



Big Joy's Genetic Report

VERSION 4.0



Summary Page

Breeds Group

Western 6.32%



Ragdoll	3.21%
Siberian	3.1%
Broadly Western	0%
Russian Blue	0%
Norwegian Forest Cat	0%
American Shorthair	0%
Maine Coon	0%
Abyssinian	0%
Turkish Van	0%
Turkish Angora	0%

Eastern 0%



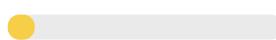
Broadly Eastern	0%
Oriental	0%
Peterbald	0%
Burmese	0%
Birman	0%
Thai	0%

Persian 93.68%



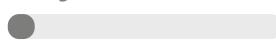
Persian	52.05%
Himalayan	17.02%
Exotic Shorthair	13.22%
Broadly Persian	6.82%
British Shorthair	4.58%

Exotic 0%

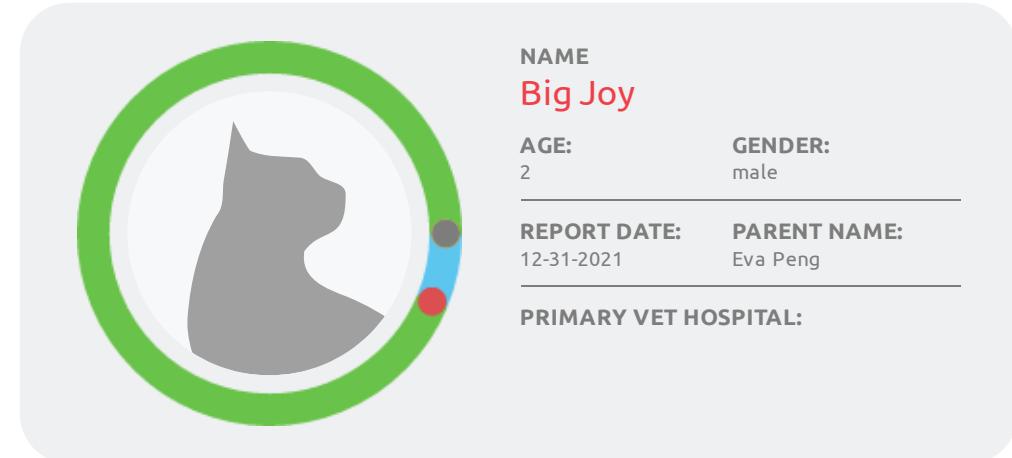


Broadly Exotic	0%
Bengal	0%
Savannah	0%
Egyptian Mau	0%

Polycat 0%



A domestic polycat is a remarkable result of many generations of mixed breeding between different types of cats, which is why the ancestry and origin of these kitties can be very difficult to determine.



Dental Report

Risk score legend



BIG JOY'S RISK OF PERIODONTAL DISEASE

Periodontal disease affects the tissues surrounding the teeth. Initial stages are classified as gingivitis, while advanced stages are known as periodontitis.

RISK:

- HIGH
- MEDIUM
- LOW

Risk score

5.03

BIG JOY'S RISK OF TOOTH RESORPTION

Tooth resorption, also known as feline odontoclastic resorative lesion (FORL), is characterized by progressive dentin erosion.

RISK:

- HIGH
- MEDIUM
- LOW

Risk score

0.93

BIG JOY'S RISK OF BAD BREATH

When bad breath is a persistent problem for a cat, this could be indicative of more serious dental or general health issues.

RISK:

- HIGH
- MEDIUM
- LOW

Risk score

8.37

Health Markers

CLEAR

Your cat is negative for genetic markers associated with this number of diseases:

43

CARRIER

Your cat is not at risk, but carries genetic markers associated with this number of diseases:

0

AT RISK

Your cat is positive for genetic markers increasing their risk for developing this number of diseases:

0

AT HIGH RISK

Your cat's genotype puts them at high risk for developing this number of diseases:

0

LIKELY BLOOD TYPE:
(based on genotype)

A

Trait Markers

LIKELY TO HAVE

1

NOT LIKELY TO HAVE

20

CARRIER

0

General Information

History of cat domestication and breeding

The history of cat domestication is very different from that of other companion or agricultural animals. Unlike dogs, cats have not undergone thousand of years of selective breeding for specific behavioral and physical traits. This is why cats have remained genetically similar to their wild ancestors.

As agricultural settlements were established, the storage of crop harvests led to an expansion of the surrounding rodent population. As eager hunters, cats were attracted to the bounty of prey that these settlements offered. As a result, a mutually beneficial relationship began wherein cats helped humans with rodent control, and humans helped cats by giving them food and shelter. In rather unique fashion, cats essentially domesticated themselves by choosing to live near or with us. Since cats are born with natural, highly effective prey-catching skills, humans didn't need to selectively breed them for physical or behavioral traits to make them better hunters.

Instead, it was more advantageous to let them instinctively "run wild" across their farmland hunting grounds. Since cats were historically free to hunt on their own terms, it also means that they were free to reproduce on their own terms with any cats they encountered.

It wasn't until the 19th century that humans began to selectively breed cats, but the primary focus was on aesthetic traits such as coat color or pattern. It is these aesthetic traits that largely distinguish the modern-day cat breeds we know today as "purebred" or "pedigree". This very short timeline of selective cat breeding by humans has yet to overcome the much longer history of cats reproducing freely. This is why modern-day cats rarely have ancestors of a defined breed.



Genetic Report

Unlike dog or human ancestry tests, we cannot make the assumption that your cat was descended from a mixture of purebred lines since purebred cats are so new. However, we can find parts of your cat's genome that are similar to the genomes of the modern-day purebred cats in our reference panel.

Basepaws continues to gather more purebred cat data to further narrow down the parts of the feline genome that are responsible for certain traits among different breeds.

Based on an analysis of the purebred cat genomes in our reference panel, the most common modern-day cat breeds fall into four main groups: Western, Eastern, Persian and Exotic.

WESTERN BREEDS

- ragdoll
- russian blue
- norwegian forest cat
- siberian
- american shorthair
- maine coon
- abyssinian
- turkish van
- turkish angora

EASTERN BREEDS

- oriental
- peterbald
- burmese
- birman
- thai

PERSIAN BREEDS

- persian
- exotic shorthair
- british shorthair
- himalayan

EXOTIC BREEDS

- bengal
- savannah
- egyptian mau

The Exotic group contains some hybrid cats, which are the result of crossing a domestic cat with a wildcat. Bengals are a cross between Asian leopard cats and domestic cats, while Savannahs are a cross between servals and domestic cats.

We extracted Big Joy's DNA from the sample that you sent us. We then ran quality checks on the material and performed low-coverage whole genome sequencing (WGS). This was followed by a process of bioinformatic imputation to fill in missing pieces of information. Next, we compared your cat's genome to the genomes of the purebred cats in our reference database.

We assigned Big Joy to the {breed} group with highest % breed group, since it is the group with which their genome shares the most similarity. Each subsequent breed group listed is based on the next highest level of shared genomic similarity. We also provide the percentage of similarity that your cat's genome shares with individual breeds that fall within each of the four breed groups.

Breed Analysis

We analyzed your cat's genome and compared it to the genomes of purebred cats in our reference panel. There are 21 popular purebred breeds represented in our panel, which are categorized into the four main breed groups. Below is the percentage breakdown of the genomic similarity that your cat shares with each purebred breed within each main breed group.



Western 6.32%

Despite its name, this breed group contains breeds with diverse geographic origins, spanning Turkey, Russia, Europe, and the Americas.

3.21%	3.1%	0%	0%	0%	0%	0%	0%	0%	0%
Ragdoll	Siberian	Broadly Western	Russian Blue	Norwegian Forest Cat	American Shorthair	Maine Coon	Abyssinian	Turkish Van	Turkish Angora

Eastern 0%

Eastern breeds form their own tight, genetically distinct group. The origins of the breeds in this group can be traced back to Asian countries, with Southeast Asia playing a prominent role.

0%	0%	0%	0%	0%	0%
Broadly Eastern	Oriental	Peterbald	Burmese	Birman	Thai

Domestic Polycat

0%

A domestic polycat is the remarkable result of many generations of mixed breeding (the opposite of selective breeding) between different types of cats, which is why the ancestry and origin of these kitties can be very difficult to determine.

Persian 93.68%

The Persian breed is among the oldest in the world. The Persian breed group contains breeds that are derived from the Persian breed.

52.05%	17.02%	13.22%	6.82%	4.58%
Persian	Himalayan	Exotic Shorthair	Broadly Persian	British Shorthair

Exotic 0%

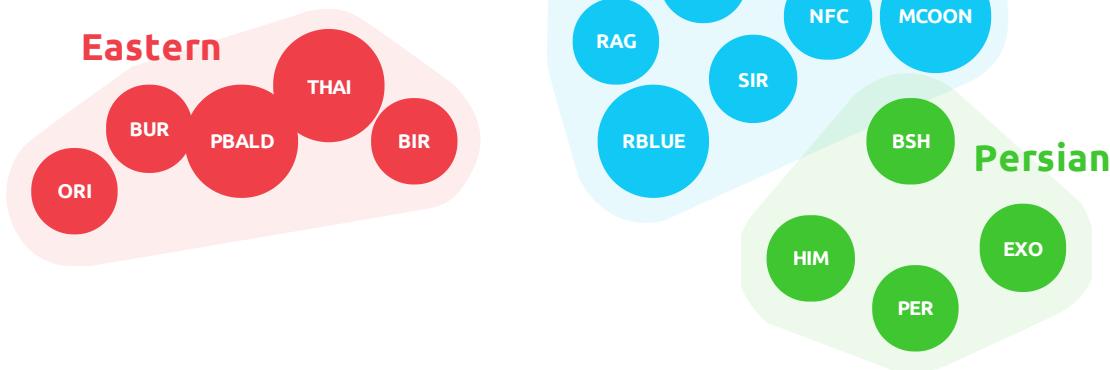
The Exotic breed group contains Egyptian Mau and hybrid cats, which are the result of crossing domestic cats with certain wildcats. These cats often have a high degree of genetic separation from other breeds.

0%	0%	0%	0%
Broadly Exotic	Bengal	Savannah	Egyptian Mau

Feline Breeds

Using our genomic reference panel of purebred cats, we can classify feline breeds into the following four groups based on their genomic similarity: Western, Eastern, Exotic, and Persian. Pedigree ancestry is rare in cats, so don't forget that random-bred moggie heritage is an equally important part of your kitty's uniqueness.

Click on any of the breeds in this graph for more information →



Western

Russian Blue | Ragdoll | American Shorthair | Siberian | Norwegian Forest Cat | Maine Coon | Abyssinian | Turkish Van | Turkish Angora

Eastern

Oriental Shorthair | Peterbald | Burmese | Birman | Siamese | Persian | Exotic Shorthair | British Shorthair | Himalayan | Savannah | Bengal | Egyptian Mau

Persian

Exotic

Ragdoll



Origin
USA

Related Breeds
Persian, Siamese

Alternate Names
None

Personality
Calm, docile, lap cat

Avg. Male Weight
10-15

Avg. Female Weight
10-15



General Overview

Alongside the Maine Coon, the Ragdoll is considered one of the world's largest cat breeds with an average weight ranging from 10 to 15 pounds. These friendly felines are a semi-longhaired, blue-eyed, pointed cat variety that come in a range of pointed colors and patterns such as white, tortoiseshell, lynx, lilac, blue, chocolate, and seal.

Breed History

The Ragdoll is considered to be a native to the United States. It is said that they originated in California during the 1960s. The breed was created through the crossing of a long-haired, white cat named Josephine with a seal-colored mitted cat, and a black cat. It is believed that Josephine may have been a hybrid of a Persian and possibly a Birman or Siamese.

Genetic predisposition and health

The Ragdoll is a strong, robust breed that can live a long and healthy life if nurtured properly. However, these cats are at a higher risk of developing feline infectious peritonitis (FIP) and hypertrophic cardiomyopathy (HCM). HCM can be caused by several genetic mutations that have been identified in about 20% of Ragdoll cats.

Personality

These elegant kitties are quite easygoing. They are calm, sweet-natured, and enjoy cuddles. They are known to possess quirky behaviors like drinking water from the tap or going "limp like a ragdoll" when being held. They are the ultimate lap cat, and because of their docile manner, they make perfect companions for families with children or other pets.

Russian Blue



Origin
Russia

Related Breeds
Russian White, Russian Black

Alternate Names
Archangel Blue, Archangel Cat

Personality
Curious, social, intelligent

Avg. Male Weight
8-15

Avg. Female Weight
8-15



General Overview

Meet the "Doberman Pinscher of cats". A cat that combines elegance and strength in its own unique way. Russian Blues are powerful, agile cats, with a sweet-natured temperament. The breed is known for its grayish-blue coat, broad head and vividly green eyes. Its short, plush fur has silver-tipped hairs giving the coat a shimmery appearance.

Breed History

The Russian Blue is a naturally occurring breed thought to have originated in Archangel, Russia. However, despite its Russian origins, the breed was mainly developed in Great Britain and Northern Europe where it was thought to have been introduced by Russian sailors. The Russian Blue breed present in the US today was developed by combining the British Russian Blue with the Scandinavian Russian Blue. Russian Whites, Blacks and Tabbies were all created by crossing Russian Blues with domestic cats. The breed was also used, to a certain extent, in the development of the Havana Brown and in altering the Nebelung breed.

