BIOGRAPHICAL SKETCH

NAME Ciobanu, Daniel Constantin	POSITION TITLE Professor
eRA COMMONS USER NAME dciobanu2	

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	MM/YY	FIELD OF STUDY
University of Agricultural Sciences of Cluj-Napoca, Romania	BSc	1992	Animal Science; Breeding and Genetics
Academy of Agricultural and Forestry Sciences, Bucharest, Romania	PhD	1999	Genetics
Iowa State University, Ames, IA	PostDoc	1999-2002	Molecular Genetics

RESEARCH FOCUS

The focus of our current studies is to understand genetic and mechanistic basis of viral disease susceptibility. The objectives of the research are to identify genes, genetic variants, and molecular pathways that explain the variation in susceptibility to Porcine Circovirus 2 and other swine viruses. We integrate refined-molecular phenotypes that define disease status, with large-scale genotyping, host and viral genome sequencing, structural and functional annotation, genome-wide associations, gene editing and infection models, to uncover genetic causality of susceptibility to infectious diseases.

POSITIONS AND HONORS

Positions and Employment

2020 – present Professor, University of Nebraska, Department of Animal Science, Lincoln, NE.
2014 – 2020 Associate Professor, University of Nebraska, Department of Animal Science, Lincoln, NE.
2009 – 2014 Assistant Professor, University of Nebraska, Department of Animal Science, Lincoln, NE.
2006 – 2008 Research Associate, University of Tennessee Health Science Center, Department of Anatomy and Neurobiology, Memphis, TN
2002 – 2006 Molecular Biology Project Manager, Sygen International, Franklin, KY.
1999 – 2002 Postdoctoral Research Associate, Department of Animal Science, Iowa State University, Ames, IA.
1992 – 1999 Teaching Assistant, Genetics Unit, University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca, Romania.

Honors and Awards

2023 Elected fellow of the National Academy of Inventors
2022 National Swine Improvement Federation *Charles Stanislaw* Memorial Distinguished Service Award
2021 Gamma Sigma Delta, Nebraska Chapter: Excellence in Research Award.
2012 Dinsdale Family Faculty Award, University of Nebraska.

MAIN GRANTS AWARDED

Current Funding: Extramural

NIFA Foundational Grant: **Ciobanu, D. (PD)**, Vu, H., Jishu Shi, "Deconstructing the role of SYNGR2 in viral disease susceptibility in livestock", 07.01.2020 – 06.30.2025, $ $500,000 PD.

NIFA Foundational Grant: **Ciobanu, D. (PD)**, Fernando, S., Kachman, S., Loy, D. "Understanding Host X Pathogen Associations In Swine Infectious Diseases, 02.01.2023 – 07.30.2027, $635,000, PD.

NIFA Education and Workforce Development Program – Postdoctoral fellowship: Survey of Intraspecific Variation within Swine ANP32A/B and Effects on Host Permissiveness to Avian Influenza Virus, 01.01.2023 – 12.31.2024, $224,804 (Walker, L. PD; **Ciobanu D., Mentor**).

Past funding: Extramural

NIFA: "Investigation of host genetic role in PCV2 and PRRSV susceptibility"; 04.01.2017 – 03.31.2021; $ $459,200 **Ciobanu, D. (PD)**, Vu H., Kachman S.

NIFA: "Translational Genomics for Improving Sow Reproductive Longevity"; 01.01.2013 – 12.31.2017; $1,166,650; **Ciobanu D. (PD)**, Lents C., Safranki T, Kachman S.

Genome Canada: "Application of genomics to improving swine health and welfare" 12/01/2010 – 12/01/2015; CAD $233,437; **Ciobanu D. (Co-PI)**.

National Pork Board: "Genome-wide association analyses of sow reproduction and lifetime productivity"; **Ciobanu D. (PD)**, 05/01/2011 – 05/01/2012; $103,377; PD.

