GENETIC ANALYSIS REPORT

Orivet Genetic Pet Care
Breed Specific Medicine

Add: P.O. Box 110
St Kilda 3182 VIC
Ph: +61 3 9534 1544
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A.B.N. 8 722 516 58 99

OWNER'S DETAILS

Gerhard Bangen
Flottbeker Stieg 21
Hamburg, 22607

ANIMAL'S DETAILS

Registered Name: Zimbert Von Flottbek
Pet Name: Zimbert
Breed: Bengalese
Registration No: L0382307
Microchip No: 945000005020259
Sex: Male

COLLECTION DETAILS

Case Number: 15-068993
Collected By: Gerhard Bangen
Date of Test: 29/04/15
Approved Coll. Mthd.:

Sample with Lab ID Number 15-068993 was received at Orivet Genetics, DNA was extracted and analysed with the following results reported:

DNA PROFILE The DNA Profile below represents the genetic identification of Zimbert Von Flottbek

SNP01	SNP02 CC	SNP03 GT	SNP04 AA	SNP05 CC	SNP06 CC	SNP07 CT	SNP08 TT	SNP09 CT	SNP10 GG	SNP11 AA
SNP12 CC	SNP13 AA	SNP14 GG	SNP15 CT	SNP16 AA	SNP17 GA	SNP18 GG	SNP19 GG	SNP20 CC	SNP21 CC	SNP22 AA
SNP23 GA	SNP24 AA	SNP25 CT	SNP26 GG	SNP27	SNP28 AA	SNP29 TT	SNP30	SNP31 GA	SNP32 GG	SNP33
SNP34	SNP35 GG	SNP36 GA	SNP37 CT	SNP38 CC	SNP39 CC	SNP40 GG	SNP41 GA	SNP42 TT	SNP43 CT	SNP44 GG
SNP45	SNP46 CT	SNP47 TT	SNP48 GA	SNP49	SNP50 GT	SNP51 GG	SNP52 GA	SNP53 GG	SNP54 CC	SNP55 TT
SNP56 AG	SNP57 CT	SNP58 CT	SNP59 CC	SNP60 GG	SNP61 CC	SNP62 CC	SNP63 CT	SNP64 GG	SNP65 GG	SNP66 GG
SNP67 CT	SNP68 CT	SNP69 GG	SNP70 AA	SNP71 CC	SNP72 AA	SNP73 GG	SNP74 GA	SNP75 AA	SNP76 GT	SNP77 AA
SNP78 TT	SNP79 GG	SNP80 AG	SNP81 CT	SNP82 TT	SNP83 CC	SNP84 CC	SNP85	SNP86 CT	SNP87 AA	SNP88 TC

15-068993

RESULTS REVIEWED AND CONFIRMED BY:

Dr. Noam Pik BVs MDSV

George Sofronidis BSc (Hons)

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DISEASE(S):

PYRUVATE KINASE (PK) DEFICIENCY **(NORMAL / CLEAR - NO MUTATION DETECTED)**
MUCOPOLYSACCHARADOSIS **(NORMAL / CLEAR - NO MUTATION DETECTED)**
POLYCYSTIC KIDNEY DISEASE **(NORMAL / CLEAR - NO MUTATION DETECTED)**
NEIMANN-PICK DISEASE TYPE C **(NORMAL / CLEAR - NO MUTATION DETECTED)**
FAMILIAL EPISODIC HYPOKALEAMIC POLYMYOPATHY **(NORMAL / CLEAR - NO MUTATION DETECTED)**
HYPERTROPHIC CARDIOMYOPATHY - MAINE COON **(NORMAL / CLEAR - NO MUTATION DETECTED)**
HYPERTROPHIC CARDIOMYOPATHY - RAGDOLL **(NORMAL / CLEAR - NO MUTATION DETECTED)**
PROGRESSIVE RETINAL ATROPHY (PRA) CEP 290 (PRA-RDC) **(INDETERMINABLE - RESULT OBTAINED IS INCONCLUSIVE)**
PROGRESSIVE RETINAL ATROPHY (PRA) CRX (PRA-RDY) **(NORMAL / CLEAR - NO MUTATION DETECTED)**
SPINAL MUSCULAR ATROPHY (SMA) - MAINE COON **(NORMAL / CLEAR - NO MUTATION DETECTED)**
GLYCOGEN STORAGE DISEASE TYPE IV **(NORMAL / CLEAR - NO MUTATION DETECTED)**
GANGLIOSIDOSI- GM2 **(NORMAL / CLEAR - NO MUTATION DETECTED)**

