



Demographic Information

Call Name	Hakuna	DOB	Apr 2019
Registered Name	Sayre's Hakuna Matata	Registration Number	DN57504201
Breed	Australian Shepherd	Tattoo	
Sex	F	Microchip	956000011870333
Owner	Kimberly Sayre	Laboratory #	AN-L-CHC-11766
		Report Date	August 9, 2019

These tests were developed and performed by Paw Print Genetics®, Spokane WA.

Explanation of Results

Normal	A 'Normal' result means that your dog does not have the mutation that causes the associated genetic disease.
Carrier	A 'Carrier' result indicates that your dog has inherited one copy of the mutation that has been reported to cause this genetic disease. Your dog may not be clinically affected by this mutation because two copies of the mutation are usually required to cause disease.
Carrier / At-Risk	A 'Carrier / At-Risk' result indicates that your dog inherited one copy of the mutation that has been reported to cause this genetic disease. Based on the mode of genetic inheritance for this particular disease, inheriting one mutant copy of the gene may result in the disease. Dogs with one copy of the mutation may have a milder phenotype as compared to dogs with two copies of this mutation.
At-Risk / Affected	An 'At-Risk / Affected' result indicates that your dog inherited one or two copies of the mutation that has been reported to cause this genetic disease. Based on the mode of genetic inheritance for this particular disease, inheriting one or two mutant copies of the gene may result in the disease.
No Result	'No Result' indicates that we were unable to obtain a genotype for your dog for this specific disease or trait and does not mean that your dog is a carrier or at-risk for this disease. There are a variety of reasons why a specific test may not provide a reportable result. Unique variations in the genetic code of some individuals may exist and cause certain regions of the genome to not perform properly with a specific test. In addition, suboptimal sampling of the dog's cheek cells could also result in poor sample performance due to inadequate cell counts, bacterial and fungal growth, or the presence of other test inhibitors. An acceptable level of tests with no results has been determined by Paw Print Genetics. Dogs with at least 90% of the test results are determined to be acceptable and reportable. If your dog has an

unacceptable level of tests with no results, you will be contacted for a new sample to repeat the testing.

Please review our [testing terms and disclaimers](#) regarding your results.

WT: **wild type (normal)** M: **mutant** Y: **Y chromosome (male)**

Breed Profile

Disease Name	Geno.	Interpretation
Coagulation Factor VII Deficiency	WT/WT	Normal (Clear)
Collie Eye Anomaly	WT/WT	Normal (Clear)
Cone Degeneration	WT/WT	Normal (Clear)
Degenerative Myelopathy Common Variant	WT/WT	Normal (Clear)
Exercise-Induced Collapse	WT/WT	Normal (Clear)
Hereditary Cataracts Australian Shepherd Type	WT/M	Carrier (At-Risk)
Hyperuricosuria	WT/WT	Normal (Clear)
Intestinal Cobalamin Malabsorption Border Collie Type	WT/WT	Normal (Clear)
Multidrug Resistance 1	WT/WT	Normal (Clear)
Multifocal Retinopathy_1	WT/WT	Normal (Clear)
Neuronal Ceroid Lipofuscinosis 6	WT/WT	Normal (Clear)
Neuronal Ceroid Lipofuscinosis 8 Australian Shepherd Type	WT/WT	Normal (Clear)
Progressive Retinal Atrophy, Progressive Rod-Cone Degeneration prcd	WT/WT	Normal (Clear)

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Coat Colors & Traits

Trait Name	Geno.	Interpretation
A Locus Agouti - A^y , a^t , a	a ^t /a ^t	Tricolor, black and tan
B Locus – b^c, b^d, b^s Brown	B/b	Black coat, nose and foot pads (carries brown)
B Locus (Brown) - b ^c	0	

B Locus (Brown) - b ^d B Locus (Brown) - b ^s	0 1	
Cu Locus Curly Hair	Cu/Cu	Straight coat
D Locus – d¹ Dilute	D/D	Non dilute
E Locus Yellow/Red	E/E	Black
E^m Locus Melanistic Mask	E ^m /N	Melanistic mask (carrier)
K Locus Dominant Black	k ^y /k ^y	Agouti expression allowed
L Locus – Lh¹ Long Hair/Fluffy	Lh/Lh	Longhaired
Sex Determination	X/X	Female
T Locus Natural Bobtail	t/T	Bobtail

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Determinants of coat colors and traits are complex. Many of these variants are known and many of the genes screened in the Canine HealthCheck interact. In addition, not all the genetic factors that contribute to a dog's coat color and traits are known. Because of the complexities in gene-gene interactions, the coat colors and traits reported in your Canine HealthCheck results may vary from your dog's actual appearance. Individual differences in genes throughout the canine genome, not tested in this genetic screen, may also affect the final coat color or traits seen in your dog.

