu Santos, Ana Fabrícia Braga Magalhães, **John Bruce Cole**, Roberto Carvalheiro, Henrique Nunes de Oliveira, Daniel Joshua Null, Paul VanRaden, Li Ma, and Lucia Galvão de Albuquerque. 2023. Identification of candidate lethal haplotypes and genomic association with post-natal mortality and reproductive traits in Nellore cattle. Scientific Reports. 13:10399. https://doi.org/10.1038/s41598-023-37586-z.

2022

Al-Khudhair, A.S., D.J. Null, **J.B. Cole**, C.W. Wolfe, D.J. Steffen, and P.M. VanRaden. 2022. Inheritance of a mutation causing neuropathy with splayed forelimbs in Jersey cattle. Journal of Dairy Science. 105:1338–1345. https://doi.org/10.3168/jds.2021-20600.

Brink, Amber A., Wanda J. Weber, John D. Lippolis, **John B. Cole**, Sandra M. Godden, Anthony Seykora, and Brian A. Crooker. 2022. Effect of Holstein genotype on ex-vivo innate immune response to lipopolysaccharide (LPS) and lipoteichoic acid (LTA) during the periparturient period. Veterinary Immunology and Immunopathology. 251:110463. https://doi.org/10.1016/j.vetimm.2022.110463.

Gao, Y., S. Liu, R.L. Baldwin, VI, E.E. Connor, **J.B. Cole**, L. Ma, C.-J. Li, L. Fang, and G.E. Liu. 2022. Functional annotation of regulatory elements in cattle genome reveals the roles of extracellular interaction and dynamic change of chromatin states in rumen development during weaning. Genomics. 114:110296. https://doi.org/10.1016/j.ygeno.2022.110296.

Liu, Shuli, Yahui Gao, Oriol Canela-Xandri, Sheng Wang, Ying Yu, Wentao Cai, Bingjie Li, Ruidong Xiang, Amanda J. Chamberlain, Erola Pairo-Castineira, Kenton D'Mellow, Konrad Rawlik, Charley Xia, Yuelin Yao, Paul Navarro, Dominique Rocha, Xiujin Li, Ze Yan, Congjun Li, Benjamin D. Rosen, Curtis P. Van Tassell, Paul M. VanRaden, Shengli Zhang, Li Ma, **John B. Cole**, George E. Liu, Albert Tenesa, and Lingzhao Fang. 2022. A multi-tissue atlas of regulatory variants in cattle. Nature Genetics. 54:1438–1447. https://doi.org/10.1038/s41588-022-01153-5.

Lozada-Soto, Emmanuel A., Christian Maltecca, Jicai Jiang, **John B. Cole**, Paul VanRaden, and Francesco Tiezzi. 2022. Genomic characterization of autozygosity and recent inbreeding trends in all major breeds of US dairy cattle. Journal of Dairy Science. 105:8956–8971. https://doi.org/10.3168/jds.2022-22116.

Ortega, M. Sofía, Derek M. Bickhart, Kelsey N. Clark, *Daniel J. Null*, *Jana L. Hutchison*, Jennifer C. McClure, and **John B. Cole**. 2022. Truncation of IFT80 causes early embryonic loss in Holstein cattle associated with the HH2 haplotype. Journal of Dairy Science. 105:9001–9011. https://doi.org/10.3168/jds.2022-21853.

Yang, Liu, Yahui Gao, Mingxun Li, Ki-Eun Park, *Shuli Liu*, Xiaolong Kang, Mei Liu, Adam Oswalt, Bhanu P. Telugu, Charles G. Sattler, Cong-jun Li, **John B. Cole**, Eyal Seroussi, Lingyang Xu, Lv Yang, Yang Zhou, Li Li, Hongping Zhang, Benjamin D. Rosen, Curtis P. Van Tassell, Li Ma, and George E. Liu. 2022. Genome-wide recombination analysis of in cattle single sperm. BMC Genomics. 23:181. https://doi.org/10.1186/s12864-022-08415-w.

Yao, Yuelin, *Shuli Liu*, Charley Xia, Yahui Gao, Zhangyuan Pan, Oriol Canela-Xandri, Ava Khamseh, Sheng Wang, Bingjie Li, Jianbin Li, Gaozhan Cai, Yi Zhang, Erola Pairo-Castineira, Kenton D'Mellow, Konrad Rawlik, Xiujin Li, Ze Yan, Congjun Li, Ying Yu, Shengli Zhang, Li Ma, Paul M. Vanraden, **John B. Cole**, Pablo J. Ross, Huaijun Zhou, Chris Haley, George E. Liu, Lingzhao Fang, and Albert Tenesa. 2022. Comparative transcriptome in large-scale human and cattle populations. Genome Biology. 23:176. https://doi.org/10.1186/s13059-022-02745-4.

