

Curriculum Vitae

Jason W. Abernathy

Department of Animal Science
University of California, Davis
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Davis, CA 95616

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Education:

- (2010); **Doctor of Philosophy**
Host Department: Fisheries and Allied Aquacultures
Program: *Cellular and Molecular Biosciences*
Auburn University, Auburn, Alabama
- (2002); **Bachelor of Science**
Host Department: College of Sciences and Mathematics
Major: *Biomedical Sciences*
Auburn University, Auburn, Alabama

Professional Appointments:

- (2012-present); **Postdoctoral Scholar**
Department of Animal Science
University of California Davis, Davis, California
- (2011-present); **Peer Reviewer**
American Journal Experts, Raleigh-Durham, North Carolina
- (2010-2012); **Postdoctoral Research Associate**
Department of Poultry Science
Texas A&M University, College Station, Texas
- (2005-2010); **Graduate Research Assistant**
The Fish Molecular Genetics and Biotechnology Laboratory
Department of Fisheries and Allied Aquacultures
Auburn University, Auburn, Alabama
- (2003-2005); **Research Assistant II**
Department of Fisheries and Allied Aquacultures
In cooperation, U.S.D.A - Agricultural Research Service (USDA-ARS)
Auburn University, Auburn, Alabama
- (2001-2002); **Undergraduate Student Research Assistant**
Department of Pathobiology - Veterinary Medicine
In cooperation, U.S.D.A - Agricultural Research Service (USDA-ARS)
Auburn University, Auburn, Alabama

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Professional Experience (research):

- (2010-present); **Investigating** host-pathogen interactions of avian and mammalian infectious diseases; host genome marker development for QTL mapping and GWAS.
- (2010-present); **Sampling and preparing** birds (field work) at Texas A&M University and USDA Southern Plains Agricultural Research Center, College Station, TX.
- (2005-2010); **Investigating** host-pathogen interactions of aquatic animal diseases; host whole-genome sequencing; host marker identification / mapping; gene expression profiling of fish diseases for understanding developmental and virulence characteristics.
- (2004-2010); **Sampling and preparing** organisms (field work) from ponds at the E.W. Shell North Auburn Fisheries Station and USDA-ARS, Auburn, AL.
- (2003-2005); **Investigating** genetic and biochemical characteristics among strains of aquatic animal pathogens for vaccine development.

Professional Experience (teaching):

- (2011); **Guest lecturing** for the undergraduate course “Avian Genetics and Breeding” course POSC414 at Texas A&M University.
- (2008); **Teaching** the workshop / lab portion of the course “Molecular Genetics and Biotechnology” course CMBL7660 at Auburn University.

Publications:

- (2011) **J. Abernathy**, D-H Xu, E. Peatman, H. Kucuktas, P. Klesius, and Z. Liu. Gene expression profiling of a fish parasite *Ichthyophthirius multifiliis*: insights into development and senescence-associated avirulence. *Comparative Biochemistry and Physiology – Part D: Genomics and Proteomics*, 6(4):382-92.
- (2011) H. Liu, E. Peatman, W. Wang, **J. Abernathy**, S. Liu, H. Kucuktas, J. Terhune, DH Xu, P. Klesius, and Z. Liu. Molecular responses of ceruloplasmin to *Edwardsiella ictaluri* infection and iron overload in channel catfish (*Ictalurus punctatus*). *Fish and Shellfish Immunology* 30(3):992-7.
- (2011) H. Liu, E. Peatman, W. Wang, **J. Abernathy**, S. Liu, H. Kucuktas, J. Lu, D-H Xu, P. Klesius, G. Waldbieser, and Z. Liu. Molecular responses of calreticulin genes to iron overload and bacterial challenge in channel catfish (*Ictalurus punctatus*). *Developmental and Comparative Immunology* 35(3):267-72.
- (2010) Y. Lee, F. Chen, Y. Jiang, S. Wang, E. Peatman, **J. Abernathy**, H. Liu, S. Liu, H. Kucuktas, C. Ke, and Z. Liu. Identification and characterization of full-length cDNAs in channel catfish (*Ictalurus punctatus*) and blue catfish (*Ictalurus furcatus*). *PLoS One* 5(7):e11546.