Genetic predisposition and health

These moderate-sized cats have little to no predispositions to genetic diseases. However, they do love to eat, therefore it is important to appropriately dose their food to avoid the onset of obesity. Some published studies have recognized the Russian Blue, among several other breeds, to be at a higher risk for Diabetes mellitus.

Personality

Russian Blues are very curious, friendly and social cats. They can seem shy or distant at times, but in fact, they often get depressed or anxious if they feel neglected in any way. Blues are known to be very loyal, loving and even sensitive to human emotions. They are typically quiet, and yet very playful and energetic. Due to their high level of intelligence and excellent memory they tend to remember favorite visitors even if the visits are infrequent.

Norwegian Forest Cat



Origin

Norway

Related Breeds

Siberian, Turkish Angora

Alternate Names

Norsk Skogkatt, Skaukatt

Personality

Social, friendly, explorer

Avg. Male Weight

10-16

Avg. Female Weight

8-12



General Overview

Also known as the "mystic wildcat of the fairy tales", the Norwegian Forest Cat is a feline breed believed to be between 1000 to 2000 years old. This breed is so popular and beloved across Northern Europe that it has made frequent appearances in numerous Norwegian urban myths and folklore. These strong and sturdy cats are well protected in Europe's brutal winters by an insulated, waterproof double coat. Norwegian Forest cats are distinguished by their large, almond-shaped eyes, a triangle-shaped head and a straight profile from the brow ridge to the tip of the nose.

Breed History

Originating in Norway, one theory is that the breed's ancestors may be black and white shorthair cats brought from Great Britain and longhaired cats introduced by the Crusaders. Another theory claims that their ancestry lies with the Russian Siberian cat and the Turkish Angora. The breed was recognized and registered in Europe in the 1970s, and in the American Cat Fanciers Association in 1994.

Genetic predisposition and health

Some published studies have recognized the Norwegian Forest Cat, among several other breeds, to be at a higher risk for Diabetes mellitus. In a 2007 study, a complex rearrangement in the gene coding for the glycogen branching enzyme (GBE1) was identified in some cats of this breed. The rearrangement causes glycogen storage disease type IV, characterized by a perinatal hypoglycemic collapse and a late-juvenile-onset neuromuscular degeneration. The breed has also been known to suffer from hip dysplasia.

Personality

Norwegian Forest cats have a calm temperament and will usually get along well with children and other pets. While they highly appreciate the company of their favorite humans, they do so on their own terms. These kitties love to explore, and their strong claws make them excellent climbers. A scratching post or a tall cat tree will go a long way toward entertaining these kitties.

Siberian



Origin
Russia

Related Breeds
Norwegian Forest Cat

Alternate Names
Siberian Forest Cat, Moscow semi-longhair

Personality
Social, playful

Avg. Male Weight
8-17

Avg. Female Weight
8-17

General Overview

For centuries, the Siberian Forest Cat, also referred to as the Siberian, was a landrace variety of a domestic cat in Russia. By the 1980s, they developed into a formal breed with declared standards. This feline is considered an ancient cat, and believed to be the ancestor of all long-haired modern cats. The Siberian cat is Russia's national animal, characterized by a long, luxuriously dense coat. They express all three natural types of fur: guard hairs, awn hairs and down hairs. Their coat colors can vary from tabby, solid, tortoiseshell and color-point. Known as exceptional jumpers, Siberians are powerfully built, strong cats with large rounded paws.

Breed History

The first mention of the breed appeared in a book by Harrison Wier in 1871. It wasn't until the 1990s that the breed was introduced to the U.S. This breed is highly popular, but being native to Russia, Siberian kittens are very expensive to obtain which is why they are relatively rare outside Europe. The breed was officially recognized and validated in the 1980s.

Genetic predisposition and health

Though no known conditions have been proven to be tightly associated with Siberian cats, there are some claims about diseases for which they may be at a higher risk. These include hypertrophic cardiomyopathy (HCM), polycystic kidney disease (PKD), hereditary cancer, feline lower urinary tract disease (FLUTD), and periodontal disease. Siberian cats are also often considered a hypoallergenic breed due to the fact that they produce less FelD1, which is a primary allergen present on cats and kittens.

Personality

Siberians are friendly and social cats who are always looking for companionship. They get along well with other animals and with children. They are equally brave and independent as they are easygoing and affectionate. There are thought to have a keen sense of the emotional needs of others and eagerly respond by offering their company and support.

American Shorthair



Origin
USA

Related Breeds
British Shorthair

Alternate Names
None

Personality
Outgoing, social, adaptable

Avg. Male Weight
10-15

Avg. Female Weight
8-12



General Overview

Sturdy, powerful, agile and full of endurance, the American Shorthair has all the characteristics of a skilled hunter. These beauties are defined by their large heads, powerful jaws, and full cheeks. American Shorthairs have short, dense coats that come in various colors such as gold, brown, cameo, calico, and the popular silver tabby. Their eyes are large and distinctive and come in colors such as blue, copper, hazel, and gold.

Breed History

The first American Shorthairs were believed to have accompanied European settlers who left Europe and set their sails for North America. They were brought onboard as mice hunters, protecting the ship's cargo from rodent infestation. These hardy companions didn't receive their American Shorthair name until 1966, when they were crowned the title in order to differentiate them from regular random-bred, domestic shorthair cats.

Genetic predisposition and health

Although the American Shorthair is considered a healthy breed with very few health problems, they can be affected by hypertrophic cardiomyopathy (HCM). They are also prone to inherited craniofacial defects which can range from mild versions like dermoid cysts to more serious conditions such as cleft palates and crooked jaws, where the latter results in the development of misaligned teeth.

Personality

The American Shorthair is the ideal family cat. These versatile cats are social, easygoing and quite affectionate. Even though they aren't typically known to be lap cats, they will certainly appreciate a spot next to you on the sofa. Being a moderately active breed, they are not overly demanding of attention and activity, and are good at keeping themselves entertained. When not hunting for random insects, the American Shorthair can be found lounging the day away in the sun.

Maine Coon



Origin
USA

Related Breeds
Persian, Norwegian Forest Cat

Alternate Names
Snowshoe Cat, Coon Cat, American Forest Cat

Personality
Water lover, obedient, playful

Avg. Male Weight
12-15

Avg. Female Weight
9-12



General Overview

Tipping the scales at sometimes almost 20 pounds, the Maine Coon is said to be one of the largest and heaviest cat breeds. This breed is very muscular, agile and heavily boned, sporting a thick, uneven, double layered coat and a bushy tail. They also have the longest whiskers of any other cat breed.

Breed History

The origin of the Maine Coon remains unknown, but there are many speculations and supported theories. One theory suggests that these elegant, long-haired cats accompanied the Vikings from Europe as they journeyed to America. Another story has it that the Maine Coon is the first and therefore the oldest native breed to have been created in the United States, specifically in the state of Maine, where today it is the official state cat.

Genetic predisposition and health

The Maine Coon breed is known to be at a higher risk for developing hypertrophic cardiomyopathy (HCM), the most common heart condition among all feline breed groups. HCM can be caused by several genetic mutations. In the Maine Coon an autosomal dominant mutation in the myosin-binding protein C gene has been identified in 33% of the breed. HCM is a progressive disease and can result in heart failure, paralysis of the hind legs, and even sudden death. Another genetic mutation found among Maine Coon cats is known as the "Hemingway" mutation, which can result in the development of an extra toe, or at times even two. This harmless mutation is commonly referred to as polydactylism and is frequently seen among the breed.

Personality

Termed as one of the few water loving cats, the Maine Coon is truly a gentle giant and adored for its playful, independent dog-like nature. Maine Coons are known to be pretty vocal, utilizing a wide range of complex sounds. These cats are often quite obedient and possess an above average intelligence making them easy to train. It is not uncommon to see cats of this breed being walked on leashes.

Abyssinian



Origin
Asia

Related Breeds
Old Egyptian breeds, Ocicats

Alternate Names
None

Personality
Active, intelligent, mischievous

Avg. Male Weight
7-10

Avg. Female Weight
6-8



General Overview

The miniature cougar of the cat world, the Abyssinian is a gorgeous and energetic breed that is said to resemble the wild cats found all over North America. The Abyssinian always has a ticked coat pattern ranging in color from ruby red, fawn tones and silvery blues. These cats are characterized by wide expressive eyes, large ears, and a long, lean body.

Breed History

The Abyssinian is said to be one of the oldest cat breeds. For a long time, it was believed that these cats originated from ancient Abyssinia (present Ethiopia), but recent genetic studies have suggested that South East Asia is more likely to be their place of origin. Based on the genetic markers found in the Abyssinian, it is presumed that cats from both Asia and Europe were used to create the Abyssinian breed we know today.

Genetic predisposition and health

Some published studies have recognized the Abyssinian breed, among several other breeds, to be at a higher risk for Diabetes mellitus. Progressive retinal atrophy (PRA) has also been noted in the breed, as well as in Somali and Ocicat cat breeds. Two mutations related to this condition have been identified in all three of the breeds. Other health problems associated with the Abyssinian breed are periodontal disease (gingivitis), hypertrophic cardiomyopathy (HCM), dilated cardiomyopathy (DCM), pyruvate kinase deficiency (PKD), psychogenic alopecia (stress-related hair loss) and patellar luxation (trick knee).

Personality

Notorious for their intelligence and agility, the Abyssinian is considered to be one of the most athletic and outgoing breeds. Although Abyssinians are not typically known to be laid back and cuddly cats, they can easily suffer from depression without the attention of their owners. These cats are excellent climbers, hunters and jumpers. They thrive in environments where they can explore, climb high spaces or simply enjoy good mischievous play with their humans and fellow cat friends.

Turkish Van



Origin
Turkey

Related Breeds
Persian

Alternate Names
Turkish Vankedisi

Personality
Water lover, energetic, vocal

Avg. Male Weight
10-12

Avg. Female Weight
7-10

General Overview

With a striking wisp of color topping its head and its tail painted to match, this mostly white cat is one of the rarest in the world! These fur decorations are known as the "Van Pattern". The Turkish Van has two coat lengths depending on the season. The winter coat is longer and thicker than its shorter summer counterpart. The Turkish Van may sport eyes of differing colors (blue and amber), a trait not uncommon with this breed.

Breed History

The Turkish Van are known as one of the oldest breeds in the world and also one of the rarest! Though being a newer breed in North America, the Turkish Van has ties back to between 6,000 BC and 3,000 BC. The Modern history of the Van starts with Sonia Halliday and Laura Lushington, two British photographers on assignment to photograph Lake Van in 1955. Upon finishing, the two were gifted two unrelated Turkish Vans with the now infamous "Van pattern". These two cats mated and were used as the base-lineage for Turkish Van cats in England. The Van wasn't officially introduced to America until 1982.

Genetic predisposition and health

The gene (KIT) associated with the white coat seems to be linked to hearing abilities. Deafness in white cats is more common among those cats with blue eyes or with heterochromia. This is because the KIT gene can occasionally cause the degradation of the cochlea aside from disrupting melanocyte migration into one or both eyes. This results in irreversible deafness in one or both ears. Other genetic conditions found in the breed are also hereditary ataxia and hypertrophic cardiomyopathy (HCM). The exact cause for HCM in cats remains unknown. Scientists have, however, found that feline HCM can be inherited.

Personality

Turkish Van cats are extremely intelligent and friendly and they make excellent companions. They are lively cats and will enjoy playing games with humans or other cats and so they need stimulation and a chance to play. Turkish Van cats have soft voices.

Turkish Angora



Origin
Turkey

Related Breeds
Persian

Alternate Names
Angora Cat, Ankara Cat

Personality
Active, stubborn

Avg. Male Weight
12+

Avg. Female Weight
8-12



General Overview

The Turkish Angora is an ancient, natural breed from Turkey. It is thought that this breed is the true origin of the mutation for white coat color and long hair in domestic cats. Turkish Angoras have long, posh and silky coats and their bodies are graceful and agile. Ears are pointed and the tail is rich and upright. Although they are most famous for their shimmery white furs, their coats can also be tabby (brown or white), black with a chocolate brown undercoat or a variety of smoke tones. The eyes are almond-shaped and come in a variety of colors, and heterochromia is not uncommon.

Breed History

This breed has developed through natural selection in the regions of Anatolia, Turkey. Turkish Angoras were used for the development of the Persian breed, as cat fanciers selected them for their luxurious coats. In United States, The Cat Fanciers' Association officially recognized the breed in 1963, but only white Angoras were accepted until 1978. Today, all cat registries in the US recognize an assortment of coats and patterns of the Turkish Angoras.

Genetic predisposition and health

Turkish Angoras, particularly those with white coats and blue eyes, have a higher risk of congenital deafness due to a mutation in the KIT gene. Compared to other breeds, Turkish Angora kittens also have a higher likelihood of developing heterochromia. This breed may be at a higher risk of developing congenital ataxia, which is a fatal disease that causes uncoordinated movement and shaking. Turkish Angoras may also be predisposed to hypertrophic cardiomyopathy, which is a condition of the heart that causes it to pump harder than necessary.

Personality

Turkish Angoras are affectionate and intelligent companions. They are curious and enjoy being involved in everyday human activity. They often bond most with one person in the family, and can become very protective of them. They are highly trainable, and get along well with children and other pets.

