



Golden Retriever Foundation

CHF Grant Sponsorships and Resulting Publications through 2017

0001626T: Significance of Tumor Suppressor Genes in Canine Cancer

Principal Investigator: Dr. Jaime F Modiano, VMD, PhD; University of Colorado

Grant Period: 11/12/1999 - 8/31/2000

Koenig, A., Bianco, S. R., Fosmire, S., Wojcieszyn, J., & Modiano, J. F. (2002). Expression and significance of p53, rb, p21/waf-1, p16/ink-4a, and PTEN tumor suppressors in canine melanoma. *Veterinary pathology*, 39(4), 458-472.

Koenig, A., Wojcieszyn, J., Weeks, B. R., & Modiano, J. F. (2001). Expression of S100a, vimentin, NSE, and Melan A/MART-1 in seven canine melanoma cell lines and twenty-nine retrospective cases of canine melanoma. *Veterinary pathology*, 38(4), 427-435.

Bianco, S. R., Sun, J., Fosmire, S. P., Hance, K., Padilla, M. L., Ritt, M. G., ... & Matthiesen, D. T. (2003). Enhancing antimelanoma immune responses through apoptosis. *Cancer gene therapy*, 10(9), 726.

Modiano, J. F., Breen, M., Burnett, R. C., Parker, H. G., Inusah, S., Thomas, R., ... & Avery, A. C. (2005). Distinct B-cell and T-cell lymphoproliferative disease prevalence among dog breeds indicates heritable risk. *Cancer research*, 65(13), 5654-5661.

Jubala, C. M., Wojcieszyn, J. W., Valli, V. E. O., Getzy, D. M., Fosmire, S. P., Coffey, D., ... & Modiano, J. F. (2005). CD20 expression in normal canine B cells and in canine non-Hodgkin lymphoma. *Veterinary pathology*, 42(4), 468-476.

Dickerson, E. B., Thomas, R., Fosmire, S. P., Lamerato-Kozicki, A. R., Bianco, S. R., Wojcieszyn, J. W., ... & Modiano, J. F. (2005). Mutations of phosphatase and tensin homolog deleted from chromosome 10 in canine hemangiosarcoma. *Veterinary pathology*, 42(5), 618-632.

Fosmire, S. P., Thomas, R., Jubala, C. M., Wojcieszyn, J. W., Valli, V. E. O., Getzy, D. M., ... & Freeman, K. P. (2007). Inactivation of the p16 cyclin-dependent kinase inhibitor in high-grade canine non-Hodgkin's T-cell lymphoma. *Veterinary pathology*, 44(4), 467-478.

Breen, M., & Modiano, J. F. (2008). Evolutionarily conserved cytogenetic changes in hematological malignancies of dogs and humans—man and his best friend share more than companionship. *Chromosome Research*, 16(1), 145-154.

Ritt, M. G., Mayor, J., Wojcieszyn, J., Smith, R., Barton, C. L., & Modiano, J. F. (2000). Sustained nuclear localization of p21/WAF-1 upon growth arrest induced by contact inhibition. *Cancer letters*, 158(1), 73-84.



0002012: Development of PCR Multiplexed Canine Marker Panels for the Purposes of Genome Screening and Linkage Analysis

Principal Investigator: Dr. Marcia Eggleston, PhD; University of California, Davis
Grant Period: 7/19/2000 - 9/30/2002

Eggleston, M. L., Irion, D. N., Schaffer, A. L., Hughes, S. S., Draper, J. E., Robertson, K. R., ... & Pedersen, N. C. (2002). PCR multiplexed microsatellite panels to expedite canine genetic disease linkage analysis. *Animal biotechnology*, 13(2), 223-235.



0002044: Ultrasonic and Cytologic Evaluation of the Thyroid Gland in Golden Retriever Dogs

Principal Investigator: Dr. Richard Nelson, DVM; University of California, Davis
Grant Period: 9/1/2000 - 9/30/2001

Brömel, C., Pollard, R. E., Kass, P. H., Samii, V. F., Davidson, A. P., & Nelson, R. W. (2006). Comparison of ultrasonographic characteristics of the thyroid gland in healthy small-, medium-, and large-breed dogs. *American journal of veterinary research*, 67(1), 70-77.

Brömel, C., Pollard, R. E., Kass, P. H., Samii, V. F., Davidson, A. P., & Nelson, R. W. (2005). Ultrasonographic evaluation of the thyroid gland in healthy, hypothyroid, and euthyroid Golden Retrievers with nonthyroidal illness. *Journal of veterinary internal medicine*, 19(4), 499-506.



