OWNER

Nichole Watterson

[redacted]

Membership Number : Not Assigned
Member Body/Breed Club : Not Assigned

Orivet Genetic Pet Care

GENETIC COMPREHENSIVE REPORT

Accredited and Compliant with

ACCREDITED ISO/IEC 17025 LABORATORY

bsi. ISO 9001 Quality Management

Members of

ISAG Institutional Member

IPFD DogWellNet Harmonization of Genetic Testing for Dogs

OWNER'S DETAILS

Name :	Nichole Watterson
Address :	[redacted]

ANIMAL'S DETAILS

Registered Name :	Makhosazana Luenha Jamilah
Pet Name :	Jamilah
Registration Number :	6100112792
Breed :	Rhodesian Ridgeback
Microchip Number :	953010002510214
Sex :	Female
Date of Birth :	21st Jun 2018
Colour :	Red/Wheaten

SAMPLE COLLECTION DETAILS

Case Number :	21G06087
Collected By :	
Approved Collection :	NO
Sample Type :	SWAB

TEST DETAILS

Test Requested :	Rhodesian Ridgeback - Full Breed Profile
Pet Name :	Jamilah
Date of Test :	17th Mar 2021

Sample with Lab ID Number 21G06087 was received at Orivet Genetics, DNA was extracted and analysed with the following result reported:

RESULTS REVIEWED AND CONFIRMED BY

George Sofronidis BSc (Hons)

Dr Noam Pik BVSc, MAVS

ORIVET GENETIC COMPREHENSIVE REPORT

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P1_2	A G	P3_2	A A	P3_3	G G	P11_3	C C	P12_1	G G	P24_2	A G	P12_3	G G	P30_3	A A
P13_1	C C	P24_3	A C	P31_1	A C	P28_3	A A	P31_3	G G	P25_1	A A	P32_2	G G	P13_2	A T
P13_3	A A	P25_2	A G	P25_3	A A	P32_3	A G	P33_1	G G	P14_1	A T	P10_1	G G	P26_1	A G
P33_3	G G	P26_2	A A	P14_2	C G	P26_3	G G	P14_3	A C	P15_1	A A	P34_1	A A	P34_2	A A
P34_3	A C	P10_3	C C	P15_2	A A	P15_3	A C	P16_3	C G	P35_1	G G	P35_2	G G	P36_1	C C
P17_1	G G	P36_2	C C	P37_2	A G	P17_2	A A	P29_1	G G	P37_3	G G	P38_1	A A	P38_2	A G
P27_1	G G	P17_3	G G	P27_2	A C	P4_3	G G	P18_2	C C	P18_3	C C	P5_1	G G	P11_1	G G
P19_1	A A	P19_2	G G	P5_2	G G	P19_3	G G	P2_1	G G	P2_3	A A	P27_3	A A	P20_1	A A
P20_3	A A	P5_3	G G	P11_2	C C	P6_2	G G	P6_3	C C	P21_1	A G	P21_3	A G	P22_2	A A
P28_1	G G	P7_1	A C	P7_2	A G	P28_2	C G	P7_3	A A	P29_2	G G	P8_1	A A	P22_3	G G
P8_2	A A	P8_3	A A	P23_1	G G	P9_3	T T	P23_2	C C	P23_3	A A	P24_1	A G	P3_1	G G

ORIVET GENETIC COMPREHENSIVE REPORT

ANIMAL'S DETAILS

Registered Name :	Makhosazana Luenha Jamilah
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Colour :	Red/Wheaten