TRAIT(S):

ALBINISM **(ALB N / ALB N - NO ALBINO MUTATION DETECTED)**
AMBER **(E/E - NO COPIES OF AMBER MUTATION DETECTED)**
DILUTION **(D/D FULL COLOUR - DOES NOT HAVE DILUTE ALLELE)**
BLOOD GROUP **(N/N = TYPE A or AB (non-b/non-b) CAN BE A/A. A/AB or AB/AB)**
CHOCOLATE AND CINAMMON **(B/B (FULL COLOUR - CAT DOES NOT CARRY BROWN OR CINNAMON))**
COLOURPOINT RESTRICTION **(c^s/c^s - SIAMESE)**
AGOUTI **(A/a (OFFSPRING CAN BE AGOUTI / NON-AGOUTI DEPENDS ON MATING))**
LONG HAIR SHORTHAIR **(N/N = NONE OF THE 4 LONG HAIR MUTATIONS DETECTED)**
WHITE GLOVES **(N^g/N^g - NO GLOVE MUTATION DETECTED)**

15-068993

RESULTS REVIEWED AND CONFIRMED BY:

Dr. Noam Pik BVs MDSV
George Sofronidis BSc (Hons)

AN OVERVIEW OF GENETIC TESTING - GLOSSARY OF TERMS

The terms below are provided to help clarify certain items on your genetic reports. The genetic results/terms are those as reported by Orivet.

NORMAL/CLEAR - NO MUTATION DETECTED - No presence of the mutation (wild type) is detected. The animal is clear of disease, will not pass on any disease-causing mutation.

CARRIER/ HETEROZYGOUS - ONE COPY DETECTED - One copy of the normal gene (wild type) and affected (mutant) gene is present, 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.

AFFECTED HETEROZYGOUS (ONE COPY) - One copy of the normal gene (wild type) and affected (mutant) gene is present, yet due to the dominant mode of inheritance of the disease the animal may show symptoms (affected). Appropriate treatment should be pursued by consulting a veterinarian.

AFFECTED/ POSITIVE - TWO COPIES - Two copies of the disease gene (mutant) are present, the animal may show symptoms (affected) associated with the disease. Appropriate treatment should be pursued by consulting a veterinarian.

NORMAL BY PARENTAGE HISTORY - The sample submitted has had its parentage confirmed- by pedigree or DNA. By definition, 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.

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

DNA PROFILE - Also known as a DNA fingerprint 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). The nomenclature **CSNP** identifies the single nucleotide polymorphism (SNP) at a particular site on the chromosome with each number representing a different site.

FAIL - The sample submitted has failed to give a conclusive result. Failures are due mainly to quality/quantity of DNA. We strongly advise that another sample be re-collected and submitted. To minimize bacterial contamination you should allow the swab to air dry (stand up) for at least 3 minutes prior to placing them back into the original swab packaging.

PARENTAGE CONFIRMATION - A separate parentage report is generated and emailed for any parentage request. Parentage confirmation report can only be generated if a DNA profile has been carried out for dam, offspring and possible offspring.

PENDING - Result for this test is still being processed. When completed, the result will be emailed. Certain tests are run on different chips which can lead to results being uploaded and completed separately.

INDETERMINABLE - The samples submitted has failed to give a conclusive result, this result may need to be determined via a manual process. If you have submitted a swab sample you may need to recollect and resubmit a blood sample to enable a conclusive result for the test.

APPROVED COLLECTION METHOD (YES) - the sample submitted for testing HAS met the requirements recommended by member bodies for the DNA collection process. The animal has been identified via its microchip number (Positive ID) and collected by a Veterinarian or Approved Collection Agent.

APPROVED COLLECTION METHOD (BLANK) - the sample submitted for testing HAS NOT met the requirements recommended by member bodies for the DNA collection process.

TRAIT - A feature that an animal is born with (genetically determined characteristic). Traits area visual phenotype that range from colour to hair length, 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.

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 no 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 heterogenity". 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 smiliar- 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 continue to increase and we see some of 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, his (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 the temperant 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 and we will be happy to work with you to answer any relevant questions.