



Certificate of Breed

OWNER'S NAME: Claudia Fuhrmann

DOG'S NAME: "EDDY"
Pelicanos Butch

TEST DATE: July 18th, 2018

This certifies the authenticity of **EDDY**'s canine genetic background as determined following careful analysis of more than 200,000 genetic markers.

Welcome to the **Embark** family!

FRENCH BULLDOG

WOLFINESS **0.6% LOW**

MATERNAL **A224**

HAPLOTYPE

PATERNAL **H7**

HAPLOTYPE


Adam Boyko, Ph.D.
CHIEF SCIENCE OFFICER


Ryan Boyko
CHIEF EXECUTIVE OFFICER

"EDDY"

PELICANOS BUTCH



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embk.me/pelicanosbutch

GENETIC STATS

Wolfiness: 0.6 % **LOW**

Predicted adult weight: **25 lbs**

Genetic age: **21 human years**

TEST DETAILS

Kit number: EM-5003651

Swab number: 31001804051268

FRENCH BULLDOG



Fun Fact Despite not being the sharpest knives in the drawer, it is rumored that a French Bulldog, named Princess Jacqueline, was able to understand 20 distinct words.

French Bulldogs, affectionately known by their many fans as Frenchies, are an immensely popular and well-known breed of dog. As their name implies, they are native to France and are the result of a mix between English Bulldogs and local dogs in Paris. They are very popular around the world, earning their place as the 4th most popular dog in the United Kingdom and the 9th most popular dog in the United States. Despite the fact that they are the descendants of ancient Mastiffs, French Bulldogs don't retain much of that noble and tough ancestry. They were really bred over the years to make exceptional lap dogs and companion animals. During the 1700s and 1800s, they were well loved by European aristocrats and nobility who prized them for their unique look and affectionate and goofy personalities. They are often featured in paintings of the era, and they can be seen sitting regally upon the laps of their noble owners. Because they were bred to be companion dogs, French Bulldogs need lots of love. If left alone, they will become anxious and unhappy. They make up for their lower-scoring cognitive ability with their stellar personalities, loving nature, and love of fun. Because they are rather calm, love to snuggle, and don't require excessive amounts of exercise, they make excellent apartment dogs. As a bonus, they also don't bark very much. French Bulldogs get along well with other pets, including other dogs, and are marvelous with children. As with most short-nosed breeds, they require a little bit of extra care and attention, especially in hot weather. They cannot tolerate the heat and will suffer greatly—they can become very ill and can even die if left in hot weather for too long. They also need to be monitored while exercising, as their short noses can make it difficult for them to catch their breath if they are overexerted. French Bulldogs make great parents but poor reproducers. They often need to be artificially inseminated and frequently require cesarean births. Because of these costs associated with having a litter, expect to pay more money for a French Bulldog than other pure bred dogs. It is very important to choose a breeder carefully—a reputable breeder will health test their dogs, and they will be able to show prospective owners all the documentation. They're well worth the cost, though. Few breeds are as affable and loving as the French Bulldog.

