

# Wisdom Panel<sup>®</sup> 2.0

## Congratulations!

Max is a Labrador Retriever,  
Border Collie, German Shepherd  
Dog Mix

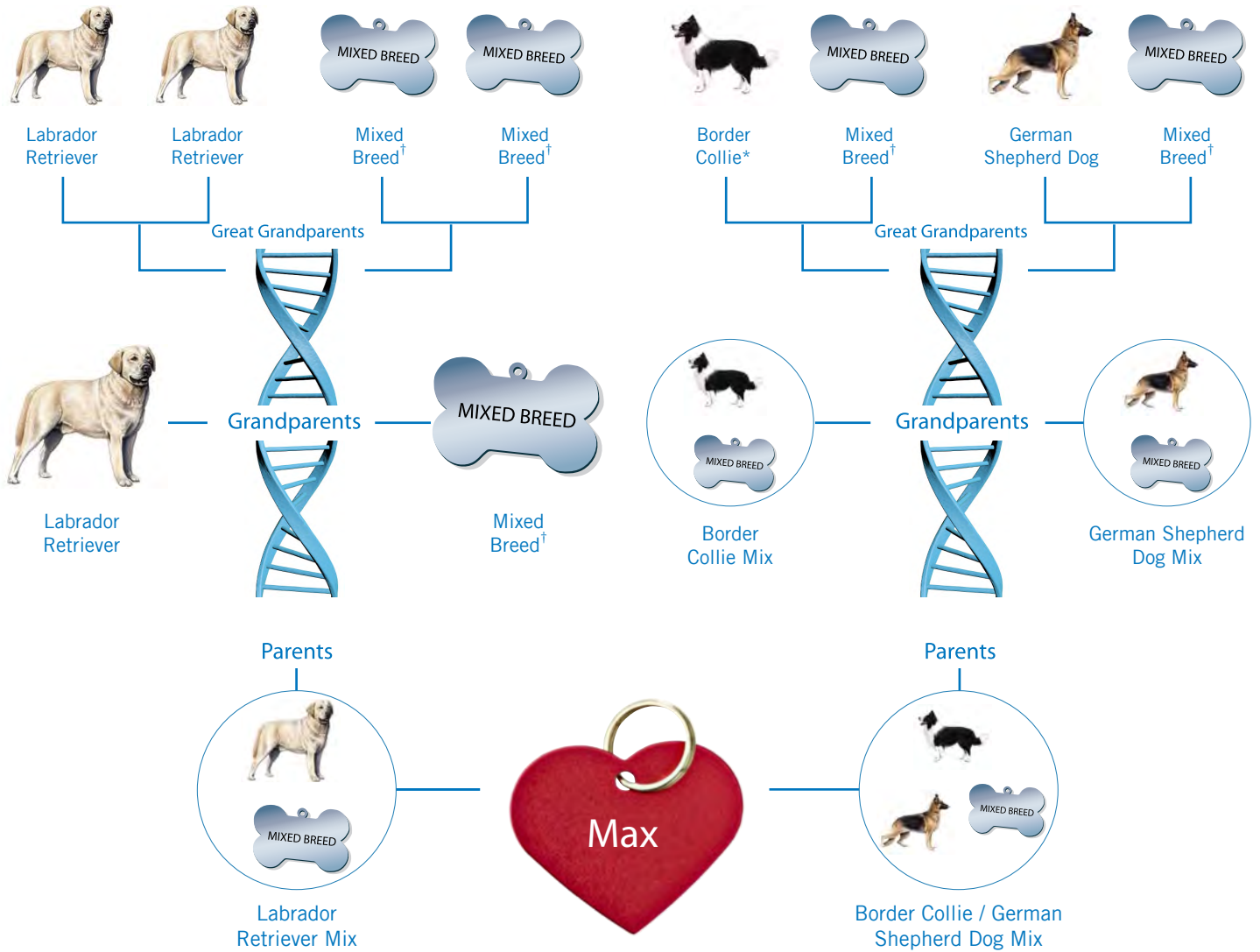
In the following pages, you will learn about:

