



## Congratulations!

Molly is a Dalmatian, Chihuahua, German Shepherd Dog, Labrador Retriever, Siberian Husky Mix

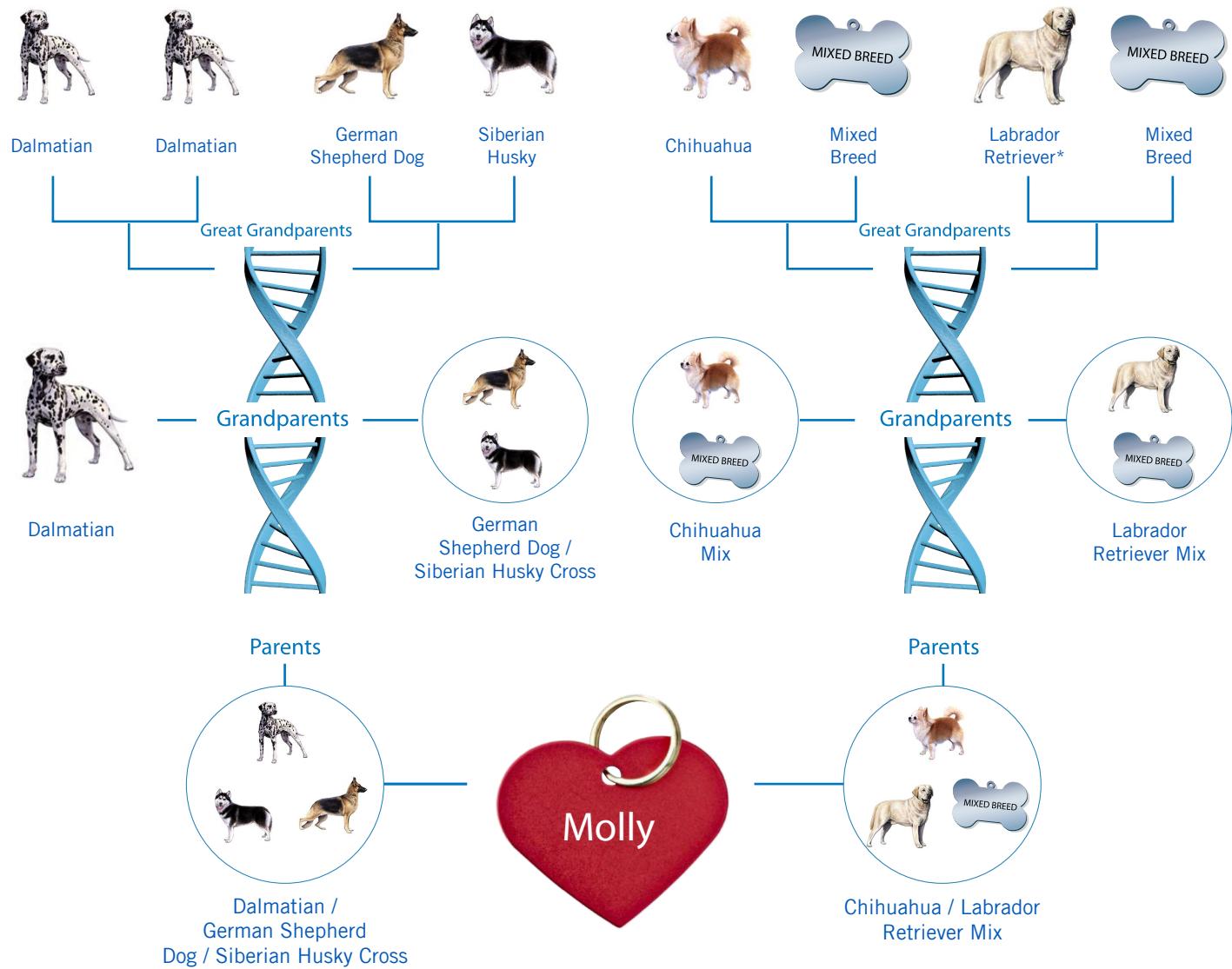
In the following pages, you will learn about:

- KEY BREEDS DETECTED
- KEY BREED HISTORY, APPEARANCE, & BEHAVIOR
- MDR1 SCREENING
- MIXED-BREED ANCESTRY
- HOW KEY PHYSICAL TRAITS ARE INHERITED
- ADDITIONAL INFORMATION



### YOU HAVE A DALMATIAN, CHIHUAHUA, GERMAN SHEPHERD DOG, LABRADOR RETRIEVER, SIBERIAN HUSKY MIX

The *Wisdom Panel* computer algorithm performed over seven million calculations using 11 different models (from a single breed to complex combinations of breeds) to predict the most likely combination of pure and mixed breed dogs in the last 3 ancestral generations that best fit the DNA marker pattern observed in Molly. The ancestry chart depicting the best statistical result of this analysis is shown in the picture below.



Interested in the Mixed Breed ancestry? Look for the Mixed Breed Signatures page later in the report!

\*Breed detected, however at a lower confidence. Such results are not included in accuracy calculations.

## DALMATIAN

Dalmatian



All dogs should be considered individual animals. Because each is a product of their unique environment and handling, they may exhibit different traits and behaviors than those listed here.

**HEIGHT:**

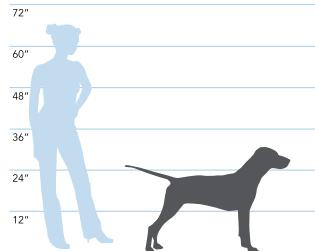
23 - 24 in

**WEIGHT (SHOW):**

40 - 65 lb

**WEIGHT (PET):**

39 - 75 lb

**EARS****MUZZLE****TAIL**

The Dalmatian is one of the oldest breeds in existence and it is believed that the breed dates back more than four thousand years. Evidence of the Dalmatian wasn't documented until the 1700's, although pictures of the breed date back thousands of years prior to first documentation. The exact origin of the Dalmatian is highly disputed; however, most people believe that the breed developed in Dalmatia, a region in Croatia bordering the eastern Adriatic Sea. The name Dalmatia comes from the ancient Illyrian language meaning "land of shepherds" and it was from this area that the breed received its name. Dalmatians were used to chase rats out of the fire stations and horse stables of old London. They also guided the horse-drawn fire wagons through city streets and safeguarded the fire equipment from vandalism and theft. This tradition endured even after the old wagons were replaced with more modern fire engines and today Dalmatians enjoy status as the iconic fire house dog. The first Dalmatian was registered with the American Kennel Club in 1888.

The Dalmatian is a white dog spotted with spots between the size of a dime and a half-dollar. The spots may be black or liver (which ranges from a light lemon to tan) with the nose sharing the color of the spots. The distribution of spots is generally even, though more generally on the ears.

**Do You Recognize Any of These Dalmatian Traits In Molly?**

- Intelligent, energetic, and alert dogs with great stamina.
- Respond well to reward-based training using treats or favorite toys.
- Enjoy dog sports such as agility, flyball, tracking, scent hurdling, and both rally and competitive obedience.
- Have a reputation of being good family dogs but can be aloof with strangers.

# CHIHUAHUA

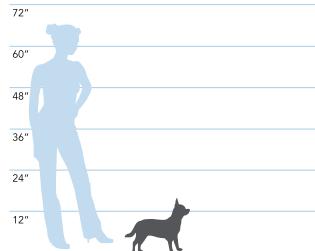
Chihuahua



All dogs should be considered individual animals. Because each is a product of their unique environment and handling, they may exhibit different traits and behaviors than those listed here.