Oriental



Origin
UK

Related Breeds
Siamese

Alternate Names
Oriental

Personality
Energetic, vocal, attention seeking

Avg. Male Weight
7-10

Avg. Female Weight
5-8

General Overview

A close relative of the Siamese, the Oriental Shorthair maintains the same head and body type of its parent breed, but sports various coat colors and patterns, such as smoke, shaded, tortoiseshell, tabby and bicolor. In fact, over 750 color and pattern combinations are possible under CFA conformation rules. Oriental Shorthairs are lean, muscular and agile with large, pointed ears similar to those of the modern Siamese. However, unlike the deep blue eye color of the Siamese, their almond-shaped eyes are green. Another variety of the breed is the Oriental Longhair who simply carries a pair of recessive long hair genes.

Breed History

It is believed that the Oriental Shorthair has its foundation in the Siamese breed. The Siamese are the royal cats from Thailand, first brought to the UK in the 1800s. From there, they spread widely, quickly becoming one of the most popular breeds. During World War II, many breeding programs in UK were devastated, and the Siamese started being cross-bred with other breeds in order to expand their gene pool. They were crossed with Russian Blues, British Shorthairs, Abyssinians and Domestic Shorthairs. Kittens born with Siamese points were rotated back into Siamese breeding programs, while the non-pointed kittens became the basis for the Oriental Shorthair breed.

Genetic predisposition and health

Since it is derived from the Siamese, the Oriental Shorthair is at a higher risk for developing some health problems, such as neoplastic and gastrointestinal disorders, crossed-eyes, lung infections, feline OCD, vestibular disease, Feline Hyperesthesia Syndrome and Diabetes mellitus. Siamese-derived breeds are noted to have higher mortality rates compared to other cat breeds.

Personality

The Oriental Shorthair is said to closely resemble the personality of the Siamese as well. They are agile, athletic and skilled jumpers. They are highly vocal, playful and social cats who aren't shy about demanding the attention they so rightfully deserve.

Peterbald



Origin

Russia

Related Breeds

Don Hairless, Oriental Shorthair

Alternate Names

None

Personality

Affectionate, peaceful

Avg. Male Weight

8-10

Avg. Female Weight

6-8



General Overview

The Peterbald is a Russian hairless cat breed originating in St. Petersburg in 1994. These unusual kitties are carriers of a hair-losing mutation and are characterized by having either a bald, flocked, velour, brush, or straight coats. Those born with fur, may lose their hair over time. They come in all colors and patterns, and are said to closely resemble the Oriental Shorthair in physical appearance. They are slim and muscular with almond-shaped eyes and large, pointed ears.

Breed History

In 1994, Olga S. Mironova conducted an experimental breeding of a male Don Sphynx (Donskoy) and a female Oriental Shorthair. The first two litters produced four Peterbald kittens. These four kittens were the founders of the breed.

Genetic predisposition and health

All cats face a certain risk of developing some type of inherited health problem. However, currently there are no known conditions associated with this particular breed.

Personality

Peterbalds are sweet and affectionate little cats. These felines are famous for their dog-like loyal demeanor towards their favorite humans. It is said that they often follow their humans around the house in order to be near them as much as possible. They are energetic, curious, and at the same time peaceful and docile. They get along well with children and other pets.

Burmese



Origin

Thailand

Related Breeds

Siamese, Burmese

Alternate Names

None

Personality

Attention seeking, playful

Avg. Male Weight

8-12

Avg. Female Weight

6-10



General Overview

The Burmese is a compact and heavily built cat breed originating from Thailand. They have short, dense and glossy coats that come in a range of colors such as champagne, platinum and sable. This cat is known for its muscular, athletic and yet elegant appearance.

Breed History

The Burmese cat was initially a hybrid of the Asian cat Burma (Myanmar cat) and the Siamese. However, the breed we know today originated in the United States during the 1930s. Geneticists believe that the Burmese shares a unique genetic trait with the Siamese - a mutation in tyrosinase (enzyme involved in the production of melanin). The mutated version of this enzyme is heat sensitive and fails to work at normal body temperatures. It tends to activate only in cooler areas of the skin (< 91F), which is why we see the cooler parts of the cat's body, such as the extremities, face and tip of the tail, expressing a darker pigmentation compared to the rest of the torso.

Genetic predisposition and health

The Burmese is considered to be a fairly healthy and strong cat breed with an average lifespan of 10 to 17 years. However, some published studies have recognized the breed, among several others, to be at a higher risk for Diabetes mellitus. In addition, Hypokalemia, a genetic disease characterized by low levels of potassium in blood plasma, has also been linked to the Burmese breed.

Personality

The Burmese make excellent family pets due to their highly people-oriented nature. This breed is noted for having a dog-like loyal demeanor towards their favorite humans. They tend to form strong bonds with their owners and seem to genuinely enjoy being a part of daily human activity. They are not considered to be an independent breed and tend to cling to their owners and suffer immensely if left alone for a long period of time.

Birman



Origin

Myanmar

Related Breeds

Siamese

Alternate Names

Sacred Cat of Burma

Personality

Docile, patient, affectionate

Avg. Male Weight

9-15

Avg. Female Weight

6-10



General Overview

The Birman, also called the "Sacred Cat of Burma", is a strikingly beautiful long-haired cat. They are distinguished by a soft, silky coat, deep blue eyes, and contrasting white "gloves" on their paws, a trademark of the breed.

Breed History

The exact origin of this breed is unknown. It is believed the Birman originated from the city of Burma over a hundred years ago. According to folklore, the striking beauty of this breed was said to have been the work of divine intervention by the "blue-eyed goddess". The breed almost completely disappeared by the end of World War II, with only two cats being the breed's sole survivors. In order to restore the breed, they were outcrossed with long-haired Persians and Siamese. The cats were first imported to the United States in 1959 and were recognized by the Cat Fanciers' Association in 1967.

Genetic predisposition and health

The Birman is more likely to develop early renal failure, congenital cataracts, feline infectious peritonitis and hemophilia B. This breed is also at a higher risk for hypertrophic cardiomyopathy (HCM), the most common heart disease seen among all feline breeds.

Personality

The Birman is a docile, smart and very sweet-natured cat. These gentle felines get along well with young children as well as other pets, and make excellent family companions. They are known for their people-loving and affectionate nature, and are always eager to be near their favorite humans. Unlike their close relative, the Siamese, Birman cats are rather quiet, yet may on occasion greet you with a very soft meow. These sweet kitties require love and attention to thrive and don't do well in solitude.

Thai



Origin

Thailand

Related Breeds

Oriental cats

Alternate Names

Traditional Siamese

Personality

Active, intelligent, vocal

Avg. Male Weight

8-12

Avg. Female Weight

6-10

General Overview

Ever wonder who might be the royal feline of the cat world? The Siamese of course. This cat has enjoyed a luxurious and royal status for centuries. This outgoing, chatty breed is famous for its remarkable blue eyes, strikingly large ears and sleek, muscular body. These cats require a lot of love and affection, and in return can be the most ideal companions.

Breed History

Originating from Thailand (formerly known as Siam), it is believed that the breed first made its way to Europe in 1884 when the British Consul-General Edward Blencowe Gould brought a breeding pair of cats from Bangkok as a gift for his sister, Lilian. Over the years to follow, fanciers imported more cats from Thailand, gradually forming the base breeding pool for the entire breed in the UK. As for the US, the first Siamese cat was reportedly given to Lucy Webb Hayes (First Lady and wife of Rutherford B. Hayes) in 1878 by US Consul, David Stickles.

Genetic predisposition and health

Siamese and Siamese-derived breeds have higher mortality and morbidity rates in comparison to other cat breeds. This breed is at a higher risk for neoplastic and gastrointestinal diseases. The pointed pattern observed in Siamese cats is a form of partial albinism caused by a mutation in tyrosinase. This mutation is also linked to causing abnormal neurological connections between the eyes and the brain. As a result, many early Siamese cats had crossed-eyes. Siamese cats are prone to lung infections, Feline OCD, vestibular disease and Feline Hyperesthesia Syndrome. Some published studies have recognized Siamese cats to also be at a higher risk for Diabetes mellitus.

Personality

Siamese are very affectionate and intelligent cats, with a distinct outgoing nature. They seek and enjoy the company of humans as well as other cats. They will often strongly bond with one person in the family. These kitties are very vocal and will often demand your attention with a loud, low-pitched persistent voice nicknamed as "Meezer".

Persian



Origin

Iran

Related Breeds

Western European cats

Alternate Names

Persian Longhair, Shiraz

Personality

Calm, restful

Avg. Male Weight

9-14

Avg. Female Weight

7-11



General Overview

The Persian cat is the glamor puss of the cat world. The Persian's exceptionally beautiful and graceful coat, chubby cheeks, expressive eyes and affectionate personality makes it one of the world's most popular feline breeds of all time. Today, this breed comes in two types: show and traditional. The show Persian is characterized by the breed's overly exaggerated features. The traditional Persian, or the "Doll Face" is essentially the original breed, without the development of these extreme features. Both types have rich, long and flowing coats that come in various colors and patterns.

Breed History

Little is known about the history of this very old breed. The exact origin of this beloved kitty is mysterious, but legend has it that the breed was first introduced to Europe in the 1620s by Pietro Della Valle from Italy, as a souvenir from Persia (present day Iran). As the breed's popularity grew, these cats gradually came to be considered luxurious and precious cargo by Persian merchants. Initially, their breeding took place in Italy and France, but then quickly spread to the rest of Europe. They finally made their appearance in United States in the early 1900s.

Genetic predisposition and health

Persians are thought to be one of the breeds with the most health issues. Aside from health problems related to brachycephaly, some of the most common inherited diseases Persians are at a high risk for are polycystic kidney disease (PKD), hypertrophic cardiomyopathy (HCM), progressive retinal atrophy (PRA) and feline lower urinary tract disease (FLUTD).

Personality

Persians are placid, friendly, and affectionate. Surprisingly, these delightful creatures are not as active as most other feline breeds. They would much rather spend their time lounging in their favorite spot on the sofa. They don't utilize much space for activity, which is why they tend to do quite well in smaller living quarters.

Exotic Shorthair



Origin
USA

Related Breeds

Persian, American Shorthair

Alternate Names

Shorthaired Persian

Personality

Active, gentle, lap cat

Avg. Male Weight

7-14

Avg. Female Weight

6-10



General Overview

The Exotic Shorthair was created as a shorthaired version of the Persian cat. It meets all the criteria designed for its Persian parent breed, except for the fur. These cats are medium-sized, with an oval, broad head and short, "pushed in" muzzle. Their coat is short, but a tad longer than that in other shorthaired cats. They come in all colors and patterns.

Breed History

The Exotic Shorthair's origin goes back about 50 years. The breed was created accidentally in a secret effort of American Shorthair (ASH) breeders to improve the body type of the ASH by introducing the Persian into the bloodline. The new crossbreed gained unexpected recognition, thus resulting in the production of a brand-new breed standard. This, sadly for ASH breeders, resulted in the disqualification of ASH crossbreds from the show ring, and the creation of a new breed officially recognized by the Cat Fanciers' Association in 1966. The breed was named Exotic Shorthair and it met every standard designed for the Persian breed, except for the coat. In 1987, the outcrossing of the new breed to ASH was closed, thus leaving the Persian as the only allowable outcross breed.

Genetic predisposition and health

Like the Persian, the Exotic Shorthair is a brachycephalic breed, thus being prone to health problems associated with brachycephaly (i.e. brachycephalic airway obstructive syndrome, tooth misalignment, tooth crowding, tear ducts issues, heart problems). The breed has also been associated with increased risk from calcium oxalate urolithiasis, dystocia, and polycystic kidney disease (PKD).

Personality

The Exotic Shorthair is a very gentle and calm kitty. Their personality reflects both parent breeds, from which they retained the best traits. They are often playful and energetic like the ASH, thus being a lot livelier than the Persian. Their temperament retains the affection and loyalty of the Persian, however, thus making them purrfectly loving 'lap cats'. Despite their energetic nature, they are very well suited for a life in the apartment.

British Shorthair



Origin
Europe

Related Breeds
Persian, Siamese, Russian Blue

Alternate Names
The British

Personality
Laid back, quiet, patient

Avg. Male Weight
12-18

Avg. Female Weight
9-15



General Overview

The British Shorthair is a version of the traditional British domestic cat. They are fairly large solid cats with chunky bodies, strong legs, broad heads and large piercing eyes. The most common coat color among this breed is known as the "British Blue", but the breed has developed a wide range of coat colors and patterns which complement their densely rich coats.

Breed History

The British Shorthair is considered to be one of the oldest identifiable cat breeds in the world. The British Shorthair is considered to have originated in the 1870s. It shares common ancestry with the native wild cats of Great Britain and was first introduced to the United Kingdom by the Romans. Towards the end of World War II, the breed began to drastically decline in numbers, so in order to salvage and recreate the gene pool, breeders began crossing them with other purebreds such as Persians, Russian Blues and Burmese.

Genetic predisposition and health

Unfortunately, recent genetic evidence suggests that the British Shorthair can be genetically predisposed to polycystic kidney disease, an inherited kidney disorder characterized by renal cysts leading to kidney failure, and hypertrophic cardiomyopathy (HCM), a form of heart disease that results in the abnormal thickening of the heart muscle. A 2011 Danish study of more than 329 British Shorthairs concluded that 20.4% of males and 2.1% of the females had HCM. In addition, this breed is prone to obesity, therefore it is important to instill a proper diet and exercise regimen.