- KEY BREEDS DETECTED
- KEY BREED HISTORY, APPEARANCE, AND BEHAVIOUR
- HOW KEY PHYSICAL TRAITS ARE INHERITED
- OTHER POSSIBLE MIXED BREED SIGNATURES
- PREDICTED WEIGHT
- JOIN THE DOG COMMUNITY!
- ADDITIONAL INFORMATION



## YOU HAVE A LABRADOR RETRIEVER, BORDER COLLIE, GERMAN SHEPHERD DOG 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 Max. 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.



# 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 behaviours than those listed here.



**HEIGHT:**

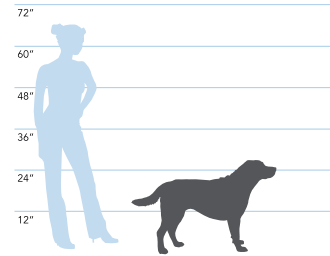
53 - 61 cm

**WEIGHT (SHOW):**

25 - 30 kg

**WEIGHT (PET):**

22 - 35 kg



**EARS**



**MUZZLE**

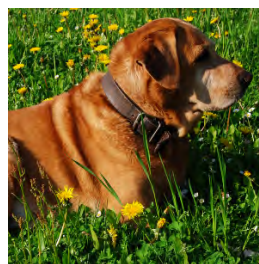
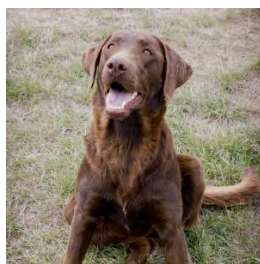
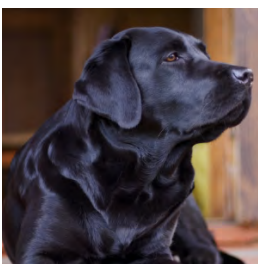


**TAIL**



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.

The Labrador Retriever comes in solid black, chocolate, and yellow. The yellow varies from a pale cream to a rich red fox colour. 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 recognise a Silver Variant though this may be classed as chocolate by the AKC.



**Do You Recognise Any of These Labrador Retriever Traits In Max?**

- 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.



### BORDER COLLIE



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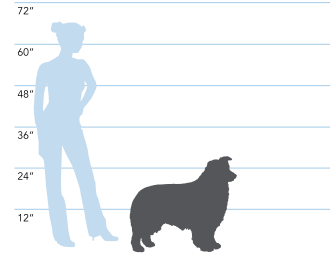
46 - 53 cm

**WEIGHT (SHOW):**

15 - 20 kg

**WEIGHT (PET):**

14 - 24 kg



**EARS**



**MUZZLE**

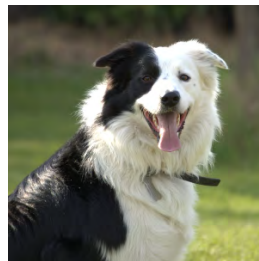
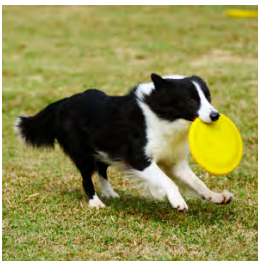


**TAIL**



The Border Collie can be traced back to the 1700's where they were traditionally used by shepherds in Scotland and England. They were developed for their herding skills and quickly acquired an excellent reputation. The Border Collie has keen herding instincts and their power over sheep has proven to be an asset to shepherds. In 1894, an effort was made by a farmer named Adam Telfer to tone down the breed's mannerisms. Telfer succeeded and today's Border Collies are descendants of Telfer's dogs. The Border Collie was introduced into the United States in the 1880's, where it played a key role in sheep ranching in the western states.

The Border Collie comes in a range of colours which includes solid, bicour, tricolour, merle (mottled) and sable. The solid colours include black, blue (a shade of grey), gold, brindle (black and brown stripes) and red. The white markings are generally but not always symmetrical.