0002254A: Heritable and Sporadic Genetic Lesions in Canine Lymphoma and Osteosarcoma

Principal Investigator: Dr. Jaime F Modiano, VMD, PhD; AMC Cancer Research Center
Grant Period: 5/1/2002 - 6/30/2005

Tamburini, B. A., Phang, T. L., Fosmire, S. P., Scott, M. C., Trapp, S. C., Duckett, M. M., ... & Wojcieszyn, J. W. (2010). Gene expression profiling identifies inflammation and angiogenesis as distinguishing features of canine hemangiosarcoma. *BMC cancer*, 10(1), 619.

Scott, M. C., Sarver, A. L., Gavin, K. J., Thayanithy, V., Getzy, D. M., Newman, R. A., ... & Subramanian, S. (2011). Molecular subtypes of osteosarcoma identified by reducing tumor heterogeneity through an interspecies comparative approach. *Bone*, 49(3), 356-367.

Thayanithy, V., Sarver, A. L., Kartha, R. V., Li, L., Angstadt, A. Y., Breen, M., ... & Subramanian, S. (2012). Perturbation of 14q32 miRNAs-cMYC gene network in osteosarcoma. *Bone*, 50(1), 171-181.



Karlsson, E. K., Sigurdsson, S., Ivansson, E., Thomas, R., Elvers, I., Wright, J., ... & Biagi, T. (2013). Genome-wide analyses implicate 33 loci in heritable dog osteosarcoma, including regulatory variants near CDKN2A/B. *Genome biology*, 14(12), R132.

Sarver, A. L., Thayanithy, V., Scott, M. C., Cleton-Jansen, A. M., Hogendoorn, P. C., Modiano, J. F., & Subramanian, S. (2013). MicroRNAs at the human 14q32 locus have prognostic significance in osteosarcoma. *Orphanet journal of rare diseases*, 8(1), 7.

Thayanithy, V., Park, C., Sarver, A. L., Kartha, R. V., Korpela, D. M., Graef, A. J., ... & Subramanian, S. (2012). Combinatorial treatment of DNA and chromatin-modifying drugs cause cell death in human and canine osteosarcoma cell lines. *PloS one*, 7(9), e43720.

Frantz, A. M., Sarver, A. L., Ito, D., Phang, T. L., Karimpour-Fard, A., Scott, M. C., ... & Henson, M. S. (2013). Molecular profiling reveals prognostically significant subtypes of canine lymphoma. *Veterinary pathology*, 50(4), 693-703.

Modiano, J. F., Breen, M., Burnett, R. C., Parker, H. G., Inusah, S., Thomas, R., ... & Avery, A. C. (2005). Distinct B-cell and T-cell lymphoproliferative disease prevalence among dog breeds indicates heritable risk. *Cancer research*, 65(13), 5654-5661.

Fosmire, S. P., Thomas, R., Jubala, C. M., Wojcieszyn, J. W., Valli, V. E. O., Getzy, D. M., ... & Freeman, K. P. (2007). Inactivation of the p16 cyclin-dependent kinase inhibitor in high-grade canine non-Hodgkin's T-cell lymphoma. *Veterinary pathology*, 44(4), 467-478.

Dickerson, E. B., Thomas, R., Fosmire, S. P., Lamerato-Kozicki, A. R., Bianco, S. R., Wojcieszyn, J. W., ... & Modiano, J. F. (2005). Mutations of phosphatase and tensin homolog deleted from chromosome 10 in canine hemangiosarcoma. *Veterinary pathology*, 42(5), 618-632.



0002434: Recombinant Thyrotropin (TSH): Standard for the Next Generation of Canine TSH Immunoassays with Improved Sensitivity

Principal Investigator: Dr. Duncan Ferguson, DVM PhD; University of Georgia
Grant Period: 1/1/2004 - 12/31/2006

Ferguson, D. C. (2007). Testing for hypothyroidism in dogs. *Veterinary Clinics of North America: Small Animal Practice*, 37(4), 647-669.





0002667: Cellular Genomics - Molecular Cytogenetic Investigation of Canine Soft Tissue Sarcomas

Principal Investigator: Dr. Matthew Breen, PhD; North Carolina State University

Grant Period: 4/1/2004 - 3/31/2006

Hedan, B., Thomas, R., Motsinger-Reif, A., Abadie, J., Andre, C., Cullen, J., & Breen, M. (2011). Molecular cytogenetic characterization of canine histiocytic sarcoma: A spontaneous model for human histiocytic cancer identifies deletion of tumor suppressor genes and highlights influence of genetic background on tumor behavior. *BMC cancer*, 11(1), 201.

Philipp, U., Quignon, P., Scott, A., Rak, S., André, C., Breen, M., & Leeb, T. (2003). Assignment of the canine myosin Va gene (MYO5A) to chromosome 30q14 by fluorescence in situ hybridization and radiation hybrid mapping. *Cytogenetic and genome research*, 101(1), 92C.

