

# GENETIC ANALYSIS REPORT



## OWNER'S DETAILS

Luke Erb  
5121 Perth Line 89  
Gowanstown, Ontario, CANADA  
N0G 1Y0 Canada

## COLLECTION DETAILS

Case Number : 20158218  
Date of Test : 6th Feb 2020  
Collected By :  
**Approved Collection : NO**

## ANIMAL'S DETAILS

Registered Name : Arrowhead Migina  
Pet Name : Migina  
Registration Number : 152506F2  
Breed : Australian  
: Cobberdog  
Microchip Number : 952000001154129  
Sex : Intact Female  
Date of Birth : 19th Oct 2019  
Colour : Chocolate

Sample with Lab ID Number 20158218 was received at Orivet Genetics, DNA was extracted and analysed with the following result reported:

## GENETIC ANALYSIS SUMMARY

<sup>1</sup> **Please Note:** This is a summary disease and trait report. To view more details on each test, including a DNA profile, please log in to your account and view the detailed single DNA report.

### TESTS REPORTED

### RESULT <sup>1</sup>

#### *Urinary system / Urologic - Associated with the kidneys, bladder, ureters and urethra*

AUTOSOMAL HEREDITARY RECESSIVE NEPHROPATHY	NEGATIVE / CLEAR [NO VARIANT DETECTED]
CANINE HYPERURICOSURIA	NEGATIVE / CLEAR [NO VARIANT DETECTED]
CYSTINURIA (NEWFOUNDLAND TYPE)	NEGATIVE / CLEAR [NO VARIANT DETECTED]

#### *Musculoskeletal - Associated with muscles, bones and associated structures*

CENTRONUCLEAR MYOPATHY (LABRADOR RETRIEVER TYPE)	NEGATIVE / CLEAR [NO VARIANT DETECTED]
MILD DISPROPORTIONATE DWARFISM (LABRADOR TYPE)	NEGATIVE / CLEAR [NO VARIANT DETECTED]
MYOTUBULAR MYOPATHY X-LINKED	NEGATIVE / CLEAR [NO VARIANT DETECTED]
SKELETAL DYSPLASIA 2 (MILD DISPROPORTIONATE DWARFISM)	NEGATIVE / CLEAR [NO VARIANT DETECTED]

#### *Ophthalmologic - Associated with the eyes and associated structures*

COLLIE EYE ANOMALY/CHOROIDAL HYPOPLASIA	NEGATIVE / CLEAR [NO VARIANT DETECTED]
CONE-ROD DYSTROPHY I - PRA (CORD I)	NEGATIVE / CLEAR [NO VARIANT DETECTED]
CURLY COAT DRY EYE SYNDROME (CAVALIER TYPE)	NEGATIVE / CLEAR [NO VARIANT DETECTED]
GENERALISED PRA 1 (GOLDEN RETRIEVER TYPE)	NEGATIVE / CLEAR [NO VARIANT DETECTED]
MACULAR CORNEAL DYSTROPHY (LABRADOR TYPE)	NEGATIVE / CLEAR [NO VARIANT DETECTED]
PROGRESSIVE ROD CONE DEGENERATION (PRCD) - PRA	NEGATIVE / CLEAR [NO VARIANT DETECTED]

#### *Haemolymphatic - Associated with the blood and lymph*

CONGENITAL MACROTHROMBOCYTOPENIA	NEGATIVE / CLEAR [NO VARIANT DETECTED]
ELLIPTOCYTOSIS B-SPECTRIN (LABRADOR RETRIEVER/POODLE TYPE)	NEGATIVE / CLEAR [NO VARIANT DETECTED]
GLOBOID CELL LEUKODYSTROPHY/KRABBE'S DISEASE	NEGATIVE / CLEAR [NO VARIANT DETECTED]
VON WILLEBRAND'S DISEASE TYPE I	NEGATIVE / CLEAR [NO VARIANT DETECTED]