BICF2G630103624	A C	BICF2G630111735	A G	BICF2G630122583	A G	BICF2G630133028	A A
BICF2G630133994	A A	BICF2G630149030	G G	BICF2G630200354	A A	BICF2G630209886	A A
BICF2G630220326	A G	BICF2G630221287	A A	BICF2G630264994	A G	BICF2G630276039	A G
BICF2G630276136	G G	BICF2G630306265	A G	BICF2G630326688	A A	BICF2G630328172	A A
BICF2G630328323	A G	BICF2G630367177	A A	BICF2G630409193	A G	BICF2G630453264	C G
BICF2G630474528	A G	BICF2G630499189	A G	BICF2G630539759	A G	BICF2G630552597	A A
BICF2G630653298	A G	BICF2G630666362	A A	BICF2G630691635	G G	BICF2G630704611	G G
BICF2G630708384	A A	BICF2G630762459	A A	BICF2G63078341	G G	BICF2G63088115	A A
BICF2P1010945	A A	BICF2P105070	A G	BICF2P1138733	A G	BICF2P1159837	A G
BICF2P1181787	A G	BICF2P1192522	A G	BICF2P1226745	G G	BICF2P1286728	G G
BICF2P1362405	A G	BICF2P1369088	A G	BICF2P1391407	A G	BICF2P164304	A G
BICF2P184963	A G	BICF2P251850	A C	BICF2P277987	G G	BICF2P345488	A A
BICF2P401677	A A	BICF2P414351	A G	BICF2P42825	A G	BICF2P452541	G G
BICF2P457665	A A	BICF2P464536	A G	BICF2P465276	A G	BICF2P46604	A A
BICF2P46672	A G	BICF2P496466	A A	BICF2P496837	A G	BICF2P567552	A G
BICF2P590440	A G	BICF2P600196	A A	BICF2P615597	C C	BICF2P635478	A G
BICF2P651575	G G	BICF2P651577	A A	BICF2P70891	C C	BICF2P725743	C G
BICF2P728698	A G	BICF2P789367	A G	BICF2P805553	A G	BICF2P840653	A G
BICF2P885380	A G	BICF2P923421	A G	BICF2P950116	A G	BICF2P963969	A A
BICF2P998036	C C	BICF2S22912385	A G	BICF2S22926284	A A	BICF2S22953709	A C
BICF2S23018785	A A	BICF2S23111132	A A	BICF2S23138418	A A	BICF2S23141330	T T
BICF2S23214514	A C	BICF2S23326150	G G	BICF2S23329382	C C	BICF2S23357186	C C
BICF2S2338108	A G	BICF2S23434277	G G	BICF2S23529290	A G	BICF2S23535154	G G
BICF2S23614068	C C	BICF2S2399705	A A	G1425f16S28	G G	TIGRP2P255960_rs9030578	G G
TIGRP2P283310_rs8881748	A G	TIGRP2P328303_rs8531882	A A	TIGRP2P354499_rs9162547	A G	TIGRP2P356245_rs8830240	A C
TIGRP2P362535_rs9130694	A A	TIGRP2P389035_rs9038546	A A				

ORIVET GENETIC COMPREHENSIVE REPORT

ANIMAL'S DETAILS

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Sex :	Female
Date of Birth :	21st Jun 2018
Colour :	Red/Wheaten