Personality

This dignified breed is famous for its easygoing and patient temperament. Although these cats are very affectionate, they don't make particularly good lap cats and do not appreciate being picked up or carried around. The British Shorthair is sweet-natured and can make a great companion for anyone seeking a low-maintenance cat.

Himalayan



Origin
UK

Related Breeds
Persian, Siamese

Alternate Names
Colorpoint Persian

Personality
Gentle, affectionate, quiet

Avg. Male Weight
9-14

Avg. Female Weight
7-11



General Overview

A medium-sized breed of cat, the Himalayan is a friendly companion most prized for its long, silky soft coat. Himalayan coats are identical in type to those of Persian cats, but their deep blue eye color and pointed coloration are inherited from cross-breeding with the Siamese breed. The Cat Fanciers' Association considers the Himalayan simply a color variation of the Persian breed rather than a separate breed of its own, although they do compete in their own color division.

Breed History

In 1931 two breeders began a breeding program that involved crossing a Persian cat with a Siamese cat. The goal was to create a new Persian breed that would inherit the color pointed coat and blue eyes of the Siamese. This how the Himalayan breed was created.

Genetic predisposition and health

Most Himalayans tend to live healthy long lives with very little health problems. However, being so closely related to the Persian cat, a breed known to struggle with multiple inherited health problems, Himalayans are at a higher risk for developing polycystic kidney disease (PKD) and progressive retinal atrophy. They have also been noted to be prone to various ocular disorders.

Personality

Himalayans are gentle, affectionate, and typically not very vocal. They are known to be 'one-man cats', which means they aren't well suited for large families as they don't like sharing the attention of their favorite human. They are not very tolerant of dogs or children and may get nippy if pestered. The Himalayan is an easy going, placid feline who won't ruin the furniture, preferring to curl up on their humans' lap whenever possible.

Bengal



Origin
USA

Related Breeds
Asian leopard cat, Egyptian Mau

Alternate Names
None

Personality
Active, energetic, playful

Avg. Male Weight
10-18

Avg. Female Weight
6-12



General Overview

Often referred to as the "Miniature Leopard" of the domestic cat breeds, the Bengal is a unique breed designed to resemble exotic wild cats such as leopards, ocelots, margays and clouded leopards. Bengals are characterized by having a lean and muscular body, broad head, relatively short ears and a long, muscular neck. The coat pattern is spotted or marbled and can be any shade of orange-brown, light brown or silver. Sometimes the fur can have a sheen, giving the coat a shimmering appearance. The spots and rosettes are vivid, contrasted and at times multicolored.

Breed History

Bengals were developed in California in 1963, as a result of selective breeding between the hybrids of the Asian leopard cat and domestic cat. The hybrids were backcrossed to domestic cats in order to create a healthy and friendly cat, which expressed the vivid, contrasting coat markings of a leopard cat with the docile temperament of a domestic cat.

Genetic predisposition and health

Bengals are known to be affected by several genetic diseases, such as Bengal Progressive Retinal Atrophy (or PRA-b), a group of diseases characterized by progressive, bilateral retinal degeneration. Bengals are also susceptible to Erythrocyte pyruvate kinase deficiency (PK-Def), an inherited metabolic disorder characterized by disrupted survival of the red blood cells, and hypertrophic cardiomyopathy (HCM), a disease that affects the heart muscle (myocardium).

Personality

If you're looking for an active playmate with lots of purrr-sonality, then a Bengal is the cat for you! These cats, although friendly and devoted companions, are exceptionally curious, energetic, agile and constantly on the move with confidence and flare. Bengals are considered to be highly intelligent and are known to naturally retrieve toys during a game of fetch. They are also one of the few cat breeds that are uncharacteristically fond of playing in water.

Savannah



Origin
USA

Related Breeds
African Serval

Alternate Names
None

Personality
Loyal, athletic, intelligent

Avg. Male Weight
12-25

Avg. Female Weight
12-25



General Overview

The Savannah cat is an elegant cross between an African Serval cat and a domestic cat. Savannah cats are lean and tall, but their size greatly depends on sex and the hybrid's generation. First generations are usually larger, weighing around 8 to 20 pounds, while later generations (F3 and onward) tend to be smaller. The Savannah breed is distinguished by a few prominent features inherited from their wild ancestors. They have exceptionally long bodies, tall and cupped ears, puffy noses and hooded eyes. Their coats are short and dense. TICA accepts only spotted coat patterns which can be brown, silver or black smoke (as these are the only patterns found in the African Serval). However, non-standard colors and patterns can be found as well, such as marble, rosette, pointed, cinnamon, and chocolate among others.

Breed History

The Savannah cat was created by Judee Frank, who crossbred a male African Serval cat with a Siamese domestic cat. The first Savannah cat, also named Savannah, was born on April 7, 1986. The breed was first presented to the board of The International Cat Association (TICA) in 1996, and was finally accepted in 2001. While the wild cat was originally crossed with a Siamese, the hybrids were outcrossed with other domestic cats in the early days to supplement genetic diversity. TICA accepts outcrosses with the Egyptian Mau, Ocicat, Oriental Shorthair and Domestic Shorthair, but outcrosses with Bengal and Maine Coon breeds are not permitted.

Genetic predisposition and health

All cats face a certain risk of developing some type of inherited health problem. However, currently there are no known conditions tightly associated with this particular breed.

Personality

Savannah cats are known to be loyal and friendly with a very calm demeanor. Due to their above average intelligence, they are highly trainable and tend to enjoy being walked on a leash. They are very athletic and agile cats, preferring any activity or game that involves jumping or climbing.

Egyptian Mau



Origin

Egypt

Related Breeds

Turkish cats, Russian Blue, Korat

Alternate Names

The Mau

Personality

Water lover, adventurous, energetic

Avg. Male Weight

10-14

Avg. Female Weight

6-10



General Overview

Loyal, playful and an elite athlete, the Egyptian Mau is one of the few naturally spotted domestic cat breeds. The breed conformation is described by The Cornell Book of Cats as "a balance between the compactness of a Burmese and the slim elegance of a Siamese". The breed comes in five colors, however, only silver, smoke and bronze are considered show worthy. This breed is extremely rare. Today, it is estimated that there are as little as 3,000 Egyptian Mau cats worldwide.

Breed History

There is still a big controversy behind the origins of this breed. While all historic evidence suggest that this is an Egyptian breed, DNA studies reveal that the breed we know today is actually mostly of European and North American origin. The first recording of the breed came from ancient Egypt, as the breed was known to be prized by the Pharaohs, however the question of how the breed surfaced in Egypt in the first place remains a mystery. The first Egyptian Mau was brought to the US in 1956 by a Russian Princess named Nathalie Troubetzkoy.

Genetic predisposition and health

The Egyptian Mau is at a higher risk for developing feline urate urolithiasis, a disease caused by the crystallization of minerals and compounds such as ammonium and uric acid. The disease leads to the build-up of stones within the urinary tract which can ultimately be fatal if left untreated. Egyptian Mau cats are fond of very warm temperatures, and are more temperature sensitive than most other domestic cats. They are noted to also be more sensitive to medicines and anesthesia.

Personality

Vocal, adventurous and a water lover, the Egyptian Mau is an athletic breed that requires an engaging environment. These cats are playful, fast and keen hunters and will thrive in an environment which enables them to express their instincts. They often do better in homes with older children as opposed to younger ones.



Big Joy's genetic health and trait markers

VERSION 4.0



Health Markers

Kitty Genetics 101: Critical Reading

Genotype is the portion of your cat's genome that encodes the physical expression (phenotype) of a particular trait, such as eye color, coat color, or disease predisposition.
Genes comprise the genotype.

Every gene in your kitty's genome is present in two copies—one inherited from each parent. These two copies can be the same or different. If they are different, we say that the cat has two different alleles (gene variants) and is heterozygous for this gene. On the contrary, if the two copies of the gene are the same, the cat is homozygous for the gene of interest.

When it comes to the phenotype, alleles can have different contributions. If the two gene alleles are the same, then they will both contribute to the phenotype equally.

If the two alleles are different, then it is the nature of their relationship that determines which allele will contribute to the phenotype. Some alleles are dominant, meaning that they have the ability to "hide" other alleles and become the sole contributor to the phenotype. In contrast, the allele that is "hidden" in a heterozygous state is known as a recessive allele. A recessive allele can only contribute to the phenotype when your cat is homozygous for that allele, in other words, there is no dominant allele that can hijack the phenotype expression.

How Does It All Relate To Disease?

Genetic disorders are conditions that can be present at birth or develop later in life and are caused by one or more genetic mutations.

We tested your cat for genetic health markers associated with genetic disorders. Genetic health markers are mutated gene alleles that are associated with an increased likelihood of developing a particular genetic disorder. With the exception of hypertrophic cardiomyopathy (which has more complex genetics) and Haemophilia B (which has an X-linked inheritance pattern), the conditions included in this report have either a dominant or a recessive pattern of inheritance. Diseases with a dominant inheritance pattern means that having only one mutated gene allele will result in the cat developing the disease. For diseases with a recessive inheritance pattern, the cat will develop the disease only if it has two mutated alleles. Having only one mutated recessive allele makes the cat a disease "carrier", meaning that it will not develop the disease but can pass the mutation to its kittens.

This section of the report details your kitty's results for 115 genetic markers that are associated with 43 diseases. 'Clear' status indicates that your cat tested negative for all genetic markers associated with a disease. 'Carrier' status means that your cat has one copy of a recessive genetic marker, or that your female cat has one copy of a marker with X-linked inheritance. In either case, this should only be a concern if you plan to breed your cat. 'At risk' and 'At high risk' status means one of three things: (a) your cat has tested positive for a dominant allelic mutation, (b) your cat has two copies of a recessive allelic mutation, or (c) your male cat has one copy of a marker with X-linked inheritance.

If you see either "At risk" or "At high risk", contact your veterinarian.

Please note that Basepaws results should not replace a professional evaluation and clinical diagnosis by a veterinarian. It is also important to understand that a 'Clear' result does not mean that your cat is guaranteed to not develop the disease. It simply means that your cat is negative for the particular mutation(s) that we tested them for. There may be indeed be environmental factors and other genetic mutations that are not yet known (i.e., they are not yet included in our test) which could possibly contribute to developing the disease.

Scientific evidence strength rating system

The genetic markers in this report represent a deep dive into available feline genetics research, including the very latest findings. Some research findings are scientifically stronger than others. For example, a study on 100 cats has stronger statistical power, and its conclusions can be interpreted with greater confidence, than a study on fewer than five cats. The Basepaws report includes a five-star rating system that denotes the strength of the scientific research evidence that is available for each genetic marker, and the interpretation of associated results. This system answers the question: 'How strong is the evidence that this marker is associated with this disease or trait?'



Consistent results reported across multiple scientific studies. More than 100 cats across studies confirmed to have the expected correlation between the genetic marker and physical presentation. Multiple scientific tools used to confirm the mechanism behind the mutation. No contradictory results reported in literature.



Results based on one or more studies reporting findings from at least 30 cats, confirming the expected correlation between the genetic marker and physical presentation. Multiple scientific tools used to confirm the mechanism behind the mutation. No contradictory results reported in literature.



Results based on one or more studies reporting findings from at least 10 cats, confirming the expected correlation between the genetic marker and physical presentation. Multiple scientific tools may or may not have been used to confirm the mechanism behind the mutation. No contradictory results reported in literature.



Results based on a study reporting findings from fewer than 10 cats, confirming the expected correlation between the genetic marker and physical presentation. Multiple scientific tools may or may not have been used to confirm the mechanism behind the mutation. Potentially inconclusive inheritance pattern. No contradictory results reported in literature.



Preliminary results to be interpreted with extreme caution. Based on a scientific study that either focuses on a single cat or on a few studies that report contradictory results.

Health Summary

In this section, you will find a brief description for each of the genetic diseases for which your cat currently has results. Each of these diseases is represented by at least one known health marker. In addition to your cat's results, we also provide details on the genes and genetic mutations included in our test, alongside our five-star scientific evidence grading system for each marker. This grading system assesses the strength of the evidence that links each marker to each disease, and it is based on the amount and quality of scientific literature available.

IMPORTANT: Results for some of the 115 health markers we currently test for may not be available when you first receive your report. Your cat's results for these missing markers may be added over the coming weeks or months. Stay close to your results and check often for any updates on missing markers.

It's important to share this information with your veterinarian, so it can be added to your pet's medical records. If you are a veterinarian, please email vet@basepaws.com or visit basepaws.com/vets.

Clear

The cat is negative (i.e., has zero copies) for all of the markers for which we tested that are known to be associated with a particular disease. This result, however, should not rule out the need to seek a professional diagnosis of this disease by a veterinarian, should the cat develop symptoms. It is still possible that the cat is positive for markers that are yet to be discovered that could be associated with a disease, or in some cases, environmental factors could contribute to a cat's potential to develop the disease.

Carrier

In most cases, this means that the cat has one copy of an autosomal recessive disease-associated marker (mutated gene allele). As a refresher from the health markers intro section, for diseases with a recessive inheritance pattern, the cat will develop the disease only if it has two mutated alleles (two copies of the marker). Alternatively, the 'Carrier' result may mean that a female cat has one copy of a marker associated with a disease that follows an X-linked inheritance pattern. As a carrier, your cat is not at risk for developing the disease, but its offspring may be at risk.