#### *Nervous system / Neurologic - Associated with the brain, spinal cord and nerves*

CONGENITAL MYASTHENIC SYNDROME (LABRADOR RETRIEVER TYPE)	NEGATIVE / CLEAR [NO VARIANT DETECTED]
DEGENERATIVE MYELOPATHY	CARRIER [ONE COPY OF THE VARIANT DETECTED]
EPISODIC FALLING SYNDROME (CAVALIER TYPE)	NEGATIVE / CLEAR [NO VARIANT DETECTED]
EXERCISE INDUCED COLLAPSE (RETRIEVER TYPE)	NEGATIVE / CLEAR [NO VARIANT DETECTED]
IVERMECTIN SENSITIVITY MDR1 (MULTI DRUG RESISTANCE)	NEGATIVE / CLEAR [NO VARIANT DETECTED]
NARCOLEPSY (LABRADOR)	NEGATIVE / CLEAR [NO VARIANT DETECTED]

NEONATAL ENCEPHALOPATHY (POODLE TYPE)

NEGATIVE / CLEAR [NO VARIANT DETECTED]

**Metabolic - Associated with the enzymes and metabolic processes of cells**

GANGLIOSIDOSIS GM2 (POODLE TYPE)

NEGATIVE / CLEAR [NO VARIANT DETECTED]

MALIGNANT HYPERTHERMIA

NEGATIVE / CLEAR [NO VARIANT DETECTED]

MUCOPOLYSACCHARIDOSIS VI (POODLE TYPE)

NEGATIVE / CLEAR [NO VARIANT DETECTED]

PHOSPHOFRUCTOKINASE DEFICIENCY (SPANIEL TYPE)

NEGATIVE / CLEAR [NO VARIANT DETECTED]

PYRUVATE KINASE DEFICIENCY (CANINE)

NEGATIVE / CLEAR [NO VARIANT DETECTED]

**Dermatologic - Associated with the skin**

HEREDITARY NASAL PARAKERATOSIS/DRY NOSE (LABRADOR RETRIEVER TYPE)

NEGATIVE / CLEAR [NO VARIANT DETECTED]

**Immunologic - Associated with the organs and cells of the immune system**

TRAPPED NEUTROPHIL SYNDROME (BORDER COLLIE TYPE)

NEGATIVE / CLEAR [NO VARIANT DETECTED]

**Trait (Associated with Phenotype)**

A LOCUS (FAWN/SABLE;TRI/TAN POINTS)

a<sup>t</sup>/a<sup>t</sup> - TAN POINTS/BLACK & TAN or TRICOLOUR MAY BE BRINDLED [SEE K LOCUS]

BLACK AND TAN/SADDLE COAT COLOUR

POSITIVE TWO COPIES of TAN SADDLE VARIANT - MAY EXPRESS THE PHENOTYPE [See E and K Locus]

BROWN (345DELPRO) DELETION

bb<sup>d</sup> - BROWN/CHOCOLATE, LIVER OR RED [DELETION]

BROWN (GLNT331STOP) STOP CODON

Bb<sup>s</sup> - CARRIER of BROWN/CHOCOLATE/LIVER [STOP CODON]

BROWN (SER41CYS) INSERTION CODON

Bb<sup>c</sup> - CARRIER OF BROWN/LIVER/CHOCOLATE [INSERTION]

D (DILUTE) LOCUS

DD - NO COPY OF MLPH-D ALLELE (DILUTE) - PIGMENT IS NORMAL

E LOCUS - (CREAM/RED/YELLOW)

Ee - BLACK CARRIES EXTENSION [YELLOW/WHITE/APRICOT/RUBY/RED]

EM (MC1R) LOCUS - MELANISTIC MASK

E<sup>m</sup>/E<sup>n</sup> ONE COPY OF MASK ALLELE DETERMINED BY A SERIES

K LOCUS (DOMINANT BLACK)

