

John B. Cole

12753 Midwood Lane · Bowie, MD 20715, USA

E-mail: john.b.cole@gmail.com

Education

- May 2003 Ph.D., Animal, Dairy, and Poultry Science, Louisiana State University, Baton Rouge, LA, 70803.
Advisor: D. E. Franke. Dissertation: *Population structure and genetics of longevity in a colony of dog guides*
- August 1996 M.S., Animal and Dairy Science (Minor: Applied Statistics), Louisiana State University, Baton Rouge, LA, 70803.
Advisor: R. W. Adkinson. Thesis: *The effect of single and multiple trait selection on somatic cell count and clinical mastitis in dairy cattle*
- May 1994 B.S., Animal Systems (Dairy Production) (Minor: Microbiology), Louisiana State University, Baton Rouge, LA, 70803.

Work Experience

- December 2004 – Present Research Geneticist (Animal)
- Animal Improvement Programs laboratory, Agricultural Research Service, United States Department of Agriculture, Beltsville, MD*
- Conducted research to develop procedures to enhance genetic improvement in the efficiency of the nation's dairy population for health and fitness traits.
- Used genomic data to identify a quantitative trait locus (QTL) associated with dystocia, conformation, longevity, and lifetime economic merit in Holsteins. Developed a physiological explanation for the QTL effect based on comparative bioinformatics with human and mouse.
 - Enhanced best prediction methodology to account for lactations longer than 305 days. Updated 40 million lactation records in the national dairy database using the new calculations. Obtained industry and Interbull approval for routine use of the new methods for calculation of actual and mature equivalent lactation yields.
 - Led a research project resulting in the implementation of a routine national genetic evaluation for stillbirth. Calculated economic values and variance components used to incorporate stillbirth into the USDA lifetime economic merit indices. Researched new models for genetic evaluation of dystocia and stillbirth.
 - Conducted research into genetic evaluation of persistency of lactation for milk, fat, and protein. Demonstrated that 305 day mature equivalent yield and persistency can be used to predict yield beyond 305 days. Routine national evaluations for these traits have been requested by industry stakeholders.
 - Extended the national calving ease genetic evaluation to provide proofs for Brown Swiss and Jersey bulls, as well as utilize records from crossbred offspring of Brown Swiss, Jersey, and Holstein sires. This was the first US evaluation to include data from crossbred animals.
 - Developed data exchange format for the collection of producer-recorded health and management traits. Supervised development of edits for incoming data and the beginning of routine national data collection.

- Discovered data sources and implemented daily collection of climate data from 238 stations in the United States. Worked with scientists at the University of Georgia to develop best practices for use of climate data in management and genetic evaluation programs.
- Routinely presented research findings to groups of industry stakeholders, including dairy records processing centers, artificial insemination firms, breed associations, and National DHIA.

June 2002 – December 2004 Data Manager

Southern Regional Climate Center, Louisiana State University, Baton Rouge, LA
Data manager for one of six regional climate centers. Discovered, collected, and managed climate data for the Southern United States. Designed and wrote several web-based systems for order management and delivery of climate data. Provided statistical and programming support to faculty in the Department of Geography and Anthropology.

June 2000 – June 2002 Computer Analyst 2

PT.NET, College of Education, Louisiana State University, Baton Rouge, LA
Webmaster for a multi-million collaborative grant between LSU, Southern University, and the East Baton Rouge Parish School System. Developed interactive web-based systems for the grant as well as departments within the College of Education.

January 2001– May 2001 Instructor

Department of Dairy Science, Louisiana State University, Baton Rouge, LA
Taught a sophomore-level introductory genetics course to ~70 undergraduates in the College of Agriculture. Scored above the College of Agriculture average on the end-of-semester Student Perception of Teaching evaluation.

Summer 1998 and 1999 Seminar Coordinator

Life Sciences Summer Undergraduate Research Program, University of Minnesota, St. Paul, MN
Mentored groups of ~12 undergraduates participating in a seven week summer research program during which they participated in research projects in faculty laboratories. Taught presentation skills during weekly seminars and assisted students with preparation of posters describing their research at the end of the summer. 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
Planned and conducted research under the supervision of a faculty advisor. Lectured and assisted with laboratory exercises as needed for classes in introductory animal science, animal breeding, and biometrics.

Research Interests

Economic impact of production diseases on lifetime profitability of dairy cattle;
Accounting for traits with non-market values in the formulation of selection indices;
Genetic improvement of health and longevity in livestock species;

Population structure, systems of mating, and conservation genetics applied to livestock and companion animal species.

