Hera

Igenity® Canine Wellness Results

Animal Hospital

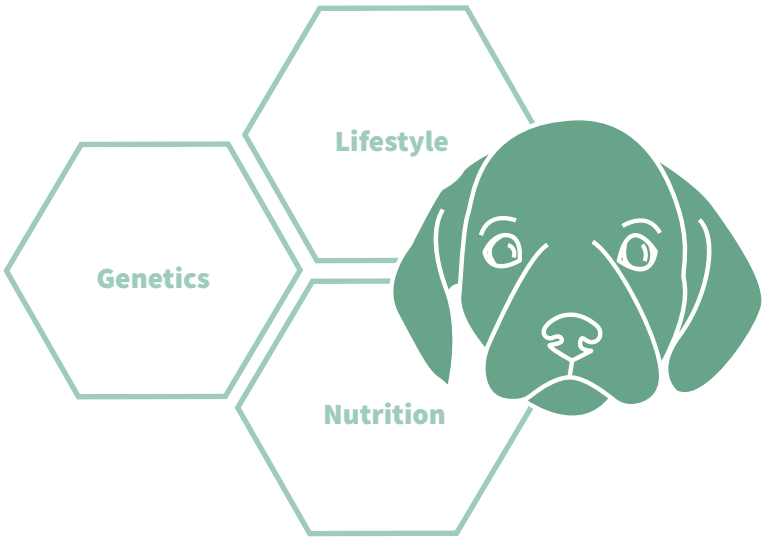
Veterinarian Name: Dr. Igenity

Pet Parent: Jane Doe

Lab ID:123456789

Date: 8/06/2020

The enclosed results include insights into the genetic component of common canine health conditions. Results should be discussed with a veterinarian in order to design a personalized health care plan for Hera. Informed, personalized recommendations regarding diet, diagnostic screening and lifestyle will help enable a longer and happier life for Hera and their family.



Results:

Bleeding Disorders
Variant not detected

Exercise-induced Collapse
Variant not detected

Urate Urinary Stones
Variant not detected

Lens Luxation
Variant not detected

Mammary Tumors
Variant not detected

Pancreatitis
Potential increased risk

Intervertebral Disc Disease
Increased risk

Social Behavior
0 of 4 variants detected

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Hera

does not have an increased risk for prolonged bleeding based on thevariants tested

Factor VII Deficiency
Variant not detected

von Willebrand Disease Type I
Variant not detected

von Willebrand Disease Type II
Variant not detected

Clinical risk for bleeding disorders is dependent onthe mode of inheritance for specific genetic variants- visit vet.NEOGEN.com to learn more

Bleeding Disorders

There are many inherited conditions that can affect an individual dog's clotting ability. Igenity Canine Wellness focuses on several inherited clotting disorders that may go un-diagnosed in puppies but are manageable when the veterinarian is fully informed about genetic risk. Normal pre-surgical blood work is unlikely to detect the conditions.

Igenity Canine Wellness includes tests for the most common clotting disorders in dogs:

Factor VII deficiency
Initially discovered in beagles, but also affects other breeds.

von Willebrand's disease Type I and II
Type I can be found in many purebred and mixed breed dogs, while TypeII is specific to German Shorthaired Pointers and German Wirehaired Pointers.

Surgical Safety
Additional diagnostic testing can be done to assess clotting ability prior to surgery or other procedures.

Avoid medications that interfere with clotting:

- Amoxicillin
- Ampicillin
- Antihistamines
- Aspirin
- Carprofen
- Clopidogrel
- Deracoxib
- Estrogen
- Firocoxib
- Heparin
- Ibuprofen
- Meloxicam
- NSAID's
- Penicillin
- Phenothiazine tranquilizers
- Phenylbutazone
- Sulfa antibiotics
- Theophylline

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Hera

does not have an increased risk for Exercise-induced Collapse based on the variant tested

Variant not detected

Exercise-induced collapse is inherited as an autosomal recessive trait. Carriers are not at anincreased risk for collapse but could pass on the riskallele to their offspring.

