

ak koopman middenweg 83 1764kn breezand Customer number

103538

Analysis Certificate

Animal data

Name: Date of birth: Sexe: Chip number: Breed: LOKI 23.03.2013 Male 981000006097199 Border Collie Sample data

VHL_ID: Test ID-nr: Material: H338901 364100 1 Swab

H919 - Hiplaxity 1 - Date of test: 23.09.2019 Testresult: N/N

H421 - Hiplaxity 2 - Date of test: 23.09.2019 Testresult: N/N

H811 - Hyperuricemia (HUU) - Date of test: 23.09.2019 Testresult: NORMAL

H787 - TNS - Date of test: 23.09.2019 Testresult: NORMAL

H721 - Neuronal Ceroid Lipofuscinosis (NCL) 5 - Date of test: 23.09.2019 Testresult: NORMAL

H367 - IGS (Selective Cobalamin Malabsorption) 2 - Date of test: 23.09.2019 Testresult: NORMAL

H673 - DM (partner lab) - Date of test: 16.10.2019 Testresult: NORMAL

VHL exercises the utmost care in performing each of its engagements. No party other than the principal may derive any rights from the results of these engagements, and the principal expressly indemnifies VHL in respect of any third-party claims. VHL policy provides that any complaints must be received within eight days of the completion of an engagement and imposes restrictions on liability. In that respect, VHL refers to its General Conditions, which are applicable to all engagements VHL performs and which were enclosed with the submission form. These General Conditions can also be reviewed at www.vhlgenetics.com. The work VHL performs is based on the material and/or data it receives from its principal. This report may only be copied in its entirety. The organization is ISO:9001 certified for all her work. This test is based on PCR technology.

(Certificate nr: H56634/Date of issue: 16.10.2019) page 1 of 5 Agro Business Park 100,NL-6708 PW Wageningen - T.+31(0)317416402 - F.+31(0)317426117 - info@vhlgenetics.com - www.vhlgenetics.com Chamber of commerce Arnhem 09112692 - VAT nr NL8088.07.973.B.01



dr. van haeringen laboratorium b.v.

a VHLGenetics company

H705 - Collie Eye Anomaly (CEA_CH, partnerlab) - Date of test: 16.10.2019 Testresult: NORMAL

H746 - Canine Malignant Hypertherm - Date of test: 23.09.2019 Testresult: NORMAL

H629 - MDR1 (partner lab) - Date of test: 16.10.2019 Testresult: NORMAL

H849 - PLL - Date of test: 23.09.2019 Testresult: NORMAL

H644 - Cystinuria, type II - A - Date of test: 23.09.2019 Testresult: NORMAL

H388 - Sensory Neuropathy - Date of test: 27.09.2019 Testresult: CARRIER

> W.A. van Haeringen, PhD Executive Director

VHL exercises the utmost care in performing each of its engagements. No party other than the principal may derive any rights from the results of these engagements, and the principal expressly indemnifies VHL in respect of any third-party claims. VHL policy provides that any complaints must be received within eight days of the completion of an engagement and imposes restrictions on liability. In that respect, VHL refers to its General Conditions, which are applicable to all engagements VHL performs and which were enclosed with the submission form. These General Conditions can also be reviewed at www.vhlgenetics.com. The work VHL performs is based on the material and/or data it receives from its principal. This report may only be copied in its entirety. The organization is ISO:9001 certified for all her work. This test is based on PCR technology.

(Certificate nr: H56634/Date of issue: 16.10.2019)

page 2 of 5

Agro Business Park 100,NL-6708 PW Wageningen - T.+31(0)317416402 - F.+31(0)317426117 - info@vhlgenetics.com - www.vhlgenetics.com Chamber of commerce Arnhem 09112692 - VAT nr NL8088.07.973.B.01



H919 - Hiplaxity 1

The disease is of multifactorial origin, which means that the symptoms are a combination of genetic factors as well as the environment.

This marker is part of a panel of genetic factors influencing hip laxity. For each genetic factor of a multifactorial disease, the desirable genetic variant is indicated as 'N/N'. Animals carrying one copy of the undesirable genetic variant are indicated as 'N/HL', whereas animals carrying two copies of the undesirable genetic variant are indicated as 'HL/HL'.

H421 - Hiplaxity 2

The disease is of multifactorial origin, which means that the symptoms are a combination of genetic factors as well as the environment.

This marker is part of a panel of genetic factors influencing hip laxity. For each genetic factor of a multifactorial disease, the desirable genetic variant is indicated as 'N/N'. Animals carrying one copy of the undesirable genetic variant are indicated as 'N/HL', whereas animals carrying two copies of the undesirable genetic variant are indicated as 'HL/HL'.