Diseases

Disease Name	Geno.	Interpretation
Alaskan Husky Encephalopathy	WT/WT	Normal (Clear)
Alaskan Malamute Polyneuropathy	WT/WT	Normal (Clear)
Amelogenesis Imperfecta	WT/WT	Normal (Clear)
Benign Familial Juvenile Epilepsy	WT/WT	Normal (Clear)
Canine Multiple System Degeneration Chinese Crested Type	WT/WT	Normal (Clear)
Canine Multiple System Degeneration Kerry Blue Terrier Type	WT/WT	Normal (Clear)
Cerebellar Ataxia Finnish Hound Type	WT/WT	Normal (Clear)
Chondrodysplasia Karelian Bear Dog and Norwegian Elkhound Type	WT/WT	Normal (Clear)

Coagulation Factor VII Deficiency	WT/WT	Normal (Clear)
Collie Eye Anomaly	WT/WT	Normal (Clear)
Complement 3 Deficiency	WT/WT	Normal (Clear)
Cone Degeneration	WT/WT	Normal (Clear)
Cone Degeneration German Shorthaired Pointer Type	WT/WT	Normal (Clear)
Congenital Myasthenic Syndrome Labrador Retriever Type	WT/WT	Normal (Clear)
Congenital Myasthenic Syndrome Old Danish Pointer Type	WT/WT	Normal (Clear)
Congenital Stationary Night Blindness	WT/WT	Normal (Clear)
Cystinuria Australian Cattle Dog Type	WT/WT	Normal (Clear)
Cystinuria Miniature Pinscher Type	WT/WT	Normal (Clear)
Cystinuria Newfoundland Type	WT/WT	Normal (Clear)
Degenerative Myelopathy Common Variant	WT/WT	Normal (Clear)
Dilated Cardiomyopathy Doberman Pinscher Type Risk Factor, Variant 1	No Result	No Result
Dry Eye Curly Coat Syndrome	WT/WT	Normal (Clear)
Dystrophic Epidermolysis Bullosa	WT/WT	Normal (Clear)
Early Retinal Degeneration	WT/WT	Normal (Clear)
Ectodermal Dysplasia Chesapeake Bay Retriever Type	WT/WT	Normal (Clear)
Ectodermal Dysplasia, X-Linked Shepherd Type	WT/WT	X-Linked Female Normal
Elliptocytosis	WT/WT	Normal (Clear)
Epidermolytic Hyperkeratosis	WT/WT	Normal (Clear)
Exercise-Induced Collapse	WT/WT	Normal (Clear)
Familial Nephropathy Cocker Spaniel Type	WT/WT	Normal (Clear)
Familial Nephropathy English Springer Spaniel Type	No Result	No Result
Gallbladder Mucoceles	WT/WT	Normal (Clear)
Glanzmann's Thrombasthenia	WT/WT	Normal (Clear)

Great Pyrenees Type		
Glanzmann's Thrombasthenia Otterhound Type	WT/WT	Normal (Clear)
Globoid Cell Leukodystrophy. Irish Setter Type	WT/WT	Normal (Clear)
Globoid Cell Leukodystrophy. Terrier Type	WT/WT	Normal (Clear)
Glycogen Storage Disease Ia	WT/WT	Normal (Clear)
Glycogen Storage Disease IIIa	WT/WT	Normal (Clear)
Glycogen Storage Disease VII Wachtelhund Type	WT/WT	Normal (Clear)
GM1 Gangliosidosis Alaskan Husky Type	WT/WT	Normal (Clear)
GM1 Gangliosidosis Portuguese Water Dog Type	WT/WT	Normal (Clear)
GM1 Gangliosidosis Shiba Inu Type	WT/WT	Normal (Clear)
GM2 Gangliosidosis Japanese Chin Type	WT/WT	Normal (Clear)
GM2 Gangliosidosis Poodle Type	WT/WT	Normal (Clear)
Greyhound Polyneuropathy.	WT/WT	Normal (Clear)
Hemophilia A Boxer Type	WT/WT	X-Linked Female Normal
Hemophilia A German Shepherd Dog, Type 1	WT/WT	X-Linked Female Normal
Hemophilia A German Shepherd Dog, Type 2	WT/WT	X-Linked Female Normal
Hemophilia B Cairn Terrier Type	WT/WT	X-Linked Female Normal
Hemophilia B Lhasa Apso Type	WT/WT	X-Linked Female Normal
Hemophilia B Rhodesian Ridgeback Type	WT/WT	X-Linked Female Normal
Hereditary Cataracts	WT/WT	Normal (Clear)
Hereditary Cataracts Australian Shepherd Type	WT/M	Carrier (At-Risk)
Hereditary Footpad Hyperkeratosis Irish Terrier and Kromfohländer Type	WT/WT	Normal (Clear)
Hereditary Nasal Parakeratosis	WT/WT	Normal (Clear)