National Pork Board: "Identification of markers associated with sow lifetime productivity for whole genomic selection"; 05.01.2009 – 05.01.2010; $102,740; **Ciobanu D. (PD).**

PATENTS

Biomarkers for resistance to Porcine Circovirus 2 Associated Disease, 16/149,059, United States. (September 29, 2017).

Novel *PRKAG3* alleles and use of the same as genetic markers for reproductive and meat quality traits – application granted in USA and Canada.

Novel *Calpastatin* alleles and use of the same genetic markers for growth and meat quality – application granted in USA and Canada.

SELECTED PEER-REVIEWED PUBLICATIONS (ORCID iD: 0000-0002-7301-1339)

Walker LR, Vu HL, Montooth KL, **Ciobanu DC**. Functional and evolutionary analysis of host Synaptogyrin-2 in porcine circovirus type 2 susceptibility. PLoS Genet. 2023 Nov 27;19(11):e1011029. doi: 10.1371/journal.pgen.1011029.

Eaton CW, Vu HL, Hodges AL, Harris SP, Kachman SD, **Ciobanu DC**. Host-Genetic-Based Outcome of Coinfection by PCV2b and PRRSV in Pigs. J Anim Sci. 2023 May 20:skad164. doi: 10.1093/jas/skad164.

Sutton KM, Eaton CW, Borza T, Burkey TE, Mote BE, Loy JD, **Ciobanu DC**. Genetic Diversity and Detection of Atypical Porcine Pestivirus Infections. J Anim Sci. **2022** Jan 1;100(1):skab360. doi: 10.1093/jas/skab360.

Wijesena HR, Kachman SD, Lents CA, Riethoven JJ, Trenhaile-Grannemann MD, Safranski TJ, Spangler ML, **Ciobanu DC.** Fine mapping genetic variants associated with age at puberty and sow fertility using SowPro90 genotyping array. J Anim Sci. **2020** Oct 1;98(10):skaa293. doi: 10.1093/jas/skaa293. PMID: 32888012.

Perez-Munoz ME, McKnite AM, Williams EG, Auwerx J, Williams RW, Peterson DA, **Ciobanu DC**. Diet Modulates Cecum Bacterial Diversity and Physiological Phenotypes across the BXD Mouse

Genetic Reference Population. PLoS One. **2019** Oct 21;14(10):e0224100. doi: 10.1371/journal.pone.0224100. PMID:31634382.

Sutton KM, Lahmers KK, Harris SP, Wijesena HR, Mote BE, Kachman SD, Borza T, **Ciobanu DC**. Detection of Atypical Porcine Pestivirus Genome in Newborn Piglets Affected by Congenital Tremor and High Pre-weaning Mortality. J Anim Sci. **2019** Aug 9. doi: 10.1093/jas/skz267. PMID:31396615.

Wijesena HR, Rohrer GA, Nonneman DJ, Keel BN, Petersen JL, Kachman SD, **Ciobanu DC**. Evaluation of genotype quality parameters for *SowPro90*, a novel genotyping array for swine, J Anim Sci. **2019,** May 31. doi: 10.1093/jas/skz185.

Walker LR, Jobman EE, Sutton KM, Wittler J, Johnson R, **Ciobanu DC**. Genome-wide association analysis for Porcine Reproductive and Respiratory Syndrome Virus susceptibility traits in two genetic populations of pigs. J Anim Sci. **2019**, May 31 doi:10.1093/jas/skz184.

Walker LR, Engle TB, Vu H, Tosky ER, Nonneman DJ, Smith TPL, Borza T, Burkey TE, Plastow GS, Kachman SD, **Ciobanu DC**. Synaptogyrin-2 influences replication of Porcine circovirus 2. PLoS Genet. **2018** Oct 31;14(10):e1007750. doi:10.1371/journal.pgen.1007750. eCollection 2018 Oct. PubMed PMID: 30379811.