Applications of genomic data in genetic evaluation; use of genomic data and bioinformatics to understand the biology of genes of large effect.

Refereed Journal Articles

- Appuhamy, J. A. D. R. N., B. G. Cassell, and **J. B. Cole**. 2008. Phenotypic and genetic relationships between common health disorders and milk and fat yield persistencies from producer recorded health data and test day yields. *Journal of Dairy Science* (submitted)
- Appuhamy, J. A. D. R.N., B. G. Cassell, C. D. Dechow, and **J. B. Cole**. 2007. Phenotypic relationships of common health disorders in dairy cows to lactation persistency estimated from daily milk weights. *Journal of Dairy Science* 90:4424–4434.
- Bohmanova, J., I. Misztal, and **J. B. Cole**. 2007. Comparison of seven temperature humidity indices as indicators of milk production losses due to heat stress in semi-arid and humid climates. *Journal of Dairy Science* 90:1947–1956.
- Cole, J. B.** 2007. PyPedal: A package for pedigree analysis using the Python programming language. *Computers and Electronics in Agriculture* 57:107–113.
- Cole, J. B.**, D. E. Franke, and E. A. Leighton. 2004. Population genetic structure of a colony of German Shepherd and Labrador Retriever dog guides. *Journal of Animal Science* 82:2906–2912.
- Cole, J. B.**, R. C. Goodling, Jr., G. R. Wiggans, and P. M. VanRaden. 2005. Genetic evaluation of calving ease for Brown Swiss and Jersey bulls from purebred and crossbred calvings. *Journal of Dairy Science* 88:1529–1539.
- Cole, J. B.**, and D. J. Null. 2008. Genetic evaluation of lactation persistency for five breeds of dairy cattle. *Journal of Dairy Science* (submitted)
- Cole, J. B.**, D. J. Null, A. H. Sanders, and J. S. Clay. 2008. Use of producer-recorded health event data in genetic evaluation. I. Validation of data from on-farm computer systems. *Journal of Dairy Science* (in preparation)
- Cole, J. B.**, D. J. Null, and P. M. VanRaden. 2008. Best prediction of yields for long lactations. *Journal of Dairy Science* (accepted)
- Cole, J. B.**, P. M. VanRaden, J. R. O'Connell, C. P. Van Tassell, T. S. Sonstegard, R. D. Schnabel, J. F. Taylor, and G. R. Wiggans. 2008. Distribution and location of genetic effects for dairy traits. *Journal of Dairy Science* (submitted)
- Cole, J. B.**, and P. M. VanRaden. 2006. Genetic evaluation and best prediction of lactation persistency. *Journal of Dairy Science* 89:2722–2728.
- Cole, J. B.**, G. R. Wiggans, and P. M. VanRaden. 2007. Genetic evaluation of stillbirth in United States Holsteins using a sire-maternal grandsire threshold model. *Journal of Dairy Science* 90:2480–2488.
- Cole, J. B.**, G. R. Wiggans, P. M. VanRaden, and R. H. Miller. 2007. Stillbirth (co)variance components for a sire-maternal grandsire threshold model and development of a calving ability index for sire selection. *Journal of Dairy Science* 90:2489–2496.
- Hansen, L. B., **J. B. Cole**, G. D. Marx, and A. J. Seykora. 1999. Productive life and reasons for disposal of Holstein cows selected for large versus small body size. *Journal of Dairy Science* 82:795–801.
- Miller, R. H., H. D. Norman, J. R. Wright, and **J. B. Cole**. 2008. Relationship of productive life of daughters to predicted transmitting ability milk somatic cell score of their sires and maternal grandsires. *Journal of Dairy Science* (submitted)

- Norman, H. D., J. R. Wright, M. T. Kuhn, S. M. Hubbard, **J. B. Cole**, and P. M. VanRaden. 2008. Genetic and environmental factors that impact gestation length. *Journal of Dairy Science* (submitted)
- Rohli, R. V., M. M. Russo, A. J. Vega, and **J. B. Cole**. 2004. Atmospheric and statewide anomalously-high tropospheric ozone concentrations in Louisiana. *Journal of Applied Meteorology* 43:1438–1451.
- Sonstegard, T. S., L. Ma, **J. B. Cole**, G. R. Wiggans, C. P. Van Tassell, G. Liu, B. D. Mariani, B. A. Crooker, P. M. VanRaden, M. V. da Silva, and Y. Da. 2008. Genomic signatures of artificial selection in U.S. Holstein cows. *Nature Genetics* (in preparation)
- VanRaden, P. M., M. E. Tooker, **J. B. Cole**, G. R. Wiggans, and J. H. Megonigal, Jr. 2007. Genetic evaluations for mixed breed populations. *Journal of Dairy Science* 90:2434–2441.
- Wiggans, G. R., **J. B. Cole**, and L. L. M. Thornton. 2007. Multiparity evaluation of calving ease and stillbirth with separate genetic effects by parity. *Journal of Dairy Science* 91:3173–3178.