**Do You Recognise Any of These Border Collie Traits In Max?**

- Very intelligent, obedient, active, energetic and watchful dogs.
- Enjoy activities including agility, flyball, herding, retrieving, Frisbee, rally, and competitive obedience.
- Eager to learn and respond well to reward-based training.
- May attempt to herd children and chase moving vehicles; the Border Collie stare may be perceived by other dogs as threatening.





# GERMAN SHEPHERD DOG

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



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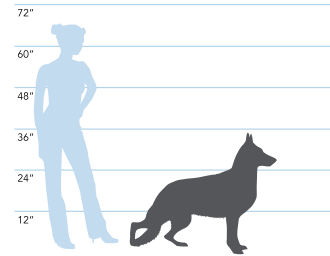
56 - 66 cm

**WEIGHT (SHOW):**

22 - 40 kg

**WEIGHT (PET):**

22 - 44 kg



**EARS**



**MUZZLE**

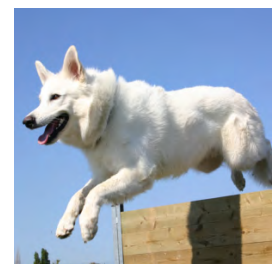
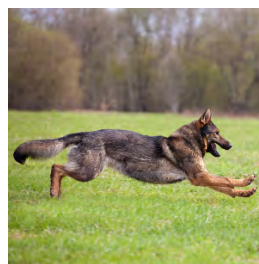
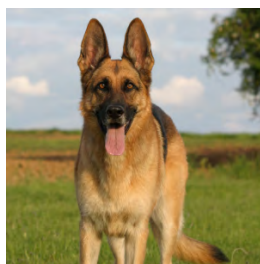


**TAIL**



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.

German Shepherd Dogs are generally a combination of black and tan, though more or less black may be seen. There is also a "grey" 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 Recognise Any of These German Shepherd Dog Traits In Max?**

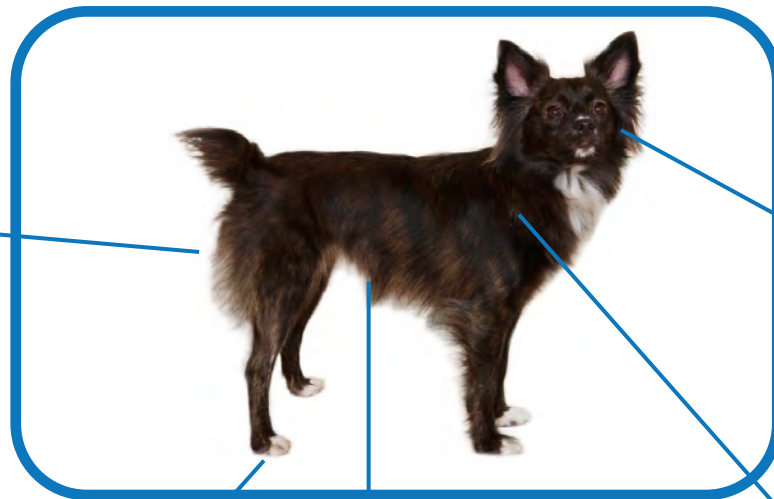
- Personalities can vary from calm and watchful/observant to energetic.
- Enjoy participating in dog sports such as agility, tracking, flyball, and competitive obedience.
- Eager to learn and respond well to reward-based training.
- There have been reported incidents of German Shepherd Dogs being aggressive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



**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.



**FEATHERING**

The longer hair on the legs, tail and around the ears, is due to dominant modifier genes available from the Shetland Sheepdog.

**BLACK PIGMENT**

This colouring in the nose, eye rims, lips and pads on the feet is due to one copy of the black gene variant, available from all three ancestral breeds.

**WHITE SPOTTING**

This is due to a lack of pigment and is often found in the extremities (feet, chest, face, etc.), but can also extend over more of the body. It can be due to many genes including those found in the three ancestral breeds here.

