ANALYSIS SUMMARY - PAGE 1

ROYAL CANIN
GENETIC HEALTH Analysis

Dear Dr. McCallister,

This is your analysis summary for **Angela Stanley's dog Aiko**.

Dr. Sabra McCallister
Pamlico Animal Hospital
3005 JOHN SMALL AVE,
WASHINGTON, NC 27889

Owner Name: Angela Stanley
Pet Name: Aiko
Report Code: 4343132
Date Processed: June 6, 2023

Report Summary:

As of today's date, ROYAL CANIN® Genetic Health Analysis™ compares the tested sample against the DNA of over 250 breeds, types, and varieties taken from over 12,000 dogs across the world. This comprehensive test also checks for over 140 specific disease mutations and predicts the adult weight of the tested dog.

We hope the following information will help you to develop a custom health and wellness plan for Aiko:

- Aiko's test results show German Short Haired Pointer.
- The test results indicate that Aiko carries no copies of the MDR1 mutation. Please refer to the detailed MDR1 results page later in this report.
- The test results indicate that Aiko carries one copy of the factor VII deficiency mutation. As this is a recessive disorder, Aiko should not develop the disease, and no further testing is typically required.
- The predicted weight range for Aiko is 42 - 71 lbs.

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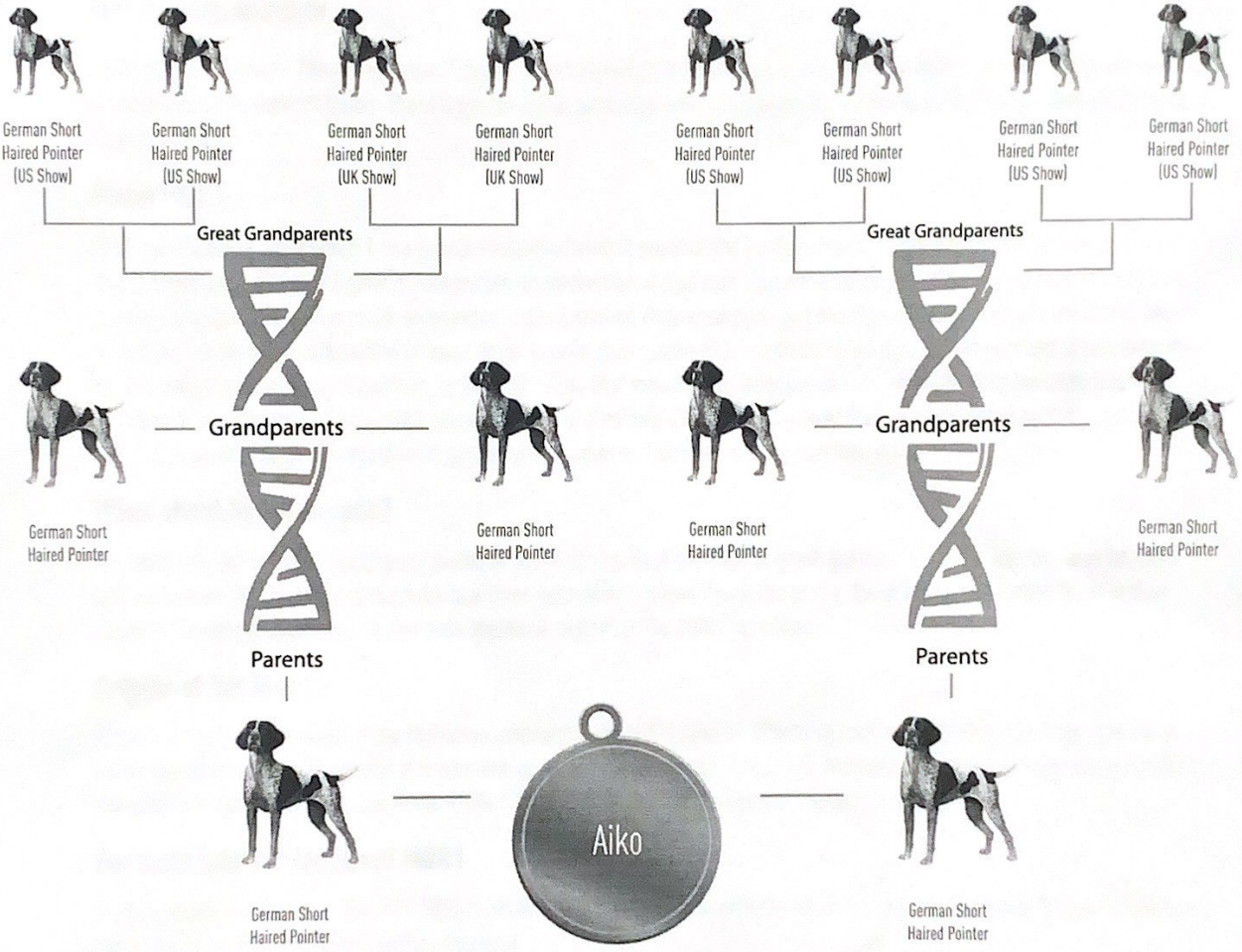
ROYAL CANIN
GENETIC HEALTH Analysis™

Aiko is a German Shorthaired Pointer

The ROYAL CANIN® Genetic Health Analysis™ computer algorithm performed over 17,000,000 calculations using 11 different models (from a single breed to complex combinations of breeds) to predict the most likely combination of pure and mixed breed dogs in the last three ancestral generations that best fit the DNA marker pattern observed in Aiko. The ancestry chart depicting the best statistical result of this analysis is shown in the picture below.