BICF2G630102146	A A	BICF2G630149581	G G	BICF2G630159183	G G	BICF2G630170631	A C
BICF2G630187649	A A	BICF2G630187658	G G	BICF2G630204463	A A	BICF2G630209373	A G
BICF2G630209508	A G	BICF2G630255439	A G	BICF2G630271966	G G	BICF2G630274628	A G
BICF2G630307199	A C	BICF2G630340940	A G	BICF2G630340944	A G	BICF2G630365778	A C
BICF2G630382763	A G	BICF2G630437783	C C	BICF2G630449851	A A	BICF2G630467607	A A
BICF2G630488267	G G	BICF2G630504410	G G	BICF2G630552598	A A	BICF2G630558437	A G
BICF2G630594648	G G	BICF2G630634836	A C	BICF2G630641678	G G	BICF2G630646431	A A
BICF2G630689403	G G	BICF2G630798972	G G	BICF2G630814422	A A	BICF2G63090019	A T
BICF2P1019402	A G	BICF2P103615	A G	BICF2P1060087	A G	BICF2P1104630	A G
BICF2P1141966	A G	BICF2P1173491	G G	BICF2P1183665	A A	BICF2P1193353	A G
BICF2P1216677	A G	BICF2P1226838	A G	BICF2P1232055	G G	BICF2P1271174	G G
BICF2P129347	G G	BICF2P129670	G G	BICF2P1308802	A C	BICF2P1310805	C C
BICF2P1344095	A A	BICF2P1346673	A G	BICF2P1357746	G G	BICF2P1454500	G G
BICF2P155421	C C	BICF2P157421	A G	BICF2P182473	A G	BICF2P224656	A C
BICF2P237994	A G	BICF2P246592	A A	BICF2P250787	C C	BICF2P25730	A T
BICF2P283440	G G	BICF2P285489	G G	BICF2P345056	A G	BICF2P347679	G G
BICF2P378969	C C	BICF2P382742	G G	BICF2P415783	G G	BICF2P422152	G G
BICF2P508740	C C	BICF2P516667	A A	BICF2P553317	A A	BICF2P554817	A G
BICF2P561057	A A	BICF2P585943	G G	BICF2P624936	A A	BICF2P635172	G G
BICF2P643134	A A	BICF2P65087	A A	BICF2P651576	A A	BICF2P717226	A A
BICF2P751654	G G	BICF2P774003	C C	BICF2P798404	A G	BICF2P842510	G G
BICF2P856893	A A	BICF2P878175	A A	BICF2P935470	A A	BICF2P990814	A A
BICF2S22910736	A G	BICF2S22913753	A G	BICF2S22928800	A A	BICF2S22943825	G G
BICF2S23028732	A A	BICF2S23031254	A C	BICF2S23049416	A A	BICF2S23057560	A A
BICF2S23124313	A A	BICF2S23126079	A G	BICF2S23246455	G G	BICF2S23250041	C C
BICF2S23333411	G G	BICF2S23356653	A A	BICF2S23429022	A G	BICF2S23449478	A A
BICF2S23519644	G G	BICF2S2351979	G G	BICF2S2359809	G G	BICF2S236196	A G
BICF2S23626625	G G	BICF2S23648905	G G	BICF2S23649947	G G	BICF2S23713161	G G
BICF2S23737033	A A	BICF2S24511913	A A	TIGRP2P106843_rs8858816	A G	TIGRP2P116826_rs8741680	G G
TIGRP2P164720_rs8839809	A G	TIGRP2P177606_rs8886563	G G	TIGRP2P215708_rs8686029	A T	TIGRP2P316532_rs8597522	A A
TIGRP2P372104_rs9153277	A G	TIGRP2P402042_rs9121006	G G	TIGRP2P406551_rs9235397	A G	TIGRP2P407751_rs8803124	A A

ORIVET GENETIC COMPREHENSIVE REPORT

Sample with Lab ID Number 21G06087 was received at Orivet Genetics, DNA was extracted and analysed with the following result reported

Test Reported : DEGENERATIVE MYELOPATHY

Result : NEGATIVE / CLEAR [NO VARIANT DETECTED][1]

Gene : Superoxide dismutase 1 (SOD1) on chromosome 31

Variant Detected : Base Substitutionc.118G>Ap.Glu40Lys

We have scanned the DNA and the genotype of this animal is NORMAL - no presence of the disease associated variant (mutation) has been detected. This result may also be referred to as NORMAL, "-/-" or "wild type (WT)" or "homozygous negative". The animal is clear of the disease and will not pass on the disease-causing variant. Can be mated with an untested animal and WILL NOT produce any positive/affected offspring.