2021

Bakshy, K., D. Heimeier, J.C. Schwartz, E.J. Glass, S. Wilkinson, R.A. Skuce, A.R. Allen, J. Young, J.C. McClure, **J.B. Cole**, *D.J. Null*, J.A. Hammond, T.P.L. Smith, and D.M. Bickhart. 2021. Development of polymorphic markers in the immune gene complex loci of cattle. Journal of Dairy Science. 104:6897–6908. https://doi.org/10.3168/jds.2020-19809.

Cole, J.B., J.W. Dürr, and E.L. Nicolazzi. 2021. Invited Review: The future of selection decisions and breeding programs: What are we breeding for, and who decides? Journal of Dairy Science. 104:5111–5124. https://doi.org/10.3168/jds.2020-19777.

Cole, J.B., and P.J. Hansen. 2021. Dairy cattle fertility after 12 years of genomic selection: Lessons learned, current applications, and future development. Proceedings of the Dairy Cattle Reproduction Council Annual Meeting (Submitted 09/10/2020.)

Gao, Y., L. Fang, R.L. Baldwin, E.E. Connor, **J.B. Cole**, L. Ma, C.J. Li, and G.E. Liu. 2021. Single-cell transcriptomic analyses of cattle ruminal epithelial cells during weaning. Genomics. 113:2045–2055. https://doi.org/10.1016/j.ygeno.2021.04.039.

Houlahan, Kerry, Flavio S. Schenkel, Dagnachew Hailemariam, Jan Lassen, Morten Kargo, **John B. Cole**, Erin E. Connor, Silvia Wegmann, Gerson A. Oliveira, Jr., Filippo Miglior, Allison Fleming, Tatiane C.S. Chud, and Christine F. Baes. 2021. Effects of incorporating dry matter intake and residual feed intake into a selection index for dairy cattle using deterministic modeling. MDPI Animals. 11:1157. https://www.mdpi.com/2076-2615/11/4/1157.

Li, *B.*, P.M. VanRaden, *D.J. Null*, J.R. O'Connell, and **J.B. Cole**. 2021. Major quantitative loci influencing milk production and conformation traits in Guernsey dairy cattle detected on BTA19. Journal of Dairy Science 104:550–560. https://doi.org/10.3168/jds.2020-18766.

Lozada-Soto, E.A., C. Maltecca, D. Lu, S. Miller**, J.B. Cole**, and F. Tiezzi. 2021. Trends in genetic diversity and the effect of inbreeding in American Angus cattle under genomic selection. Genetics, Selection, Evolution. 53:50. https://doi.org/10.1186/s12711-021-00644-z.)

Mueller, M.L., **J.B. Cole**, N.K. Connors, D.J. Johnston, I.A.S. Randhawa, and A.L. Van Eenennaam. 2021. Comparison of gene editing versus conventional breeding to introgress the POLLED allele into the tropically adapted Australian beef cattle population. Frontiers in Genetics. 12:593154. https://doi.org/10.3389/fgene.2021.593154.

Shen, Botong, Ellen Freebern, Jicai Jiang, Christian Maltecca, **John B. Cole**, George E. Liu, and Li Ma. 2021. Effect of temperature and maternal age on recombination rate in cattle. Front. Genetics. 12:682718. https://doi.org/10.3389/fgene.2021.682718.

Wu, Xiao-Lin, Kristen L. Parker Gaddis, Javier Burchard, H. Duane Norman, Ezequiel Nicolazzi, Erin E. Connor, **John B. Cole**, and João Dürr. 2021. An alternative Interpretation of residual feed intake by phenotypic recursive relationships in dairy cattle. JDS Communications. 2:371–375. https://doi.org/10.3168/jdsc.2021-0080.

2020

Cole, J.B., S.A.E. Eaglen, C. Maltecca, H.A. Mulder, and J.E. Pryce. 2020. The future of phenomics in dairy cattle breeding. Animal Frontiers 10:37–44. https://doi.org/10.1093/af/vfaa007.

Fang, L., W. Cai, S. Liu, J. Jiang, *B. Li*, S.G. Schroder, B.D. Rosen, C. Li, T.S. Sonstegard, L.J. Alexander, C.P. Van Tassell, P.M. VanRaden, **J.B. Cole**, Y. Yu, S. Zhang, L. Ma, and G.E. Liu. 2020. Comprehensive analyses of 723 transcriptomes enhance GWAS biological interpretation and genomic prediction for complex traits in cattle. Genome Research 30:790–801. https://doi.org/10.1101/gr.250704.119.

Freebern, E., D.J.A. Santos, L. Fang, J. Jiang, K.L. Parker Gaddis, C. Maltecca, **J.B. Cole**, and L. Ma. 2020. GWAS and fine-mapping of livability and six health traits in Holstein cattle. BMC Genomics 21:4. https://doi.org/10.1186/s12864-020-6461-z.