Wijesena HR, Lents CA, Riethoven JJ, Trenhaile-Grannemann MD, Thorson JF, Keel BN, Miller PS, Spangler ML, Kachman SD, **Ciobanu DC**. GENOMICS SYMPOSIUM: Using genomic approaches to uncover sources of variation in age at puberty and reproductive longevity in sows. J Anim Sci. **2017** Sep;95(9):4196-4205. doi: 10.2527/jas2016.1334. PubMed PMID: 28992028.

Walker LR, Tosky ER, Sutton KM, Griess R, Abebe MD, Barnes SY, Cunnigham T, Kachman SD, Nielsen MK, **Ciobanu DC**. A 16.7kb deletion in Sipa1l3 is associated with juvenile cataract in mice. Mamm Genome. 2017 Dec;28(11-12):515-519. doi: 10.1007/s00335-017-9720-9. Epub **2017** Sep 26. PubMed PMID: 28951961.

Trenhaile MD, Petersen JL, Kachman SD, Johnson RK, **Ciobanu DC**. Long-term selection for litter size in swine results in shifts in allelic frequency in regions involved in reproductive processes. Anim Genet. **2016** Oct;47(5):534-42. doi: 10.1111/age.12448. Epub 2016 May 26. PubMed PMID: 27226276.

Wang X, Pandey AK, Mulligan MK, Williams EG, Mozhui K, Li Z, Jovaisaite V, Quarles LD, Xiao Z, Huang J, Capra JA, Chen Z, Taylor WL, Bastarache L, Niu X, Pollard KS, **Ciobanu DC**, Reznik AO, Tishkov AV, Zhulin IB, Peng J, Nelson SF, Denny JC, Auwerx J, Lu L, Williams RW. Joint mouse-human phenome-wide association to test gene function and disease risk. Nat Commun. **2016** Feb 2;7:10464. doi: 10.1038/ncomms10464. PubMed PMID: 26833085.

Lucot KL, Spangler ML, Trenhaile MD, Kachman SD, **Ciobanu DC**. Evaluation of reduced subsets of single nucleotide polymorphisms for the prediction of age at puberty in sows. Anim Genet. **2015** Aug;46(4):403-9. doi: 10.1111/age.12310. Epub 2015 Jun 9. PubMed PMID: 26059234.

Kreikemeier CA, Engle TB, Lucot KL, Kachman SD, Burkey TE, **Ciobanu DC**. Genome-wide analysis of TNF-alpha response in pigs challenged with porcine circovirus 2b. Anim Genet. **2015** Apr;46(2):205-8. doi: 10.1111/age.12262. Epub 2015 Jan 23. PubMed PMID: 25643812.

Engle TB, Jobman EE, Moural TW, McKnite AM, Bundy JW, Barnes SY, Davis EH, Galeota JA, Burkey TE, Plastow GS, Kachman SD, **Ciobanu DC**. Variation in time and magnitude of immune response and viremia in experimental challenges with Porcine circovirus 2b. BMC Vet Res. **2014** Dec 4;10:286. doi: 10.1186/s12917-014-0286-4. PubMed PMID: 25472653.

McKnite AM, Bundy JW, Moural TW, Tart JK, Johnson TP, Jobman EE, Barnes SY, Qiu JK, Peterson DA, Harris SP, Rothschild MF, Galeota JA, Johnson RK, Kachman SD, **Ciobanu DC**. Genomic analysis of the differential response to experimental infection with porcine circovirus 2b. Anim Genet. **2014** Apr;45(2):205-14. doi: 10.1111/age.12125. Epub 2014 Jan 21. PubMed PMID: 24444103.

Tart JK, Johnson RK, Bundy JW, Ferdinand NN, McKnite AM, Wood JR, Miller PS, Rothschild MF, Spangler ML, Garrick DJ, Kachman SD, **Ciobanu DC**. Genome-wide prediction of age at puberty and reproductive longevity in sows. Anim Genet. **2013** Aug;44(4):387-97. doi: 10.1111/age.12028. Epub 2013 Feb 26. PubMed PMID: 23437861.