KB / k<sup>y</sup> or k<sup>br</sup> - ONE COPY DOMINANT BLACK (KB) and ONE COPY OF NON-BLACK (k<sup>y</sup>) dog MAY be brindled

LONG HAIR GENE (CANINE C95F)

POSITIVE - SHOWING THE PHENOTYPE

**Dermatologic - Associated with the skin**

BLACK HAIR FOLLICULAR DYSPLASIA

NEGATIVE - NOT SHOWING THE PHENOTYPE

COAT COLOUR DILUTION ALOPECIA

NEGATIVE - NOT SHOWING THE PHENOTYPE

**RESULTS REVIEWED & CONFIRMED BY:**

Dr. Noam Pik BVSc, BMVS, MBA, MACVSc



George Sofronidis BSc(Hons)

**ORIVET GENETIC PET CARE**

Suite 102A/ 163 - 169 Inkerman Street,  
St Kilda 3182, Australia  
t +61 3 9534 1544 | f +61 3 9525 3550  
e admin@orivet.com  
www.orivet.com

**ORIVET INTERNATIONAL - USA**

20 Church Street,  
Hartford, CT 06103  
t +844-4 ORIVET (Ext. 105)  
e usa@orivet.com  
www.orivet.com

**ORIVET INTERNATIONAL - JAPAN**

3-6-2, Kumata, Higashisumiyoshi-ku,  
Osaka-shi, Osaka 546-0002, Japan  
t 080 8312 41187 (Japan)  
e japan@orivet.com.au  
www.orivet.jp

Authentication Code



Scan To Verify

Genetic Pet Care

Genetic Pet Care

Genetic Pet Care

Genetic Pet Care

## **EXPLANATION of RESULT TERMINOLOGY**

The terms below are provided to help clarify certain results phrases on your genetic report. The phrases below are those as reported by Orivet and may vary from one laboratory to the other.

### **NEGATIVE / CLEAR [NO VARIANT DETECTED]**

No presence of the variant (mutation) has been detected. The animal is clear of the disease and will not pass on any disease-causing mutation.

### **CARRIER [ONE COPY OF THE VARIANT DETECTED]**

This is also referred to as HETEROZYGOUS. One copy of the normal gene and copy of the affected (mutant) gene has been detected. The animal will not exhibit disease symptoms or develop the disease. Consideration needs to be taken if breeding this animal - if breeding with another carrier or affected or unknown then it may produce an affected offspring.

### **POSITIVE / AT RISK [TWO COPIES OF THE VARIANT DETECTED]**

Two copies of the disease gene variant (mutation) have been detected also referred to as HOMOZYGOUS for the variant. The animal may show symptoms (affected) associated with the disease. Appropriate treatment should be pursued by consulting a Veterinarian.

### **POSITIVE HETEROZYGOUS [ONE COPY OF THE DOMINANT VARIANT DETECTED]**

Also referred to as POSITIVE ONE COPY or POSITIVE HETEROZYGOUS. This result is associated with a disease that has a dominant mode of inheritance. One copy of the normal gene (wild type) and affected (mutant) gene is present. Appropriate treatment should be pursued by consulting a Veterinarian. This result can still be used to produce a clear offspring.

### **POSITIVE HOMOZYGOUS [TWO COPIES OF THE DOMINANT VARIANT DETECTED]**

Also referred to as POSITIVE HOMOZYGOUS. Two copies of the disease gene variant (mutant) have been detected and the animal may show symptoms associated with the disease. Please Note: This disease has dominant mode of inheritance so if mated to a clear animal ALL offspring will be AFFECTED – HETEROZYGOUS ONE COPY.

### **NORMAL BY PARENTAGE HISTORY**

The sample submitted has had its parentage verified by DNA. By interrogating the DNA profiles of the Dam, Sire and Offspring this information together with the history submitted for the parents excludes this animal from having this disease. The controls run confirm that the dog is NORMAL for the disease requested.