**HEIGHT:**

6 - 9 in

**WEIGHT (SHOW):**

2 - 7.5 lb

**WEIGHT (PET):**

2 - 9 lb

**EARS****MUZZLE****TAIL**

The Chihuahua is one of the most ancient of dog breeds, with its origins dating back to the Mayan civilization. The breed is believed to have descended from the ancient Techichi, a dog that played an important role in both the Toltec and Aztec cultures. Some believe that the Chihuahua is a result of the crossing of the Techichi and the Chinese Crested, which came to South America from Alaska. Due to the destruction of the ancient civilizations, the breed faced extinction. However, remnants of the breed survived in Mexico and the Chihuahua was introduced to the United States in 1898. The Chihuahua was recognized as an official breed in 1904 by the American Kennel Club and by 1915, thirty Chihuahuas were registered in the States with that number jumping to over 25,000 by the early seventies.

The Chihuahua has a vast amount of variation partly due to the fact that any color or combination is permitted in the breed standard. The coat comes in either long or short hair, with traits including dark masks, merle, and white markings. The colors range from blacks to various silver and fawn shades.

**Do You Recognize Any of These Chihuahua Traits In Molly?**

- Alert, active, and often playful dogs.
- Small size makes it easy for them to live in smaller places such as apartments.
- Responds well to reward-based training using treats or favorite toys.
- May be suspicious of strangers or bark at other dogs when intimidated by their size.

# GERMAN SHEPHERD DOG

German Shepherd Dog



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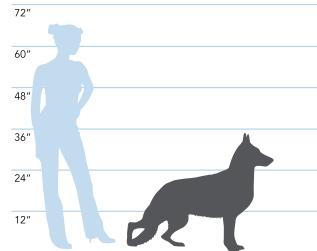
22 - 26 in

**WEIGHT (SHOW):**

48 - 89 lb

**WEIGHT (PET):**

48 - 97 lb



**EARS**



**MUZZLE**



**TAIL**



The modern day German Shepherd breed is a cross between the long-haired, short-haired and wire-haired shepherd dogs of the German regions of Württemberg, Thuringia and Bavaria. Initially bred for herding, due to their strength, intelligence and excellent temperament, they became popular as guard dogs, guide dogs, search and rescue dogs, police dogs and military dogs. Max Emil Von Stephanitz sought to protect and refine the German Shepherd breed at the end of the nineteenth Century. German Shepherds were used as German police and military dogs during World Wars I and II. Allied soldiers during World War I took notice of the Shepherd's use as messenger dogs or search and rescue dogs as they were very good at locating wounded soldiers. Some soldiers introduced the breed to their home countries and the popularity of the German Shepherd took off, making it one of the most popular breeds in the world today. The German Shepherd Dog was recognized by the American Kennel Club in 1908.

German Shepherd Dogs are generally a combination of black and tan, though more or less black may be seen. There is also a "gray" variant where the tip of the hair is black and the rest is tan. A black mask and a black "saddle" are both common traits in this breed. Although not an AKC variant, all-white German Shepherds exist as a separate FCI breed. The coat comes in long and short varieties.



## Do You Recognize Any of These German Shepherd Dog Traits In Molly?

- Personalities can vary from calm and watchful/observant to energetic.
- Enjoy participating in dog sports such as agility, tracking, flyball, and competitive obedience.
- Eager to learn and respond well to reward-based training.
- There have been reported incidents of German Shepherd Dogs being aggressive with other pets or people.

# LABRADOR RETRIEVER

Labrador Retriever



All dogs should be considered individual animals. Because each is a product of their unique environment and handling, they may exhibit different traits and behaviors than those listed here.

**HEIGHT:**

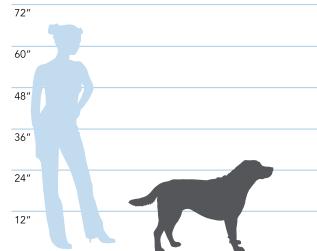
21 - 24 in

**WEIGHT (SHOW):**

55 - 66 lb

**WEIGHT (PET):**

49 - 77 lb

**EARS****MUZZLE****TAIL**

The Labrador Retriever can trace its roots to the coast of Newfoundland, Canada. The breed dates back to at least the seventeenth century when they were known as the "Lesser Newfoundland." The breed is believed to have descended from the extinct "St. John's Water Dog" which was a cross between native water dogs and the Newfoundland. Labrador Retrievers were initially trained to retrieve fishing nets from the cold waters of the North Atlantic. Fisherman brought them to England in the nineteenth century where they were lauded for their swimming, retrieving and hunting skills. The Earl of Malmesbury is believed to have coined the name Labrador in order to differentiate them from their Newfoundland ancestors. During the 1800's, a heavy dog tax in Canada and quarantine laws in Britain drastically cut the number of Labradors in the U.K., but a good breeding program replenished the stock. Labrador Retrievers were recognized by the American Kennel Club in 1917.