Book Chapters and Technical Reports

- Cole, J. B.** 2007. AIPL Research Report SB1: Genetic evaluation of stillbirth. Available: <http://aipl.arsusda.gov/reference/fertility/sb2006.html>.
- Cole, J. B.** 2005. AIPL Research Report CE1: Brown Swiss and Holstein calving ease. Available: <http://aipl.arsusda.gov/reference/fertility/ce2005.htm>.
- de Vries, A., and **J. B. Cole**. 2008. Profitable dairy cow traits for hot climatic conditions *in* Breeding for robustness in cattle – EAAP 126 (M. Klopčič, R. Reents, J. Philipsson, and A. Kuipers, Eds.) Wageningen Academic Publishers, Wageningen, The Netherlands.
- Lanting, F. L., and **J. B. Cole**. 2004. Chapter 13: Basics of Genetics. Pages 256–290 *in* The Total German Shepherd Dog, 2nd ed. Hoflin Publishing, Wheat Ridge, CO.

Popular Press Articles

- Cole, J. B.** 2008. Using Python to study pedigrees with PyPedal. *Python Magazine* (accepted)
- Cole, J. B.** 2005. How can we genetically improve dairy cattle health? *The Dairy Focus* 6(4):3.
- Cole, J. B.**, R. C. Goodling, Jr., G. R. Wiggans, and P. M. VanRaden. 2006. Genetic calving ease study on crossbreeds. *Jersey Journal* 53(5):83–4.
- Seykora, A. J., P. M. VanRaden, and **J. B. Cole**. 2006. Net Merit receives face-lift. *Hoard's Dairyman* 151(14):557.

Proceedings

- Appuhamy, J. A. D. R. N., B. G. Cassell, and **J. B. Cole**. 2006. Effect of mastitis and postpartum metabolic diseases on lactation persistency of Holstein and Jersey cows. *Journal of Dairy Science* 89(Suppl. 1):398(abstr. 476).
- Cole, J. B.** 2008. Best predictions of daily and lactation yields and data collection ratings. *International Committee on Animal Recording Proceedings*. (accepted)
- Cole, J. B.**, and D. E. Franke. 2002. PyPedal: A package for pedigree analysis using the Python programming language. *Journal of Animal Science* 80 (Suppl. 1):323(abstr. 1291)
- Cole, J. B.**, D. E. Franke, and E. A. Leighton. 2003. Genetic parameters for longevity in a colony of German Shepherd dog guides. *Journal of Animal Science* 81 (Suppl. 1):197(abstr. M76)
- Cole, J. B.**, D. E. Franke, and E. A. Leighton. 2003. Population genetic structure of a colony of German Shepherd and Labrador Retriever dog guides. *Journal of Animal Science* 81 (Suppl. 1):69(abstr. 272)