Exercise-induced Collapse

Exercise-induced collapse (EIC) is a genetic condition characterized by episodes of ataxia and collapse after 5 to 15 minutes of strenuous exercise and excitement. Many times, dogs recover within about 30 minutes, but sometimes these events can be fatal.

Prior to an episode, dogs with EIC appear normal and healthy. Based on a result for increased risk of EIC, lifestyle adjustments can be made to help avoid a fatal event.

80% **of at risk dogs will have an episode of collapse before four years of age.**

14% **of Labrador Retrievers could be at risk for EIC. Ongoing research has shown that other lines and breeds of dogs can also be affected.**

Stop exercise at the first sign of weakness or staggering

Avoid activities such as hunting and field trials or exercising in hot weather for at-risk dogs

When monitored closely, affected dogs can live normal healthy lives with proper lifestyle adjustments.

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Hera

does not have an increased risk forurate urinary crystals or stones basedon the variant tested

Variant not detected

Hyperuricosuria is inherited as an autosomal recessive trait. Carriers do not have an alteration in purine metabolism, which causes increased risk, but could pass on the risk allele to their offspring.

Urate Crystals & Bladder Stones

Hyperuricosuria results in a variation in protein metabolism which results in higher levels or uric acid in the blood and urine. This condition could lead to build up of urate crystals or stones in the bladder.

Relevant breeds Dalmatians & many others

Considerations Urate stones can also be caused by other conditions, such as liver dysfunction or portosystemic shunts.

Managing patients with increased risk

Monitor urinary health

- Urine sediment to screen for crystals
- Urine pH ≥7
- Urine specific gravity ≥1.020
- Ultrasound to detect stones early

Dietary considerations

Feed protein sources that are lower in protein (purines) and consider canned or wet food to increase water intake.

Eggs | Rice | Whey (dairy casein) | Wet dog food

Watch for signs of urinary discomfort including straining to urinate or blood in the urine.

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Hera

does not have an increased risk for lens luxation based on the variant tested

Variant not detected

Primary lens luxation is inherited as an autosomal recessive trait, however carriers do appear to have a slightly increased risk of lens luxation which could be due to haploinsufficiency

Lens Luxation

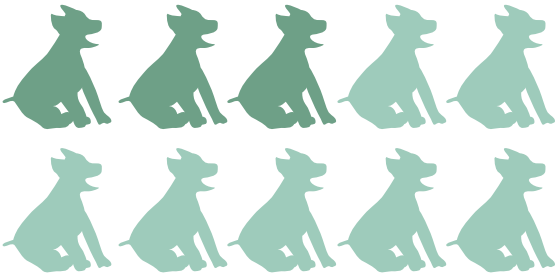
Lens luxation can be due to a number of conditions, one of which is a genetic variant resulting in increased risk for primary lens luxation.

Displacement of the lens can be quite painful and early intervention is key to successful treatment. Prepare pet parents of at-risk animals to watch for early warning signs and incorporate ocular health screening into exam visits.

Not all cases of lens luxation are due to genetics.

Secondary causes of lens luxation:

- Injury or trauma
- Glaucoma
- Intraocular tumors
- Anterior uveitis
- Collagen disorders
- Idiopathic (cause unknown)



The prevalence of carriers is as high as 30% in some popular dog breeds.

Anterior displacement of the lens is an emergency. Have a plan in place to detect and treat symptoms.

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Hera
does not have an increased risk for mammary cancer based on the variants tested

Mammary Cancer

Genetics is a factor in development of mammary cancer, likely due to many different genes and DNA loci. Risk can be significantly decreased by early ovariohysterectomy (spaying.) Early detection can aid in successful treatment via surgery or chemotherapy.

Risk variants detected by this genetic test were initially discovered in agroup of English Springer Spaniels from Sweden. Impact of the variants in other breeds is unknown at this time.

91% of affected dogs in the initial study carried at least one risk allele.