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- (2010) J. Lu, E. Peatman, W. Wang, Q. Yang, **J. Abernathy**, S. Wang, H. Kucuktas, and Z. Liu. Alternative splicing in teleost fish genomes: Same-species and cross-species analysis and comparisons. *Molecular Genetics and Genomics* 283(6):531-9.
- (2010) H. Liu, T. Takano, E. Peatman, **J. Abernathy**, S. Wang, Z. Sha, H. Kucuktas, and Z. Liu. Molecular characterization and gene expression of the channel catfish ferritin H subunit after bacterial infection and iron treatment. *Journal of Experimental Zoology Part A: Ecological Genetics and Physiology* 313(6):359-68.
- (2010) S. Wang, E. Peatman, **J. Abernathy**, G. Waldbieser, E. Lindquist, P. Richardson, S. Lucas, M. Wang, P. Li, J. Thimmapuram, L. Liu, D. Vullaganti, H. Kucuktas, C. Murdock, B.C. Small, M. Wilson, H. Liu, Y. Jiang, Y. Lee, F. Chen, J. Lu, W. Wang, P. Xu, B. Somridhivej, P. Baoprasertkul, J. Quilang, Z. Sha, B. Bao, Y. Wang, Q. Wang, T. Takano, S. Nandi, S. Liu, L. Wong, L. Kaltenboeck, S. Quiniou, E. Bengten, N. Miller, J. Trant, D. Rokhsar, Z. Liu and the catfish genome consortium. Assembly of 500,000 inter-specific catfish expressed sequence tags and large scale gene-associated marker development for whole genome association studies. *Genome Biology* 11(1):R8.
- (2010) Y. Jiang*, **J. Abernathy***, E. Peatman*, H. Liu, S. Wang, D-H Xu, H. Kucuktas, P. Klesius, and Z. Liu. Identification and characterization of matrix metalloproteinase-13 sequence structure and expression during embryogenesis and infection in channel catfish (*Ictalurus punctatus*). *Developmental and Comparative Immunology* 34(5):590-7. ***Co-first authors.**
- (2010) **J. Abernathy**, E. Peatman, and Z. Liu. *Basic Aquaculture Genetics*. Southern Regional Aquaculture Center (SRAC) – Publications, Videos, and Computer Software (PVCS) year 13 project. SRAC Publication No. 5001.
- (2010) H. Liu, T. Takano, **J. Abernathy**, S. Wang, Z. Sha, Y. Jiang, J. Terhune, H. Kucuktas, E. Peatman, and Z. Liu. Structure and expression of transferrin gene of channel catfish, *Ictalurus punctatus*. *Fish and Shellfish Immunology* 28(1):159-66.
- (2009) H. Liu, Y. Jiang, S. Wang, P. Ninwichian, B. Somridhivej, P. Xu, **J. Abernathy**, H. Kucuktas, and Z. Liu. Comparative analysis of catfish BAC end sequences with the zebrafish genome. *BMC Genomics* 10:592.
- (2009) D.-H. Xu, V.S. Panangala, V.L. van Santan, K. Dybvig, **J. Abernathy**, P.H. Klesius, Z. Liu and R. Russo. Molecular characteristics of an immobilization antigen gene of the fish-parasitic protozoan *Ichthyophthirius multifiliis* strain ARS-6. *Aquaculture Research* 40:1884-92.
- (2009) **J. Abernathy**, J. Lu, H. Liu, H. Kucuktas, and Z. Liu. Molecular characterization of complement factor I reveals constitutive expression in channel catfish. *Fish and Shellfish Immunology* 27(3):529-34.
- (2009) **J. Abernathy**, D-H Xu, P. Li, P. Klesius, H. Kucuktas, and Z. Liu. Transcriptomic profiling of *Ichthyophthirius multifiliis* reveals polyadenylation of the

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large subunit ribosomal RNA. *Comparative Biochemistry and Physiology – Part D: Genomics and Proteomics* 4:179-86.