McKnite AM, Perez-Munoz ME, Lu L, Williams EG, Brewer S, Andreux PA, Bastiaansen JW, Wang X, Kachman SD, Auwerx J, Williams RW, Benson AK, Peterson DA, **Ciobanu DC**. Murine gut

microbiota is defined by host genetics and modulates variation of metabolic traits. PLoS One. **2012**;7(6):e39191. doi: 10.1371/journal.pone.0039191. Epub 2012 Jun 18. PubMed PMID: 22723961.

Whitney IE, Raven MA, **Ciobanu DC**, Poche RA, Ding Q, Elshatory Y, Gan L, Williams RW, Reese BE. Genetic modulation of horizontal cell number in the mouse retina. Proc Natl Acad Sci U S A. **2011** Jun 7;108(23):9697-702. doi: 10.1073/pnas.1103253108. Epub 2011 May 16. PubMed PMID: 21576457.

Mozhui K, Karlsson RM, Kash TL, Ihne J, Norcross M, Patel S, Farrell MR, Hill EE, Graybeal C, Martin KP, Camp M, Fitzgerald PJ, **Ciobanu DC**, Sprengel R, Mishina M, Wellman CL, Winder DG, Williams RW, Holmes A. Strain differences in stress responsivity are associated with divergent amygdala gene expression and glutamate-mediated neuronal excitability. J Neurosci. **2010** Apr 14;30(15):5357-67. doi: 10.1523/JNEUROSCI.5017-09.2010. PubMed PMID: 20392957.

Du ZQ, **Ciobanu DC**, Onteru SK, Gorbach D, Mileham AJ, Jaramillo G, Rothschild MF. A gene-based SNP linkage map for pacific white shrimp, Litopenaeus vannamei. Anim Genet. **2010** Jun;41(3):286-94. doi: 10.1111/j.1365-2052.2009.02002.x. Epub 2009 Nov 26. PubMed PMID: 19968647.

Ciobanu DC, Lu L, Mozhui K, Wang X, Jagalur M, Morris JA, Taylor WL, Dietz K, Simon P, Williams RW. Detection, validation, and downstream analysis of allelic variation in gene expression. Genetics. **2010** Jan;184(1):119-28. doi: 10.1534/genetics.109.107474. Epub 2009 Nov 2. PubMed PMID: 19884314.

Ciobanu DC, Bastiaansen JW, Magrin J, Rocha JL, Jiang DH, Yu N, Geiger B, Deeb N, Rocha D, Gong H, Kinghorn BP, Plastow GS, van der Steen HA, Mileham AJ. A major SNP resource for dissection of phenotypic and genetic variation in Pacific white shrimp (Litopenaeus vannamei). Anim Genet. **2010** Feb;41(1):39-47. doi: 10.1111/j.1365-2052.2009.01961.x. Epub 2009 Oct 2. PubMed PMID: 19799596.

Whitney IE, Raven MA, **Ciobanu DC**, Williams RW, Reese BE. Multiple genes on chromosome 7 regulate dopaminergic amacrine cell number in the mouse retina. Invest Ophthalmol Vis Sci. **2009** May;50(5):1996-2003. doi: 10.1167/iovs.08-2556. Epub 2009 Jan 24. PubMed PMID: 19168892.

Mozhui K, **Ciobanu DC**, Schikorski T, Wang X, Lu L, Williams RW. Dissection of a QTL hotspot on mouse distal chromosome 1 that modulates neurobehavioral phenotypes and gene expression. PLoS Genet. **2008** Nov;4(11):e1000260. doi: 10.1371/journal.pgen.1000260. Epub 2008 Nov 14. PubMed PMID: 19008955.