The Labrador Retriever comes in solid black, chocolate, and yellow. The yellow varies from a pale cream to a rich red fox color. Some Labradors also have white chest blazes. The Dudley variant is where the nose is pink, though this is quite rare. Non-AKC registries sometimes recognize a Silver Variant though this may be classed as chocolate by the AKC.

**Do You Recognize Any of These Labrador Retriever Traits In Molly?**

- Usually happy-go-lucky, calm, or easygoing dogs, though some may be energetic.
- Usually friendly and are generally good family dogs.

- Labrador Retrievers enjoy dog sports such as agility, hunting, tracking, rally and competitive obedience; retrieving and swimming.

- Quite food motivated, which may make it easier to teach the Labrador Retriever to drop retrieved items not intended for play.

## SIBERIAN HUSKY

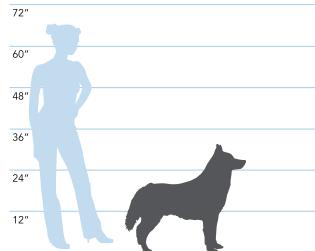
Siberian Husky



All dogs should be considered individual animals. Because each is a product of their unique environment and handling, they may exhibit different traits and behaviors than those listed here.

**HEIGHT:**

21 - 23 in



**WEIGHT (SHOW):**

35 - 60 lb

**WEIGHT (PET):**

34 - 67 lb

**EARS**



**MUZZLE**

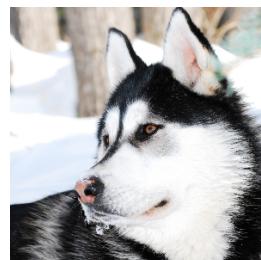
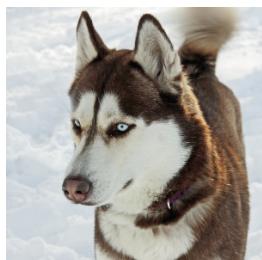


**TAIL**



The Siberian Husky is an ancient breed that has a long history of helping mankind. The breed is believed to have started with the Chukchi tribe of Siberia, though various other tribes are occasionally credited with its development. The Siberian Husky has been used for a number of purposes throughout history, including herding of reindeer, pulling sleds and keeping children warm. This breed was made famous in 1925 when they were used to deliver diphtheria serum after a city was stricken by an epidemic. They were also used for transporting various other medications to the ill. The Siberian Husky found its way to America in 1909 and since that time the popularity of the breed has grown significantly. The Siberian Husky was not recognized by the American Kennel Club until 1930. Ironically, that is the same year in which the exportation of this breed was stopped by the Soviet government, who closed the borders of Siberia to external trade.

The Siberian Husky breed standard permits any color, though the dog can be black, silver, or a variety of tans. These are generally shaded and mixed with white markings leading to varied wolfish markings on the head and muzzle. Blue or amber eyes are possible.



### Do You Recognize Any of These Siberian Husky Traits In Molly?

- Active, social, and usually friendly dogs; often do well with children and other dogs.
- Stubborn tendencies may be lessened by using reward-based training involving small treats and favorite toys.
- Siberian Huskies are energetic dogs and participate in dog sports such as sledding, skijoring (pulling a skier), and carting.
- May engage in digging; might chase wildlife.





## What Does the Mixed-breed Ancestry Mean for MOLLY?

A portion of Molly's ancestry was predicted to be mixed beyond the three generations we test for. It is difficult to identify strong individual breed signals in this mixed portion, so we have listed the genetic breed groups with the strongest statistical likelihood below. The breed groups are listed in order of strength with the most likely at the top of the list.