### **NORMAL BY PEDIGREE**

The sample submitted has had its parentage verified by Pedigree. The pedigree has been provided and details (genetic testing reports) of the parents have been included. Parentage could not be determined via DNA profile as no sample was submitted.

### **NO RESULTS AVAILABLE**

Insufficient information has been provided to provide a result for this test. Sire and Dam information and/or sample may be required. This result is mostly associated with tests that have a patent/license and therefore certain restrictions apply. Please contact the laboratory to discuss.

### **INDETERMINABLE**

The sample submitted has failed to give a conclusive result. This result is mainly due to the sample failing to "cluster" or result in the current grouping. A recollection is required at no charge.

### **DNA PROFILE**

Also known as a DNA fingerprint. This is unique for the animal. No animal shares the same DNA profile. An individual's DNA profile is inherited from both parents and can be used for verifying parentage (pedigrees). This profile contains no disease or trait information and is simply a unique DNA signature for that animal.

### **PARENTAGE VERIFICATION**

#### **QUALIFIES/CONFIRMED or DOES NOT QUALIFY/EXCLUDED**

Parentage is determined by examining the markers on the DNA profile. A result is generated and stated for all DNA parentage requests. Parentage confirmation reports can only be generated if a DNA profile has been carried out for Dam, Offspring and possible Sire/s.

### **PENDING**

Results for this test are still being processed. Some tests are run independently and are reported at a later date. When completed, the result will be emailed.

### **APPROVED COLLECTION METHOD (NO)**

The sample submitted for testing HAS NOT met the requirements recommended by member bodies for the DNA collection process.

### **TRAIT (PHENOTYPE)**

A feature that an animal is born with (a genetically determined characteristic). Traits are a visual phenotype that range from colour to hair length, and also includes certain features such as tail length. If an individual is AFFECTED for a trait then it will show that characteristic eg. AFFECTED for the B (Brown) Locus or bb will be brown/chocolate.

### **POSITIVE – SHOWING THE PHENOTYPE**

The animal is showing the trait or phenotype tested.

## CLARIFICATION OF GENETIC TESTING

The goal of genetic testing is to provide breeders with relevant information to improve breeding practices in the interest of animal health. However, genetic inheritance is not a simple process, and may be complicated by several factors. Below is some information to help clarify these factors.

- 1) Some diseases may demonstrate signs of what Geneticists call "genetic heterogeneity". This is a term to describe an apparently single condition that may be caused by more than one mutation and/or gene.
- 2) It is possible that there exists more than one disease that presents in a similar fashion and segregates in a single breed. These conditions - although phenotypically similar - may be caused by separate mutations and/or genes.
- 3) It is possible that the disease affecting your breed may be what Geneticists call an "oligogenic disease". This is a term to describe the existence of additional genes that may modify the action of a dominant gene associated with a disease. These modifier genes may for example give rise to a variable age of onset for a particular condition, or affect the penetrance of a particular mutation such that some animals may never develop the condition.

The range of hereditary diseases continues to increase and we see some that are relatively benign and others that can cause severe and/or fatal disease. Diagnosis of any disease should be based on pedigree history, clinical signs, history (incidence) of the disease and the specific genetic test for the disease.

Penetrance of a disease will always vary not only from breed to breed but within a breed, and will vary with different diseases. Factors that influence penetrance are genetics, nutrition and environment. Although genetic testing should be a priority for breeders, we strongly recommend that temperament and phenotype also be considered when breeding.

**Orivet Genetic Pet Care** aims to frequently update breeders with the latest research from the scientific literature. If breeders have any questions regarding a particular condition, please contact us on **(03) 9534 1544** or **admin@orivet.com** and we will be happy to work with you to answer any relevant questions.

This report has been generated by Orivet Genetic Pet Care (Case Number : 20158218)