While the ROYAL CANIN® Genetic Health Analysis™ is not designed as a pure breed test our results indicate that the recent ancestry of Aiko only includes **German Shorthaired Pointer**.

ROYAL CANIN
GENETIC HEALTH Analysis

MDR1 Genetic Screening Results

CONDITION	GENE	MODE OF INHERITANCE	TEST RESULTS
Multidrug Sensitivity	MDR1	Dominant	Normal/Normal

Test Results Analysis

MDR1 Normal/Normal - These dogs have 2 copies of the normal MDR1 gene and do not have the MDR1 mutation. They will not pass on the mutation to their offspring. These dogs are not at increased risk for experiencing side effects from drugs that are pumped by P-glycoprotein.

About MDR1

MDR1, or Multidrug Resistance-1 is a genetic mutation found in many of the herding breeds, some sighthound breeds and many mixed-breed dogs. The MDR1 gene is responsible for production of a protein called P-glycoprotein. The P-glycoprotein molecule is a drug transport pump that plays an important role in limiting drug absorption and distribution (particularly to the brain) and enhancing the excretion/elimination of many drugs used in dogs. Some dogs, particularly herding breeds or mixed-breed dogs with herding breed ancestry have a mutation in the MDR1 gene that makes them defective in their ability to limit the absorption and distribution of many drugs. These dogs are also slower to eliminate drugs from the body that are transported by P-glycoprotein. As a result, dogs with the MDR1 mutation may have severe adverse reactions to some common drugs.

What about Mixed-breeds?

Our tests look for the presence of pure breeds in your dog's heritage back to the great-grandparent level. Just because we don't find a pedigree herding breed in the dog's last three generations, doesn't mean he or she doesn't have one further back in their ancestry. Therefore, even mixed-breed dogs should be tested for the MDR1 mutation.

Origins of the Test

The discovery of the mutation of the multidrug resistant gene (MDR1) and its effects on multidrug sensitivity in dogs, was made by the Washington State University. It is a patent-protected diagnostic test offered by Washington State University that has been licensed to Wisdom Health for use in the ROYAL CANIN® Genetic Health Analysis™ tests.

For more information about MDR1

Contact Wisdom Health at 1-888-597-3883 or info@wisdomhealth.com or visit the Washington State University School of Veterinary Medicine web site at: http://vcpl.vetmed.wsu.edu/.

ROYAL CANIN
GENETIC HEALTH Analysis™

MDR1 Genetic Screening Information

Drugs affected by the MDR1 mutation

Acepromazine
Butorphanol
Doxorubicin
Doramectin
Emodepside
Erythromycin
Ivermectin
Loperamide
Milbemycin
Moxidectin
Paclitaxel
Rifampin
Selamectin
Vinblastine
Vincristine

Breeds affected by the MDR1 mutation (frequency %):

Australian Shepherd 50%
Australian Shepherd, Mini 50%
Border Collie 5%
Collie 70%
English Shepherd 15%
German Shepherd 10%
Herding Breed Cross 10%
Long-haired Whippet 65%
McNab 30%
Mixed Breed 5%
Old English Sheepdog 5%
Shetland Sheepdog 15%
Silken Windhound 30%

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ROYAL CANIN
GENETIC HEALTH Analysis™

Genetic mutation tests performed for Aiko:

ROYAL CANIN® Genetic Health Analysis™ currently looks for more than 140 specific disease causing mutations in every sample submitted. The most common disease mutation test results as well as any others with positive results are listed below. All positive results are highlighted and additional information for those are provided below. For more information about these and all the diseases that the Genetic Health Analysis™ tests for, please visit **marsveterinary.force.com/royalcaningha/**

DISEASE	GENE	MODE OF INHERITANCE	TEST RESULTS
Neonatal Encephalopathy with Seizures	ATF2	recessive	negative
Exercise-Induced Collapse	DNM1	recessive	negative
Factor VII Deficiency	F7	recessive	positive one copy
Cystinuria Type I-A	SLC3A1_Newfoundland	recessive	negative
Pyruvate Dehydrogenase Phosphatase 1 Deficiency	PDP1	recessive	negative
Pyruvate Kinase Deficiency	PKLR_West Highland White Terrier	recessive	negative
Hyperuricosuria	SLC2A9	recessive	negative
Primary Lens Luxation	ADAMTS17	recessive but may also affect some heterozygotes with incomplete penetrance	negative
L-2-Hydroxyglutaric Aciduria	L2HGDH_Staffordshire Bull Terrier	recessive	negative
von Willebrand's Disease Type 1	VWF	recessive but may also affect some heterozygotes	negative
Degenerative Myelopathy	SOD1	recessive with incomplete penetrance	negative
Phosphofructokinase Deficiency	PFKM	recessive	negative

Factor VII Deficiency:

Factor VII deficiency is an inherited bleeding disorder encountered in several breeds. The related clinical signs are typically mild but may vary in severity, and excessive bleeding only occurs after a severe trauma or surgery. The mode of inheritance for this mutation is autosomal recessive.

Additional information on factor VII deficiency can be seen online at:
marsveterinary.force.com/royalcaningha/

Next Steps: Tests indicate that Aiko has inherited one copy of the factor VII deficiency mutation. As this is a recessive disorder, Aiko should not suffer from it and no further action is typically necessary.

This genetic screening was developed in partnership with Genoscoper® (www.genoscoper.com) for use in ROYAL CANIN® Genetic Health Analysis™ tests.

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