Breen, M. (2008). Canine cytogenetics—from band to basepair. *Cytogenetic and genome research*, 120(1-2), 50-60.

Rak, S. G., Drögemüller, C., Leeb, T., Quignon, P., André, C., Scott, A., ... & Distl, O. (2003). Chromosomal assignment of 20 candidate genes for canine congenital sensorineural deafness by FISH and RH mapping. *Cytogenetic and genome research*, 101(2), 130-135.

Modiano, J. F., Breen, M., Lana, S. E., Ehrhart, N., Fosmire, S. P., Thomas, R., ... & Duke, R. C. (2006). Naturally occurring translational models for development of cancer gene therapy. *Gene Ther Mol Biol*, 10, 31-40.

Tiret, L., Blot, S., Kessler, J. L., Gaillot, H., Breen, M., & Panthier, J. J. (2003). The cnm locus, a canine homologue of human autosomal forms of centronuclear myopathy, maps to chromosome 2. *Human genetics*, 113(4), 297-306.

Kennerly, E., Thomson, S., Olby, N., Breen, M., & Gibson, G. (2004). Comparison of regional gene expression differences in the brains of the domestic dog and human. *Human genomics*, 1(6), 435.

Fosmire, S. P., Dickerson, E. B., Scott, A. M., Bianco, S. R., Pettengill, M. J., Meylemans, H., ... & Wojcieszyn, J. (2004). Canine malignant hemangiosarcoma as a model of primitive angiogenic endothelium. *Laboratory investigation*, 84(5), 562-572.

Modiano, J. F., Breen, M., Valli, V. E. O., Wojcieszyn, J. W., & Cutter, G. R. (2007). Predictive value of p16 or Rb inactivation in a model of naturally occurring canine non-Hodgkin's lymphoma. *Leukemia*, 21(1), 184-187.





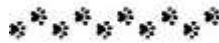
00237: Molecular Epidemiology of Ehrlichia and Bartonella spp. Infection in Golden Retrievers with Lymphoma

Principal Investigator: Dr. Edward B Breitschwerdt, DVM; North Carolina State University

Grant Period: 7/1/2004 - 6/30/2006

Duncan, A. W., Maggi, R. G., & Breitschwerdt, E. B. (2007). Bartonella DNA in dog saliva. Emerging infectious diseases, 13(12), 1948.

Duncan, A. W., Marr, H. S., Birkenheuer, A. J., Maggi, R. G., Williams, L. E., Correa, M. T., & Breitschwerdt, E. B. (2008). Bartonella DNA in the blood and lymph nodes of Golden Retrievers with lymphoma and in healthy controls. Journal of veterinary internal medicine, 22(1), 89-95.



00249: Genomics of Canine Brain Neoplasia

Principal Investigator: Dr. Matthew Breen, PhD; North Carolina State University

Grant Period: 10/1/2004 - 9/30/2006

Thomson, S. A. M., Kennerly, E., Olby, N., Mickelson, J. R., Hoffmann, D. E., Dickinson, P. J., ... & Breen, M. (2005). Microarray analysis of differentially expressed genes of primary tumors in the canine central nervous system. Veterinary Pathology, 42(5), 550-558.



00272: Oligonucleotide Microarray Gene Expression Profiling of Canine Lymphoma

Principal Investigator: Dr. William C Kisseberth, DVM PhD; Ohio State University

Grant Period: 7/1/2004 - 6/30/2006

Kisseberth, W. C., Nadella, M. V. P., Breen, M., Thomas, R., Duke, S. E., Murahari, S., ... & Rosol, T. J. (2007). A novel canine lymphoma cell line: a translational and comparative model for lymphoma research. Leukemia research, 31(12), 1709-1720.





0002447: Genetic Determinants of Susceptibility to Hypothyroid Disease in Dogs

Principal Investigator: Dr. George Happ, PhD; University of Alaska, Fairbanks

Grant Period: 10/1/2003 - 9/30/2004

Bianchi, M., Dahlgren, S., Massey, J., Dietschi, E., Kierczak, M., Lund-Ziener, M., ... & Ollier, W. E. (2015). A multi-breed genome-wide association analysis for canine hypothyroidism identifies a shared major risk locus on CFA12. *PLoS one*, 10(8), e0134720.

Kennedy, L. J., Quarmby, S., Happ, G. M., Barnes, A., Ramsey, I. K., Dixon, R. M., ... & Roethel, C. (2006). Association of canine hypothyroidism with a common major histocompatibility complex DLA class II allele. *HLA*, 68(1), 82-86.