Hereditary Nephritis Samoyed Type	WT/WT	X-Linked Female Normal
Hyperuricosuria	WT/WT	Normal (Clear)
Ichthyosis Golden Retriever Type	WT/WT	Normal (Clear)
Inherited Myopathy of Great Danes	WT/WT	Normal (Clear)
Intestinal Cobalamin Malabsorption Beagle Type	WT/WT	Normal (Clear)
Intestinal Cobalamin Malabsorption Border Collie Type	WT/WT	Normal (Clear)
Juvenile Laryngeal Paralysis and Polyneuropathy.	WT/WT	Normal (Clear)
L-2-Hydroxyglutaric Aciduria Staffordshire Bull Terrier Type	WT/WT	Normal (Clear)
Late Onset Ataxia	WT/WT	Normal (Clear)
Leukocyte Adhesion Deficiency, Type I	WT/WT	Normal (Clear)
Leukocyte Adhesion Deficiency, Type III	WT/WT	Normal (Clear)
May-Hegglin Anomaly.	WT/WT	Normal (Clear)
Mucopolysaccharidosis I	WT/WT	Normal (Clear)
Mucopolysaccharidosis IIIA Dachshund Type	WT/WT	Normal (Clear)
Mucopolysaccharidosis IIIA New Zealand Huntaway Type	WT/WT	Normal (Clear)
Mucopolysaccharidosis VII Shepherd Type	WT/WT	Normal (Clear)
Multidrug Resistance 1	WT/WT	Normal (Clear)
Multifocal Retinopathy 1	WT/WT	Normal (Clear)
Multifocal Retinopathy 2	WT/WT	Normal (Clear)
Multifocal Retinopathy 3	WT/WT	Normal (Clear)
Muscular Dystrophy Golden Retriever Type	WT/WT	X-Linked Female Normal
Myostatin Deficiency Whippet and Longhaired Whippet Type	WT/WT	Normal (Clear)
Myotonia Congenita Australian Cattle Dog Type	WT/WT	Normal (Clear)
Myotonia Congenita Schnauzer Type	WT/WT	Normal (Clear)

Myotubular Myopathy 1	WT/WT	X-Linked Female Normal
Narcolepsy Dachshund Type	WT/WT	Normal (Clear)
Narcolepsy Doberman Pinscher Type	WT/WT	Normal (Clear)
Narcolepsy Labrador Retriever Type	WT/WT	Normal (Clear)
Neonatal Cerebellar Cortical Degeneration	WT/WT	Normal (Clear)
Neonatal Encephalopathy with Seizures	WT/WT	Normal (Clear)
Neuronal Ceroid Lipofuscinosis Tibetan Terrier Type	WT/WT	Normal (Clear)
Neuronal Ceroid Lipofuscinosis 1	WT/WT	Normal (Clear)
Neuronal Ceroid Lipofuscinosis 10	WT/WT	Normal (Clear)
Neuronal Ceroid Lipofuscinosis 2	WT/WT	Normal (Clear)
Neuronal Ceroid Lipofuscinosis 4A	WT/WT	Normal (Clear)
Neuronal Ceroid Lipofuscinosis 5 Australian Cattle Dog/Border Collie Type	WT/WT	Normal (Clear)
Neuronal Ceroid Lipofuscinosis 6	WT/WT	Normal (Clear)
Neuronal Ceroid Lipofuscinosis 8 Australian Shepherd Type	WT/WT	Normal (Clear)
Neuronal Ceroid Lipofuscinosis 8 Setter Type	WT/WT	Normal (Clear)
Osteogenesis Imperfecta Beagle Type	WT/WT	Normal (Clear)
Osteogenesis Imperfecta Golden Retriever Type	WT/WT	Normal (Clear)
P2RY12 Receptor Platelet Disorder	WT/WT	Normal (Clear)
Persistent Müllerian Duct Syndrome	WT/WT	Normal (Clear)
Polyneuropathy Leonberger and Saint Bernard Type	WT/WT	Normal (Clear)
Pompe Disease	WT/WT	Normal (Clear)
Prekallikrein Deficiency	WT/WT	Normal (Clear)
Primary Ciliary Dyskinesia	WT/WT	Normal (Clear)
Primary Hyperoxaluria	WT/WT	Normal (Clear)
Primary Lens Luxation	WT/WT	Normal (Clear)
Primary Open Angle Glaucoma	WT/WT	Normal (Clear)