- (2009) Z. Sha, **J. Abernathy**, S. Wang, P. Li, H. Kucuktas, H. Liu, and Z. Liu. NOD-like subfamily of the nucleotide-binding domain and leucine-rich repeat containing family receptors and their expression in channel catfish. *Developmental and Comparative Immunology* 33(9):991-9.
- (2009) H. Kucuktas, S. Wang, P. Li, C. He, P. Xu, Z. Sha, H. Liu, Y. Jiang, P. Baoprasertkul, B. Somridhivej, Y. Wang, **J. Abernathy**, X. Guo, L. Liu, W. Muir, and Z. Liu. Construction of genetic linkage maps and comparative genome analysis of catfish using gene-associated markers. *Genetics* 181(4):1649-60.
- (2007) **J. Abernathy**, P. Xu, P. Li, D-H Xu, H. Kucuktas, P. Klesius, C. Arias, and Z. Liu. Generation and analysis of expressed sequence tags from the ciliate protozoan parasite *Ichthyophthirius multifiliis*. *BMC Genomics* 8:176.
- (2007) J. Qiulang, S. Wang, P. Li, **J. Abernathy**, E. Peatman, Y. Wang, L. Wang, Y. Shi, R. Wallace, X. Guo, and Z. Liu. Generation and analysis of ESTs from the eastern oyster *Crassostrea virginica* Gmelin and identification of microsatellite and SNP markers. *BMC Genomics* 8:157.
- (2007) P. Baoprasertkul, E. Peatman, **J. Abernathy**, and Z. Liu. Structural characterization and expression analysis of Toll-like receptor 2 gene from catfish. *Fish and Shellfish Immunology* 22(4):418-26.
- (2006) C. Arias, **J. Abernathy**, and Z. Liu. Combined use of 16S ribosomal DNA and Automated Ribosomal Intergenic Spacer Analysis to study the bacterial community in catfish ponds. *Letters in Applied Microbiology* 43(3):287-92.
- (2004) C. Arias, T. Welker, C. Shoemaker, **J. Abernathy**, and P. Klesius. Genetic fingerprinting of *Flavobacterium columnare* isolates from cultured fish. *Journal of Applied Microbiology* 97(2):421-8.

Published Abstracts:

- (Aug 2012) D.J. Coble, E. Sandford, J. Tieming, **J. Abernathy**, H. Zhou, S.J. Lamont. Impacts of *Salmonella enteritidis* infection on liver transcriptome in broilers. 24th World Poultry Congress. Salvador, Brazil. Poster Presentation.
- (Mar 2012) **J. Abernathy**, C. Corkill, C. Hinojosa, X. Li, H. Andrews-Polymenis, and H. Zhou. Host innate immune response to pflB *Salmonella typhimurium* mutant with elevated SPI1-mediated virulence. Keystone Symposia on Molecular and Cellular Biology, Joint Meeting on Innate Immunity and the Microbiome. Keystone, CO. Poster Presentation.