Kennedy, L. J., Huson, H. J., Leonard, J., Angles, J. M., Fox, L. E., Wojciechowski, J. W., ... & Happ, G. M. (2006). Association of hypothyroid disease in Doberman Pinscher dogs with a rare major histocompatibility complex DLA class II haplotype. *HLA*, 67(1), 53-56.

Kennedy, L. J., Barnes, A., Short, A., Brown, J. J., Seddon, J., Fleeman, L., ... & Ollier, W. E. R. (2007). Canine DLA diversity: 3. Disease studies. *HLA*, 69(s1), 292-296.



00372: Determination of Breed-Specific Reference Ranges for Assessing Thyroid Function in Several Breeds

Principal Investigator: Dr. Rebecca L. Davies, PhD; University of Minnesota

Grant Period: 7/1/2005 - 6/30/2010

Hegstad-Davies, R. L., Torres, S. M., Sharkey, L. C., Gresch, S. C., Muñoz-Zanzi, C. A., & Davies, P. R. (2015). Breed-specific reference intervals for assessing thyroid function in seven dog breeds. *Journal of Veterinary Diagnostic Investigation*, 27(6), 716-727.

Sharkey, L., Gjevre, K., Hegstad-Davies, R., Torres, S., & Muñoz-Zanzi, C. (2009). Breed-associated variability in serum biochemical analytes in four large-breed dogs. *Veterinary clinical pathology*, 38(3), 375-380.





00415: Anti-HLA-DR Antibody Therapy in Canine B-cell Lymphoma: Preliminary Clinical Evaluation

Principal Investigator: Dr. Rodney Page, DVM; Cornell University

Grant Period: 10/1/2004 - 9/30/2005

Stein, R., Balkman, C., Chen, S., Rassnick, K., Mcentee, M., Page, R., & Goldenberg, D. M. (2011). Evaluation of anti-human leukocyte antigen-DR monoclonal antibody therapy in spontaneous canine lymphoma. *Leukemia & lymphoma*, 52(2), 273-284.



00593A: Mapping Genes Associated with Canine Hemangiosarcoma

Principal Investigator: Dr. Kerstin Lindblad-Toh, PhD; Broad Institute

Grant Period: 4/1/2006 - 9/30/2008

Tonomura, N., Elvers, I., Thomas, R., Megquier, K., Turner-Maier, J., Howald, C., ... & Mauceli, E. (2015). Genome-wide association study identifies shared risk loci common to two malignancies in golden retrievers. *PLoS genetics*, 11(2), e1004922.



00613: The Prognostic Significance of Chromosome Aneuploidy in Canine Lymphoma

Principal Investigator: Dr. Matthew Breen, PhD; North Carolina State University

Grant Period: 8/1/2008 - 7/31/2011

Thomas, R., Seiser, E. L., Motsinger-Reif, A., Borst, L., Valli, V. E., Kelley, K., ... & Lindblad-Toh, K. (2011). Refining tumor-associated aneuploidy through 'genomic recoding' of recurrent DNA copy number aberrations in 150 canine non-Hodgkin lymphomas. *Leukemia & lymphoma*, 52(7), 1321-1335.

Seiser, E. L., Thomas, R., Richards, K. L., Kathryn Kelley, M., Moore, P., Suter, S. E., & Breen, M. (2013). Reading between the lines: molecular characterization of five widely used canine lymphoid tumour cell lines. *Veterinary and comparative oncology*, 11(1), 30-50.





00678: Generation and Analysis of Canine Bone Marrow Derived Mast Cells

Principal Investigator: Dr. Cheryl A. London, DVM PhD; Ohio State University

Grant Period: 4/1/2006 - 3/31/2007

Lin, T. Y., & London, C. A. (2006). A functional comparison of canine and murine bone marrow derived cultured mast cells. *Veterinary immunology and immunopathology*, 114(3), 320-334.

Lin, T. Y., Rush, L. J., & London, C. A. (2006). Generation and characterization of bone marrow-derived cultured canine mast cells. *Veterinary immunology and immunopathology*, 113(1), 37-52.

Lin, T. Y., Thomas, R., Tsai, P. C., Breen, M., & London, C. A. (2009). Generation and characterization of novel canine malignant mast cell line CL1. *Veterinary immunology and immunopathology*, 127(1), 114-124.



00760: Cellular Genomics- Molecular Cytogenetic Investigation of Canine Soft Tissue Sarcomas

Principal Investigator: Dr. Matthew Breen, PhD; North Carolina State University

Grant Period: 10/1/2007 - 9/30/2009

Hedan, B., Thomas, R., Motsinger-Reif, A., Abadie, J., Andre, C., Cullen, J., & Breen, M. (2011). Molecular cytogenetic characterization of canine histiocytic sarcoma: A spontaneous model for human histiocytic cancer identifies deletion of tumor suppressor genes and highlights influence of genetic background on tumor behavior. *BMC cancer*, 11(1), 201.