Olsen CM, Huang Y, Goodwin S, **Ciobanu DC**, Lu L, Sutter TR, Winder DG. Microarray analysis reveals distinctive signaling between the bed nucleus of the stria terminalis, nucleus accumbens, and dorsal striatum. Physiol Genomics. **2008** Feb 19;32(3):283-98. Epub 2007 Oct 2. PubMed PMID: 17911379.

Ciobanu DC, Bastiaansen JW, Lonergan SM, Thomsen H, Dekkers JC, Plastow GS, Rothschild MF. New alleles in calpastatin gene are associated with meat quality traits in pigs. J Anim Sci. **2004** Oct;82(10):2829-39. PubMed PMID: 15484933.

Ciobanu DC, Day AE, Nagy A, Wales R, Rothschild MF, Plastow GS. Genetic variation in two conserved local Romanian pig breeds using type 1 DNA markers. Genet Sel Evol. **2001** Jul-Aug;33(4):417-32. PubMed PMID: 11559484.

Ciobanu D, Bastiaansen J, Malek M, Helm J, Woollard J, Plastow G, Rothschild M. Evidence for new alleles in the protein kinase adenosine monophosphate-activated gamma(3)-subunit gene associated with low glycogen content in pig skeletal muscle and improved meat quality. Genetics. **2001** Nov;159(3):1151-62. PubMed PMID: 11729159.

Contributions in books

1. **Ciobanu, D.C.**, S.M. Lonergan and E. J. Huff-Lonergan. **2011** Genetics of meat quality and carcass traits, in Genetics of the Pig edited by Max F. Rothschild and Anatoly Ruvinsky, CABI Publishing Group, UK.
2. **Ciobanu, D.C.**, M.F. Rothschild, G.S. Plastow, **2005** The role of molecular genetics in

Animal breeding: strategies and results. In "*Animal Breeding Programs*" Eds. Oltenacu, N., Grosu, H., Ceres.

3. Rothschild, M.F., J. P. Bidanel, **D.C. Ciobanu**. **2004** Genome Analysis of QTL for Muscle Tissue Development and Meat Quality. In: *Muscle Development of Livestock Animals Physiology, Genetics and Muscle Quality*, Eds: M.F. W. te Pas, H.P. Haagsman and M.E. Everts, CABI.

TEACHING AND MENTORING

Teaching experience

1992 - 1999	Animal Genetics, University of Agricultural Sciences and Veterinary Medicine, Cluj-Napoca, Romania.
2010 - present	ASCI 432/832, Genome analysis, University of Nebraska - Lincoln.
2010 - present	Invited lectures: ASCI 486, ASCI 918.

Graduate student training

Graduate student	Degree objective	Graduated	Expected to graduate
1. Theresa Bohnert	MS	June 2011	
Current employment: Data Review Supervisor at Bioanalytical Systems, Inc. (Pharmaceuticals)			
2. Julie Tart	MS	May 2012	
Current employment: DVM, Lillington Veterinary Hospital, Lillington, NC.			
3. Taylor Engle	MS	May 2014	
Current employment: DVM, Four-star Veterinary Service, OH.			
4. Katherine Lucot	MS	May 2014	
Current employment: Postdoctoral fellow, Stanford University, Stanford, CA.			
5. Melanie Trenhaile	MS	December 2015	
Current employment: Geneticist, Cobb – Vantress.			
6. Lianna Walker	MS	May 2018	
Current employment: Postdoctoral fellow, University of Nebraska – Lincoln.			
7. Emily Tosky	MS		NA
Current employment: lab technician, Iowa State University.			
8. Hiruni Wijesena	PhD	May 2020	
Current employment: Postdoctoral fellow, US-MARC.			
9. Kylee Sutton	MS	August 2020	
Current employment: lab technician, Creighton University.			
10. Lianna Walker	PhD	May 2022	
Current employment: Postdoctoral fellow, University of Nebraska – Lincoln.			
11. Christian Eaton	PhD		May 2025
12. Emmalise Meyer	MS		December 2025

Postdoctoral fellow

1. Lianna Walker	2022 – present