At Risk

The cat has one copy of a marker for a disease where there is a dosage component to disease presentation (e.g., Hypertrophic Cardiomyopathy, Mucopolysaccharidosis VI, Hyperlipoproteinemia). Gene dosage refers to the number of copies of an allele present in a cat's genome (the entire set of genetic instructions stored in their chromosomes). A higher gene dosage results in an increased expression of a disease. This means that having one copy of the disease-associated marker could result in a milder disease presentation, as compared to having two copies where the disease presentation may be more severe.

At High Risk

This designation indicates that there is a very strong chance that the cat will develop the disease. It can mean one of four things: (a) the cat has one or two copies of a marker associated with an autosomal dominant disease (a single copy is enough to cause the disease); (b) the cat has two copies of a marker associated with an autosomal recessive disease; (c) the cat has two copies of a marker associated with a disease, where having these two copies results in a more severe disease presentation than if there was only one copy (i.e., the gene dosage effect); (d) a male cat has one copy of a disease with an X-linked (sex-linked and therefore non-autosomal) inheritance pattern (i.e., they are affected because they only have a single copy of the X chromosome that carries the mutation).

Autoimmune disorders

Leukocyte Adhesion Deficiency

Leukocyte adhesion deficiency (LAD) is an immunodeficiency disorder associated with poorly-functioning neutrophils. Consequently, affected cats are highly susceptible to recurrent infections. LAD is a serious disorder, and if left untreated, affected kittens rarely reach adulthood.

Gene	Mutation	Seen in	Status	
ITGB2	★★★★★ del(GCC..)	None	0 copies	Clear

Autoimmune Lymphoproliferative Syndrome

Autoimmune Lymphoproliferative Syndrome (ALPS) is a lethal disease, distinguished by massive enlargement of lymphatic nodes and the spleen, caused by the accumulation of lymphocytes.

Gene	Mutation	Seen in	Status	
FASLG	★★★★★ ins(A)	British Shorthair	0 copies	Clear

Eye disorders

Glaucoma

Primary congenital glaucoma is an autosomal recessive disease characterized by high fluid pressure in the eye, which damages the optic nerve and ultimately leads to blindness. Early diagnosis and treatment may slow the progression of the disease.

Gene	Mutation	Seen in	Status	
LTBP2	★★★★★ ins(CTC..)	Siamese	0 copies	Clear

Late-Onset Photoreceptor Degeneration (rdAc)

This late-onset type of progressive retinal atrophy (PRA) is caused by an autosomal recessive mutation "rdAc" in the CEP290 gene. The mutation causes progressive degeneration of the retina, slowly leading to vision loss and blindness.

Gene	Mutation	Seen in	Status	
CEP290	★★★★★ A>C	Abyssinian, Somali	0 copies	Clear

Progressive Retinal Atrophy (KIF3B-related)

This progressive retinal atrophy is related to Leber congenital amaurosis—a retinal disease causing severe visual impairment at birth. The disorder is inherited in an autosomal recessive manner, and is associated with the defective functioning of a protein called aryl hydrocarbon receptor-interacting protein-like 1 (AIPL1).

Gene	Mutation	Seen in	Status	
KIF3B	★★★★★ C>T	Bengal	0 copies	Clear

Progressive Retinal Atrophy (AIPL1-related)

This progressive retinal atrophy is related to Leber congenital amaurosis—a retinal disease causing severe visual impairment at birth. The disorder is inherited in an autosomal recessive manner, and is associated with the defective functioning of a protein called aryl hydrocarbon receptor-interacting protein-like 1 (AIPL1).

Gene	Mutation	Seen in	Status	
AIPL1	★★★★★ C>T	Persian	0 copies	Clear

Metabolic disorders

Niemann-Pick disease, type C1

Niemann-Pick disease is a group of autosomal recessive disorders characterized by deficiencies of specific enzymes that are involved in the intracellular transport of lipids. This leads to accumulation of cholesterol in lysosomes, causing neurological deterioration.

Gene	Mutation	Seen in	Status
NPC1	★★★★★ C>G	None	0 copies
NPC1	★★★★★ T>G	None	0 copies

Clear

Mucopolysaccharidosis I

Mucopolysaccharidosis is a metabolic deficiency in the production or functioning of the enzymes required for digestion of glycosaminoglycans (GAGs). Consequently, GAGs start accumulating in the cells, causing progressive cellular damage. The prognosis and life expectancy are variable.

Gene	Mutation	Seen in	Status
IDUA	★★★★★ del(TCG)	None	0 copies
IDUA	★★★★★ del(GTC)	None	0 copies

Clear

Porphyria, acute intermittent (AIP)

Porphyria is a group of diseases associated with the accumulation of porphyrins. There are two types of porphyria described: acute and congenital. The acute type primarily affects the nervous system. Clinical presentation, severity and prognosis vary.

Gene	Mutation	Seen in	Status
HMBS	★★★★★ G>A	None	0 copies
HMBS	★★★★★ del(ACA..)	None	0 copies
HMBS	★★★★★ C>T	None	0 copies
HMBS	★★★★★ ins(T)	None	0 copies
HMBS	★★★★★ G>A	None	0 copies
HMBS	★★★★★ del(GAG)	None	0 copies

Clear

Porphyria, congenital erythropoietic (CEP)

Porphyria is a group of diseases associated with the accumulation of porphyrins. There are two types of porphyria described: acute and congenital. The acute type primarily affects the nervous system. Clinical presentation, severity and prognosis vary.

Gene	Mutation	Seen in	Status
UROS	★★★★★ C>T	None	0 copies
UROS	★★★★★ G>A	None	0 copies

Clear

Metabolic disorders

Mucopolysaccharidosis VII

Mucopolysaccharidosis is a metabolic deficiency in the production or functioning of the enzymes required for digestion of glycosaminoglycans (GAGs). Consequently, GAGs start accumulating in the cells, causing progressive cellular damage. The prognosis and life expectancy are variable.

Gene	Mutation	Seen in	Status	
GUSB	★★★★★ T>G	None	0 copies	
GUSB	★★★★★ C>T	None	0 copies	<button>Clear</button>
GUSB	★★★★★ G>A	None	0 copies	

Niemann-Pick disease, type A

Niemann-Pick disease is a group of autosomal recessive disorders characterized by deficiencies of specific enzymes that are involved in the intracellular transport of lipids. This leads to accumulation of cholesterol in lysosomes, causing neurological deterioration.

Gene	Mutation	Seen in	Status	
SMPD1	★★★★★ G>A	None	0 copies	<button>Clear</button>

Gangliosidosis, type GM2 (variant 0)

Gangliosidosis is a group of lipid storage disorders characterized by the accumulation of gangliosides in neurons. This eventually leads to progressive destruction of the nerve cells in the brain and spinal cord. The disease is not treatable, and typically leads to death within the first year of life.

Gene	Mutation	Seen in	Status	
HEXB	★★★★★ inv(TAC..)	Burmese, Korat	0 copies	
HEXB	★★★★★ del(TAA..)	Burmese, Korat	0 copies	
HEXB	★★★★★ del(C)	Burmese, Korat	0 copies	
HEXB	★★★★★ C>T	Burmese, Korat	0 copies	<button>Clear</button>

Mucopolysaccharidosis VI

Mucopolysaccharidosis is a metabolic deficiency in the production or functioning of the enzymes required for digestion of glycosaminoglycans (GAGs). Consequently, GAGs start accumulating in the cells, causing progressive cellular damage. The prognosis and life expectancy are variable.

Gene	Mutation	Seen in	Status	
ARSB	★★★★★ A>G	Birman, Siamese	0 copies	
ARSB	★★★★★ C>T	Birman, Siamese	0 copies	<button>Clear</button>

Metabolic disorders

Gangliosidosis, type GM1

Gangliosidosis is a group of lipid storage disorders characterized by the accumulation of gangliosides in neurons. This eventually leads to progressive destruction of the nerve cells in the brain and spinal cord. The disease is not treatable, and typically leads to death within the first year of life.

Gene	Mutation	Seen in	Status	
GLB1	★★★★★ C>G	None	0 copies	Clear

Pyruvate Kinase Deficiency

Pyruvate kinase (PK) deficiency is an inherited metabolic disorder characterized by disrupted survival of erythrocytes, leading to anemia, lethargy, weakness, weight loss, abdominal enlargement, and in some cases, jaundice, tachycardia, and muscle wasting. The prognosis and severity are variable.

Gene	Mutation	Seen in	Status	
PKLR	★★★★★ G>A	Somali, Abyssinian	0 copies	Clear

Wilson's Disease

Wilson's Disease is a rare autosomal recessive genetic disorder associated with accumulation of copper in the vital organs, such as the liver and the brain. If left untreated, this can be a lethal disease. Affected cats may show signs of jaundice, lethargy, weight loss, hyperammonemia, and elevated hepatic enzymes.

Gene	Mutation	Seen in	Status	
ATP7B	★★★★★ C>G	None	0 copies	Clear

Dihydropyrimidinuria

Dihydropyrimidinuria is a rare disease associated with a deficiency of the enzyme dihydropyrimidinase. Cats with this disease can suffer from weight loss, vomiting, and lethargy.

Gene	Mutation	Seen in	Status	
DPYS	★★★★★ C>T	None	0 copies	Clear

Metabolic disorders

Alpha-mannosidosis

Alpha-mannosidosis is a lysosomal storage disorder characterized by the deficiency of the alpha-D-mannosidase enzyme and the progressive accumulation of oligosaccharides in all tissues, consequently leading to cell death. Treatment options are scarce.

Gene	Mutation	Seen in	Status	
MAN2B1	★★★★★ del(CTG..)	Persian	0 copies	Clear

Niemann-Pick disease, type C2

Niemann-Pick disease is a group of autosomal recessive disorders characterized by deficiencies of specific enzymes that are involved in the intracellular transport of lipids. This leads to accumulation of cholesterol in lysosomes, causing neurological deterioration.

Gene	Mutation	Seen in	Status	
NPC2	★★★★★ C>T	None	0 copies	Clear

Hyperlipoproteinemia

Hyperlipoproteinemia is a disease characterized by a deficiency in the digestion of lipids and lipoproteins, mainly cholesterol and triglycerides. Their persistently elevated levels in the blood pose multiple health threats, such as heart disease. Timely diagnosis improves prognosis.

Gene	Mutation	Seen in	Status	
LPL	★★★★★ C>T	None	0 copies	Clear

Gangliosidosis, type GM2 (variant AB)

Gangliosidosis is a group of lipid storage disorders characterized by the accumulation of gangliosides in neurons. This eventually leads to progressive destruction of the nerve cells in the brain and spinal cord. The disease is not treatable, and typically leads to death within the first year of life.

Gene	Mutation	Seen in	Status	
GM2A	★★★★★ del(GAC..)	None	0 copies	Clear

Metabolic disorders

Neuronal Ceroid Lipofuscinosis

Neuronal ceroid lipofuscinosis (NCL) is a neurodegenerative lysosomal storage disease. It is characterized by abnormal accumulation of lipopigments in the neurons, liver, spleen, kidneys, and heart. NCL is associated with progressive blindness and neurologic deficits.

Gene	Mutation	Seen in	Status	
MFSD8	★★★★★ del(T)	None	0 copies	Clear

Blood disorders

Factor XII Deficiency

Factor XII deficiency, or Hageman deficiency, is a blood clotting disorder characterized by deficiency in the coagulation factor XII. Luckily, unlike other types of haemophilias, this condition is not severe and prognosis is typically very good.

Gene	Mutation	Seen in	Status	
F12	★★★★★ del(C)	None	0 copies	<button>Clear</button>
F12	★★★★★ G>C	None	0 copies	

Methemoglobinemia

Methemoglobinemia is a disease characterized by elevated levels of methemoglobin in the blood. The disease presentation is variable, but usually includes brownish discoloration of mucous membranes and blood with a brownish hue. Complications can involve arrhythmias and seizures.

Gene	Mutation	Seen in	Status	
CYB5R3	★★★★★ C>T	None	0 copies	<button>Clear</button>
CYB5R3	★★★★★ C>G	None	0 copies	

Haemophilia B

Haemophilia B, also known as Christmas disease, is an X chromosome-linked recessive deficiency of coagulation factor IX. Like other haemophilias, the disorder is characterized by dysfunctional blood coagulation in a case of injury. The prognosis and treatment depend on the severity of the disease.

Gene	Mutation	Seen in	Status	
F9	★★★★★ G>A	None	0 copies	<button>Clear</button>
F9	★★★★★ C>T	None	0 copies	

Glanzmann Thrombasthenia

Glanzmann thrombasthenia is a rare genetic coagulation disorder. The disease is caused by a mutation in an integrin gene, resulting in the inability of thrombocytes to clot blood. The severity and presentation of the disease are variable.

Gene	Mutation	Seen in	Status	
ITGA2B	★★★★★ del(G)	None	0 copies	<button>Clear</button>

Musculoskeletal and connective tissue disorders

Hypokalemic Periodic Paralysis

Hypokalemic periodic paralysis is a genetic disease of the Burmese and closely related cat breeds that is characterized by low potassium ion (K^+) levels in the blood. The condition is marked by either generalized or localized skeletal muscle weakness, often episodic in nature.

Gene	Mutation	Seen in	Status	
WNK4	★★★★★ C>T	Burmese	0 copies	Clear

Vitamin D-deficiency rickets, type IA

Vitamin D-dependent rickets is a disease associated with the softening of bones and an increased rate of bone deformities and fractures.