00615A-T: Heritable and Sporadic Genetic Lesions in Canine Lymphoma

Principal Investigator: Dr. Jaime F Modiano, VMD, PhD; University of Minnesota

Grant Period: 10/1/2007 - 3/31/2009

Elvers, I., Turner-Maier, J., Swofford, R., Koltookian, M., Johnson, J., Stewart, C., ... & Thomas, R. (2015). Exome sequencing of lymphomas from three dog breeds reveals somatic mutation patterns reflecting genetic background. *Genome research*, 25(11), 1634-1645.





01147: Identifying Mutations in Genes Associated with Canine Hemangiosarcoma

Principal Investigator: Dr. Chieko Azuma, DVM, PhD, ACVR (Radiation Oncology), CPIA; Tufts University
Grant Period: 1/1/2009 - 6/30/2010

Tonomura, N., Elvers, I., Thomas, R., Megquier, K., Turner-Maier, J., Howald, C., ... & Mauceli, E. (2015). Genome-wide association study identifies shared risk loci common to two malignancies in golden retrievers. *PLoS genetics*, 11(2), e1004922.



01131: Genetic Background and the Angiogenic Phenotype in Cancer

Principal Investigator: Dr. Jaime F Modiano, VMD, PhD; University of Minnesota
Grant Period: 1/1/2010 - 6/30/2013

Gorden, B. H., Kim, J. H., Sarver, A. L., Frantz, A. M., Breen, M., Lindblad-Toh, K., ... & Dickerson, E. B. (2014). Identification of three molecular and functional subtypes in canine hemangiosarcoma through gene expression profiling and progenitor cell characterization. *The American journal of pathology*, 184(4), 985-995.

Thomas, R., Borst, L., Rotroff, D., Motsinger-Reif, A., Lindblad-Toh, K., Modiano, J. F., & Breen, M. (2014). Genomic profiling reveals extensive heterogeneity in somatic DNA copy number aberrations of canine hemangiosarcoma. *Chromosome research*, 22(3), 305-319.

Schappa, J. T., Frantz, A. M., Gorden, B. H., Dickerson, E. B., Vallera, D. A., & Modiano, J. F. (2013). Hemangiosarcoma and its cancer stem cell subpopulation are effectively killed by a toxin targeted through epidermal growth factor and urokinase receptors. *International journal of cancer*, 133(8), 1936-1944.

Koopmeiners, J. S., & Modiano, J. Extending the TITE CRM to Multiple Outcomes with Application to a Phase 1 Clinical Trial in Canine Hemangiosarcoma.

Borgatti, A., Duckett, M., Spangler, C., & Modiano, J. F. (2014). Binding of VEGF-A to canine cancer cells with preferential expression of VEGFR1. *Veterinary World*, 7(1).

Kim, J. H., Anderson, K. L., Frantz, A. M., Graef, A. J., Scott, M. C., Sharkey, L. C., ... & Modiano, J. F. (2013, April). Constitutive expression and roles of interleukin-8 in canine hemangiosarcoma. In *BMC proceedings* (Vol. 7, No. S2, p. P35). BioMed Central.

Kim, J. H., Frantz, A. M., Anderson, K. L., Graef, A. J., Scott, M. C., Robinson, S., ... & Modiano, J. F. (2014). Interleukin-8 promotes canine hemangiosarcoma growth by regulating the tumor microenvironment. *Experimental cell research*, 323(1), 155-164.



Tonomura, N., Elvers, I., Thomas, R., Megquier, K., Turner-Maier, J., Howald, C., ... & Mauceli, E. (2015). Genome-wide association study identifies shared risk loci common to two malignancies in golden retrievers. *PLoS genetics*, 11(2), e1004922.

Kim, J. H., Frantz, A. M., Sarver, A. L., Gorden Klukas, B. H., Lewellen, M., O'Brien, T. D., ... & Modiano, J. F. (2017). Modulation of fatty acid metabolism and immune suppression are features of in vitro tumour sphere formation in ontogenetically distinct dog cancers. *Veterinary and comparative oncology*.

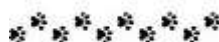


01248: Whole Genome Association Analyses for Cryptorchidism in Dogs

Principal Investigator: Dr. Max F. Rothschild, PhD; Iowa State University

Grant Period: 1/1/2010 - 12/31/2010

Zhao, X., Onteru, S., Saatchi, M., Garrick, D., & Rothschild, M. (2014). A genome-wide association study for canine cryptorchidism in Siberian Huskies. *Journal of animal breeding and genetics*, 131(3), 202-209.