The Terrier Group ancestors were bred to hunt and kill vermin. They are often characterized as feisty and energetic dogs whose sizes range from fairly small to much larger.

**Example Breeds:** Russell Terrier, Soft-coated Wheaten Terrier, Standard Schnauzer, Chihuahua, Miniature Pinscher



Dogs of the Guard Group were bred to guard people and property. They are often quick to learn and these intelligent, capable animals make solid companions.

**Example Breeds:** Boston Terrier, Boxer, Great Dane, American Staffordshire Terrier



This genetic group was bred for hard work in mountainous regions. Characterized by their thick coats and sturdy, larger builds they quickly became the invaluable working companions of people in endurance activities such as drafting and hauling.

**Example Breeds:** Bernese Mountain Dog, Saint Bernard, Leonberger, Newfoundland



The sporting group of breeds is incredibly diverse in personality and appearance, but can be characterized as a very sturdy group that was developed to work closely with people and in general have a very responsive nature and high intelligence.

**Example Breeds:** Cocker Spaniel, Golden Retriever, Poodle, Weimaraner



Detection Threshold

## MDR1 Screening Results

Condition	Gene	Mode of Inheritance	Test Results
Multi-Drug Sensitivity	MDR1	Dominant	Normal/Normal

Please be sure to share these results with your veterinarian at your first opportunity. They may be critical to the health care of your dog.

## Test Results Analysis

MDR1 Normal/Normal - These dogs have two copies of the normal MDR1 gene and do not have the MDR1 mutation. They will not pass on the mutation to their offspring. These dogs are not at increased risk for experiencing side effects from drugs that are pumped by P-glycoprotein.

## About MDR1

MDR1, or Multi-Drug Resistance-1 is a genetic mutation found in many of the herding breeds, some sight-hound breeds and many mixed breed dogs. The MDR1 gene is responsible for production of P-glycoprotein, which is a transport pump that plays an important role in limiting drug absorption and distribution (particularly to the brain), and in enhancing the excretion of many drugs used in dogs.

Some dogs, particularly herding breeds or mixed-breed dogs with herding breed ancestry have a mutation in the MDR1 gene that makes them defective in their ability to limit drug absorption and distribution. These dogs are also slower to eliminate drugs from the body that are normally transported by P-glycoprotein. All dogs have two copies of this gene, and dogs with mutations in both copies will be much more sensitive to many commonly used drugs. Even dogs with only one copy of the mutation, however, are more sensitive to drugs than dogs with two normal MDR1 genes. Therefore it is important to test your dog and share your results with your veterinarian so they can provide your dog with the best possible care.

For more information about MDR1 and a full list of drugs affected by MDR1 please visit:  
[http://www.wisdompanel.com/mdr1\\_disease\\_screening/](http://www.wisdompanel.com/mdr1_disease_screening/) or <http://vcpl.vetmed.wsu.edu>