Gene	Mutation	Seen in	Status	
CYP27B1	★★★★★ del(C)	None	0 copies	Clear
CYP27B1	★★★★★ C>A	None	0 copies	

Ehlers-Danlos Syndrome

Ehlers-Danlos syndrome is a genetic disorder of the connective tissue that is associated with defective formation of collagen. The disease causes abnormally extensible skin, hindered wound healing, and hypermobility of joints. Treatment is focused on relieving symptoms and preventing complications.

Gene	Mutation	Seen in	Status	
COL5A1	★★★★★ del(C)	None	0 copies	Clear

Myotonia Congenita

Myotonia Congenita (MC) is a hereditary neuromuscular disorder characterized by persistent muscle contraction (or delayed relaxation of muscles). The overall prognosis of the disease is poor, and treatment options are scarce.

Gene	Mutation	Seen in	Status	
CLCN1	★★★★★ G>T	None	0 copies	Clear

Vitamin D-deficiency rickets, type IB

Vitamin D-dependent rickets is a disease associated with the softening of bones and an increased rate of bone deformities and fractures.

Gene	Mutation	Seen in	Status	
CYP2R1	★★★★★ del(A)	None	0 copies	Clear

Musculoskeletal and connective tissue disorders

Fibrodysplasia Ossificans

Fibrodysplasia ossificans is a connective tissue disease that results in severe disability. This condition causes muscles, filaments, and tendons to ossify (turn into bony tissues), either spontaneously or post-injury. Due to the formation of a secondary skeleton in place of damaged muscle tissues, the cat's ability to move is progressively hindered.

Gene	Mutation	Seen in	Status	
ACVR1	★★★★★ C>T	None	0 copies	Clear

Cardiovascular disorders

Hypertrophic Cardiomyopathy

Hypertrophic cardiomyopathy (HCM) is the most common feline heart disease, and it is characterized by tachycardia and the thickening of the heart's muscular walls. The severity of the disease is variable, but if diagnosed early, different treatment options are available.

Gene	Mutation	Seen in	Status
TNNT2	★★★★★ C>T	Maine Coon	0 copies
MYBPC3	★★★★★ G>A	Maine Coon	0 copies
MYH7	★★★★★ C>T	None	0 copies
MYBPC3	★★★★★ C>G	Ragdoll	0 copies

Clear

Renal disorders

Cystinuria, type B

Cystinuria is an inherited metabolic disease characterized by defective amino acid reabsorption, leading to the formation of cystine stones in the kidneys, ureter and bladder, and eventually, to urinary obstruction. There are no available treatments for this condition.

Gene	Mutation	Seen in	Status	
SLC7A9	★★★★★ T>A	None	0 copies	
SLC7A9	★★★★★ A>G	None	0 copies	
SLC7A9	★★★★★ G>A	None	0 copies	Clear
SLC7A9	★★★★★ C>T	None	0 copies	
SLC7A9	★★★★★ G>A	None	0 copies	

Polycystic Kidney Disease

Polycystic kidney disease (PKD) is an autosomal dominant genetic disease characterized by the formation of small fluid-filled cysts in the kidneys, which leads to kidney damage and failure. The disease is progressive and irreversible, but early diagnosis can significantly improve prognosis.

Gene	Mutation	Seen in	Status	
PKD1	★★★★★ C>A	Persian	0 copies	Clear

Cystinuria, type IA

Cystinuria is an inherited metabolic disease characterized by defective amino acid reabsorption, leading to the formation of cystine stones in the kidneys, ureter and bladder, and eventually, to urinary obstruction. There are no available treatments for this condition.

Gene	Mutation	Seen in	Status	
SLC3A1	★★★★★ C>T	None	0 copies	Clear

Primary Hyperoxaluria

Primary hyperoxaluria is a severe, autosomal recessive disorder associated with an elevated deposition and excretion of oxalates. This leads to formation of renal and bladder oxalate stones, and eventually, kidney damage and failure. Therapy is restricted to the treatment of symptoms.

Gene	Mutation	Seen in	Status	
GRHPR	★★★★★ G>A	None	0 copies	Clear

Endocrine disorders

Congenital Adrenal Hyperplasia

Congenital adrenal hyperplasia is an autosomal recessive disease characterized by an imbalance in the production of the adrenal hormones cortisol and aldosterone. The severity of the condition depends on the nature of the deficiency, and common presentations include altered development of primary and secondary sex characteristics.

Gene	Mutation	Seen in	Status	
CYP11B1	★★★★★ G>A	None	0 copies	Clear

Hypogonadotropic Hypogonadism

Hypogonadotropic hypogonadism is associated with a gonadotropin-releasing hormone (GnRH) deficiency. The presentation of the disease depends on the severity, and affected cats typically suffer from hindered sexual development.

Gene	Mutation	Seen in	Status	
TAC3	★★★★★ C>T	None	0 copies	Clear

Hypothyroidism

Hypothyroidism in cats is a rare and complex glandular disorder caused by an under-active thyroid gland. As a result, thyroid hormones triiodothyronine (T3) and thyroxine (T4) are under-produced. If diagnosed correctly and as early as possible, the prognosis and management of the disease can be promising.

Gene	Mutation	Seen in	Status	
TPO	★★★★★ C>T	None	0 copies	Clear

Skin disorders

Inflammatory Linear Verrucous Epidermal Nevus

Inflammatory Linear Verrucous Epidermal Nevus (ILVEN) is an inherited disease characterized by skin overgrowth and the formation of pigmented, itchy cutaneous lesions. These wart-like lesions are called epidermal nevi, and affected areas are prone to inflammation. Due to the rarity of this disease in cats, there is no established treatment protocol.

Gene	Mutation	Seen in	Status	
NSDHL	★★★★★ A>G	None	0 copies	Clear

Epidermolysis Bullosa Simplex

Epidermolysis bullosa simplex (EBS) is a genetic disease associated with highly fragile skin and mucous membranes, due to mutations in genes associated with cytoskeletal cell functions. Common issues include blistering and wounding of the skin, ulcer formation on mucous membranes, and nail deformities in response to mild traumas.

Gene	Mutation	Seen in	Status	
KRT14	★★★★★ G>A	None	0 copies	Clear

Blood type and transfusion risk

Only one blood type system has been established in domestic cats—the AB system. There are three feline blood types: A, B, and AB. A fourth blood type, MiK, has also been identified, but not much is known about it other than the fact that it is very rare (occurring in less than 1% of cats).

The genetics behind feline blood types is rather complicated. There is scientific literature on seven different markers that may play a role in determining a cat's blood type. However, only four of them are considered the most reliable and consistent predictors. These four are the markers for which we screen in this test. They are all mutations in the Cytidine monophospho-N-acetylneuraminc acid hydroxylase (CMAH) gene.

IMPORTANT: Due to the imperfect relationship between genetics and blood type, we strongly recommend performing a serological blood typing test with your veterinarian, especially if blood type information is needed for making any medical decisions.

Blood Group A

Most cats of European or American descent have blood type A. This is considered the most prevalent feline blood type, with more than 70% of cats estimated to have blood type A.

Blood Group B

The prevalence of blood type B varies widely depending on the cat's pedigree. This blood type is very rarely seen in Maine Coons and Norwegian Forest Cats, and more frequently in the British shorthair and in Exotic and rexoid breeds.

Blood Group AB

Blood type AB is extremely rare, with an estimated prevalence across pedigreed and non-pedigreed cats of less than 1%.

Likely blood type based on genotype

Gene	Mutation	Status
CMAH	★★★★★ G>T	0
CMAH	★★★★★ T>A	0
CMAH	★★★★★ C>T	0
CMAH	★★★★★ del(T)	0

Blood type A

Blood transfusion risk

It is recommended that the blood types of both the donor and the recipient are established before a transfusion. Cats with blood type A should only receive blood from cats of the same blood type. Transfusion from type B donors to type A recipients does not work efficiently, and may be accompanied by mild incompatibility symptoms such as restlessness, tachycardia, and tachypnea.

Medium

Traits

This section presents your cat's results for a variety of genetic markers associated with physical traits that can be seen. Additionally, we screened your feline companion for one important trait that you cannot see with the naked eye: resistance to Feline Immunodeficiency Virus (FIV).

For many traits in this section, there are multiple known variants associated with each trait. Similar to the health markers section of this report, we have included a five-star scientific evidence grading system for each marker. This evidence grading assesses the strength of evidence linking each marker to each trait, based on the amount and quality of scientific literature available. In rare cases, it is possible that your cat is positive for a marker, but does not exhibit the physical trait associated with it due to complex genetic or epigenetic interactions that may not be well understood. Epigenetic interactions include behavior and environment, which can cause changes that affect the way your cat's genes work, but are reversible and do not change your cat's DNA sequence.

It is also possible that your cat does exhibit a physical trait, but has tested negative for all known markers associated with the trait. What this means is that, in your cat's case, this specific physical presentation may have different underlying genetics to what is currently known in the scientific literature. If this is the case, it is one more reason why your cat is special! Let us know (email us at meow@basepaws.com) if you have such a special kitty, as they could potentially help contribute to the advancement of feline genetics research!

IMPORTANT: Results for some of the 50 trait markers we currently test for may not be available when you first receive your report. Your cat's results for these missing markers may be added over the coming weeks or months. Stay close to your results and check often for any updates on missing markers.

Carrier

The cat has one copy of a marker associated with a specific physical trait, however, it is unlikely to be physically manifesting this trait. This could be because the trait has an autosomal recessive pattern of inheritance (i.e., needs two copies to manifest physically) or because the physical presentation of the trait is associated with a specific combination of markers, of which your cat only has one.

Likely to Have

The cat is positive for a marker (or markers) linked to a specific trait, and is likely to exhibit this trait. This could be a result of the cat having one copy of a trait marker with an autosomal dominant pattern of inheritance, or the cat having two copies of a marker with an autosomal recessive pattern of inheritance. Alternatively, your cat could have the specific allelic series (combination of markers) that is likely to result in a specific trait.

Not Likely to Have

Based on the cat's genotype, it is unlikely that it is exhibiting this particular trait.

Coat texture

Curly coat

The genetic variations resulting in curly fur are called rex mutations. They can occur in a variety of genes, thus creating various types of curly coats in cats. These mutations cause changes in the hair structure, leading to the curly appearance.

Gene	Mutation	Seen in	Status
KRT71	★★★★★ TCC..>ATC..	Devon Rex	0 copies
KRT71	★★★★★ C>G	Devon Rex	0 copies
LPAR6	★★★★★ del(GTT..)	Cornish Rex, German Rex	0 copies
KRT71	★★★★★ C>T	Devon Rex	0 copies

Not Likely To Have

Sphynx Coat

The Sphynx coat type is characterised by a lack of fur, with very fine hairs covering the body, particularly around the nose, tail, and toes. These hairs don't have a well-formed bulb, which makes them easily dislodged. The Sphynx coat is associated with an autosomal recessive allele of the KRT71 gene.

Gene	Mutation	Seen in	Status
KRT71	★★★★★ TCC..>ATC..	Sphynx, Kohana	0 copies
KRT71	★★★★★ C>T	Sphynx, Kohana	0 copies

Not Likely To Have

Lykoi coat

Lykoi (werewolf) cats have a characteristic form of partial hairlessness (hypotrichia), where there is a significant reduction in the average number of follicles per hair follicle group as compared to domestic shorthair cats. Fur on the limbs is even sparser. The phenotype is associated with a variety of mutations in the HR gene.

Gene	Mutation	Seen in	Status
HR	★★★★★ ins(GT)	Lykoi	0 copies
HR	★★★★★ GT>GCA..	Lykoi	0 copies
HR	★★★★★ C>T	Lykoi	0 copies
HR	★★★★★ ins(GAC..)	Lykoi	0 copies
HR	★★★★★ C>T	Lykoi	0 copies
HR	★★★★★ G>A	Lykoi	0 copies

Not Likely To Have

Coat texture

Hypotrichosis

An autosomal recessive allele of the FOXN1 gene is associated with an almost complete lack of hair (hypotrichosis) and a shortened life expectancy. Most kittens with two mutated FOXN1 gene copies die before their first birthday. This mutation was described in Birman cats.

Gene	Mutation	Seen in	Status
FOXN1	★★★★★ del(ACA..)	Birman	0 copies Not Likely To Have

Coat color and pattern

Charcoal coat color

The charcoal colored coat seen in some Bengal cats is the product of two distinct alleles of the ASIP gene, inherited together. The first allele is the one associated with a solid black coat (melanism) in domestic cats, while the second allele is inherited directly from the Asian leopard cat.

Gene	Mutation	Seen in	Status
ASIP	★★★★★ T>C	Bengal	0 copies
ASIP	★★★★★ A>G	Bengal	0 copies
ASIP	★★★★★ A>T	Bengal	0 copies
ASIP	★★★★★ T>C	Bengal	0 copies
ASIP	★★★★★ G>T	Bengal	0 copies
ASIP	★★★★★ C>G	Bengal	0 copies
ASIP	★★★★★ del(CA)	Bengal	2 copies
ASIP	★★★★★ C>T	Bengal	0 copies
ASIP	★★★★★ A>G	Bengal	0 copies

Not Likely To Have

Amber coat color

The melanocortin 1 receptor gene (MC1R) is responsible for the deposition of pigment in hair. Recessive alleles of this gene produce bright red to yellow coat pigmentation. A mutation described in Norwegian Forest cats is associated with the "amber" red coat. These cats are born a different color, with amber shades developing over time.