H811 - Hyperuricemia (HUU)

Explanation about the result:

NORMAL: The animal is free and has two healthy alleles. When used in breeding, this animal will not become ill due to the disease. It cannot spread the disease in the population.

CARRIER: The animal is carrier and has one healthy and one mutant (disease) allele. When used in breeding, 50 percent of the offspring will receive the disease allele. Carriers will not become ill.

AFFECTED: The animal is affected and has two mutant (disease) alleles. When used in breeding, all offspring will receive the mutant allele from this animal. Affected animals will become ill.

H787 - TNS

Explanation about the result:

NORMAL: The animal is free and has two healthy alleles. When used in breeding, this animal will not become ill due to the disease. It cannot spread the disease in the population.

CARRIER: The animal is carrier and has one healthy and one mutant (disease) allele. When used in breeding, 50 percent of the offspring will receive the disease allele. Carriers will not become ill.

AFFECTED: The animal is affected and has two mutant (disease) alleles. When used in breeding, all offspring will receive the mutant allele from this animal. Affected animals will become ill.

H721 - Neuronal Ceroid Lipofuscinosis (NCL) 5

Explanation about the result:

NORMAL: The animal is free and has two healthy alleles. When used in breeding, this animal will not become ill due to the disease. It cannot spread the disease in the population.

CARRIER: The animal is carrier and has one healthy and one mutant (disease) allele. When used in breeding, 50 percent of the offspring will receive the disease allele. Carriers will not become ill.

AFFECTED: The animal is affected and has two mutant (disease) alleles. When used in breeding, all offspring will receive the mutant allele from this animal. Affected animals will become ill.

H367 - IGS (Selective Cobalamin Malabsorption) 2

Explanation about the result:

NORMAL: The animal is free and has two healthy alleles. When used in breeding, this animal will not become ill due to the disease. It cannot spread the disease in the population.

VHL exercises the utmost care in performing each of its engagements. No party other than the principal may derive any rights from the results of these engagements, and the principal expressly indemnifies VHL in respect of any third-party claims. VHL policy provides that any complaints must be received within eight days of the completion of an engagement and imposes restrictions on liability. In that respect, VHL refers to its General Conditions, which are applicable to all engagements VHL performs and which were enclosed with the submission form. These General Conditions can also be reviewed at www.vhlgenetics.com. The work VHL performs is based on the material and/or data it receives from its principal. This report may only be copied in its entirety. The organization is ISO:9001 certified for all her work. This test is based on PCR technology.

(Certificate nr: H56634/Date of issue: 16.10.2019) page 3 of 5 Agro Business Park 100,NL-6708 PW Wageningen - T.+31(0)317416402 - F.+31(0)317426117 - info@vhlgenetics.com - www.vhlgenetics.com

Chamber of commerce Arnhem 09112692 - VAT nr NL8088.07.973.B.01



a VHLGenetics company

CARRIER: The animal is carrier and has one healthy and one mutant (disease) allele. When used in breeding, 50 percent of the offspring will receive the disease allele. Carriers will not become ill.

AFFECTED: The animal is affected and has two mutant (disease) alleles. When used in breeding, all offspring will receive the mutant allele from this animal. Affected animals will become ill.

H673 - DM (partner lab)

Explanation about the result:

NORMAL: The animal is free and has two healthy alleles. When used in breeding, this animal will not become ill due to the disease. It cannot spread the disease in the population.

CARRIER: The animal is carrier and has one healthy and one mutant (disease) allele. When used in breeding, 50 percent of the offspring will receive the disease allele. Carriers will not become ill.

AFFECTED: The animal is affected and has two mutant (disease) alleles. When used in breeding, all offspring will receive the mutant allele from this animal. Affected animals will become ill.

H705 - Collie Eye Anomaly (CEA_CH, partnerlab)

Explanation about the result:

NORMAL: The animal is free and has two healthy alleles. When used in breeding, this animal will not become ill due to the disease. It cannot spread the disease in the population.

CARRIER: The animal is carrier and has one healthy and one mutant (disease) allele. When used in breeding, 50 percent of the offspring will receive the disease allele. Carriers will not become ill.

AFFECTED: The animal is affected and has two mutant (disease) alleles. When used in breeding, all offspring will receive the mutant allele from this animal. Affected animals will become ill.

H746 - Canine Malignant Hypertherm

Explanation about the result:

NORMAL: The animal is free and has two healthy alleles. When used in breeding, this animal will not become ill due to the disease. It cannot spread the disease in the population.