Progressive Retinal Atrophy, Basenji Type	WT/WT	Normal (Clear)
Progressive Retinal Atrophy, Bullmastiff/Mastiff Type	WT/WT	Normal (Clear)
Progressive Retinal Atrophy, Irish Setter Type	WT/WT	Normal (Clear)
Progressive Retinal Atrophy, Sloughi Type	WT/WT	Normal (Clear)
Progressive Retinal Atrophy, Cone-Rod Dystrophy_1	WT/WT	Normal (Clear)
Progressive Retinal Atrophy, Generalized	WT/WT	Normal (Clear)
Progressive Retinal Atrophy, Golden Retriever 1	WT/WT	Normal (Clear)
Progressive Retinal Atrophy, Golden Retriever 2	WT/WT	Normal (Clear)
Progressive Retinal Atrophy, PRA1 Papillon Type	WT/WT	Normal (Clear)
Progressive Retinal Atrophy, Progressive Rod-Cone Degeneration prcd	WT/WT	Normal (Clear)
Progressive Retinal Atrophy, Rod-Cone Dysplasia 3	WT/WT	Normal (Clear)
Pyruvate Dehydrogenase Deficiency	WT/WT	Normal (Clear)
Pyruvate Kinase Deficiency, Basenji Type	WT/WT	Normal (Clear)
Pyruvate Kinase Deficiency, Beagle Type	WT/WT	Normal (Clear)
Pyruvate Kinase Deficiency, Labrador Retriever Type	WT/WT	Normal (Clear)
Pyruvate Kinase Deficiency, Pug Type	WT/WT	Normal (Clear)
Pyruvate Kinase Deficiency, Terrier Type	WT/WT	Normal (Clear)
Renal Cystadenocarcinoma and Nodular Dermatofibrosis	WT/WT	Normal (Clear)
Sensory Ataxic Neuropathy	WT	Normal (Clear)
Severe Combined Immunodeficiency Disease, Terrier Type	WT/WT	Normal (Clear)
Severe Combined Immunodeficiency Disease, Wetterhoun Type	WT/WT	Normal (Clear)
Severe Combined Immunodeficiency Disease, X-Linked, Basset Hound Type	WT/WT	X-Linked Female Normal

Severe Combined Immunodeficiency Disease, X-Linked Corgi Type	WT/WT	X-Linked Female Normal
Skeletal Dysplasia 2	WT/WT	Normal (Clear)
Spinal Dysraphism	WT/WT	Normal (Clear)
Spinocerebellar Ataxia	WT/WT	Normal (Clear)
Startle Disease	WT/WT	Normal (Clear)
Thrombopathia American Eskimo Dog Type	WT/WT	Normal (Clear)
Thrombopathia Basset Hound Type	WT/WT	Normal (Clear)
Thrombopathia Newfoundland Type	WT/WT	Normal (Clear)
Trapped Neutrophil Syndrome	WT/WT	Normal (Clear)
Vitamin D Dependent Rickets, Type II Pomeranian Type	WT/WT	Normal (Clear)
Von Willebrand Disease I	WT/WT	Normal (Clear)
Von Willebrand Disease II	No Result	No Result
Von Willebrand Disease III Kooikerhondje Type	WT/WT	Normal (Clear)
Von Willebrand Disease III Scottish Terrier Type	WT/WT	Normal (Clear)

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Canine HealthCheck is a product of Paw Print Genetics. This test was developed and its performance determined by Paw Print Genetics®. This laboratory has established and verified the test's accuracy and precision. Because all tests are preformed are DNA-base, rare genomic variations may interfere with the performance of some tests producing false results. If you think these results are in error, please contact the laboratory for further evaluation.