Gene	Mutation	Seen in	Status
MC1R	★★★★★ G>A	Norwegian Forest Cat	0 copies

Not Likely To Have

Cinnamon coat color

Brown coat color variations are caused by various mutations in the gene coding for tyrosinase-related protein-1 (TYRP1). The cinnamon (light brown) coat color is a consequence of inheriting two mutated copies of the TYRP1 gene.

Gene	Mutation	Seen in	Status
TYRP1	★★★★★ C>T	None	0 copies

Not Likely To Have

Coat color and pattern

Chocolate coat color

Brown coat color variations are caused by various mutations in the gene coding for tyrosinase-related protein-1 (TYRP1). The chocolate coat color is a consequence of inheriting two mutated copies of the TYRP1 gene.

Gene	Mutation	Seen in	Status
TYRP1	★★★★★ C>G	None	0 copies
TYRP1	★★★★★ G>A	None	0 copies

Not Likely To Have

Russet coat color

The melanocortin 1 receptor gene (MC1R) is responsible for the deposition of pigment in hair. Recessive alleles of this gene produce bright red to yellow coat pigmentation. A mutation described in Burmese cats produces the "russet" red coat. These cats are born a different color, with red shades developing over time.

Gene	Mutation	Seen in	Status
MC1R	★★★★★ del(TCT)	Burmese	0 copies

Not Likely To Have

Copal coat color

The melanocortin 1 receptor gene (MC1R) is responsible for the deposition of pigment in hair. Recessive alleles of this gene produce bright red to yellow coat pigmentation. A mutation described in Burmese cats produces the "russet" red coat. These cats are born a different color, with red shades developing over time.

Gene	Mutation	Seen in	Status
MC1R	★★★★★ del(GCG..)	Kurilian Bobtail	0 copies

Not Likely To Have

Blotched tabby coat color

The tabby coat is characterized by a mix of two features: (1) a light background component where individual hairs have light bands, and (2) a superimposed darker component where hairs have almost no banding. In blotched tabbies, the dark component is expanded into loosely-organized structures, forming wide whorls. The genetic determination of tabby coloration is complicated (and not fully understood), but different mutations in the gene LVRN play a key role in forming the blotched or mackerel tabby coat phenotype.

Gene	Mutation	Seen in	Status
LVRN	★★★★★ G>A	None	0 copies
LVRN	★★★★★ C>A	None	0 copies
LVRN	★★★★★ A>G	None	0 copies

Not Likely To Have

Coat color and pattern

Dilute coat color

The dilute coat color phenotype in cats is related to both the eumelanin and phaeomelanin pigment pathways. When two copies of a mutation in the melanophilin gene (*MLPH*) are inherited, the pigment deposition in hair is affected and the original coat color is altered. For example, black fur becomes gray, and orange will turn cream.

Gene	Mutation	Seen in	Status
<i>MLPH</i>	★★★★★ del(T)	None	0 copies Not Likely To Have

Siamese coat color

The Siamese 'colorpoint' coat is a form of albinism characterized by darker pigmentation at the extremities of the body (ears, tail, paws). This appearance is due to a temperature-sensitive mutation in the tyrosinase gene, causing pigment to be produced only at the cooler extremities of the body. This coat type is characteristic of Siamese, Birman and Himalayan cats.

Gene	Mutation	Seen in	Status
<i>TYR</i>	★★★★★ C>A	Siamese, Birman, Himalayan	0 copies
<i>TYR</i>	★★★★★ G>A	Siamese, Birman, Himalayan	0 copies
<i>TYR</i>	★★★★★ G>A	Siamese, Birman, Himalayan	0 copies
<i>TYR</i>	★★★★★ C>T	Siamese, Birman, Himalayan	2 copies
<i>TYR</i>	★★★★★ del(G)	Siamese, Birman, Himalayan	0 copies
<i>TYR</i>	★★★★★ del(G)	Siamese, Birman, Himalayan	0 copies

Likely To Have

Albinism

Albinism is a phenotype characterized by a lack of pigmentation in hair (appearing as a solid white coat), skin, and eyes. It is associated with a recessive allele of the tyrosinase gene. Albino cats tend to have blue or pink eyes.

Gene	Mutation	Seen in	Status
<i>TYR</i>	★★★★★ G>A	None	0 copies
<i>TYR</i>	★★★★★ del(G)	None	0 copies Not Likely To Have

Coat color and pattern

Mackerel tabby coat color

The tabby coat is characterized by a mix of two features: (1) a light background component where individual hairs have light bands, and (2) a superimposed darker component where hairs have almost no banding. In mackerel tabbies, the coat has a striped appearance. The genetic determination of tabby coloration is complicated (and not fully understood), but different mutations in the gene LVRN play a key role in forming the tabby coat phenotype.

Gene	Mutation	Seen in	Status
LVRN	★★★★★ C>A	None	0 copies
LVRN	★★★★★ A>G	None	0 copies

Not Likely To Have

Body morphology

Osteochondrodysplasia

Folded ears are associated with osteochondrodysplasia, a genetic condition affecting cartilage tissues throughout the body. The phenotype is linked to an autosomal dominant allele of a gene named TRPV4. This mutation is specific to the Scottish Fold breed. Affected cats have ears folded forward and down, as well as different degrees of malformation in the distal forelimbs, distal hindlimbs, and tail, as well as progressive joint destruction.

Gene	Mutation	Seen in	Status
TRPV4	★★★★★ C>A	None	0 copies Not Likely To Have

Short and kinked tail

A dominantly inherited mutation in a gene responsible for proper body patterning and segmentation, HES7, is the cause of the short tail phenotype characteristic of the Japanese Bobtail breed.

Gene	Mutation	Seen in	Status
HES7	★★★★★ A>G	Japanese Bobtail	0 copies Not Likely To Have

Short tail

A variety of short tail phenotypes are associated with autosomal dominant mutations in the T gene. Some of the breeds among which these mutations can be found are Manx, American Bobtail, and Pixie-Bob.

Gene	Mutation	Seen in	Status
T	★★★★★ del(G)	Manx, American Bobtail, Pixie-bob	0 copies
T	★★★★★ del(G)	Manx, American Bobtail, Pixie-bob	0 copies
T	★★★★★ del(A)	Manx, American Bobtail, Pixie-bob	0 copies
T	★★★★★ GGC..>CTG..	Manx, American Bobtail, Pixie-bob	0 copies Not Likely To Have

Body morphology

Polydactyly

Cats have four toes and one dewclaw (thumb) on each front paw, and four toes on each hind paw. Polydactyly is a phenotype characterized by a higher number of toes, either on the outer or inner side of the paw. Any cat may be born polydactyl, but the trait seems to be most common among Maine Coons.

Gene	Mutation	Seen in	Status
ZRS	★★★★★ C>G	None	0 copies
ZRS	★★★★★ T>A	None	0 copies
ZRS	★★★★★ T>C	None	0 copies

Not Likely To Have

Susceptibility to viral infection

Resistance to FIV

Feline Immunodeficiency Virus (FIV) is a lentivirus affecting from 2.5% to 4.4% cats worldwide, causing a disease similar to human AIDS. A variant of the APOBEC3Z3 gene was demonstrated to suppress the infectivity of FIV, thus making cats that carry this variant more likely to be resistant to infection.

Gene	Mutation	Seen in	Status
APOBEC3Z3	★★★★★ GC>AT	None	0 copies Not Likely To Have

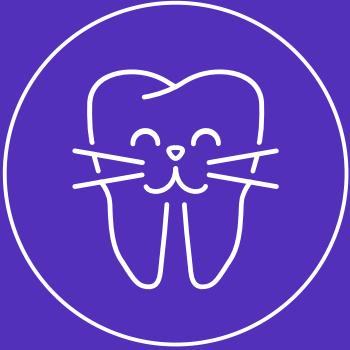
Coat length

Long-haired coat

The long-haired coat can be a typical feature of Maine Coon, Persian, Ragdoll, and Somali cats, as well as of some mixed-breed cats. The long-haired coat phenotype is associated with various mutations in the fibroblast growth factor 5 (FGF5) gene.

Gene	Mutation	Seen in	Status
FGF5	★★★★★ del(A)	Maine Coon, Persian, Ragdoll, Somali	0 copies
FGF5	★★★★★ T>G	Maine Coon, Persian, Ragdoll, Somali	1 copies
FGF5	★★★★★ G>T	Maine Coon, Persian, Ragdoll, Somali	1 copies
FGF5	★★★★★ A>T	Maine Coon, Persian, Ragdoll, Somali	1 copies
FGF5	★★★★★ G>A	Maine Coon, Persian, Ragdoll, Somali	0 copies
FGF5	★★★★★ ins(A)	Maine Coon, Persian, Ragdoll, Somali	0 copies

Not Likely To Have



Big Joy's Dental Health Report

VERSION 4.0



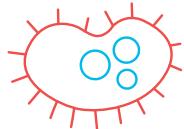
Dental Disease 101

Did you know?

Dental disease affects 50-90% of cats over the age of four.

Fortunately, most dental diseases are preventable with a good dental care routine and are mostly treatable, if caught early. The microbes in a cat's mouth can inform us of developing dental issues before they become visible by a veterinarian during a routine checkup, which is usually when the disease has already reached an advanced stage. The Basepaws Dental Health test looks for microbial signatures associated with three of the most common dental conditions in cats: Periodontal Disease, Tooth Resorption, and Halitosis (bad breath).

The oral microbiome

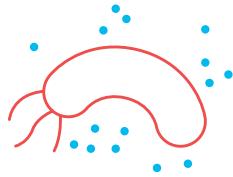


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Can the oral microbiome change?



YES! The oral microbiome is not static.

Different factors such as diet (dry versus wet food), environment (indoor versus outdoor), supplement intake, medications (particularly antibiotics), and dental care routines can all influence the composition of the oral microbiome.

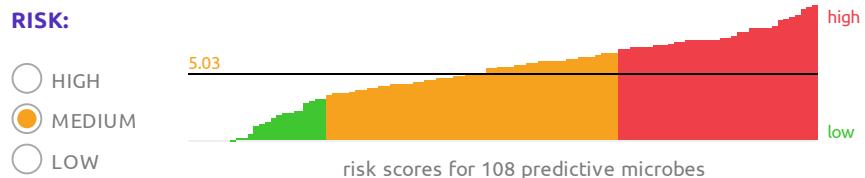
This is why testing early and testing often is key for optimal dental health!

Dental Health Summary

How does this test work? We used our oral microbiome database of healthy cats and of cats known to be suffering from periodontal disease, tooth resorption, or halitosis to identify a set of predictive microbes whose compositional abundance is associated with each condition. Based on these results, we developed a 0 - 10 risk score system for each condition, where 0 - 3.3 reflects a 'low' risk, 3.4 - 6.6 a 'medium' risk, and 6.7 - 10 a 'high' risk. **The results below show Big Joy's overall risk for each of the three conditions, as well as a breakdown of the proportions of predictive microbes whose compositional abundance in the mouth is associated with high, medium, or low risk for each dental condition (denoted by the colors red, yellow, and green, respectively).** The purple line and the number next to it indicate your cat's risk score for each condition.

Risk for periodontal disease

Periodontal disease affects the tissues surrounding the teeth. Initial stages are classified as gingivitis, while advanced cases are known as periodontitis.



Risk for tooth resorption

Tooth resorption is a relatively common condition characterized by progressive dentin erosion.



Risk for bad breath (halitosis)

When bad breath is a persistent problem for a cat, this could be indicative of more serious general health issues.



What's next?

- Adopt a daily dental care routine for Big Joy to improve dental health
- You can supplement Big Joy's dental care routine with [products accepted by the Veterinary Oral Health Council](#)
- Keep up with routine veterinarian visits at least annually

• **NEXT RECOMMENDED dental health test in: 3-6 months**

What (else) does your cat eat?

Are you sure you know everything that goes into your cat's mouth? We analyzed Big Joy's sample for trace DNA from a wide variety of plants and animals. Here are the non-microbial organisms that we found. Does this surprise you?

Does any of this surprise you?



dog



Wow, what does this mean?

There are many possible explanations for these results:

- **These organisms may reflect the composition of Big Joy's typical meals**

If Big Joy is an indoor/outdoor cat, these results may represent favorite animals (and plants!) to hunt outside

- **Big Joy could be sharing your meal**
 - taking a bite when you are not at the table or picking up crumbs from the floor

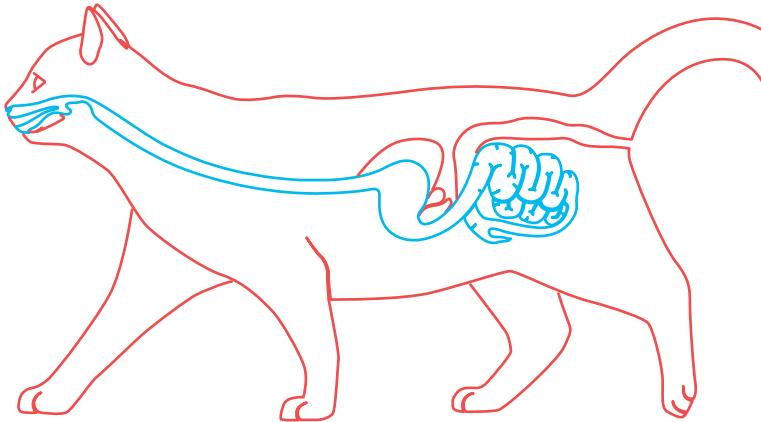
We could have detected an organism that is not a typical part of Big Joy's diet, but instead, something eaten right before the sample was collected

TO DO: Test Big Joy again in 3 months to see if the results have changed

Health implications

Great news!