RELATED BREEDS



Bulldog
Sibling breed



Boxer
Cousin breed

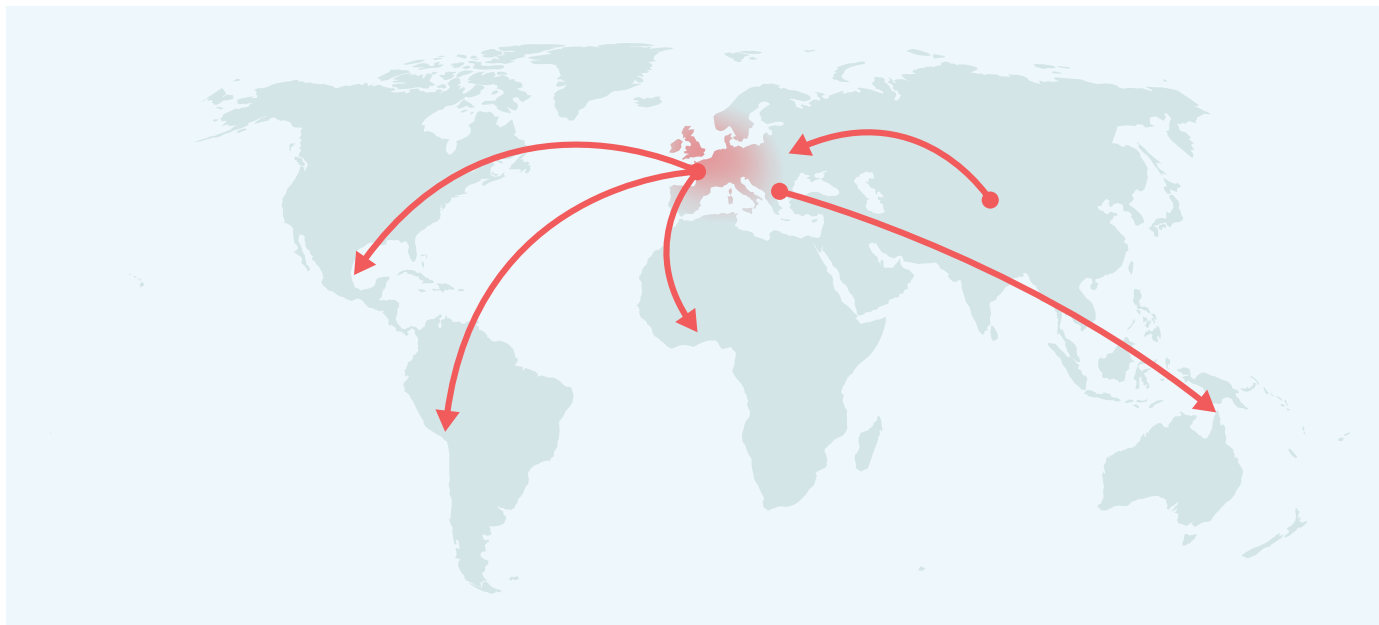


Bull Terrier
Cousin breed

“EDDY”

PELICANOS BUTCH

MATERNAL LINE



Through EDDY’s mitochondrial DNA we can trace his mother’s ancestry back to where dogs and people first became friends. This map helps you visualize the routes that his ancestors took to your home. Their story is described below the map.

HAPLOGROUP: A1a

A1a is the most common maternal lineage among Western dogs. This lineage traveled from the site of dog domestication in Central Asia to Europe along with an early dog expansion perhaps 10,000 years ago. It hung around in European village dogs for many millennia. Then, about 300 years ago, some of the prized females in the line were chosen as the founding dogs for several dog breeds. That set in motion a huge expansion of this lineage. It’s now the maternal lineage of the overwhelming majority of Mastiffs, Labrador Retrievers and Gordon Setters. About half of Boxers and less than half of Shar-Pei dogs descend from the A1a line. It is also common across the world among village dogs, a legacy of European colonialism.

HAPLOTYPE: A224

Part of the large A1a haplogroup, this haplotype is found in village dogs in Peru, Fiji, and Namibia. Among breeds, we see this haplotype most frequently in Cavalier King Charles Spaniels, Mastiffs, and Boston Terriers.

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PATERNAL LINE



Through EDDY’s Y chromosome we can trace his father’s ancestry back to where dogs and people first became friends. This map helps you visualize the routes that his ancestors took to your home. Their story is described below the map.

HAPLOGROUP: D

The D paternal lineage is very common in well-known populations of dogs. Breeds belonging to the D lineage likely have direct male ancestors that can be traced all the way back to the origin of domestic dogs themselves! One popular breed that commonly sports a D lineage is the Boxer. Boxers were developed in the late 19th century from Mastiff dogs, so it is no surprise that D is well represented among Mastiffs, Bulldogs, as well as Terriers. Intriguingly, D is also found among Lhasa Apsos, an ancient Tibetan breed, and Afghan Hounds. While the presence of this lineage in Polynesia or the New World can be chalked up to interbreeding with European dogs brought during voyages of discovery or later settlement, D is also well represented among village dog populations in the Middle East and Africa. If the fact that we find dogs bearing a D lineage in the Middle East (not to mention the large amount of diversity among Middle Eastern D lineage males) is any indication of ancient residence in that region, then the presence among Oceanian village dogs is peculiar. Rather, it may be that D is

HAPLOTYPE: H7

Part of the D haplogroup, this common haplotype has been found in French Bulldogs, Afghan Hounds, Bull Terriers, and village dogs spanning from South America to Africa and into the South Pacific.