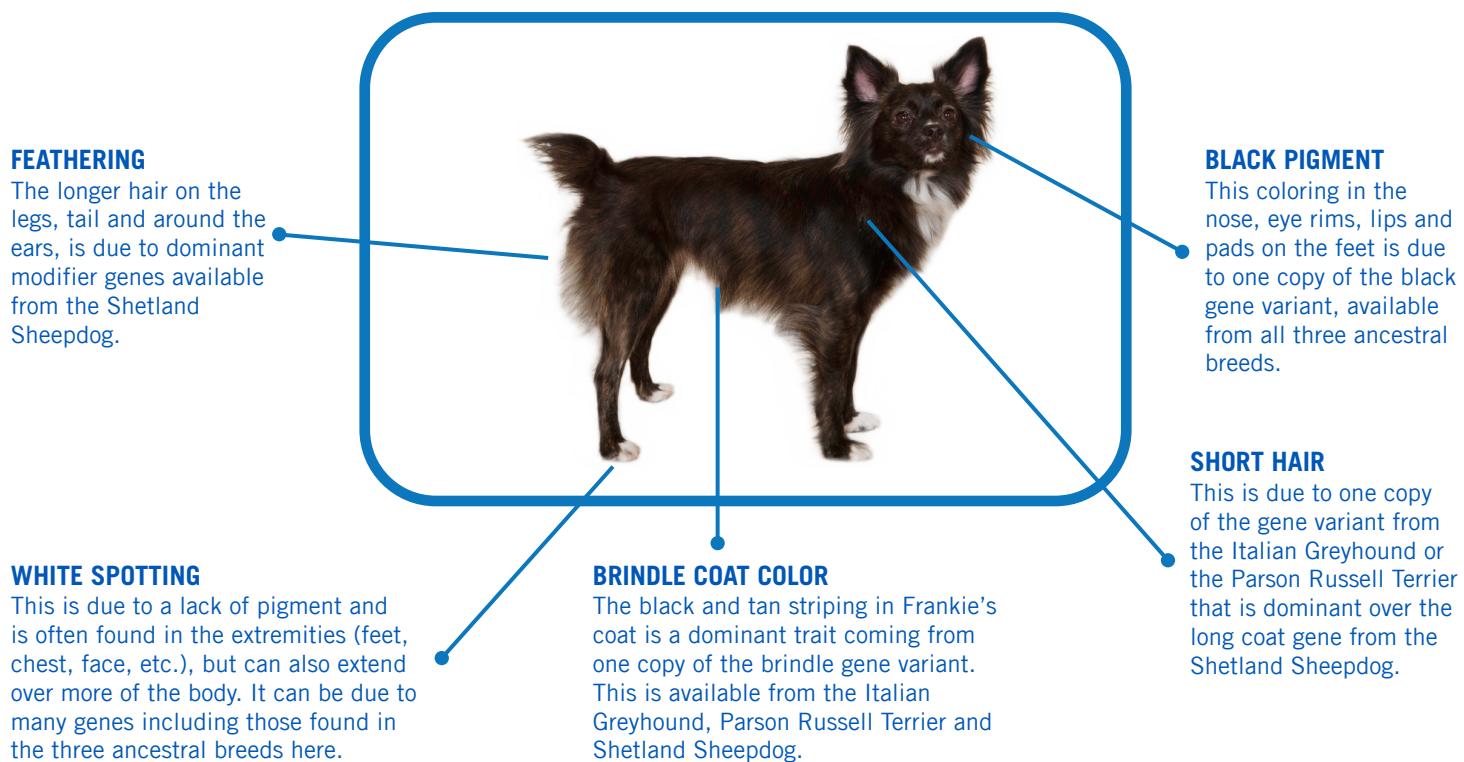
## Origins of the Test

The discovery of the mutation of the multi-drug resistant gene (MDR1) and its effects on multi-drug sensitivity in dogs, was made by Washington State University. It is a patent-protected diagnostic test offered by Washington State University that has been licensed to Mars Veterinary for use in the **Wisdom Panel** tests.

## The Influence of Breeds on Appearance

This report reveals the breeds detected in your dog's DNA. It also includes checklists of physical traits associated with these breeds. Breeds can combine their influences in countless, fascinating ways. It's the unique combination that makes your dog one-of-a-kind.

Your dog may behave like, or strongly resemble, just one of the breeds in its makeup. However much more commonly your dog's looks and personality will blend aspects of these breeds. In the example below you can see how many of Frankie's physical traits are due to a blending of breed influences.



**Wisdom Panel** found these breeds in our example dog **Frankie**:



Shetland Sheepdog



Italian Greyhound



Parson Russell Terrier



For additional information, watch an illustrative video at <http://youtu.be/UAcPOch4-C8> - it provides educational content around canine DNA, the basic blueprint for life, and a closer look at inherited genes.



## Predicted Adult Weight Profile

Based upon the breeds detected in Molly's ancestry and the genetic markers analyzed by **Wisdom Panel**, as well as the information provided that Molly is **female** and spayed, we have calculated the likely weight that Molly should reach when an adult. The **Wisdom Panel** target weight profile is presented as a range based on the unique mix and proportion of breeds detected.