Currently, your cat's oral health is unlikely to be having a negative effect on their general health. Cats with good oral health are less prone to developing chronic kidney disease, diabetes mellitus, cardiovascular problems and some autoimmune diseases.



What can you do?

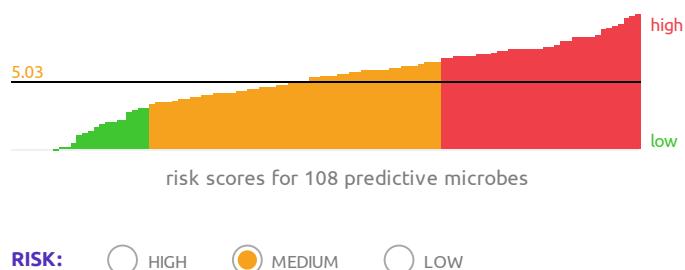
- It is important to regularly assess a cat's dental health in order to address any emerging issues early on and minimize chances of them negatively impacting general health.
- Adopting a thorough and consistent dental care routine at home can significantly reduce the chance of developing dental diseases. This will in turn reduce your cat's likelihood of developing more serious general health problems.

Periodontal disease

Periodontal disease (PD) is a group of inflammatory disorders affecting the tissues surrounding the teeth. Periodontal disease is initiated by the build-up of plaque on the tooth surface resulting in the gingiva becoming inflamed (gingivitis). Without an effective oral care regime, inflammation can begin to destroy the structures that support the tooth (periodontitis). Periodontal disease affects up to 80% of the adult feline population. Below you will see how your cat's oral microbiome compares to a healthy population when it comes to microbial signatures of periodontal disease.

We analyzed Big Joy's oral microbiome to establish the compositional abundance of 110 microbes predictive of periodontal disease. We ranked each microbe's abundance on a scale from 1 to 5, where 1 represents abundance levels close to a healthy control population and 5 represents abundance levels close to cats with periodontal disease. Below are Big Joy's TOP 3 most significant microbes associated with high, medium and low risk, respectively.

Average risk across microbes



Currently, Big Joy's abundance levels for 35 out of 108 microbes are consistent with having periodontal disease (32%).

Top 3 high risk microbes

Moraxella ovis



Salmonella enterica



Moraxella osloensis



Top 3 medium risk microbes

Bacteroides heparinolyticus



Neisseria wadsworthii

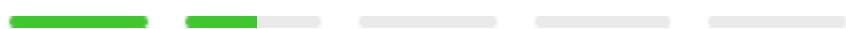


Neisseria subflava



Top 3 low risk microbes

Neisseria dentiae



Ottowia sp. oral taxon 894



Rodentibacter pneumotropicus

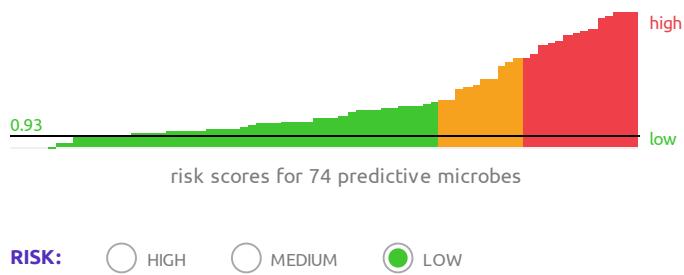


Tooth resorption

Every tooth is composed of a root canal (containing nerves, blood and lymphatic vessels) and bony substances called dentin and enamel. When a cat suffers from tooth resorption, the dentin of the affected tooth starts to progressively erode. Unfortunately, tooth resorption is relatively common, affecting 20-60% of all cats and over 70% of cats over the age of five. Below, you can see how your cat compares to the healthy feline population with regards to abundance of microbes associated with tooth resorption.

We analyzed Big Joy's oral microbiome to establish the compositional abundance of 74 microbes predictive of tooth resorption. We ranked each microbe's abundance on a scale from 1 to 5, where 1 represents abundance levels close to a healthy control population and 5 represents abundance levels close to cats with tooth resorption. Below are Big Joy's TOP 3 most significant microbes associated with high, medium and low risk, respectively.

Average risk across microbes



Currently, Big Joy's abundance levels for 14 out of 74 microbes are consistent with having tooth resorption (19%).

Top 3 high risk microbes

Psychrobacter sp. PRwf-1



Moraxella ovis



Moraxella osloensis



Top 3 medium risk microbes

Acetoanaerobium sticklandii



Bacteroides xylinisolvans



Streptococcus canis

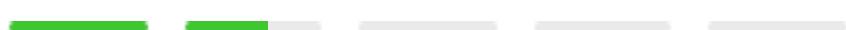


Top 3 low risk microbes

Acinetobacter junii



Pelistega sp. NLN63



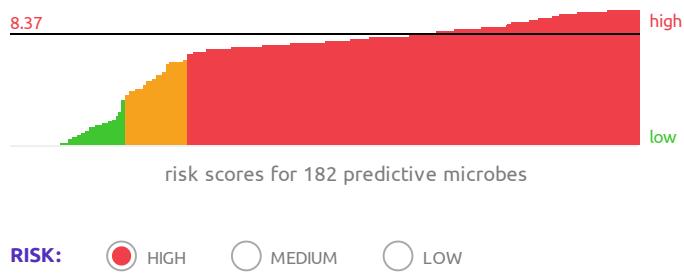
Fusobacterium gonidiaformans



Bad breath (halitosis)

Occasional bad breath is usually not something you should worry about. When bad breath is a persistent problem, this could be indicative of more serious issues. The most common cause of bad breath is periodontal disease. Different types of bad breath can also indicate general health problems, such as kidney disease, diabetes and some liver disorders. Here is how your cat's oral microbiome compares to the general healthy population when it comes to halitosis.

Average risk across microbes



We analyzed Big Joy's oral microbiome to establish the compositional abundance of 138 microbes predictive of bad breath. We ranked each microbe's abundance on a scale from 1 to 5, where 1 represents abundance levels close to a healthy control population and 5 represents abundance levels close to cats with bad breath. Below are Big Joy's TOP 3 most significant microbes associated with high, medium and low risk, respectively.

Currently, Big Joy's abundance levels for 134 out of 182 microbes are consistent with having bad breath (74%).

Top 3 high risk microbes

Acidovorax sp. JS42



Acidovorax ebreus



Pseudomonas denitrificans (nom. rej.)



Top 3 medium risk microbes

Aggregatibacter aphrophilus



Ottowia oryzae

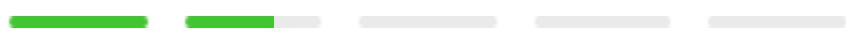


Propioniciclavula sp. HDW11

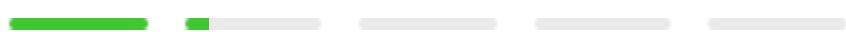


Top 3 low risk microbes

Cardiobacterium hominis



Neisseria dentiae



Bacteroides zoogloformans



What's next

At home care

To improve your cat's oral health, adopt a daily dental care routine, if you don't already have one. If you already have a routine, consider modifying it or supplementing it by implementing some of the suggestions below.

While tooth brushing is the most effective at home treatment (when done properly), we understand that every cat is different and might have different tolerance levels for this method. This is especially true if your cat shows any signs of dental discomfort and pain (dropping food, loss of appetite, favoring one side over the other when chewing, drooling). We teamed up with some of the world's top veterinary dentistry professionals to provide you with support and innovative solutions on how to best approach brushing your cat's teeth and other tips and tricks for optimal dental hygiene.

Watch the video to learn how to tailor your routine to your cat's personality and comfort level.



[learn more](#)

You can also read about some effective, off-the-beaten-path ways to maximize the effect of your cat's dental care routine in this article.

In addition, you can also learn how to perform routine 'flip the lip' exams at home and recognize signs of dental pain in your cat (dropping food, loss of appetite, favoring one side over the other when chewing, drooling).

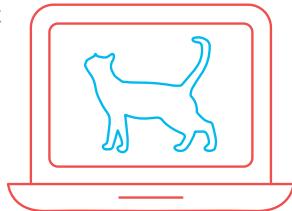
Finally, you can consider incorporating some of [the products accepted by the Veterinary Oral Health Council](#) to support your preventative dental care routine. These products have demonstrated efficacy in fighting plaque and tartar buildup, which are the root cause of many dental problems.

Veterinary oral exam



Have a question for Basepaws?

If you have a question about any part of this report, you can send us an email at:
meow@basepaws.com



We have identified some potential signs of dental disease in your cat's mouth.

We recommend scheduling an appointment with your veterinarian in the next few months for an in-person general and dental health assessment. You can also share this report with your veterinarian by clicking [here](#).



Want to discuss your results with other cat parents? Join our [facebook group!](#)

Would you like to tell us more about your cat's dental and general health? Contribute to feline dental health research by filling out this survey.

Next dental health test recommended in: 6 months or sooner if any of the following change: diet, medications, supplements, general health

Appendix

Sequencing and analysis methodology

Most direct-to-consumer microbiome tests use a technique called '16S rRNA gene sequencing'.

This technique can only provide information about the bacteria present in the microbiome. However, it is well known that the microbiome is composed of viruses, protozoa, fungi, and archaea species, in addition to bacteria. This means that the 16S approach zooms in on just one part of the microbiome, ignoring the rest. Additionally, 16S sequencing does not provide sufficient resolution to reliably and consistently go beyond the genus level of bacterial classification.

Therefore, in most cases, we don't know the exact species of bacteria in the microbiome, making analysis somewhat vague and relying on approximation.

To address these problems, Basepaws uses metagenomic sequencing instead of 16S sequencing. Our method allows us to capture organisms across all domains of life, not restricting us to just bacteria. In addition, we can reliably identify organisms to the species or even the strain level, making our analysis more accurate and improving our confidence in the results. These results paint a richer, unbiased picture of your feline companion's mouth. We used pairwise log ratio transformation to estimate the compositional abundance of microbial species, and Gaussian mixture modeling to determine your cat's risk for periodontal disease, tooth resorption, and bad breath.

Limitations

The Basepaws oral microbiome report is based on our ability to identify thousands of microbial species with each test.

Our large oral microbiome reference database allows us to identify a multitude of novel associations between microbes found in the mouth and a variety of diseases, as well as confirm previously reported findings. However, the field of feline oral microbiome science is extremely young and understudied, which is why we report only on conditions and microbes where previous knowledge exists, and/or if we see a particularly strong signal coming through in our data.

As we accumulate more data and conduct more analyses, we will continuously enrich this report to provide even more helpful insights. We want to emphasize that the identification of a certain microbial signature associated with a dental disease does not constitute a diagnosis. Conversely, if a particular microbial signature is not detected, it does not exclude the possibility of an unknown disease-causing pathogen being present, or that a dental disease could be caused by something other than pathogenic microbes. This report does not aim to substitute a diagnosis by a professional.

Health and Wellness

We hope you enjoyed flipping through the first chapter of your cat's DNA story. This is just the start of connecting all of the dots so please stay tuned - there is much more to come. Feline health & wellness is very important to us, and we are dedicating all our resources to making a world better for cats. Together, we will elevate feline care to a new level on our mission to help cats live healthier and happier lives. We've shared some actionable insights to help you optimize your kitty's health and well being, so that you may get to know your cat better.

Visit your veterinarian

Be proactive and have your kitty examined regularly. Annual (semi-annual for older cats) wellness exams and routine lab tests can help veterinarians find and treat many health conditions before they become life-threatening. Check-ups are especially important for cats, who are excellent at hiding when they're sick or in pain.

Polish those pearly whites

Unlike humans, cats can't brush their teeth. Partner with your veterinarian to create a dental care plan. The bacteria that collects on your cat's teeth can also enter their bloodstream, contributing to a plethora of health issues and other feline diseases.

Give your cat mini exams at home

Petting and brushing your cat is about more than minimizing hairballs and showing your kitty love. It also lets you get your hands on your kitty so you can notice any lumps, bumps, or growths early and get them checked out right away. It's equally important to look for changes in behavior, stool/urine, coat condition and weight. By knowing your kitty well, you can catch changes before it's too late.

Keep your cat at a healthy weight

Obesity is as dangerous for cats as it is for people. It puts them at risk for health problems such as diabetes, high blood pressure, heart and lung disease. It can even increase their risk of developing cancer. Talk to your veterinarian about what a healthy weight means for your cat.

Provide clean water daily

If your kitty isn't drinking enough water, they could become dehydrated or develop a urinary tract disease. Always make sure that you provide a constant supply of clean water. If they are finicky about water, try providing an intriguing fountain or feed them wet canned food which adds more water to their diet.

Proper nutrition can increase life expectancy

Aging includes a multitude of factors: environment, breed characteristics, nutrition and genetics. To help your cat live her best life, she needs a high-moisture, species-appropriate diet. While diet is important, how much and how often your cat eats is also key. Additional Tips: If you have more than one cat, feed them separately and monitor each one's consumption.

Thank you!
Stay healthy.