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- (Mar 2012) **J. Abernathy**, C. Corkill, C. Hinojosa, X. Li, H. Andrews-Polymenis, and H. Zhou. Gene expression profiling of human intestinal epithelia cell line HCT-8 challenged by a pflB *Salmonella* Typhimurium mutant with elevated *SPI1*-mediated virulence. 15th annual Bay Area Microbial Pathogenesis Symposium. University of California. San Francisco, CA. Poster Presentation.
- (Jan 2012) **J. Abernathy**, R.M. Goto, M.M. Miller, and H. Zhou. Using trisomy mapping and array comparative genomic hybridization to assign candidate genes to chicken chromosome 16. 20th Annual Plant and Animal Genome Conference. San Diego, CA. Poster Presentation.
- (Jan 2012) **J. Abernathy**, C. Corkill, C. Hinojosa, X. Li, H. Andrews-Polymenis, and H. Zhou. Host response to gene knockouts in the pyruvate metabolism pathway of *Salmonella typhimurium*. 20th Annual Plant and Animal Genome Conference. San Diego, CA. Oral Presentation.
- (Nov 2011) **J. Abernathy**, C. Corkill, C. Hinojosa, X. Li, H. Andrews-Polymenis, and H. Zhou. Gene knockouts in the pyruvate metabolism pathway of *Salmonella typhimurium* increase *SPI1*-virulence expression and invasion of host cells. 43rd American Society for Microbiology, Texas Branch Meeting, University of Texas at Arlington, Arlington, TX. Poster Presentation.
- (Jan 2011) **J. Abernathy**, X. Li, Y. Wang, and H. Zhou. Assessment of gene regulation of microRNA-155 in the chicken macrophage during *Salmonella typhimurium* infection. 19th Annual Plant and Animal Genome Conference. San Diego, CA. Poster Presentation.
- (Jan 2011) D.J. Coble, E. Sandford, **J. Abernathy**, H. Zhou, and S.J. Lamont. Impacts of *Salmonella enteritidis* infection on liver transcriptome in broilers. 19th Annual Plant and Animal Genome Conference. San Diego, CA. Poster Presentation.
- (Jan 2010) **J. Abernathy**, D-H Xu, E. Peatman, H. Kucuktas, P. Klesius, and Z. Liu. Microarray analysis for developmental and pathogenic gene regulation in the fish protozoan parasite *Ichthyophthirius multifiliis*. 18th Annual Plant and Animal Genome Conference. San Diego, CA. Poster Presentation.
- (Jan 2010) Y. Lee, F. Chen, S. Wang, Y. Jiang, H. Liu, S. Liu, **J. Abernathy**, E. Peatman, H. Kucuktas and Z. Liu. Identification and characterization of catfish full-length cDNAs. 18th Annual Plant and Animal Genome Conference. San Diego, CA. Invited Oral Presentation and Poster Presentation.
- (Jan 2010) J. Liu, E. Peatman, W. Wang, Q. Yang, **J. Abernathy**, S. Wang, and Z. Liu. Alternative splicing in teleost fish genomes: Cross-species analysis and comparisons. 18th Annual Plant and Animal Genome Conference. San Diego, CA. Poster Presentation.
- (Jan 2009) **J. Abernathy**, J. Lu, H. Liu, Z. Sha, and Z. Liu. Complement control factor I in catfish immunity: molecular characterization and gene expression after bacterial

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challenge. 17th Annual Plant and Animal Genome Conference. San Diego, CA. Poster Presentation.

- (Jan 2009) H. Kucuktas, S. Wang, **J. Abernathy**, P. Ninwichian, P. Li, C. He, P. Xu, Z. Sha, H. Liu, Y. Jiang, P. Baoprasertkul, B. Somridhivej, Y. Wang, L. Liu, W. Muir, X. Guo, and Z. Liu. Construction of the genetic linkage and comparative maps of channel catfish (*Ictalurus punctatus*) using EST-derived microsatellite markers. 17th Annual Plant and Animal Genome Conference. San Diego, CA. Invited Oral Presentation and Poster Presentation.
- (Jan 2009) S. Wang, **J. Abernathy**, G. Waldbieser, E. Lindquist, P. Richardson, S. Lucas, M. Wang, P. Li, J. Thimmapuram, L. Liu, D. Vullaganti, E. Peatman, P. Xu, C. Murdock, B. Small, M. Wilson, H. Kucuktas, B. Somridhivej, P. Baoprasertkul, J. Quilang, H. Liu, Z. Sha, J. Lu, B. Bao, Y. Wang, Q. Wang, T. Takano, S. Nandi, S. Quiniou, E. Bengten, N. Miller, J. Trant, D. Rokhsar, and Z. Liu. JGI completed catfish EST sequencing project. 17th Annual Plant and Animal Genome Conference. San Diego, CA. Poster Presentation.
- (Jan 2009) S. Wang, Z. Sha, **J. Abernathy**, T. Sonstegard, H. Liu, P. Xu, B. Somridhivej, E. Peatman, H. Kucuktas, and Z. Liu. Quality assessment parameters for EST-derived SNPs from catfish. 17th Annual Plant and Animal Genome Conference. San Diego, CA. Poster Presentation.
- (Jan 2009) H. Liu, T. Takano, **J. Abernathy**, S. Wang, Z. Sha, J. Terhune, H. Kucuktas, Y. Jiang, and Z. Liu. Expression analysis of the ferritin gene in channel catfish suggests its importance in iron regulation with Gram-negative bacterial infections. 17th Annual Plant and Animal Genome Conference. San Diego, CA. Poster Presentation.
- (Jan 2009) H. Liu, T. Takano, **J. Abernathy**, S. Wang, Z. Sha, J. Terhune, H. Kucuktas, Y. Jiang, and Z. Liu. Molecular characterization and gene expression of the channel catfish ferritin heavy chain gene after bacterial infection and iron treatment. 17th Annual Plant and Animal Genome Conference. San Diego, CA. Poster Presentation.
- (Jan 2009) Z. Sha, **J. Abernathy**, S. Wang, P. Li, H. Kucuktas, H. Liu, and Z. Liu. The NOD-like subfamily of NLR receptor genes exhibit tissue-specific expression patterns in the channel catfish (*Ictalurus punctatus*). 17th Annual Plant and Animal Genome Conference. San Diego, CA. Poster Presentation.
- (Jan 2009) Y. Jiang, **J. Abernathy**, H. Liu, S. Wang, A. Chaimongkol, J. Lu, and Z. Liu. Identification of matrix metalloproteinase-13 gene in the channel catfish (*Ictalurus punctatus*) and expression through embryogenesis and pathology. 17th Annual Plant and Animal Genome Conference. San Diego, CA. Poster Presentation.
- (Mar 2008) **J. Abernathy**, J. Lu, Z. Sha, and Z. Liu. Complement control factor I in the channel catfish (*Ictalurus punctatus*) is conserved through teleost evolution. 2008