Li, B., P.M. VanRaden, E. Gunal, *D.J. Null*, E.E. Connor, M.J. VandeHaar, R.J. Tempelman, K.A. Weigel, and **J.B. Cole**. 2020. Genomic predictions of residual feed intake in US Holstein dairy cattle. Journal of Dairy Science 103:2477–2486. https://doi.org/10.3168/jds.2019-17332.

Liu, S., Y. Yu, S. Zhang, **J.B. Cole**, A. Tenesa, T. Wang, L. Ma, G.E. Liu, and L. Fang. 2020. Comparative epigenomics and genotype-phenotype association analyses revealed conserved genetic architecture underlying complex traits between cattle and human. Nature Ecology and Evolution 18:80. https://doi.org/10.1186/s12915-020-00792-6.

Maltecca, C., F. Tiezzi, **J. Cole**, and C. Baes. 2020. Exploiting homozygosity in the era of genomics—ROH, inbreeding and genomic mating programs. Journal of Dairy Science 103:5302–5313. https://doi.org/10.3168/jds.2019-17846.

McWhorter, T.M., *J.L. Hutchison*, H.D. Norman, **J.B. Cole**, G.C. Fok, D.A.L. Lourenço, and P.M. VanRaden. 2020. Investigating conception rate for beef service sires bred to dairy cows. Journal of Dairy Science 103:10374–10382. https://doi.org/10.3168/jds.2020-18399.

Nani, *J.P.*, L.R. Bacheller, **J.B. Cole**, and P.M. VanRaden. 2020. Discovering ancestors and connecting relatives in large genomic databases. Journal of Dairy Science 103: 1729–1734. https://doi.org/10.3168/jds.2019-17580.

Parker Gaddis, K.L., P.M. VanRaden, **J.B. Cole**, H.D. Norman, E. Niccolazi, and J.W. Dürr. 2020. Development, implementation and future perspectives of health evaluations in the U.S. Journal of Dairy Science 103:5354–5365. https://doi.org/10.3168/jds.2019-17687.

Rosen, B.D., D.M. Bickhart, R.D. Schnabel, S. Koren, C.G. Elsik, E. Tseng, T.N. Rowan, P.M. VanRaden, D.J. Null, W.Y. Low, A. Zimin, C. Couldrey, R. Hall, W. Li, A. Rhie, J. Ghurye, S.D. McKay, F. Thibaud-Nissen, J. Hoffman, W.M. Snelling, W. Warren, T.G. McDaneld, J.A. Hammond, J.C. Schwartz, W. Nandolo, S.G. Schroeder, A.M. Phillippy, **J.B. Cole**, C.P. Van Tassell, G. Liu, T.P.L. Smith, and J.F. Medrano. 2020. De novo assembly of the cattle reference genome with single-molecule sequencing. GigaScience 3:giaa021. https://doi.org/10.1093/gigascience/giaa021.

Santos, D.J.A., **J.B. Cole**, G.E. Liu, P.M. VanRaden, and L. Ma. 2020. gamevar.f90: A software package for calculating individual gametic diversity. BMC Bioinformatics 21:100. https://doi.org/10.1186/s12859-020-3417-x.

Young, J., J. Skarlupka, R. Tassinari, A. Bouche, K.F. Kalscheur, J.C. McClure, **J.B. Cole**, P.J. Weimer, G. Suen, and D.M. Bickhart. 2020. Random forest classification identifies candidate facultative aerobic community in cattle buccal swabs. Applied and Environmental Microbiology 86:e00861-20. https://doi.org/10.1128/AEM.00861-20. (Preprint on bioRxiv: https://doi.org/10.1101/2020.04.10.036665.)

Zhou, Y., S. Liu, Y. Hu, L. Fang, Y. Gao, H. Xia, S.G. Schroeder, B.D. Rosen, E.E. Connor, C. Li, R.L. Baldwin, **J.B. Cole**, C.P. Van Tassell, L. Yang, L. Ma, and G.E. Liu. 2020. Comparative whole-genome DNA methylation profiling of cattle tissues reveals global and tissue-specific methylation patterns. 18:85. https://doi.org/10.1186/s12915-020-00793-5.

2019

Bradford, *H.L.*, Y.M. Masuda, **J.B. Cole**, I. Misztal, and P.M. VanRaden. 2019. Modeling pedigree accuracy and uncertain parentage in single-step genomic evaluations of simulated and US Holstein datasets. Journal of Dairy Science 102:2308–2318. https://doi.org/10.3168/jds.2018-15419.

Cole, J.B. 2019. Promotion of alleles by genome engineering. CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources. 14:1–15. https://doi.org/10.1079/PAVSNNR201914015.