CARRIER: The animal is carrier and has one healthy and one mutant (disease) allele. When used in breeding, 50 percent of the offspring will receive the disease allele. Carriers will also become ill.

AFFECTED: The animal is affected and has two mutant (disease) alleles. When used in breeding, all offspring will receive the mutant allele from this animal. Affected animals will become ill.

H629 - MDR1 (partner lab)

Explanation about the result:

NORMAL: The animal is free and has two healthy alleles. When used in breeding, this animal will not become ill due to the disease. It cannot spread the disease in the population.

CARRIER: The animal is carrier and has one healthy and one mutant (disease) allele. When used in breeding, 50 percent of the offspring will receive the disease allele. Carriers will not become ill.

AFFECTED: The animal is affected and has two mutant (disease) alleles. When used in breeding, all offspring will receive the mutant allele from this animal. Affected animals will become ill.

H849 - PLL

Explanation about the result:

NORMAL: The animal is free and has two healthy alleles. When used in breeding, this animal will not become ill due to the disease. It cannot spread the disease in the population.

CARRIER: The animal is carrier and has one healthy and one mutant (disease) allele. When used in breeding, 50 percent of the offspring will receive the disease allele. Carriers will not become ill.

AFFECTED: The animal is affected and has two mutant (disease) alleles. When used in breeding, all offspring

VHL exercises the utmost care in performing each of its engagements. No party other than the principal may derive any rights from the results of these engagements, and the principal expressly indemnifies VHL in respect of any third-party claims. VHL policy provides that any complaints must be received within eight days of the completion of an engagement and imposes restrictions on liability. In that respect, VHL refers to its General Conditions, which are applicable to all engagements VHL performs and which were enclosed with the submission form. These General Conditions can also be reviewed at www.vhlgenetics.com. The work VHL performs is based on the material and/or data it receives from its principal. This report may only be copied in its entirety. The organization is ISO:9001 certified for all her work. This test is based on PCR technology.

(Certificate nr: H56634/Date of issue: 16.10.2019) page 4 of 5 Agro Business Park 100,NL-6708 PW Wageningen - T.+31(0)317416402 - F.+31(0)317426117 - info@vhlgenetics.com - www.vhlgenetics.com

Chamber of commerce Arnhem 09112692 - VAT nr NL8088.07.973.B.01



a VHLGenetics company

will receive the mutant allele from this animal. Affected animals will become ill.

H644 - Cystinuria, type II - A

Explanation about the result:

NORMAL: The animal is free and has two healthy alleles. When used in breeding, this animal will not become ill due to the disease. It cannot spread the disease in the population.

CARRIER: The animal is carrier and has one healthy and one mutant (disease) allele. When used in breeding, 50 percent of the offspring will receive the disease allele. Carriers will not become ill.

AFFECTED: The animal is affected and has two mutant (disease) alleles. When used in breeding, all offspring will receive the mutant allele from this animal. Affected animals will become ill.

H388 - Sensory Neuropathy

Explanation about the result:

NORMAL: The animal is free and has two healthy alleles. When used in breeding, this animal will not become ill due to the disease. It cannot spread the disease in the population.

CARRIER: The animal is carrier and has one healthy and one mutant (disease) allele. When used in breeding, 50 percent of the offspring will receive the disease allele. Carriers will not become ill.

AFFECTED: The animal is affected and has two mutant (disease) alleles. When used in breeding, all offspring will receive the mutant allele from this animal. Affected animals will become ill.

VHL exercises the utmost care in performing each of its engagements. No party other than the principal may derive any rights from the results of these engagements, and the principal expressly indemnifies VHL in respect of any third-party claims. VHL policy provides that any complaints must be received within eight days of the completion of an engagement and imposes restrictions on liability. In that respect, VHL refers to its General Conditions, which are applicable to all engagements VHL performs and which were enclosed with the submission form. These General Conditions can also be reviewed at www.vhlgenetics.com. The work VHL performs is based on the material and/or data it receives from its principal. This report may only be copied in its entirety. The organization is ISO:9001 certified for all her work. This test is based on PCR technology.

(Certificate nr: H56634/Date of issue: 16.10.2019)

page 5 of 5 <end of report>

Agro Business Park 100,NL-6708 PW Wageningen - T.+31(0)317416402 - F.+31(0)317426117 - info@vhlgenetics.com - www.vhlgenetics.com Chamber of commerce Arnhem 09112692 - VAT nr NL8088.07.973.B.01