- Cole, J. B.**, L. B. Hansen, and G. D. Marx. 1997. Productive life, reasons for disposal, and body dimensions and weights of Holsteins selected for large versus small body size. *Journal of Dairy Science* 80(Suppl. 1): 252(abstr. P423)
- Cole, J. B.**, and E. A. Leighton. 2004. Linear versus threshold model analysis of trainability in a colony of German Shepherd dog guides. *Journal of Animal Science* 87(Suppl. 1):391(abstr. 648)
- Cole, J. B.**, H. D. Norman, and P. D. Miller. 2004. Genetic improvement of dairy cattle health *in* Proceedings of the 12th International Conference on Production Diseases in Farm Animals, July 19–22, 2004, East Lansing, MI. p. 78.
- Cole, J. B.**, and D. J. Null. 2007. Genetic evaluation of lactation persistency estimated by best prediction for Ayrshire, Brown Swiss, Guernsey, and Milking Shorthorn dairy cattle. *Journal of Dairy Science* 90(Suppl. 1):20(abstr. M52)
- Cole, J. B.**, D. J. Null, and L. R. Bacheller. 2008. A data exchange format and national database for producer-recorded health event data from on-farm management software. *Journal of Dairy Science* 91(E-Suppl. 1):2–3(abstr. T6)
- Cole, J. B.**, A. H. Sanders, and J. S. Clay. 2006. Use of producer-recorded health data in determining incidence risks and relationships between health events and culling. *Journal of Dairy Science* 89(Suppl. 1):10(abstr. M7).
- Cole, J. B.**, and A. H. Sanders. 2005. Genetic evaluation of clinical mastitis in U.S. dairy cattle *in* Lamont, S.J., M. F. Rothschild, and D. L. Harris, editors. Proceedings of the Third International Symposium on Genetics of Animal Health, July 13–15, 2005, Ames, Iowa. p. 112.
- Cole, J. B.**, B. R. Southey, D. E. Franke, and E. A. Leighton. 2007. Discrete time survival analysis of longevity in a colony of dog guides *in* Proceedings of 5th International Working Dog Breeding Conference, San Antonio, TX.
- Cole, J. B.**, B. R. Southey, D. E. Franke, and E. A. Leighton. 2005. Discrete time survival analysis of longevity in a colony of dog guides. *Journal of Animal Science* 83 (Suppl. 1):103(abstr. 136).
- Cole, J. B.**, M. E. Tooker, P. M. VanRaden, and J. H. Megonigal. 2004. Breed composition codes for crossbred dairy cattle in the United States. *Journal of Dairy Science* 87(Suppl. 1):284(abstr. 536).
- Cole, J. B.**, and P. M. VanRaden. 2005. Genetic evaluation and best prediction of lactation persistency. *Journal of Dairy Science* 88 (Suppl. 1):379–380(abstr. 651).
- Cole, J. B.**, P. M. VanRaden, and C. M. B. Dematawewa. 2007. Estimation of yields for long lactations using best prediction. *Journal of Dairy Science* 90(Suppl. 1):421(abstr. 558).
- Cole, J. B.**, P. M. VanRaden, J. R. O'Connell, C. P. Van Tassell, and R. D. Schnabel. 2008. Distribution and location of genetic effects for dairy traits. International Committee on Animal Recording Proceedings. (accepted)
- Cole, J. B.**, G. R. Wiggans, and P. M. VanRaden. 2006. Genetic evaluation of stillbirth in United States Holsteins using a sire-maternal grandsire threshold model. Comm. 01-28 *in* Proceedings of the 8th World Congress on Genetics Applied to Livestock Production, Belo Horizonte, Brazil.
- Cole, J. B.**, G. R. Wiggans, P. M. VanRaden, and R. H. Miller. 2006. Stillbirth (co)variance components for a sire-maternal grandsire threshold model. *Journal of Dairy Science* 89(Suppl. 1):273(abstr. 339).
- Hansen, L. B., **J. B. Cole**, and G. D. Marx. 1998. Body size of lactating dairy cows: Results of divergent selection for over 30 years. Proceedings of the 6th World Congress on Genetics Applied to Livestock Production, Armidale, NSW, Australia XXV:35–38.
- Norman, H. D., J. R. Wright, M. T. Kuhn, S. M. Hubbard, and **J. B. Cole**. 2007. Genetic and environmental factors that affect gestation length. *Journal of Dairy Science* 90(Suppl. 1):264 (abstr. T73)

- Norman, H. D., J. R. Wright, and **J. B. Cole**. 2007. Effect of temperature and humidity on gestation length. *Journal of Dairy Science* 90(Suppl. 1):16(abstr. M38)
- Norman, H. D., J. R. Wright, P. M. VanRaden, and **J. B. Cole**. 2007. Effect of service sire and cow sire on gestation length. *Journal of Dairy Science* 90(Suppl. 1):194(abstr. 230)
- Sonstegard, T. S., L. Ma, **J. B. Cole**, G. R. Wiggans, C. P. Van Tassell, G. Liu, B. D. Mariani, B. A. Crooker, P. M. VanRaden, M. V. da Silva, and Y. Da. 2008. Genomic signatures of artificial selection in U.S. Holstein cows. *International Society for Animal Genetics Proceedings* (Poster 638 2098) Available: <http://www.isag2008.nl/p2000.pdf>.
- Sonstegard, T. S., L. Ma, **J. B. Cole**, G. R. Wiggans, B. A. Crooker, C. P. Van Tassell, B. D. Mariani, and Y. Da. 2008. Genome signature of artificial selection for high milk yield in Holstein cattle. *Plant and Animal Genome XVII Proceedings*. (accepted)
- VanRaden, P. M., M. E. Tooker, and **J. B. Cole**. 2004. Heterosis and breed differences for daughter pregnancy rate in crossbred dairy cows. *Journal of Dairy Science* 87(Suppl. 1):284(abstr. 532)
- VanRaden, P. M., M. E. Tooker, **J. B. Cole**, G. R. Wiggans, and J. H. Megonigal, Jr. 2006. Genetic evaluations for mixed breed populations. *Journal of Dairy Science* 89(Suppl. 1):98(abstr. 40).
- Wiggans, G. R., **J. B. Cole**, and L. L. M. Thornton. 2007. Multitrait evaluation for calving ease and stillbirth with separate genetic effects by parity. *Journal of Dairy Science* 90(Suppl. 1):377(abstr. 422).
- Wiggans, G. R., C. P. Van Tassell, **J. B. Cole**, and L. L. M. Thornton. 2006. Genetic correlations between first and later parity calving ease in a sire-maternal grandsire model. *Comm. 01-92 in Proceedings of the 8th World Congress on Genetics Applied to Livestock Production*, Belo Horizonte, Brazil.