Sample with Lab ID Number 21G06087 was received at Orivet Genetics, DNA was extracted and analysed with the following result reported

Test Reported : GENERALISED MYOCLONIC EPILEPSY (RHODESIAN RIDGEBACK TYPE)

Result : NEGATIVE / CLEAR [NO VARIANT DETECTED][1]

Gene : DIRAS family GTPase 1 (DIRAS1) on Chromosome 20

Variant Detected : Nucleotide Deletionc.564-567delAGACp.frameshift

We have scanned the DNA and the genotype of this animal is NORMAL - no presence of the disease associated variant (mutation) has been detected. This result may also be referred to as NORMAL, "-/-" or "wild type (WT)" or "homozygous negative". The animal is clear of the disease and will not pass on the disease-causing variant. Can be mated with an untested animal and WILL NOT produce any positive/affected offspring.

Sample with Lab ID Number 21G06087 was received at Orivet Genetics, DNA was extracted and analysed with the following result reported

Test Reported : E LOCUS - (CREAM/RED/YELLOW)

Result : E/E - DOMINANT BLACK DOES NOT CARRY YELLOW/RED/WHITE[1]

Gene : MC1R

Variant Detected : Em (point mutation) > E (wild type) > e (point mutation) chr5:63694334-63694334: C>T

2 copies of black E or "extension". All areas of the coat colour eumalanin will not produce any "e" offspring. The Extension loci is responsible for the majority of non-agouti patterns.

ORIVET GENETIC COMPREHENSIVE REPORT

Sample with Lab ID Number 21G06087 was received at Orivet Genetics, DNA was extracted and analysed with the following result reported

Test Reported : BROWN (345DELPRO) DELETION

Result : B^d/B^d - DOES NOT CARRY BROWN/RED/LIVER or CHOCOLATE [DELETION][1]

Gene : TYRP1

Variant Detected : Base Substitution (Point Mutation)

Does not carry the brown deletion codon. Please refer to the other brown variants to clarify potential colour for offspring.

Sample with Lab ID Number 21G06087 was received at Orivet Genetics, DNA was extracted and analysed with the following result reported

Test Reported : BROWN (GLNT331STOP) STOP CODON

Result : B^s/b^s - CARRIER OF BROWN/LIVER/RED/CHOCOLATE [STOP CODON][1]

Gene : TYRP1

Variant Detected : Point Mutation

One copy of brown stop codon SNP present – carrier. Can produce brown/chocolate/liver pups if mated with another carrier. Please note this could be a "compound heterozygote" and thus be brown/chocolate. Refer to the other 2 chocolate SNPs to confirm.

Sample with Lab ID Number 21G06087 was received at Orivet Genetics, DNA was extracted and analysed with the following result reported

Test Reported : BROWN (SER41CYS) INSERTION CODON

Result : B^c/B^c - DOES NOT CARRY BROWN/RED/LIVER or CHOCOLATE [INSERTION][1]

Gene : TYRP1

Variant Detected : Base Substitution (Point Mutation)

Does not carry the brown insertion codon. Please refer to the other brown variants to clarify potential colour for offspring.

ORIVET GENETIC COMPREHENSIVE REPORT

Sample with Lab ID Number 21G06087 was received at Orivet Genetics, DNA was extracted and analysed with the following result reported

Test Reported : LIVER [TYRP1] (LANCASHIRE HEELER TYPE)

Result : B^e/B^e - DOES NOT CARRY BROWN/LIVER [TYRP1][1]

Gene :

Variant Detected :

Sample with Lab ID Number 21G06087 was received at Orivet Genetics, DNA was extracted and analysed with the following result reported

Test Reported : D (DILUTE) LOCUS

Result : D/D - NO COPY OF MLPH-D ALLELE (DILUTE) - PIGMENT IS NORMAL[1]

Gene : MLPH

Variant Detected : Base Substitution

Full colour, no dilute gene present. The D allele modifies the Melanophillin (MLPH) gene. This animal cannot produce "dilute" offspring. Please Note: There are other dilute variants d2 (Sloughi, Chow Chow & Thai Ridgeback) and rare d3 (Italian Greyhound & Chihuahua) so this test/result may not identify dilute in these breeds.

