



AMERICAN
KENNEL CLUB®

8051 Arco Corporate Drive
Suite 100
Raleigh, NC 27617-3390
www.akc.org

November 7, 2023

DEAR JOHN HELMUTH,

Congratulations on your new Cavalier King Charles Spaniel and welcome to the world of purebred dogs. Your AKC registration dollars support numerous AKC efforts to benefit dogs and dog owners. By registering your dog with the AKC, you supported valuable programs such as Pet Disaster Relief, the AKC Canine Health Foundation, the AKC Kennel Inspection Program, public education, canine legislation, and DNA parentage verification.

AKC registration provides wonderful opportunities for every purebred dog lover. The AKC Canine Good Citizen® program is an outstanding way to train your dog in basic obedience, valuable for every family. In addition, many dog owners enjoy the thrill of participating in AKC activities, shows and trials throughout the country. I invite you and your dog to get involved with the AKC!

Your registration also includes exclusive health benefits to help keep your new dog safe and healthy. Pet health insurance from AKC Pet Insurance offers affordable, comprehensive coverage and customizable plans that allow you to build a plan to meet your individual needs and budget. For more information and to get a quote, visit www.akcpetinsurance.com or call 866-725-2747.†

Please note, if you ordered multiple items at the time of registration, they will be mailed separately and should arrive shortly. These include the AKC Certified Pedigree, the Dog Care and Training video, *Family Dog* magazine, and the AKC collar tag. If you did not order a Pedigree, you still have the opportunity to do so. An order form is provided on the back of this letter.

All of us want to be responsible dog owners. To help, the AKC offers a wealth of information at www.akc.org. Our site lists national and local dog clubs and AKC Canine Good Citizen® evaluators. Please visit us online and on Facebook and Twitter. If we can be of further service to you, please contact us by phone at 919-233-9767 or by email at info@akc.org.

Sincerely,

Dennis B. Sprung
President and Chief Executive Officer

Insurance is underwritten and issued by Independence American Insurance Company (rated A- "Excellent" by A.M. Best) with offices at 11333 N. Scottsdale Rd, Suite 160, Scottsdale, AZ 85254. Insurance plans are administered by PetPartners, Inc. (PPI), a licensed agency (CA agency #OF27261). "AKC Pet Insurance" is a marketing name used by PPI and is not an AKC business nor an insurer. AKC does not offer or sell insurance plans. "AKC" and its related trademarks are used by PPI under license; AKC may receive compensation from PPI. For complete details, refer to www.akcpetinsurance.com/sample-policies.

Please separate below and keep for your records.

AMERICAN KENNEL CLUB

NAME
SUSIE OF SVP

NUMBER
TS54360602

BREED
CAVALIER KING CHARLES SPANIEL

SEX
FEMALE

COLOR
BLENHEIM

DATE OF BIRTH
FEBRUARY 6, 2022

SIRE
SAWYER FORD
TS40620801 09-20 (OFA24G AKC DNA #V935829)

DAM
HALEY GRACE
TS29851701 11-17 (OFA62G)

BREEDER
LARRY HOCHSTETLER

OWNER

JOHN HELMUTH
1785 CR 1400E
SULLIVAN IL 61951-6968



AMERICAN
KENNEL CLUB®

CERTIFICATE ISSUED
NOVEMBER 7, 2023

This certificate invalidates all previous certificates issued.
If a date appears after the name and number of the sire and dam, it indicates the issue of the Stud Book Register in which the sire or dam is published.
For Transfer Instructions, see back of Certificate.

This Certificate issued with the right to correct or revoke by the American Kennel Club.

REGISTRATION CERTIFICATE

BREED ANCESTRY

 Cavalier King Charles Spaniel : 100.0%

GENETIC STATS

Predicted adult weight: 17 lbs







TEST DETAILS

Kit number: EM-36729752

Swab number: 31250650005218

BREED-RELEVANT RESULTS

Research studies indicate that these results are more relevant to dogs like Susie, and may influence her chances of developing certain health conditions.