- The adult weight is predicted to be between 39 - 62 lbs.

Many factors can influence an adult dog's weight, including sex and neuter status. Both of these factors have been used to calculate the predicted weight profile. Another major influence on canine weight is body condition score, which is a factor of your dog's lifetime nutrition and exercise regimen. For more information visit [WisdomPanel.com](http://WisdomPanel.com) and go to the "How it Works" section.

## Talk to Your Veterinarian

Congratulations on taking the steps to learn about Molly's ancestry and to understand what breeds are in your mixed breed dog using **Wisdom Panel!** Knowing your dog's breeds is more than a novelty, it is a medical necessity. Each breed in your dog's genetic paw print may have unique health concerns you should know about so that you can provide a lifetime of excellent care.



We recommend discussing your dog's ancestry report and genetic disease screen results with your veterinarian, as he or she can help you use your **Wisdom Panel** report to help better care for Molly. The next time you visit your veterinarian, consider asking these questions in addition to any you come up with on your own:

- Are there any specific issues that may be relevant to my dog's well-being?
- Are there any special techniques that may help in training a dog with this particular mix?
- Are there any particular dietary considerations to bear in mind for a dog like mine?

## How Wisdom Panel Works

The process started when you sent a sample to our laboratory, where the DNA was extracted from the cells and examined for the 321 markers that are used in the test. The results for these markers were sent to a computer, that evaluated them using a program designed to consider all of the pedigree trees that are possible in the last three generations. The trees considered include a simple pedigree with a single breed (a likely pure-bred dog), two different breeds at the parental level (a first-generation cross), all the way up to a complex tree with eight different great-grandparent breeds allowed.

Our computer used information from over 200 breeds, types and varieties from our breed database to fill these potential pedigrees. For each of the millions of combinations of ancestry trees built and considered, the computer gave each a score representing how well that selected combination of breeds matched to your dog's data. The pedigree with the overall best score is the one which is shown on the ancestry chart. Only breeds that reached our set confidence threshold for reporting are reported in the ancestry chart.



## ...Or Another Kit for You!

We'd like to say thank you for purchasing a **Wisdom Panel** DNA kit with \$15 off another kit for you, or to pass along to friends or family. Just visit [WisdomPanel.com](http://WisdomPanel.com) and use this promo code\* below at the time of checkout.

**PROMO CODE:  
FF5043250DW**



## Check Out the Dog Community!

Want to share your results with other **Wisdom Panel** users and dog lovers? We've got a Dog Community for you! Just visit [WisdomPanel.com](http://WisdomPanel.com) and click on "Dog Community" and you can search for dogs with the same mix of breeds as your own, or upload a photo and story about your own dog. It's easy, fun and a great way to share your results.

## Terms and Conditions

Each dog is unique and their physical and behavioral traits will be the result of multiple factors, including genetics, training, handling, and environment. Using a proprietary analysis and database, **Wisdom Panel** products can provide insight into the breed ancestry of your dog, the predicted genetic adult weight range, and breed-related risks of developing certain genetic diseases. A dog's weight range can vary significantly depending on age, diet, and exercise.

**Wisdom Panel** products are not intended to diagnose diseases or predict behavior in any particular dog. **Wisdom Panel** products are designed and intended to be used solely to identify the genetic breed makeup and predict the adult size of such a mixed-breed dog; to confirm the genetic profile observed in a tested dog matches a particular breed profile; or in certain products to identify risks of developing certain genetic diseases or conditions. No other purpose is intended, authorized, or permitted.

Upon receipt of the sample, Mars Veterinary will analyze the dog's DNA to determine the breed(s) present in its recent ancestry. In all cases this is done with a reasonable degree of certainty. Portions of DNA samples of some dogs may not include any purebreds and those ancestors will simply be noted as being mixed breeds. **Wisdom Panel** products are based upon the Mars Veterinary database of validated breeds. If a dog's ancestry contains breeds not represented in our database, the results may identify related breeds that are contained in the database.