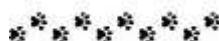


01262: Sequencing and Functional Analysis of the Canine Y Chromosome

Principal Investigator: Dr. William J. Murphy, PhD; Texas A&M Research Foundation

Grant Period: 1/1/2010 - 12/31/2011

Li, G., Davis, B. W., Raudsepp, T., Wilkerson, A. J. P., Mason, V. C., Ferguson-Smith, M., ... & Murphy, W. J. (2013). Comparative analysis of mammalian Y chromosomes illuminates ancestral structure and lineage-specific evolution. *Genome research*, 23(9), 1486-1495.



01272: Isolation and Characterization of Canine Induced Pluripotential Stem Cells (iPS)

Principal Investigator: Dr. Jorge A Piedrahita, PhD; North Carolina State University

Grant Period: 1/1/2010 - 6/30/2012

Koh, S., Thomas, R., Tsai, S., Bischoff, S., Lim, J. H., Breen, M., ... & Piedrahita, J. A. (2012). Growth requirements and chromosomal instability of induced pluripotent stem cells generated from adult canine fibroblasts. *Stem cells and development*, 22(6), 951-963.



01317: Mutation Detection and Functional Analysis of Multiple Loci for Osteosarcoma

Principal Investigator: Dr. Kerstin Lindblad-Toh, PhD; Broad Institute

Grant Period: 1/1/2010 - 3/31/2012

Karlsson, E. K., Sigurdsson, S., Ivansson, E., Thomas, R., Elvers, I., Wright, J., ... & Biagi, T. (2013). Genome-wide analyses implicate 33 loci in heritable dog osteosarcoma, including regulatory variants near CDKN2A/B. *Genome biology*, 14(12), R132.



01488-A: Health Implications of Spay and Neuter: Golden Retriever and Labrador Retriever

Principal Investigator: Dr. Benjamin L Hart, DVM, PhD; University of California, Davis

Grant Period: 7/1/2010 - 6/30/2011

Hart, B. L., Hart, L. A., Thigpen, A. P., & Willits, N. H. (2014). Long-term health effects of neutering dogs: comparison of Labrador Retrievers with Golden Retrievers. *PloS one*, 9(7), e102241.

de la Riva, G. T., Hart, B. L., Farver, T. B., Oberbauer, A. M., Messam, L. L. M., Willits, N., & Hart, L. A. (2013). Neutering dogs: effects on joint disorders and cancers in golden retrievers. *PloS one*, 8(2), e55937.

Hart, B. L., Hart, L. A., Thigpen, A. P., & Willits, N. H. (2016). Neutering of German Shepherd Dogs: associated joint disorders, cancers and urinary incontinence. *Veterinary Medicine and Science*, 2(3), 191-199.



01418: Harnessing a Dog's Own Immune System to Kill Lymphoma Tumor Cells

Principal Investigator: Dr. Heather M. Wilson-Robles, DVM; Texas A&M Research Foundation

Grant Period: 1/1/2011 - 6/30/2018

O'Connor, C. M., & Wilson-Robles, H. (2014). Developing T cell cancer immunotherapy in the dog with lymphoma. *ILAR journal*, 55(1), 169-181.

O'connor, C. M., Sheppard, S., Hartline, C. A., Huls, H., Johnson, M., Palla, S. L., ... & Lee, D. A. (2012). Adoptive T-cell therapy improves treatment of canine non-Hodgkin lymphoma post chemotherapy. *Scientific reports*, 2.





01426: Personalized Medicine for the Treatment of Canine Mast Cell Tumors

Principal Investigator: Dr. Douglas H Thamm, VMD; Colorado State University

Grant Period: 1/1/2011 - 6/30/2015

Halsey, C. H. C., Thamm, D. H., Weishaar, K. M., Burton, J. H., Charles, J. B., Gustafson, D. L., ... & Ehrhart, E. J. (2017). Expression of Phosphorylated KIT in Canine Mast Cell Tumor. *Veterinary Pathology*, 54(3), 387-394.

Weishaar, K. M., Ehrhart, E. J., Avery, A. C., Charles, J. B., Elmslie, R. E., Vail, D. M., ... & Thamm, D. H. (2017). c-Kit Mutation and Localization Status as Response Predictors in Mast Cell Tumors in Dogs Treated with Prednisone and Toceranib or Vinblastine. *Journal of veterinary internal medicine*.



01429: Mechanistic Relationship of IL-8 in Cell Proliferation and Survival of Canine Hemangiosarcoma

Principal Investigator: Dr. Jaime F Modiano, VMD, PhD; University of Minnesota

Grant Period: 1/1/2011 - 6/30/2013

Kim, J. H., Anderson, K. L., Frantz, A. M., Graef, A. J., Scott, M. C., Sharkey, L. C., ... & Modiano, J. F. (2013, April). Constitutive expression and roles of interleukin-8 in canine hemangiosarcoma. In *BMC proceedings* (Vol. 7, No. S2, p. P35). BioMed Central.