**BRINDLE COAT COLOUR**

The black and tan striping in Frankie’s coat is a dominant trait coming from one copy of the brindle gene variant. This is available from the Italian Greyhound, Parson Russell Terrier and Shetland Sheepdog.

**SHORT HAIR**

This is due to one copy of the gene variant from the Italian Greyhound or the Parson Russell Terrier that is dominant over the long coat gene from the Shetland Sheepdog.

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/UAcP0ch4-C8> - it provides educational content around canine DNA, the basic blueprint for life, and a closer look at inherited genes.



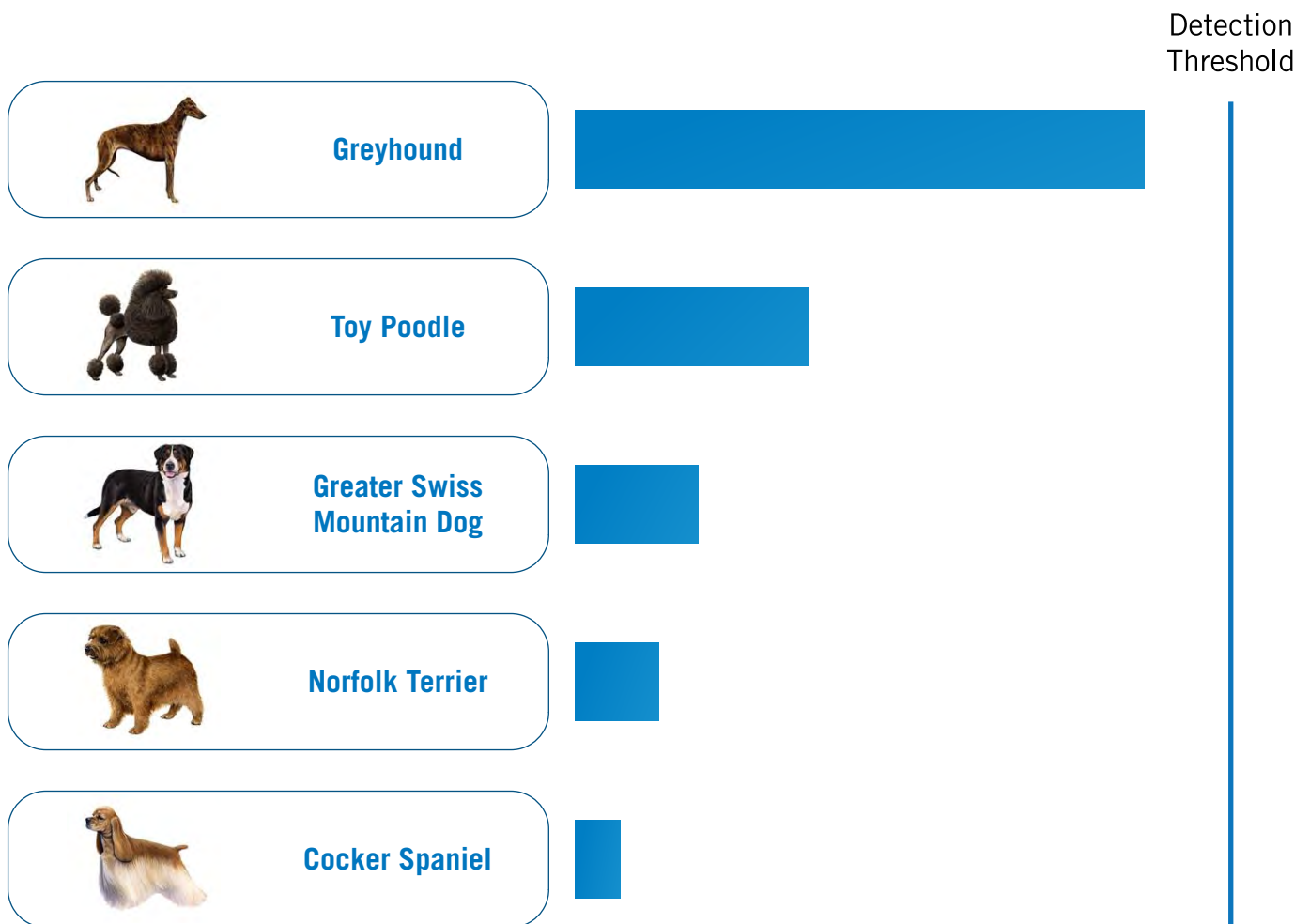


## What Does the Mixed Breed Ancestry Mean for MAX?

A portion of Max’s ancestry was predicted to be mixed beyond the three generations we test for. It is difficult to identify strong breed signals in this mixed portion, so we have listed the five breeds with the strongest statistical likelihood below.

The breeds are listed in order of strength with the most likely at the top of the list. One or more of these breeds **MAY HAVE** contributed to the genetic makeup in the mixed breed icon(s), but it is **highly unlikely that all these breeds** are present in Max’s ancestry.

Note that there could also be a breed or breeds present in the mixed breed component that cannot be detected with the current database of over 185 breeds.



For more information about how Wisdom Panel® is performed, please see the “How Wisdom Panel Works” section later in this report.



### The Virtual Dog Park

Want to share your results with other **Wisdom Panel®** users and dog lovers? We've got a Dog Community dedicated to sharing your dog's unique results and photos as well as viewing those of like breeds and make-up. There are literally hundreds of dogs to view and you can search by breed, or mix of breeds to see the wide variety of ways traits can be inherited - even within the same breed type.



### It's Easy and Fun to Use

Just visit [WisdomPanel.co.uk](http://WisdomPanel.co.uk) and click "Dog Community" and you can search for dogs with the same mix of breeds as your own. Once you have completed a **Wisdom Panel** test you can create a profile for your dog, upload his or her photo and share their results with the community. It's easy, fun and a great way to share your results with other dog lovers the world over.