Cole, J.B., and *D.J. Null*. 2019. Short communication: Phenotypic and genetic effects of the polled haplotype on yield, longevity, and fertility in U.S. Brown Swiss, Holstein, and Jersey cattle. Journal of Dairy Science 102:8247–8250. https://doi.org/10.3168/jds.2019-16530.

Connor, E.E., *J.L. Hutchison*, C.P. Van Tassell, and **J.B. Cole**. 2019. Determining the optimal period length and stage of growth or lactation to estimate residual feed intake in dairy cows. Journal of Dairy Science 102:6131–6143. https://doi.org/10.3168/jds.2018-15407.

Fang, L., J. Jiang, B. Li, Y. Zhou, E. Freebern, P. VanRaden, **J. Cole**, and L. Ma. 2019. Genetic and epigenetic architecture of paternal origin contribute to gestation length in cattle. Communications in Biology 2(100). https://doi.org/10.1038/s42003-019-0341-6.

Fang, L., Y. Zhou, S. Liu, J. Jiang, D.M. Bickhart, *D.J. Null*, *B. Li*, S.G. Schroeder, B.D. Rosen, **J.B. Cole**, C.P. Van Tassell, L. Ma, and G.E. Liu. 2019. Comparative analyses of sperm DNA methylomes among human, mouse and cattle provide insights into epigenomic evolution and complex traits. Epigenetics 3:260-276. https://doi.org/10.1080/15592294.2019.1582217.

Fang, L., Y. Zhou, S. Liu, J. Jiang, D.M. Bickhart, *D.J. Null*, *B. Li*, S.G. Schroeder, B.D. Rosen, **J.B. Cole**, C.P. Van Tassell, L. Ma, and G.E. Liu. 2019. Integrating signals from sperm methylome analysis and genome-wide association study to understand male fertility in cattle. Epigenomes 3(2):10. https://doi.org/10.3390/epigenomes3020010.

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Popular Press Articles

2020

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2015

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Cole, J.B. 2015. Feedback: Calving outcomes on dairy farms: We've been collecting data for decades. Dairy Herd Manage., Jan. 21, (Also published as Dairy Herd Manage. Daily, Thurs., Jan. 22, online; We've been collecting data for decades [excerpt as letter to editor], Dairy Herd Manage. 52(2):6) Available: http://www.dairyherd.com/news/feedback-calving-outcomes-dairy-farms-weve-been-collecting-data-decades.

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Seykora, A.J., P.M. VanRaden, and **J.B. Cole**. 2006. Net Merit receives face-lift. Hoard's Dairyman 151(14):557.

2005 **Cole, J.B.** 2005. How can we genetically improve dairy cattle health? The Dairy Focus 6(4):3.

Software Packages

2017 **gene-editing**: Programs for simulation of strategies for managing multiple recessives in a dairy cattle population using gene editing. Website: https://github.com/wintermind/gene-editing.

2014 **multiple-recessives**: Programs for simulation of strategies for managing multiple recessives in a dairy cattle population. Website: https://github.com/wintermind/multiple-recessives.

2010 **PyPedal**: A package for pedigree analysis using the Python programming language, v. 2.0.0. Website: http://pypedal.sourceforge.net/.

2007 **BESTPRED**: A program for estimation of lactation yield and persistency using best prediction. Website: http://www.aipl.arsusda.gov/software/bestpred/.

Invited Presentations

2024 *June*. What does the dairy industry know about inbreeding that you don't? Advancements in Genetic and Genomic Prediction Session, Beef Improvement Federation Symposium, Knoxville, TN.

May. Title TBD. Breed4Food Consortium Meeting. Virtual presentation.

2023 *November*. Some thoughts on inbreeding in dairy cattle. Breeding and Genetics Seminar, Department of Animal Sciences, Iowa State University.

October. Panel: Genetics industry perspectives on longevity. 45th ADSA Discover Conference.

August. From the sky the highway's straight as it could be. 2023 National Cooperator Dairy Database Workshop.

2022 *November*. What is the cow of the future, and how will we create her? 45th Argentinian Congress of Animal Production.

September. What is the sire's contribution to feed efficiency? 28th National Association of Animal Breeders Technical Conference.