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Southeastern Ecology and Evolution Conference. Florida State University, Tallahassee, FL. Poster Presentation.

- (Jan 2008) **J. Abernathy**, D-H Xu, P. Li, P. Klesius, and Z. Liu. Post-transcriptional polyadenylation of the large subunit ribosomal RNA in *Ichthyophthirius multifiliis*. 16th Annual Plant and Animal Genome Conference. San Diego, CA. Poster Presentation.
- (Jan 2008) E. Peatman, **J. Abernathy**, J. Terhune, P. Baoprasertkul, P. Xu, S. Nandi, S. Wang, B. Somridhivej, H. Kucuktas, P. Li, R. Dunham, and Z. Liu. Microarray analysis of gene expression in the blue catfish liver reveals early activation of the MHC class I pathway after infection with *Edwardsiella ictaluri*. 16th Annual Plant and Animal Genome Conference. San Diego, CA. Invited Oral Presentation and Poster Presentation.
- (Jan 2008) J. Qiulang, S. Wang, P. Li, **J. Abernathy**, E. Peatman, Y. Wang, L. Wang, Y. Shi, R. Wallace, X. Guo, and Z. Liu. Generation and analysis of ESTs from the eastern oyster *Crassostrea virginica* and identification of microsatellite and SNP markers. 16th Annual Plant and Animal Genome Conference. San Diego, CA. Poster Presentation.
- (Jan 2007) **J. Abernathy**, P. Xu, P. Li, D-H. Xu, H. Kucuktas, P. Klesius, C. Arias, and Z. Liu. A genomic resource for the analysis of developmental and environmental factors of the protozoan fish parasite *Ichthyophthirius multifiliis* using microarrays. 15th Annual Plant and Animal Genome Conference. San Diego, CA. Poster Presentation.
- (Jun 2006) Z. Liu, H. Kucuktas, P. Li, P. Baoprasertkul, P. Xu, E. Peatman, S. Wang, B. Somridhivej, **J. Abernathy**, W. Lee, and S. Nandi. Genomic resources and their informatic analysis for comparative genomics in catfish. International Symposium for Genetics in Aquaculture IX. Montpellier, France. Oral Presentation.
- (Feb 2006) Z. Liu, H. Kucuktas, P. Li, P. Baoprasertkul, P. Xu, E. Peatman, S. Wang, B. Somridhivej, **J. Abernathy**, W. Lee, and S. Nandi. Informatic analysis of genomic resources for comparative genomics in catfish. Binational Agricultural Research and Development Workshop: Aquaculture Genetics. Eilat, Israel. Oral Presentation.
- (Jan 2006) P. Baoprasertkul, **J. Abernathy**, P. Li, H. Kucuktas, and Z. Liu. Expression of Toll-like receptors in resistant and susceptible catfish after infection with the bacterial pathogen *Edwardsiella ictaluri*. 14th Annual Plant and Animal Genome Conference. San Diego, CA. Poster Presentation.
- (Jan 2006) E. Peatman, P. Xu, S. Wang, **J. Abernathy**, P. Baoprasertkul, B. Somridhivej, S. Nandi, P. Li, H. Kucuktas, and Z. Liu. Identification of catfish candidate genes for comparative genome analysis utilizing chromosome-specific genes of the *Tetraodon* genome. 14th Annual Plant and Animal Genome Conference. San Diego, CA. Poster Presentation.
- (Jul 2005) C. Arias and **J. Abernathy**. Combined use of 16S ribosomal DNA and Automated Ribosomal Intergenic Spacer Analysis (ARISA) to study the bacterial

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community in aquaculture ponds. Joint Meeting of the 3 Divisions of the International Union of Microbiological Societies. San Francisco, CA. Poster Presentation.