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TRAITS

Coat Color

E Locus (Mask, Grizzle, Recessive Red)	E^mE^m
K Locus (Dominant Black)	K^Bk^y
A Locus (Agouti, Sable)	a^ya
D Locus (Dilute, Blue, Fawn)	DD
B Locus (Brown, Chocolate, Liver, Red)	BB

Other Coat Traits

Furnishings / Improper Coat (RSPO2)	II
Long Haircoat (FGF5)	GG
Shedding (MC5R)	TT
Curly Coat (KRT71)	CC

Body Size

Body Size - IGF1	II
Body Size - IGF1R	GG
Body Size - STC2	TA
Body Size - GHR (E195K)	GG
Body Size - GHR (P177L)	CC

Other Body Features

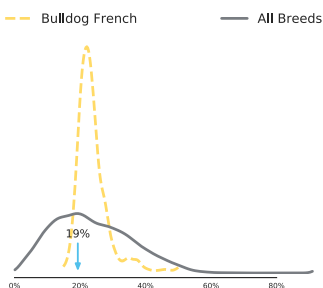
Brachycephaly (BMP3)	AA
Natural Bobtail (T)	CC
Hind Dewclaws (LMBR1)	CC

Performance

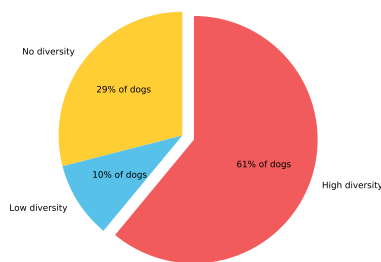
Altitude Adaptation (EPAS1)	GG
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Genetic Diversity

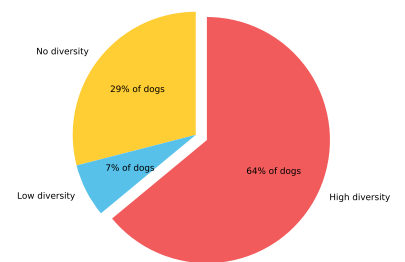
Inbreeding Coefficient **19%**



MHC Class II - DLA DRB1
High Diversity



MHC Class II - DLA DQA1 and DQB1
High Diversity



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CLINICAL TRAITS

These clinical genetic traits can inform clinical decisions and diagnoses. These traits do not predict a disease state or increased risk for disease. We currently assess one clinical trait: Alanine Aminotransferase Activity.

Alanine Aminotransferase Activity result: Normal

Pelicanos Butch has two normal alleles at ALT.

More information on Alanine Aminotransferase Activity:

Known to be highly expressed in liver cells, activity levels of alanine aminotransferase, or ALT, is a common value on most blood chemistry panels and is known to be a sensitive measure of liver health. Dogs with two ancestral G alleles show "normal" activity. Dogs that have one or two copies of the derived A allele may have lower resting levels of ALT activity, known as "low normal". If your dog's result is "low normal" then when a blood chemistry panel is being interpreted the values that you and your veterinarian consider "normal" may need to be adjusted. Please note that neither a "normal" nor a "low normal" result for this predicts a disease state or increased risk for liver disease. Moreover, this mutation does not associate with increased levels of ALT: If your dog has high ALT levels, please consult your veterinarian.

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HEALTH

Good news! EDDY did not test positive for any of the genetic diseases that Embark screens for.

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AT RISK

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CARRIER

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OTHER CONDITIONS

Good news! EDDY tested clear for 6 genetic conditions that are common in his breed.

- Progressive Retinal Atrophy - crd4/cord1 (RPGRIP1)
- Hereditary Cataracts, Early-Onset Cataracts, Juvenile Cataracts (HSF4 Exon 9 Boston Terrier Variant)
- Malignant Hyperthermia (RYR1)
- Canine Multifocal Retinopathy cmr1 (BEST1 Exon 2)
- Hyperuricosuria and Hyperuricemia or Urolithiasis (SLC2A9)
- Degenerative Myelopathy (SOD1A)

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FULL TEST PANEL

To help ensure healthy breeds, every test includes analysis of our full panel of over 160 genetic diseases.

EDDY is also clear of 159 other genetic diseases that Embark tests for.