In the unlikely event that it is not possible to determine breed history, predicted adult weight range, or breed related health risks, or that an error in the analysis occurs, liability by Mars Veterinary or related companies and individuals is expressly disclaimed. Damages, if any, are limited to the payment actually received by Mars Veterinary for the specified analysis at issue.

Mars Veterinary's testing procedures are designed to provide reliable and accurate results. Mars Veterinary is not responsible for any errors in obtaining the swab sample or for any injuries or loss that may occur as a result.

Many countries and provinces have breed-specific ordinances and laws that may require special handling or prohibit the ownership of some dogs with a particular breed in their genetic background. **Wisdom Panel** is not intended to be used by regulatory or animal control officials to determine whether a particular breed is legislated or banned in a particular country or province. Nor is **Wisdom Panel** intended to be used in any judicial proceedings. Rather, it is intended to be used as a tool or resource in determining a dog's genetic history. Neither Mars Veterinary nor any related company is responsible for compliance or notification regarding these matters.

Use of the tests acknowledges consent that Mars Veterinary may use any portion of the leftover sample, as well as the data collected, for research and development purposes only.

\*This code is good for one-time use, on [wisdompanel.com](http://wisdompanel.com) only. It cannot be combined with any other promotions or discounts and cannot be used on/in any other retailer site(s) or storefronts.



## STATEMENT OF AUTHENTICATION

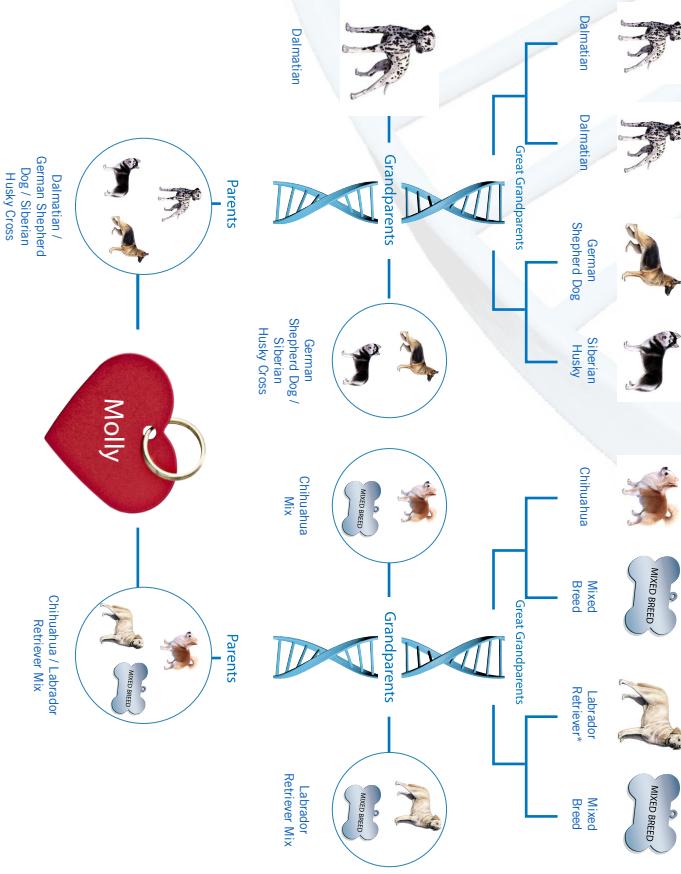
Owner's name: **Dwayne Domi**

Dog's name: **Molly**

Date: **January 14, 2016**

This certifies the authenticity of Molly's canine genetic background as determined following careful analysis of more than 300 genetic markers using **Wisdom Panel**. The purebred dog breed signature matches included in this analysis are those that were detected in the last three generations of Molly's ancestry using the proprietary breed detection algorithm at Mars Veterinary.

*Cynthia Cole*



**Molly is a Dalmatian, Chihuahua, German Shepherd Dog, Labrador Retriever, Siberian Husky Mix**

**Dr. Cynthia Cole DVM, PhD, DACVCP**

Research & Development Director