### Predicted Adult Weight Profile

Based upon the breeds detected in Max's ancestry and the genetic markers analyzed by **Wisdom Panel®**, as well as the information provided that Max is **Male** and **Neutered**, we have calculated the likely weight that Max 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 26 - 35 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. If your dog's body condition is different from the ideal body condition score, we anticipate that your dog might be under (if underweight) or over (if overweight) the weight predicted by **Wisdom Panel**.

To learn more about assessing body condition score, please use the Royal Canin™ Body Condition Score Chart: <http://about.royalcanin.co.uk/dog-body-condition/>

More information on this can be found at:

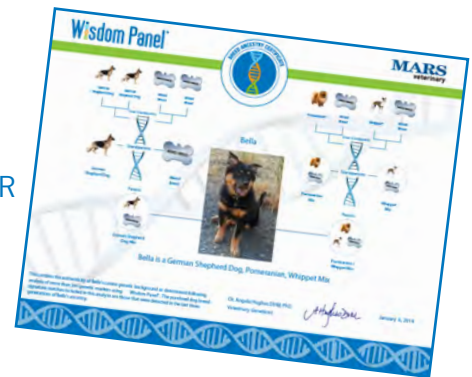
[http://www.royalcanin.ca/index.php/Your-Dog/Adult/blogindex\\_dog/Body-Condition-Scoring-in-Dogs](http://www.royalcanin.ca/index.php/Your-Dog/Adult/blogindex_dog/Body-Condition-Scoring-in-Dogs)



### Customize Your Dog's Certificate:

You can now include a photo of your dog on your certificate.

- Simply go to: [www.wisdompanel.co.uk](http://www.wisdompanel.co.uk) and click on the TEST STATUS CHECKER box at the top
- Enter your last name and test sample ID #
- Click on the UPLOAD PHOTO button
- Follow the pop-up instructions to upload your dog's photo



### Check Us Out on Social Media!



/doggieDNA



@WisdomPanel



@WisdomPanel



/WisdomPanel



### Thank You for Using Wisdom Panel® to Uncover the Story of Your Dog's Ancestry!

Congratulations on taking the steps to learn about Max'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 pooch's genetic paw print has 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 with your veterinarian, as he or she can help you use your **Wisdom Panel** report to help better care for Max. 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 185 breeds 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.

