

Feline Blood Type

Background

The presence of naturally occurring (i.e. without the need for a previous blood transfusion), high titre antibodies to type A blood in type B cats can cause neonatal isoerythrolysis (a bursting of the red blood cells).

This can occur when a type B queen is bred to a type A tom. Any type A kittens produced from the mating will absorb the anti-type A antibodies in their mother's colostrum during the first day of life, and these antibodies can mediate haemolysis (bursting) of the kitten's type A red blood cells, which can be lethal.



About the test

The genetic test for cat blood types identifies the recessive b allele that is associated with type B blood.

Cats with two copies of the b allele have type B blood. Cats with only one copy of the b allele can be type A or the rare blood type AB. The genetic test **cannot** distinguish between blood type A and type AB.

Please note: Ragdolls have been shown to have a high percentage of blood type AB (~18%), the genetic test **cannot** distinguish between blood type A and type AB.

Prof. Leslie Lyons' laboratory at UC Davis, USA originally discovered the mutations in the CMAH gene associated with B blood type. More recently we have identified a further mutation that also appears to be linked to blood type B in cats. This mutation is rare but has been observed in cats from both the UK and USA. When we identify this mutation the report will say "unusual genotype". Breeds of cat shown to have this rare mutation are: Bengal, BSH, Devon Rex, Egyptian Mau, Siberian and Turkish Van.

Our genetic test targets **both** the original and new mutations in the CMAH gene that result in blood type B.

Reception Hours

Mon-Fri 9am - 5pm

Contact Us

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Feline Blood Type

Please note: The blood type genetic test is available for all domestic breeds of cat. This test is 97% accurate at predicting a cat's blood type; in about 3% of cats the genetic results do not match the conventional blood typing results, indicating that there are additional mutations yet to be identified.

The test has been validated for domestic cat breeds only. The accuracy of results for wildcats and hybrids (Savannahs, Bengals, Chaussies) has not been determined.

Interpretation of results

Genetic Result	Interpretation
Blood type A or AB (does not carry b)	Blood Type A or AB
Blood type A or AB (carrier of b)	Carrier of the b allele; Blood type A or AB
Blood type B (Homozygous b)	Two copies of the b allele; Blood Type B
Blood type A or AB (carrier of b, unusual genotype)	Carrier of the rare b allele; Blood type A or AB
Blood type B (Homozygous b, unusual genotype)	One copy of the b allele AND one copy of the rare b allele; Blood type B OR Two copies of the rare b allele; Blood Type B

Please note: This test is 97% accurate at predicting a cat's blood type; in about 3% of cats the genetic results do not match the conventional blood typing results, indicating that there are additional mutations yet to be identified.

FAQs

Do I need to have my cat blood sampled for the test?

No. We can use either a **mouth swab** or 0.5ml of EDTA anticoagulated blood to carry out this test.

Are there any breeds that can't be tested?

No, all breeds can be tested.

The test has been validated for domestic cat breeds only. The accuracy of results for wildcats and hybrids (Savannahs, Bengals, Chaussies) has not been determined.

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What are the different cat blood types?

Cats have one common blood group system with two main blood types; A and B, and a much rarer "AB" blood type. The genetic basis of the A and B blood types has recently been elucidated; mutations in the cytidine monophospho-N-acetylneuraminic acid hydroxylase gene (CMAH) disrupt its enzymatic activity resulting in blood type B.

The following nomenclature is used to define blood types:

A for blood type A

a for blood type AB

b for blood type B

Please note: the rare AB blood type is not the result of the presence of the A and B blood types, it is a separate blood type reported to be present in less than 1% of cats. The genetics of blood type AB are not well understood.

Why is blood type important?

Blood type A cats usually have naturally occurring, low titre antibodies to type B blood

Blood type B cats usually have naturally occurring, high titre antibodies to type A blood

The presence of naturally occurring (i.e. without the need for a previous blood transfusion), high titre antibodies to type A blood in type B cats can cause neonatal isoerythrolysis (NI). This can occur when a type B queen is bred to a type A tom.

Any type A kittens produced from the mating will absorb the anti-type A antibodies in their mother's colostrum during the first day of life, and these antibodies can mediate haemolysis of the kitten's type A red blood cells, which can be lethal.

The number of kittens affected will depend on the genotype of the type A tom. If the male is pure type A (homozygous A/A), then all of the kittens will also be type A (heterozygous A/b) and therefore at risk of NI.

If the type A tom is heterozygous type A and therefore a carrier of the b allele (A/b), then about half the kittens will be type A (A/b) and at risk of NI; the remaining half will be type B (b/b) and not at risk of NI. Severity of disease with NI will also depend on the amount and nature of the

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antibodies absorbed by the kitten; large amounts of highly agglutinating antibodies will cause the most severe disease

What does this mean for breeding?

Blood type A is dominant to B. Cats with type A can be A/A, A/a or A/b and cats with type B are always b/b.

Blood type A is common among cats but the frequency varies significantly by breed and geographic location.

Breeds that do not have the b allele are Siamese, Burmese, Russian Blue and Oriental Shorthair.

Breeds with high incidence (up to 60%) of the b allele are Exotics, British Shorthair, Cornish Rex and Devon Rex.



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