	July. A panel discussion: Broadening learning by incorporating industry professionals in education. 12th World Congress on Genetics Applied to Livestock Production.
	May. Panel discussion: A closer look into the future of an industry driven by change. 43rd ADSA Discover Conference, Dairy Cattle Reproduction: Lessons Learned and Future Frontiers.
	April. A new look at genetic evaluation. 42nd ADSA Discover Conference, Managing Genetic Diversity for Future Dairy and Livestock Breeding.
2021	*November*. Exploring brave new worlds: Some thoughts on alternative protein sources. VISIONS III: Star Gazing into the Galaxy of Animal Genetics and Genomics.
	March. Dairy cattle fertility in 12 years of genomics: Lessons learned, current applications, and future development. Dairy Cattle Reproduction Council Webinar.
2020	*October*. Dairy cattle fertility in 12 years of genomics: Lessons learned, current applications, and future development. Dairy Cattle Reproduction Council Annual Meeting, Madison, WI.
	August. How to implement genomic selection. European Association for Animal Production Annual Meeting, Porto, Portugal.
	July. The future of phenomics in dairy cattle breeding. ASAS-CSAS Annual Meeting and Trade Show, Madison, WI.
	June. It's the little things: The future of selection decisions and breeding programs. ADSA 2020 Annual Meeting, West Palm Beach, FL.
	May. Breeding the cow of the future. SION 2020 Breeders Conference, Tel Aviv, Israel. (Postponed due to COVID-19 pandemic)
	March. 2020 AGIL-AIP Update. National DHIA 55th Annual Meeting, Savannah, GA.
	January. The new USDA Genome to Phenome Blueprint: A quantitative geneticist's perspective. Plant and Animal Genome XXVIII Conference Genomics Blueprint Implementation Workshop, San Diego, CA.
2019	*August*. Haplotype tests for recessive disorders that affect fertility and other traits in dairy cattle. American Angus Association, St. Joseph, MO.
	June. Pros and cons of hitchhiking: The truth about inbreeding in dairy cattle. 2019 National Genetics Conference, Appleton, WI.
	June. Bridging the gap: Opportunities and challenges for small breeds in the genomics era. World Guernsey Conference, Lancaster, PA.

	May. Future of genomic evaluations of Holstein cattle. Foro Nacional Holstein (FONAHolstein), Querétaro, México.
	April. Biotechnology and the progress of dairy production. Great Challenges to Science Workshop: How biotechnology can vanish world hunger (Como a biotecnologia pode acabar com a fome no mundo), Universidade de São Paulo, Pirassununga, Brazil.
	March. Emerging technologies in dairy cow improvement programs & 2019 AGIL-AIP update, National DHIA Annual Meeting, San Diego, CA.
	January. Benefits from adoption of a new reference genome assembly and use of a larger SNP set in genomic predictions for US dairy cattle. XXVII Plant & Animal Genome Conference, San Diego, CA. (Canceled due to government shutdown.)
2018	*October*. Strategies for managing genetic disorders in dairy cattle. Department of Animal and Avian Sciences, University of Maryland, College Park, MD.
	July. Landscape of breeding in food and agriculture - from conventional to gene editing, Responsible Use of Gene Editing Steering Committee Meeting, Center for Food Integrity, Arlington, VA.
	June. Possibilities in an age of genomics. The future of the breeding index, 21st International Conference of the World Jersey Cattle Bureau, Columbus, OH.
2017	*October*. How selection for better health impacts dairy profitability, National Dairy Herd Information Association Board Meeting, Rosemont, IL.
	October. How selection for better health impacts dairy profitability, DHI-Provo Herd & Feed Management Conference, Las Vegas, NV.
	October. The science of feeding 9 billion people. Connections Weekend, Louisiana School for Math, Science, and the Arts, Natchitoches, LA.
	October. Management of Mendelian traits in breeding programs by gene editing, Department of Animal Science, University of Wisconsin, Madison.
	October. How selection for better health impacts dairy profitability, Council on Dairy Cattle Breeding Industry Meeting: Discover New Dairy Genetics, Madison, WI.
	June. Possibilities in an age of genomics. The future of the breeding index in the ADSA Multidisciplinary and International Leadership Keynote (MILK) Symposium: The dairy cow in 50 years. ADSA, Pittsburgh, PA.

	May. Improving production efficiency through genetic selection, Genetic improvement programs for U.S. dairy cattle, The role of phenotyping in dairy cattle improvement in the genomic era, and Genomic selection for traits other than production in dairy cattle, Symposium on Genetic and Genomic Selection in Dairy Cattle, St. Petersburg, Russia.
	March. 2017 AGIL-AIP update, National DHIA Annual Meeting, Savannah, GA.
	February. Managing recessive disorders in breeding programs by gene editing, Faculdade de Zootecnia e Engenharia de Alimentos, Universidade de São Paulo, Pirassununga, SP, Brasil.
2016	*October*. Updated guidelines for the recording, evaluation, and genetic improvement of udder health in dairy cattle. ICAR, Puerto Vargas, Chile.
	May. The role of phenotyping in dairy cattle improvement in the genomic era, Department of Dairy Science, University of Wisconsin, Madison.
	May. Improving production efficiency through genetic selection. Large Dairy Herd Management Conference, Oak Brook, IL.
	March. What direction should US dairy research take in the future? 51st National DHIA Annual Meeting, Orlando, FL.
2015	*July*. Genomic selection in multiple-breed cattle populations. 52ª Reunião Anual da Sociedade Brasileira de Zootecnia, Belo Horizonte, Brasil.
	May. Genomic selection for traits other than production in dairy cattle. XX ANEMBE International Congress, Burgos, Spain.
	May. What should you expect from genomic selection? XX ANEMBE International Congress, Burgos, Spain.
	April. Using genotypes to construct phenotypes for dairy cattle breeding programs and beyond. Final OptiMIR Scientific and Expert Meeting, Namur, Belgium.
	March. If we would see further than others: research & technology today and tomorrow. 50th National DHIA Annual Meeting, Columbus, OH.
2014	*September*. Genetic improvement programs for US dairy cattle. Embrapa Gado de Leite, Juiz de Fora, MG, Brasil.
	September. Using genotyping and whole-genome sequencing to identify causal variants associated with complex phenotypes. Universidade Federal de Viçosa, Viçosa, MG, Brasil.