 Degenerative Myelopathy, DM (SOD1A)	Increased risk
 Intervertebral Disc Disease (Type I) (FGF4 retrogene - CFA12)	Increased risk
 Episodic Falling Syndrome (BCAN)	Notable
 Dry Eye Curly Coat Syndrome (FAM83H Exon 5)	Clear
 Medium-Chain Acyl-CoA Dehydrogenase Deficiency, MCADD (ACADM, Cavalier King Charles Spaniel Variant)	Clear
 Muscular Dystrophy (DMD, Cavalier King Charles Spaniel Variant 1)	Clear

HEALTH REPORT

Increased risk result

Degenerative Myelopathy, DM

Susie inherited both copies of the variant we tested for Degenerative Myelopathy, DM
Susie is at increased risk for DM

How to interpret this result

Susie has two copies of a variant in SOD1 and is at risk for developing DM. As previously stated, this variant is incompletely penetrant, so while it predisposes Susie to developing DM, other genetic and environmental factors will determine whether Susie ultimately develops the disease. Please consult your veterinarian to discuss further diagnostic, monitoring, and supportive care options for Susie.'

What is Degenerative Myelopathy, DM?

This condition affects the spinal cord nerves involved in movement, most noticeably in the hind limbs. It is progressive, meaning symptoms worsen over time, including weakness, muscle loss, and changes in walking.

When signs & symptoms develop in affected dogs

Affected dogs do not usually show signs of DM until they are at least 8 years old.

Signs & symptoms

You may notice your dog scuffing the tops of his or her hind paws, or walking with a hesitant, exaggerated gait. In advanced cases, it can lead to weakness or near-paralysis of all four legs and widespread muscle wasting.

How vets diagnose this condition

Definitive diagnosis requires microscopic analysis of the spinal cord after death. However, veterinarians use clues such as genetic testing, breed, age, and other diagnostics to determine if DM is the most likely cause of your dog's clinical signs.

How this condition is treated

As dogs are seniors at the time of onset, the treatment for DM is aimed towards increasing their comfort through a combination of lifestyle changes, medication, and physical therapy.

Actions to take if your dog is affected

- Talk to your vet about your dog's degenerative myelopathy result, as it may influence how they monitor your dog's mobility and overall health, especially in their senior years.
- Keep your dog active with regular, low-impact exercise to help them maintain a healthy weight and support their mobility.
- Watch for changes in movement, such as wobbling, reluctance to jump, or dragging their back paws, and consult your vet if you notice any of these signs.
- Provide good traction in your home with rugs or mats to help prevent slipping as your dog ages. If mobility becomes difficult, ask your vet about supportive devices such as harnesses or wheelchairs.

HEALTH REPORT

Increased risk result

Intervertebral Disc Disease (Type I)

Susie inherited both copies of the variant we tested for Chondrodystrophy and Intervertebral Disc Disease, CDDY/IVDD, Type I IVDD. Susie is at increased risk for Type I IVDD.

How to interpret this result

Susie has two copies of an FGF4 retrogene on chromosome 12. In some breeds such as Beagles, Cocker Spaniels, and Dachshunds (among others) this variant is found in nearly all dogs. While those breeds are known to have an elevated risk of IVDD, many dogs in those breeds never develop IVDD. For mixed breed dogs and purebreds of other breeds where this variant is not as common, risk for Type I IVDD is greater for individuals with this variant than for similar dogs.

What is Chondrodystrophy and Intervertebral Disc Disease, CDDY/IVDD, Type I IVDD?

This condition is associated with differences in body proportions, such as a longer back and shorter legs, and may increase the risk of spinal disc problems. Disc disease can vary in severity, from mild discomfort to more serious movement changes.

When signs & symptoms develop in affected dogs

Signs of CDDY are recognized in puppies as it affects body shape. IVDD is usually first recognized in adult dogs, with breed specific differences in age of onset.

Signs & symptoms

Research indicates that dogs with one or two copies of this variant have a similar risk of developing IVDD. However, there are some breeds (e.g. Beagles and Cocker Spaniels, among others) where this variant has been passed down to nearly all dogs of the breed and most do not show overt clinical signs of the disorder. This suggests that there are other genetic and environmental factors (such as weight, mobility, and family history) that contribute to an individual dog's risk of developing clinical IVDD. Signs of IVDD include neck or back pain, a change in your dog's walking pattern (including dragging of the hind limbs), and paralysis. These signs can be mild to severe, and if your dog starts exhibiting these signs, you should schedule an appointment with your veterinarian for a diagnosis.