- (Jul 2004) C. Arias, T. Welker, C. Shoemaker, **J. Abernathy**, and P. Klesius. Genetic fingerprinting of *Flavobacterium columnare* isolates from culture fish. 7th International Meeting on Molecular Epidemiology and Evolutionary Genetics of Infectious Diseases. Valencia, Spain. Poster Presentation.
- (Aug 2003) C. Arias, T. Welker, C. Shoemaker, **J. Abernathy**, and P. Klesius. Genetic approach for intraspecific characterization of the fish pathogens *Edwardsiella ictaluri* and *Flavobacterium columnare*. 6th International Meeting on Microbial Epidemiological Markers. Les Diablerets, Switzerland. Poster Presentation.

Funding:

- (08/15/2011-08/15/2013) USDA Agriculture and Food Research Initiative: NIFA Postdoctoral Fellowship Grant. “Genetic association between Copy Number Variation (CNV) and resistance to *Campylobacter jejuni* in the chicken” Award #2011-67012-30684. PI: Jason Abernathy (\$130,000)
- (2012) USDA NIFA (poultry group) travel scholarship to attend the 20th Plant and Animal Genome Conference, San Diego, CA (\$1,000)
- (2011) NIGMS travel fellowship to attend the 1st Annual “Course on Statistical Genetics and Genomics”, University of Alabama at Birmingham, Birmingham, AL (\$2,050)
- (2010) NIH scholarship to attend the course “Genetic Analysis of Complex Human Diseases”, University of Miami, Institute for Human Genomics, Miami, FL (\$1,000)
- (2010) NRSP-8 travel fellowship, 18th Plant and Animal Genome Conference, San Diego, CA (\$1,000)
- (2009) NRSP-8 travel fellowship, 17th Plant and Animal Genome Conference, San Diego, CA (\$1,000)
- (2008) NRSP-8 travel fellowship, 16th Plant and Animal Genome Conference, San Diego, CA (\$1,000)
- (2008) Southern Regional Aquaculture Center – PVCS year 13 project contract, *Basic Aquaculture Genetics*, SRAC Fact Sheet #5001 (\$2,000)

Awards, Honors, and Professional Services:

- (2012) *Ad Hoc* reviewer for *PLoS One*
- (2011) In-Field (Genetics) Judge, Student Research Week, Texas A&M University
- (2011) *Ad Hoc* reviewer for *Animal Genetics*
- (2009) Golden Key Leadership Learning certificate

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- (2009) Sigma Xi, promotion to full member
- (2008) AAAS/*Science* Program for Excellence in Science
- (2008) *Ad Hoc* reviewer for *Diseases of Aquatic Organisms*
- (2008) *Ad Hoc* reviewer for *Journal of Eukaryotic Microbiology*
- (2008) Golden Key International Honour Society
- (2008) Swingle Award, most outstanding Ph.D. student, Department of Fisheries
- (2007) *Ad Hoc* reviewer for *Marine Biotechnology*
- (2007) Delta Epsilon Iota, Academic Honor Society
- (2007) Sigma Xi, Scientific Research Society, nominated associate member
- (2006) Gamma Sigma Delta, Agricultural Honor Society

Professional Memberships (past and present, alphabetical):

- American Association for the Advancement of Science
- American Association of University Professors: national, state, and local
- American Society for Microbiology
- Catfish Genome Consortium
- Coalition for the Life Sciences
- Epernicus platform for research scientists
- Genetics Society of America
- International Society for Animal Genetics
- MethodShare member, *Genome Technology*
- MidSouth Computational Biology and Bioinformatics Society
- National Association of Graduate and Professional Students
- Sigma Xi, The Scientific Research Society
- The Science Advisory Board, Research Panel member, *Bioinformatics*