August. The hunt for a functional mutation affecting conformation and calving traits on chromosome 18 in Holstein cattle. 10th World Congress on Genetics Applied to Livestock Production, Vancouver, BC, Canada.

May. Phenotypes for novel functional traits of dairy cattle. International Committee for Animal Recording, Berlin, Germany.

March. Health and fitness data – what might be possible for dairy cattle? and AIPL Update National DHIA Annual Meeting, St. Louis, MO.

2013

October. Opportunities for research on applied livestock genomics. Department of Animal Sciences, Purdue University, West Lafayette, IN.

September. Genomic evaluation of low-heritability traits: dairy cattle health as a model. 5th International Symposium on Animal Functional Genomics, Guarujá, SP, Brazil.

May. Genomic evaluation of dairy cattle health. ICAR 2013 Health Data Conference, Aarhus, Denmark.

May. Use of NGS to identify the causal variant associated with a complex phenotype. Wageningen University and Research Center, the Netherlands.

May. Genomic selection and systems biology – lessons from dairy cattle breeding. KeyGene nv, Wageningen, the Netherlands.

March. Opportunities for genetic improvement of health and fitness traits. 2013 National DHIA Annual Meeting, St. Pete Beach, Florida.

February. The use and economic value of genomic testing for calves on dairy farms. ANAFI Genomics Workshop, Cremona, Italy.

2012

November. Genomic selection – dairy cattle successes and challenges. National Swine Improvement Federation, Kansas City, MO.

August. Applications of haplotypes in dairy farm management. 63rd EAAP Meeting, Bratislava, Slovak Republic.

May. Use of dense SNP chips for gene discovery. 16th QTL-MAS Workshop, Alghero, Italy.

May. The U.S. genetic evaluation system. Department of Animal Sciences, University of Sassari, Sardinia, Italy.

May. New tools for genomic selection of livestock. Department of Animal Sciences, University of Sassari, Sardinia, Italy.

April. New tools for genomic selection of livestock. Department of Animal Science, North Carolina State University, Raleigh.

	March. March 2012 AIPL update. Select Sires Holstein Sire Evaluation Committee, Columbus, OH.
	February. Genomics beyond EBVs. 2nd International Workshop on Genomics Applied to Livestock, Araçatuba, SP, Brazil.
2011	*July*. Data structures and visualization. 2011 ADSA/ASAS Joint Annual Meeting, New Orleans, LA.
2010	*November*. What can we do with dairy cattle genomics other than predict more accurate breeding values? Department of Animal Science, North Carolina State University, Raleigh.
	November. Age at first calving in Holstein cattle in the United States. Dairy Cattle Reproduction Council, St. Paul, MN.
2009	*November*. Biological insights from the implementation of a genomic selection program in dairy cattle. Institute of Genetics, Vetsuisse Faculty, University of Berne, Switzerland.
	November. Identifying markers associated with thermal tolerance. 18th DISCOVER Conference on Food Animal Agriculture: Effect of the Thermal Environment on Nutrient and Management Requirements of Cattle, Nashville, IN. (Declined due to prior commitments.)
	October. Visualization of results from genomic evaluation. Department of Animal Sciences, Colorado State University, Fort Collins.
	March. Distribution and location of genetic effects for dairy traits. CRI Genomics Emerging Markets Program, Washington, D.C.
2008	*June*. Best predictions of daily and lactation yields and data collection ratings. International Committee for Animal Recording, Niagara Falls, NY.
2007	*September*. Best prediction of actual lactation yields. AgriTech Analytics & Holstein Association USA Dairy Industry Event, Visalia, CA.
	September. Overview of Animal Improvement Programs Laboratory. Department of Animal Sciences, Louisiana State University, Baton Rouge.
	September. Genetic evaluation of calving traits in U.S. Holsteins. Department of Animal Sciences, Louisiana State University, Baton Rouge.
	June. Validation of producer-recorded health event data and use in genetic improvement of dairy cattle. Department of Animal Sciences, University of Florida, Gainesville.
2006	*October*. Genetic evaluation of calving traits in U.S. Holsteins. Breeding and Genetics group, Department of Animal Sciences, Colorado State University, Fort Collins.