How vets diagnose this condition

For CDDY, dogs with one copy of this variant may have mild proportional differences in their leg length. Dogs with two copies of this variant will often have visually longer bodies and shorter legs. For IVDD, a neurological exam will be performed on any dog showing suspicious signs. Based on the result of this exam, radiographs to detect the presence of calcified discs or advanced imaging (MRI/CT) to detect a disc rupture may be recommended.

How this condition is treated

IVDD is treated differently based on the severity of the disease. Mild cases often respond to medical management which includes cage rest and pain management, while severe cases are often treated with surgical intervention. Both conservative and surgical treatment should be followed up with rehabilitation and physical therapy.

Actions to take if your dog is affected

- Talk to your vet about your dog's chondrodystrophy and intervertebral disc disease result so you can discuss how it may influence their daily activities and lifestyle.
- This variant is very common in certain breeds, and many dogs with this result will not need any special accommodations because they are unlikely to develop symptoms. However, some breeds are at greater risk, and precautions may help reduce strain on the back and neck.
- Keep your dog fit with regular, low-impact exercise and maintain a healthy weight to support spinal health.

HEALTH REPORT

⊖ Notable result

Copper Toxicosis (Accumulating)

Susie inherited both copies of the variant we tested for Copper Toxicosis (Accumulating)

Susie is not known to be at increased risk for Copper Toxicosis (Accumulating)

What does this result mean?

We do not know whether this increases the risk that Susie will develop Copper Toxicosis (Accumulating).

Scientific Basis

Research studies for this variant have been based on dogs of other breeds. Not enough dogs with Susie's breed have been studied to know whether or not this variant will increase Susie's risk of developing this disease.

Impact on Breeding

Research into the clinical impact of this variant is ongoing. We recommend tracking this genetic result and incidence of Copper Toxicosis (Accumulating) in your breeding program and related dogs.

What is Copper Toxicosis (Accumulating)?

This condition affects the liver's ability to remove excess copper. Over time, copper can build up in the liver and damage liver cells. Both genetic and environmental factors play a role in how the condition develops.

When signs & symptoms develop in affected dogs

Signs typically develop in adults.

How vets diagnose this condition

Genetic testing, blood work, abdominal ultrasound, and surgical biopsy are all used to diagnose this condition.

How this condition is treated

Treatment includes a low copper diet and medical management to help bind excess copper. Antioxidant supplements may also be considered.

Actions to take if your dog is affected

- Talk to your vet about your dog's copper toxicosis result so you can discuss if dietary management or monitoring is indicated.
- Copper is an essential nutrient, but amounts can vary widely among commercial diets, so your vet may recommend a specific food or periodic testing to maintain safe levels.
- Many dogs with this result never develop clinical disease. Watch for signs that may indicate high copper levels, such as decreased appetite, vomiting, lethargy, or jaundice.
- Learn more about how the three variants for Copper Toxicosis are inherited and, if applicable, how results can be used in a breeding program here (<https://embarkvet.com/resources/embark-adds-copper-toxicosis-dna-test/>).

HEALTH REPORT

⊖ Notable result

Episodic Falling Syndrome

Susie inherited one copy of the variant we tested for Episodic Falling Syndrome

What does this result mean?

This variant should not impact Susie's health. This variant is inherited in an autosomal recessive manner, meaning that a dog needs two copies of the variant to show signs of this condition. Susie is unlikely to develop this condition due to this variant because she only has one copy of the variant.

Impact on Breeding

Your dog carries this variant and will pass it on to ~50% of her offspring. You can email breeders@embarkvet.com to discuss with a genetic counselor how the genotype results should be applied to a breeding program.

What is Episodic Falling Syndrome?

This condition causes episodes of muscle stiffness or spasm triggered by excitement, stress, or exercise. These episodes come from abnormal nerve signaling and typically resolve once the dog is calm or at rest.

When signs & symptoms develop in affected dogs

Signs first appear in puppies.