Sample with Lab ID Number 21G06087 was received at Orivet Genetics, DNA was extracted and analysed with the following result reported

Test Reported : K LOCUS (DOMINANT BLACK)

Result : k^y/k^y - RECESSIVE NON- BLACK [COLOUR PATTERN DETERMINED BY A LOCUS][1]

Gene : CBD103

Variant Detected : Deletion of GGG

Dog does not have the dominant black mutation. Dog's coat colour will be determined by the agouti gene – may be brindled or not brindled. Any phaeomelanin (red/tan) will be brindled. Can be sable/fawn, tricolour, tan points, black or brown. Will (may) have black pigment and black markings (unless the extension locus interferes).

ORIVET GENETIC COMPREHENSIVE REPORT

Sample with Lab ID Number 21G06087 was received at Orivet Genetics, DNA was extracted and analysed with the following result reported

Test Reported : A LOCUS (FAWN/SABLE;TRI/TAN POINTS)

Result : a^y/a^y - FAWN/RED or SABLE only PRODUCE ay OFFSPRING[1]

Gene : ASIP

Variant Detected : Base Substitution 246 G>T(A82S); G>A (R83H): C>T (p.R96C)

Homozygous for fawn/sable (no hidden colour). Also referred to as "clear red". Pure factoring/no white factoring. Please note that the colour will be dependent on the breed and other colour genes. The colour shown is dependent on the E, K and B Locus.

Sample with Lab ID Number 21G06087 was received at Orivet Genetics, DNA was extracted and analysed with the following result reported

Test Reported : BLACK HAIR FOLLICULAR DYSPLASIA

Result : NEGATIVE - NOT SHOWING THE PHENOTYPE[1]

Gene : RAB27

Variant Detected : Base Substitution G>A

Sample with Lab ID Number 21G06087 was received at Orivet Genetics, DNA was extracted and analysed with the following result reported

Test Reported : COAT COLOUR DILUTION ALOPECIA

Result : NEGATIVE - NOT SHOWING THE PHENOTYPE[1]

Gene : MLPH on Chromosome 25

Variant Detected : Base Substitution G>A

ORIVET GENETIC COMPREHENSIVE REPORT

Sample with Lab ID Number 21G06087 was received at Orivet Genetics, DNA was extracted and analysed with the following result reported

Test Reported : SHEDDING (MC5R)

Result : SHD/SHD [LOW SHEDDING] - NO COPIES OF THE SHEDDING (MC5R) VARIANT DETECTED [REFER TO R151W (IC) FOR LEVEL][1]

Gene : MC5R

Variant Detected :

The dog will (may) exhibit low or no levels of shedding. Please Note: this level is also dependent on the furnishing allele. If the dog has no IC (R151W) phenotype will be low shedding.

Sample with Lab ID Number 21G06087 was received at Orivet Genetics, DNA was extracted and analysed with the following result reported

Test Reported : COAT COMPOSITION CFA28 GENE (DOUBLE/SINGLE COAT)

Result : UDC/UDC - NO COPY OF THE DOUBLE COAT (DENSE UNDERCOAT) PHENOTYPE DETECTED[1]

Gene : CFA28

Variant Detected :

Dog has a single coat usually associated with no undercoat. Hair length can be short or long.

Sample with Lab ID Number 21G06087 was received at Orivet Genetics, DNA was extracted and analysed with the following result reported

Test Reported : CURLY COAT/HAIR CURL (KRT71 R151W)

Result : NEGATIVE FOR THE KRT71 R151W (C1) VARIANT - NOT SHOWING THE CURLY COAT PHENOTYPE[1]

Gene : KRT71 (R151W)

Variant Detected : chr27:2539211-2539211: c.451C>T

Please note there are other additional curly coat genes/variant that will impact the curly coat phenotype.

GLOSSARY OF GENETIC TERMS (RESULTS)

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.

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.

GLOSSARY OF GENETIC TERMS (RESULTS)

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.

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 hairlength, 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.

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 clarifythese 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.