	October. Dairy cattle breeding in the United States. Department of Animal Sciences, Colorado State University, Fort Collins.
	February. Genetic evaluation of calving traits. Department of Animal and Dairy Science, University of Georgia, Athens.
2003	*August*. Genetics applied to the working dog. International Seppala Siberian Sleddog Club Annual Meeting, Seeley Lake, MT.

University Teaching Experience

Courses	"Computational Biology in Animal Breeding", "Introductory Agricultural Genetics", "Biometrics for Livestock", "Animal Breeding", "Introductory Animal Science", "Plant and Animal Genetics", "Applied Animal Breeding and Genetics"
January 2001–May 2001	**Instructor**, Department of Dairy Science, Louisiana State University, Baton Rouge, LA. *Taught sophomore-level introductory genetics course to 70 undergraduates; scored above the College of Agriculture average on the end-of-semester Student Perception of Teaching evaluation.*
Summer 1998 & 1999	**Seminar Coordinator**, Life Sciences Summer Undergraduate Research Program, University of Minnesota, St. Paul, MN. *Mentored 12 undergraduate students from underserved communities; taught presentation skills during weekly seminars; assisted students with preparation of posters describing their research; worked with students to resolve laboratory and administrative issues.*
September 1996–May 2000	**Graduate Assistant**, Department of Animal Science, University of Minnesota, St. Paul, MN. *Lectured and assisted with laboratory exercises for classes in introductory animal science, animal breeding, biometrics, and dairy production.*
June 1994–May 1996	**Graduate Research Assistant**, Department of Dairy Science, Louisiana State University of Minnesota, Baton Rouge, LA. *Assisted with lectures and laboratory exercises for classes in introductory genetics and animal breeding.*

Service on Graduate Committees

2022	Saranya Narayana, University of Calgary, Ph.D. (Advisors: Herman W. Barkema and Flavio Schenkel) (External Examiner)
2021	Pierce Rafter, University College Dublin, Ph.D. (Advisor: Donagh Berry) (Viva Voce Examiner)

	Bruna Santana, University of Connecticut, Ph.D. (Advisor: Breno Fragomeni)
2020–Present	Emmanuel A. Lozada Soto, North Carolina State University, Ph.D. (Advisor: Christian Maltecca)
2020–2021	Fiona L. Guinan, University of Georgia, M.S. (Advisor: Daniela Lourenço)
2019–2022	Ellen Freebern, University of Maryland College Park, Ph.D. (Advisor: Li Ma)
2018–2020	Maci L. Mueller, University of California, Davis, M.S. (Advisor: Alison L. van Eenennaam)
2016	Mike Donnelly, University of Minnesota, M.S. (Advisors: Leslie B. Hansen and Anthony J. Seykora) (External Reviewer)
	Allison Fleming, University of Guelph, Ph.D. (Advisor: Filippo Miglior) (External Reviewer)
2014–2016	Chen Yao, University of Wisconsin, Ph.D. (Advisor: Kent A. Weigel)
2012–2016	Sofía Ortega, University of Florida, Ph.D. (Advisor: Peter J. Hansen)
2010–2013	Kristen L. Parker Gaddis, North Carolina State University, Ph.D. (Advisor: Christian Maltecca)

Postdoctoral Scientists Supervised

2020	Dr. Shuli Liu (Current position: Jian Yang Laboratory, Westlake University)
2019–2020	Dr. Juan Pablo Nani (Current position: ABS Global)
2018–2019	Dr. Bingjie Li (Current position: SRUC Challenge Research Fellow)
2018	Dr. Heather L. Bradford (Current position: Beef Cattle Genetics, Department of Animal and Poultry Sciences, Virginia Tech)
2014–2016	Dr. Kristen L. Parker Gaddis (Current position: Geneticist, Council on Dairy Cattle Breeding)

Visiting Scientists Hosted

2023	Colin Lynch, University of Guelph
2021	Irene Häfliger, University of Bern, Switzerland (canceled due to COVID)
2019	Alexandra Nin-Velez, Virginia Tech
	Patrícia Schmidt, UNESP, Jaboticabal, Brasil

2014	Sofía Ortega, University of Florida
2012	Dr. Serdal Dikmen, Uludag University, Turkey
	Adriana García-Ruiz, Instituto Nacional de Investigaciones Forestales Agrícolas y Pecuarias, México
	Chen Yao, University of Wisconsin-Madison
2011	Sarah Cochran, University of Florida
	Dr. Serdal Dikmen, Uludag University, Turkey