Kim, J. H., Frantz, A. M., Anderson, K. L., Graef, A. J., Scott, M. C., Robinson, S., ... & Modiano, J. F. (2014). Interleukin-8 promotes canine hemangiosarcoma growth by regulating the tumor microenvironment. *Experimental cell research*, 323(1), 155-164.



01472: Enhanced Killing of Malignant Histiocytosis with a Novel Combination of Anti-Tumor Drugs

Principal Investigator: Dr. Steven W. Dow, DVM PhD; Colorado State University

Grant Period: 1/1/2011 - 12/31/2013

Hafeman, S. D., Varland, D., & Dow, S. W. (2012). Bisphosphonates significantly increase the activity of doxorubicin or vincristine against canine malignant histiocytosis cells. *Veterinary and comparative oncology*, 10(1), 44-56.





01480: Leptospirosis: An Emerging Health Concern for Field Trial and Hunting Dogs

Principal Investigator: Dr. Janet Foley, DVM, PhD; University of California, Davis

Grant Period: 1/1/2011 - 12/31/2013

Hennebelle, J. H., Sykes, J. E., Carpenter, T. E., & Foley, J. (2013). Spatial and temporal patterns of Leptospira infection in dogs from northern California: 67 cases (2001–2010). *Journal of the American Veterinary Medical Association*, 242(7), 941-947.

Hennebelle, J. H., Sykes, J. E., & Foley, J. (2014). Risk factors associated with leptospirosis in dogs from Northern California: 2001–2010. *Vector-Borne and Zoonotic Diseases*, 14(10), 733-739.



01557: Narrowing the Search for the Genetic Basis of Histiocytic Malignancies

Principal Investigator: Dr. Matthew Breen, PhD; North Carolina State University

Grant Period: 7/1/2012 - 9/30/2015

Kennedy, K., Thomas, R., & Breen, M. (2016). Canine histiocytic malignancies—Challenges and opportunities. *Veterinary Sciences*, 3(1), 2.



01569: Evaluation of a Novel Drug to Treat Canine Cutaneous Lymphoma

Principal Investigator: Dr. Douglas H Thamm, VMD; Colorado State University

Grant Period: 3/1/2012 - 12/31/2013

Morges, M. A., Burton, J. H., Saba, C. F., Vail, D. M., Burgess, K. E., & Thamm, D. H. (2014). Phase II Evaluation of VDC-1101 in Canine Cutaneous T-Cell Lymphoma. *Journal of veterinary internal medicine*, 28(5), 1569-1574.





01759: Disrupting the Differentiation of Cancer Stem Cells to Prevent the Spread of Hemangiosarcoma

Principal Investigator: Dr. Jaime F Modiano, VMD, PhD; University of Minnesota

Grant Period: 1/1/2013 - 12/31/2015

Im, K. S., Kim, J. H., Graef, A. J., Cornax, I., Seelig, D. M., O'Sullivan, M. G., ... & Modiano, J. F. (2017). Establishment of a Patient-Derived Xenograft of Canine Enteropathy-Associated T-Cell Lymphoma, Large Cell Type. *Journal of comparative pathology*, 156(1), 37-41.

Im, K. S., Graef, A. J., Breen, M., Lindblad-Toh, K., Modiano, J. F., & Kim, J. H. (2017). Interactions between CXCR4 and CXCL12 promote cell migration and invasion of canine hemangiosarcoma. *Veterinary and comparative oncology*, 15(2), 315-327.

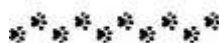
Dickerson, E. B., & Bryan, B. A. (2015). Beta adrenergic signaling: A targetable regulator of angiosarcoma and hemangiosarcoma. *Veterinary Sciences*, 2(3), 270-292.

Kim, J. H., Graef, A. J., Dickerson, E. B., & Modiano, J. F. (2015). Pathobiology of hemangiosarcoma in dogs: research advances and future perspectives. *Veterinary Sciences*, 2(4), 388-405.

Gorden, B. H., Kim, J. H., Sarver, A. L., Frantz, A. M., Breen, M., Lindblad-Toh, K., ... & Dickerson, E. B. (2014). Identification of three molecular and functional subtypes in canine hemangiosarcoma through gene expression profiling and progenitor cell characterization. *The American journal of pathology*, 184(4), 985-995.

Kim, J. H., Frantz, A. M., Anderson, K. L., Graef, A. J., Scott, M. C., Robinson, S., ... & Modiano, J. F. (2014). Interleukin-8 promotes canine hemangiosarcoma growth by regulating the tumor microenvironment. *Experimental cell research*, 323(1), 155-164.