### Terms And Conditions

Each dog is unique and their physical and behavioural traits will be the result of multiple factors, including genetics, training, handling, and environment. Using a proprietary analysis and database, **Wisdom Panel® 2.0** product can provide insight into the breed ancestry of your dog. The **Wisdom Panel® 2.0** product is designed and intended to be used solely to either identify the genetic breed makeup and predict the adult size of such a mixed-breed dog or to confirm the genetic profile observed in a tested dog matches a particular breed profile. No other purpose is intended, authorized, or permitted.

Upon receipt of your sample, Mars Veterinary will analyze your dog's DNA to determine the breed(s) present in your dog's recent ancestry. In the case of a likely purebred dog, this will involve a comparison of genetic profile in your dog to a proposed breed. In the case of a proposed crossbred dog (i.e. a dog with ancestry from two different purebred parents), this will involve determining the heritage of your dog's sire and dam. In all cases this is done with a reasonable degree of certainty.

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.

In the unlikely event that it is not possible to determine breed history 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.

**Wisdom Panel® 2.0** is based upon the Mars Veterinary database of validated breeds. If your dog contains other breeds, it may result in the identification of breeds, or a combination of breeds in the database, related to the breeds in your pet's history.

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® 2.0** 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® 2.0** intended to be used in any judicial proceedings. Rather, it is intended to be 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.





## STATEMENT OF AUTHENTICATION

Owner's name: **Pete Smith**

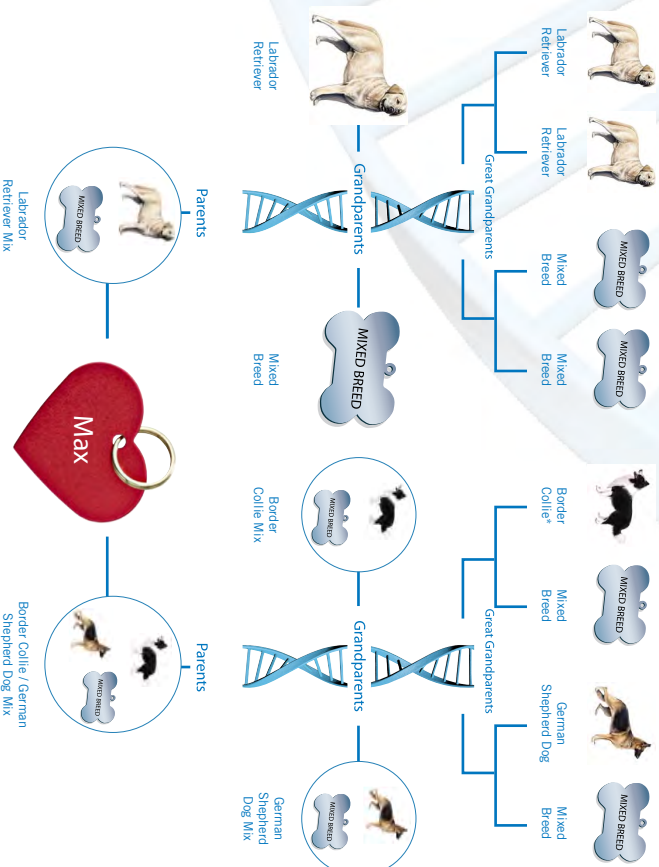
Dog's name: **Max**

Date: **January 6, 2014**

This certifies the authenticity of Max'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 Max's ancestry using the proprietary breed detection algorithm at Mars Veterinary.

**Dr. Angela Hughes DVM PhD**

Veterinary Geneticist



**Max is a Labrador Retriever, Border Collie, German Shepherd Dog Mix**