Professional Affiliations and Service

2022–2024	Member of the Collaborative Dairy DNA Repository (CDDR) Board of Managers
2021–2024	Member of the National Association of Animal Breeders (NAAB) Inherited Biochemical Defects Committee
	Member of the National Association of Animal Breeders (NAAB) Research Committee
2021	Member of the NAAB Research Award Selection Committee
2020	Grant reviewer for the French National Institute for Agricultural Research (INRAE) AgreenSkills+ program
2019	Member of the Organizing Committee for the Strategic Planning Workshop for the Future of Biomedical and Agricultural Research Programs using Large Animals, Rockville, MD
2017	Member of the Organizing Committee for the Livestock High-Throughput Phenotyping and Big Data Analytics Meeting, Beltsville, MD
2016–2017	Chair of the Jay L. Lush Award Selection Committee for the American Dairy Science Association
2016	Grant reviewer for the Agriculture and Food Research Initiative (AFRI) Competitive Grants Program
2015–2016	Member of the Jay L. Lush Award Selection Committee for the American Dairy Science Association
2015–2016	Chair of the Breeding and Genetics Program Committee for the 2016 American Dairy Science Association/American Society for Animal Science Joint Annual Meeting
2015	Peer reviewer for the Danish Council for Independent Research, Technology and Production Sciences

2014–2015	Secretary and President of the SCC-084 coordinating committee (“Genetic selection and mating strategies to improve the well-being and efficiency of dairy cattle”)
2013	Grant reviewer for the French National Research Agency (L'Agence Nationale de la Recherché)
	Key Opinion Leader for Pfizer Animal Genetics on genetic evaluation of functional traits and design and implementation of genetic evaluation programs for lowly heritable traits
2012–2013	Member of the Planning Committee for the 2013 International Committee for Animal Recording Health Data Conference in Aarhus, Denmark
2012	External reviewer for University of Minnesota Agricultural Experiment Station projects
2011–2012	Chair of the Breeding and Genetics Program Committee for the 2012 American Dairy Science Association/American Society for Animal Science Joint Annual Meeting
2010–2014	Member of the Dairy Health Data Recording Project Advisory Board
2010–present	Member of the Editorial Board for Frontiers in Livestock Genomics
2010–present	Member of the Functional Traits Working Group of the International Committee for Animal Recording
2010	Consulted with representatives from Embrapa, GenSys, and Conexão Delta G on the design and implementation of a genomic selection program for Nellore cattle in Brazil
2009–2011; 2013–2015	Member of the Breeding and Genetics Program Committee for the 2010, 2011, 2014, and 2015 American Dairy Science Association Joint Annual Meetings
2009; 2011	Grant reviewer for Der Wissenschaftsfonds (Austrian competitive-funding agency)
2009–2010	Secretary and President of the S-1040 regional research project (“Genetic Selection and Crossbreeding to Enhance Reproduction and Survival of Dairy Cattle”)
2009	Reviewer for Binational Agricultural Research and Development grants
2006–2010	Member of the Editorial Board for the Journal of Animal Science
2006–2007; 2020	Non-voting member of Holstein Association USA's Genetic Advancement Committee

2000–present	Member of the American Dairy Science Association
2021–present	Member of the American Society of Animal Science
	Member of the Luxuriant Flowing Hair Club for Scientists
2020–present	Member of the American Association for the Advancement of Science
1998–present	Member of Gamma Sigma Delta, The Honor Society of Agriculture
2004–present	Member of National Dairy Shrine

Special Assignments for USDA

2020	Chair, BARC Translational ‘Omics Vision Group
2017–2020	Member of the Beltsville Agricultural Research Center’s Animal Research Advisory Group
2016–2020	Member of the Beltsville Agricultural Research Center’s Research Leaders Board
	Represented ARS at the ARS-RDA Animal Health Meeting in Jeonju, South Korea
2011–2013	Beltsville Agricultural Research Center Pamphlet Committee member
2012	Agricultural Research Service Office of Technology Transfer’s technology transfer award panelist
	Animal and Natural Resources Institute Seminar Series Committee member
2005–2019	OSHA-certified Collateral Duty Safety Officer

Community Service

2023–Present	**Life Member**, Bowie Volunteer Fire Department and Rescue Squad, Inc., Bowie, MD.
2020–2023	**Auxiliary Member**, Bowie Volunteer Fire Department and Rescue Squad, Inc., Bowie, MD.
2017–2020	**Treasurer**, Bowie Volunteer Fire Department and Rescue Squad, Inc., Bowie, MD.
2011–2017	**Assistant Secretary**, Company 19, Bowie Volunteer Fire Department and Rescue Squad, Inc., Bowie, MD.

2004–2011	**Auxiliary Member**, Bowie Volunteer Fire Department and Rescue Squad, Inc., Bowie, MD.