Rodriguez, A. M., Graef, A. J., LeVine, D. N., Cohen, I. R., Modiano, J. F., & Kim, J. H. (2015). Association of Sphingosine-1-phosphate (S1P)/S1P Receptor-1 Pathway with Cell Proliferation and Survival in Canine Hemangiosarcoma. *Journal of veterinary internal medicine*, 29(4), 1088-1097.





01843: Further Investigation of the Genes Controlling Canine Leukemia to Properly Diagnose and Control the Disease

Principal Investigator: Dr. Matthew Breen, PhD; North Carolina State University

Grant Period: 1/1/2013 - 12/31/2015

Roode, S. C., Rotroff, D., Richards, K. L., Moore, P., Motsinger-Reif, A., Okamura, Y., ... & Breen, M. (2016). Comprehensive genomic characterization of five canine lymphoid tumor cell lines. *BMC veterinary research*, 12(1), 207.

Roode, S. C., Rotroff, D., Avery, A. C., Suter, S. E., Bienzle, D., Schiffman, J. D., ... & Breen, M. (2015). Genome-wide assessment of recurrent genomic imbalances in canine leukemia identifies evolutionarily conserved regions for subtype differentiation. *Chromosome research*, 23(4), 681-708.

Culver, S., Ito, D., Borst, L., Bell, J. S., Modiano, J. F., & Breen, M. (2013). Molecular characterization of canine BCR-ABL-positive chronic myelomonocytic leukemia before and after chemotherapy. *Veterinary clinical pathology*, 42(3), 314-322.



01889-Ga: Innovations in Prevention, Diagnosis, and Treatment of Cancer - Golden Retrievers Lead the Way

Principal Investigator: Dr. Jaime F Modiano, VMD, PhD; University of Minnesota

Grant Period: 1/1/2014 - 12/31/2017

Borgatti, A., Koopmeiners, J. S., Sarver, A. L., Winter, A. L., Stuebner, K., Todhunter, D., ... & Kim, J. H. (2017). Safe and effective sarcoma therapy through bispecific targeting of EGFR and uPAR. *Molecular Cancer Therapeutics*, 16(5), 956-965.

Gorden, B. H., Kim, J. H., Sarver, A. L., Frantz, A. M., Breen, M., Lindblad-Toh, K., ... & Dickerson, E. B. (2014). Identification of three molecular and functional subtypes in canine hemangiosarcoma through gene expression profiling and progenitor cell characterization. *The American journal of pathology*, 184(4), 985-995.

Thomas, R., Borst, L., Rotroff, D., Motsinger-Reif, A., Lindblad-Toh, K., Modiano, J. F., & Breen, M. (2014). Genomic profiling reveals extensive heterogeneity in somatic DNA copy number aberrations of canine hemangiosarcoma. *Chromosome research*, 22(3), 305-319.

Tonomura, N., Elvers, I., Thomas, R., Megquier, K., Turner-Maier, J., Howald, C., ... & Mauceli, E. (2015). Genome-wide association study identifies shared risk loci common to two malignancies in golden retrievers. *PLoS genetics*, 11(2), e1004922.



01975-A: Development of a Technique to Treat Nerve and Spinal Cord Damage Through Transplantation of Cells That Support the Repair of Damaged Neurons

Principal Investigator: Dr. Natasha J Olby, VetMB PhD; North Carolina State University

Grant Period: 8/1/2013 - 7/31/2014

Lim, J. H., & Olby, N. J. (2016). Generation of pure cultures of autologous Schwann cells by use of biopsy specimens of the dorsal cutaneous branches of the cervical nerves of young adult dogs. American journal of veterinary research, 77(10), 1166-1174.



02118-A: Targeting the Mechanism of Bacterial Adherence during Pyometra to Develop an Effective, Non-Invasive Treatment for Disease

Principal Investigator: Dr. Cordula Bartel, PhD; University of Veterinary Medicine of Vienna

Grant Period: 7/1/2014 - 11/30/2015

Gabriel, C., Becher-Deichsel, A., Hlavaty, J., Mair, G., & Walter, I. (2016). The physiological expression of scavenger receptor SR-B1 in canine endometrial and placental epithelial cells and its potential involvement in pathogenesis of pyometra. Theriogenology, 85(9), 1599-1609.



02124-A: Determining the Characteristics of Sperm That Accurately Predict Fertility of Stud Dogs

Principal Investigator: Dr. Stuart Meyers, DVM, PhD; University of California, Davis

Grant Period: 7/1/2014 - 12/31/2015

Hesser, A., Darr, C., Gonzales, K., Power, H., Scanlan, T., Thompson, J., ... & Meyers, S. (2017). Semen evaluation and fertility assessment in a purebred dog breeding facility. Theriogenology, 87, 115-123.