How vets diagnose this condition

Genetic testing, blood work, neurological tests, and clinical signs can be used to diagnose this condition.

How this condition is treated

Affected dogs usually recover within an hour of an episode, though the stiff limbs and gait may persist for several hours. However, they may overheat during an episode due to the uncontrollable muscle contractions, which could be life threatening. Medications are available to help control symptoms.

Actions to take if your dog is affected

- Talk to your vet about your dog's episodic falling syndrome result so you can plan appropriate care and monitoring.
- Avoid common triggers such as excitement, stress, or intense exercise, which can lead to brief episodes of stiffness or collapse.
- Keep your dog's environment calm and safe, and stop activity immediately if an episode occurs.
- With good management and awareness of their limits, most dogs with this condition can live relatively normal lives.

HEALTH REPORT

⊖ Notable result

Proportionate Dwarfism

Susie inherited one copy of the variant we tested for Proportionate Dwarfism

What does this result mean?

This variant should not impact Susie's health. This variant is inherited in an autosomal recessive manner, meaning that a dog needs two copies of the variant to show signs of this condition. Susie is unlikely to develop this condition due to this variant because she only has one copy of the variant.

Impact on Breeding

Your dog carries this variant and will pass it on to ~50% of her offspring. You can email breeders@embarkvet.com to discuss with a genetic counselor how the genotype results should be applied to a breeding program.

What is Proportionate Dwarfism?

This genetic variant may contribute to smaller adult size by affecting growth hormone activity. Other features, such as retained baby teeth, puppy-like coats, or low blood sugar, have been occasionally reported but can vary widely and may not be related.

When signs & symptoms develop in affected dogs

Dogs with this variant may never show clinical signs. Smaller stature may be noticeable if the puppy grows at a different rate than littermates without this variant. Low blood sugar is a potential issue common to most toy breeds but could persist beyond four months of age. Retained puppy teeth and puppy-like coats can only be noted at more than six months of age.

How vets diagnose this condition

Clinical history, genetic testing, and laboratory testing can be used to diagnose this form of Proportionate Dwarfism. Further research is needed to determine the full effects of this variant.

How this condition is treated

Our internal data suggests that most dogs with two copies of this variant will not require additional care than other toy breed puppies. If a complication occurs, your veterinarian may recommend various treatments, including correcting blood sugar or extracting retained baby teeth.

Actions to take if your dog is affected

- Talk to your vet about your dog's proportionate dwarfism result so you can discuss any monitoring that may be helpful as your dog grows.
- Most dogs with this result live normal, healthy lives, but puppies may occasionally experience low blood sugar, especially if they miss a meal or overexert themselves.
- Watch for signs of hypoglycemia such as unusual tiredness, weakness, or wobbliness. If this happens, offer a small meal or a bit of a sugar source like corn syrup or honey rubbed gently on the gums.
- If your dog does not improve within a few minutes or shows severe signs such as collapse, contact your vet right away.

INBREEDING AND DIVERSITY

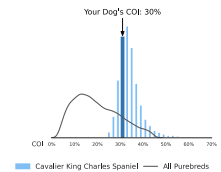
CATEGORY

RESULT

Coefficient Of Inbreeding

Our genetic COI measures the proportion of your dog's genome where the genes on the mother's side are identical by descent to those on the father's side.

30%

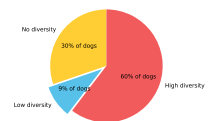


MHC Class II - DLA DRB1

A Dog Leukocyte Antigen (DLA) gene, DRB1 encodes a major histocompatibility complex (MHC) protein involved in the immune response. Some studies have shown associations between certain DRB1 haplotypes and autoimmune diseases such as Addison's disease (hypoadrenocorticism) in certain dog breeds, but these findings have yet to be scientifically validated.

Low Diversity

How common is this amount of diversity in purebreds:



MHC Class II - DLA DQA1 and DQB1

DQA1 and DQB1 are two tightly linked DLA genes that code for MHC proteins involved in the immune response. A number of studies have shown correlations of DQA-DQB1 haplotypes and certain autoimmune diseases; however, these have not yet been scientifically validated.

Low Diversity

How common is this amount of diversity in purebreds:

