An Overview of the Canine Agouti (A) Locus

Genetic Pet Care

Explanation of Key Agouti (A) Series Results

The Agouti patterns can be influenced by any of the following loci – E, D, B, Brindling (k^{br}), Spotting (W) and Merle (M) Loci.

Please Note: the genes on the A series **CAN ONLY** be expressed (visible) if the dog has one of the following K genotypes – kk, kk^{br} or $k^{br}k^{br}$. Some breeds are automatically fixed as kk or KK and should/must always be that result at the K Series.

The terminology referred to can vary from breed to breed. The key is to note that the result is consistent and only the description will vary according to your breed.

DOMINANCE HIERARCHY of the A LOCUS

ay ⟶ **at** ⟶ **a** **ie. ay** trumps **at** and **at** trumps **a**

FAWN/SABLE (ay) IS THE DOMINANT AGOUTI SERIES AND ONLY NEEDS ONE TO EXPRESS IT

RESULT	*POSSIBLE COLOUR PATTERN*
ay/ay	**FAWN or SABLE** may or may not have a mask (please see E Locus) and may or may not have white - Pure Fawn or Sable **DOES NOT** carry tan points or recessive black. Will only produce fawn/sable offspring.
ay/at	**FAWN or SABLE** may or may not have a mask (please see E Locus) and may or may not have white **- CARRIES tan points (at)**, does not carry recessive black. If mated with another tan point (at) carrier may produce a tan point offspring.
ay/a	**FAWN or SABLE** may or may not have a mask (please see E Locus) and may or may not have white - **CARRIES recessive black (a)**.

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SABLE MERLE (M) – VERY RARE

ay/at	**M SABLE** may or may not have a mask (please see E Locus) and may or may not have white - CARRIES tan points, does not carry recessive black.
ay/a	**M SABLE** may or may not have a mask (please see E Locus) and may or may not have white - CARRIES recessive black, does not carry tan points.

Please Note: a Blue Merle is an actual tri so there can be NO ay/ay M or Pure Sable Merle

TAN POINTS (at)

Tan points (at) is bottom recessive so this means that a dog **MUST HAVE** 2 copies of the ***at*** gene to express the tan points.

Tan points include - tan tips over the eyes, tan on the side of the muzzle, tan patches on the chest, tan on the legs and feet and under the tail e.g. breeds such as the Dobermann, Gordon Setter and Rottweiller. In some breeds white markings may 'over ride' the tan markings on the chest and feet e.g breeds such as the Australian Shepherd (known as a black tri), Bernese Mountain Dog, Shetland Sheep Dog, Collies and Basenji. A tan pointed dog can only carry recessive black.

RESULT	*POSSIBLE COLOUR PATTERN*
at/at	**TAN POINTS -** may or may not have a mask (please see E Locus), tan points may be brindled (please see K Locus) and may or may not have white - does not carry recessive back.
at/a	**TAN POINTS -** may or may not have a mask (please see E Locus), tan points may be brindled (please see K Locus) and may or may not have white - CARRIES recessive black.

BLUE MERLE is the same as a TAN POINTS but with the presence of the Merling Gene (M)

at/at	**M BLUE MERLE** may or may not have a mask (please see E Locus) and may or may not have white - does not carry recessive black.
at/a	**M BLUE MERLE** may or may not have a mask (please see E Locus) and may or may not have white - CARRIES recessive black.

RECESSIVE BLACK (a)

Is referred to as the "a" allele and is very rare found in only a small number of breeds – Schipperke and Puli.

RESULT	*POSSIBLE COLOUR PATTERN*
a/a	**RECESSIVE BLACK** may or may not have a mask (please see E Locus) and may or may not have white.
a/a M	**BLUE MERLE** may or may not have a mask (please see E Locus) and may or may not have white.

SUMMARY

Four alleles occur at the A series;

- **Sable/Fawn [ay];**
- **agouti [aw];**
- **Tan Points [at]; and**
- **Recessive Black [a]**

The hierarchy of these alleles is the following:

ay is dominant to aw, at and a - ay/aw, ay/at and ay/a will express fawn/sable
aw dominant to at and a - aw/at and aw/a will express agouti
at dominant to a - at/a will express tan points