Early spay dramatically decreases risk

1 in 4 unspayed females will be diagnosed with mammary cancer in their lifetime

The risk goes down to 8% if spayed prior to the second heat cycle

The risk goes down even further to 0.5% if spayed prior to first heat cycle

The best prognosis for mammary cancer is when tumors are identified and treated early. Monitoring for masses at home and special evaluation during veterinary clinic exams will facilitate early diagnosis and intervention.

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Hera
may be at increased risk for Pancreatitis based on the variants tested

Pancreatitis

Pancreatitis is inflammation of the pancreas, which can be acute or chronic. Chronic pancreatitis can be difficult to detect and likely goes un-diagnosed in many canine patients.

Initial research results

Miniature Schnauzers that were presented with pancreatits were **9.5 times** more likely to be affected with one of the risk variant alleles.

Warning signs of pancreatitis may not always be obvious to pet owners at onset and can be mistaken for other less serious conditions. Education of pet owners on early symptoms may expedite presentation to the veterinary clinic and improve chances of successful treatment.

Monitor for these symptoms:

Fever | Diarrhea | Poor Appetite

Fatigue | Vomiting | Stomach Pain

Avoid feeding table scraps, especially those high in fat. Keep at-risk patients within a healthy weight range.

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Hera
is at risk for disc herniation

Variants detected
AFFECTED: 2 copies of the risk allele in the FGF4 gene

IVDD is inherited as an autosomal dominant trait. Dog with one or two copies of the risk allele are at increased risk for disc herniation.

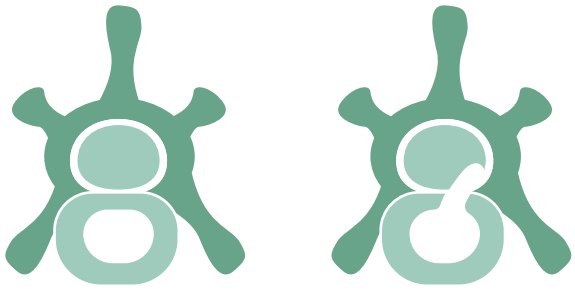
Intervertebral Disc Disease (IVDD)

Intervertebral disc disease (IVDD) is a premature degeneration of the intervertebral disc, the cushion located between the bones of the spine in the back (vertebrae).

This degeneration can lead to disc rupture or herniation, often known as a “slipped disc,” which is very painful and can have serious implications on quality of life.

Lifestyle adjustments for dogs at risk

- Maintain a healthy weight
- Avoid jumping on or off furniture
- Engage in low-impact exercise rather than rough play
- Use a harness rather than a collar for walks on leash



Healthy Spinal Cord | Hansen’s Type I IVDD

Seek medical treatment immediately if pet has difficulty walking or neck/back pain.

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Hera

Carries a total of 0 variants

Variants not detected

Carries 0 variants at the CFA 6.66 locus.

18% of dogs carry a single variant at this locus while 6% carry two variants. 76% of dogs do not carry a variant.

Variants not detected

carries 0 variants at the CFA 6.7 locus.

40% of dogs carry a single variant at this locus while 25% carry two variants. 35% of dogs do not carry a variant.

Social Behavior

Behavior is a complex trait shaped by both environment and genetics. Research done at Princeton University has revealed genetic markers correlated to increased social interaction of both dogs and wolves with humans, or hypersociability.

How to use the test:

Understanding the genetic predisposition for behavior can help pet parents provide an environment where their pets will be happy and thrive. Here are some examples of lifestyle adjustments that can be made based on results:

Customize vet visits and exams based on patient's social preferences.

Dogs that carry a higher number of mutations may prefer an environment where someone is home during the day. Consider daycare or drop-in visits.

Social behavior predisposition could influence a pet parent's choice for a boarding facility, in-home care or other options while away from home.

Some dogs may enjoy attending events with lots of people, while others may prefer to stay home or go to play independently.

Remember that these traits and tendencies are a genetic predisposition. Training and socialization can help a pet feel comfortable outside their natural comfort zone.

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