Software

- Cole, J. B.** 2005. PyPedal: A package for pedigree analysis using the Python programming language, v. 2.0.0. Website: <http://pypedal.sourceforge.net/>.
- Cole, J. B.**, and P. M. VanRaden. 2007. A Manual for Use of BESTPRED: A Program for Estimation of Lactation Yield and Persistency Using Best Prediction. Website: <http://www.aipl.arsusda.gov/software/bestpred/>.

Invited Presentations

- June 2008. Best predictions of daily and lactation yields and data collection ratings. *International Committee for Animal Recording*, Niagara Falls, NY.
- September 2007. Best prediction of actual lactation yields, *AgriTech Analytics & Holstein Association USA Dairy Industry Event*, Visalia, CA.
- September 2007. Overview of Animal Improvement Programs Laboratory. *Department of Animal Sciences*, Louisiana State University, Baton Rouge.
- September 2007. Genetic evaluation of calving traits in US Holsteins. *Department of Animal Sciences*, Louisiana State University, Baton Rouge.
- June 2007. Validation of producer-recorded health event data and use in genetic improvement of dairy cattle, *Department of Animal Sciences*, University of Florida, Gainesville.
- October 2006. Genetic evaluation of calving traits in US Holsteins. *Breeding and Genetics group*, *Department of Animal Sciences*, Colorado State University, Fort Collins.
- October 2006. Dairy cattle breeding in the United States. *Department of Animal Sciences*, Colorado State University, Fort Collins.
- February 2006. Genetic evaluation of calving traits. *Department of Animal and Dairy Science*, University of Georgia, Athens.

August 2003. Genetics applied to the working dog, International Seppala Siberian Sleddog Club Annual Meeting, Seeley, MT.

Grants

Co-principal investigator on a \$450,000 Cooperative State Research, Extension, and Education Service National Research Initiative grant for a proposal titled “Genomic signature of artificial selection and genome-wide association analysis in Holstein cows” (Grant No. 2008-35205-18846).
Principal investigator on a \$500 grant from The Seeing Eye, Inc., Morristown, NJ, USA, for a proposal titled “Genetic Analysis in a Colony of Guide Dogs”.

Teaching Experience

Instructor, DARY 2072: Introductory Agricultural Genetics, LSU, Spring 2001.
Lecturer, AGRI 2072: Plant and Animal Genetics, LSU, Spring 1996.
Lecturer, ANSC 1101: Introductory Animal Science, University of Minnesota, 1996–2000.
Lecturer, ANSC 2211: Biometrics for Livestock, University of Minnesota, 2000.
Lecturer, ANSC 3221: Animal Breeding, University of Minnesota, 1996–2000.
Lecturer, DARY 4018: Applied Animal Breeding and Genetics, LSU, 1995.

Training

“Presenting Data and Information”, Edward Tufte, Arlington, VA, May 24, 2007.
“Seminar for New Managers: Blended Course”, United States Office of Personnel Management, Western Management Development Center, Aurora, CO, April 3-May 19, 2006.
“Fast Track to ColdFusion MX7”, Fig Leaf Software, Washington, DC, June 6–8, 2005.
“Predictive Modeling Using Logistic Regression”, The SAS Institute, Inc., Rockville, MD, December 2–3, 2004
“Mixed Models Analysis Using the SAS System”, The SAS Institute, Inc., Rockville, MD, November 17–19, 2004
“Longitudinal Data Analysis with Continuous and Discrete Responses”, The SAS Institute, Inc., Rockville, MD, September 16–17, 2004

Professional Affiliations

Member of the American Dairy Science Association
Member of Gamma Sigma Delta, The Honor Society of Agriculture
Member of the International Working Dog Breeding Association and Chair of the Universal Dog Record working group
Member of the Editorial Board for the Journal of Animal Science (2006 to present)
Non-voting member of Holstein Association USA's Genetic Advancement Committee (2006-2007)

Awards and Honors

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