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| **C -**  **Rabbit Colour Genetic Genotype Chart**  **Full Colour** | **cchd -**  **Chinchilla** | **cchl cchl -**  **Seal** | **cchl -**  **Sable** | **ch -**  **Himalayan** | **c c**  **Ruby Eyed White** |
| Black (self)  aa B- C- D- E- | (Black) Self Chin  aa B- cchd- D- E | (Black) Seal  aa B- cchlcchl D- E- | (Black) Sable (Siamese Sable)  aa B- cchl- D- E- | Black Himalayan  aa B- ch- D- E- | White  aa B- cc D- E- |
| Chocolate (self)  aa bb C- D- E- | Choc. Self Chin  aa bb cchd- D- E- | Chocolate Seal  aa bb cchlcchl D- E- | Chocolate Sable  aa bb cchl- D- E- | Choc. Himalayan  aa bb ch- D- E- | White  aa bb cc D- E- |
| Blue (self)  aa B- C- dd E- | Blue Self Chin  aa B- cchd- dd E- | Blue Seal  aa B- cchlcchl dd E- | Blue Sable  (Smoke Pearl)  aa B- cchl- dd E- | Blue Himalayan  aa B- ch- dd E- | White  aa B- cc dd E- |
| Lilac (self)  aa bb C- dd E- | Lilac Self Chin  aa bb cchd- dd E- | Lilac Seal  aa bb cchlcchl dd E- | Lilac Sable  aa bb cchl- dd E- | Lilac Himalayan  a bb ch- dd E- | White  aa bb cc dd E- |
| Black Tortoise  aa B- C- D- ee | Sallander  aa B- cchd- D- ee | Seal Point  aa B- cchlcchlD- ee | Sable Point  aa B- cchl- D- ee | (Blk) Himalayan,  Extended  aa B- ch- D- ee | White  aa B- cc D- ee |
| Chocolate Tort  aa bb C- D- ee | Choc. Sallander  aa bb cchd- D- ee | Chocolate Point  aa bb cchlcchlD- ee | Chocolate Point  aa bb cchl- D- ee | Choc Himalayan, Extended  aa bb ch- D- ee | White  aa bb cc D- ee |
| Blue Tortoise  aa B- C- dd ee | Blue Sallander  aa B- cchd- dd ee | Blue Point (Siamese)  aa B- cchlcchldd ee | **Blue Point** (Siamese)  aa B- cchl- dd ee | Blue Himalayan, Extended  aa B- ch- dd ee | White  aa B- cc dd ee |
| Lilac Tortoise  aa bb C- dd ee | Lilac Sallander  aa bb cchd-dd ee | Lilac Point  aa bb cchlcchldd ee | Lilac Point **(Cream\*)**  aa bb cchl- dd ee | Lilac Himalayan, Extended  aa bb ch- dd ee | White  aa bb cc dd ee |
| Black Otter  at B- C- D- E- | Black Silver Marten  at- B- cchd- D- E- | Black Seal Marten  at- B- cchlcchl D- E- | Black Sable Marten  at- B- cchl- D- E- | Black Otter Himalayan  at- B- ch- D- E- | White  at- B- cc D- E- |
| Chocolate Otter  at bb C- D- E- | Chocolate Silver Marten  at- bb cchd- D- E- | Chocolate Seal Marten  at- bb cchlcchl D- E- | Chocolate Sable Marten  at- bb cchl- D- E- | Chocolate Otter Himalayan  at- bb ch- D- E- | White  at- bb cc D- E- |
| Blue Otter  at B- C- dd E- | Blue Silver Marten  at- B- cchd- dd E- | Blue Seal Marten  at- B- cchlcchl dd E- | Blue Sable Marten  at- B- cchl- dd E- | Blue Otter Himalayan  at- B- ch- dd E- | White  at- B- cc dd E- |
| Lilac Otter  at bb C- dd E- | Lilac Silver Marten  at- bb cchd- dd E- | Lilac Seal Marten  at- bb cchlcchl dd E- | Lilac Sable Marten  at- bb cchl- dd E- | Lilac Otter Himalayan  at- bb ch- dd E- | White  at- bb cc dd E- |
| Tort Otter/Fox  at B- C- D- ee | Otter Ermine (Otter Frost Point)  at- B- cchd- D- ee | Otter Seal Point  at- B- cchlcchlD- ee | Otter Sable Point  (Sable Point Marten)  at- B- cchl- D- ee | Black Otter Himalayan  at- B- ch- D- ee | White  at- B- cc D- ee |
| Chocolate Orange Otter  at bb C- D- ee | Chocolate Otter Ermine  at- bb cchd- D- ee | Chocolate Otter Seal Point  at- bb cchlcchlD- ee | Chocolate Otter Sable Point  at- bb cchl- D- ee | Chocolate Otter Himalayan  at- bb ch- D- ee | White  at- bb cc D- ee |
| Fawn Otter  at B- C- dd ee | Blue Otter Ermine  at- B- cchd-dd ee | Blue Otter Seal Point  at- B- cchlcchldd ee | Blue Otter Sable Point  at- B- cchl- dd ee | Blue Otter Himalayan  at- B- ch- dd ee | White  at- B- cc dd ee |
| Lilac Fawn Otter  at bb C- dd ee | Lilac Otter Ermine  at- bb cchd- dd ee | Lilac Otter Seal Point  at- bb cchlcchldd ee | Lilac Otter Sable Point  at- bb cchl- dd ee | Lilac Otter Himalayan  at- bb ch- dd ee | White  at- bb cc dd ee |
| Chestnut (agouti)   1. B- C- D- E- | (Agouti) Chinchilla  A- B- cchd- D- E- | Seal Agouti Siamese  A- B- cchlcchl D- E- | Sable Agouti Siamese  A- B- cchl- D- E- | Agouti Himalayan  A- B- ch- D- E- | White  A- B- cc D- E- |
| Cinnamon (choc. agouti)  A- bb C- D- E- | Choc Agouti Chin  A- bb cchd- D- E- | Choc Seal Agouti Siamese  A- bb cchlcchl D- E- | Choc Sable Agouti Siamese  A- bb cchl- D- E- | Chocolate Agouti Himalayan  A- bb ch- D- E- | White  A- bb cc D- E- |
| Opal (blue agouti)  A- B- C- dd E- | Squirrel (Blue Chinchilla)  A- B- cchd- dd E- | Blue Seal Agouti Siamese  A- B- cchlcchl dd E- | Blue Sable Agouti Siamese  A- B- cchl- dd E- | Blue Agouti Himalayan  A- B- ch- dd E- | White  A- B- cc dd E- |
| Lynx (lilac agouti)  A- bb C- dd E- | Lilac Agouti Chin  A- bb cchd- dd E- | Lilac Seal Agouti Siamese  A- bb cchlcchl dd E- | Lilac Sable Agouti Siamese  A- bb cchl- dd E- | Lilac Agouti Himalayan  A- bb ch- dd E- | White  A- bb cc dd E- |
| Orange (agouti)  A- B- C- D- ee | Ermine (Frost Point, Frosty, Frosted Pearl)  A- B- cchd- D- ee | Seal Agouti Point  A- B- cchlcchl D- ee | Sable Agouti Point  A- B- cchl- D- ee | Agouti Himalayan, Extended  A- B- ch- D- ee | White  A- B- cc D- ee |
| Chocolate Orange  A- bb C- D- ee | Choc. Ermine  (Chocolate Frost Point)  A- bb cchd- D- ee | Chocolate Seal Agouti Point  A- bb cchlcchlD- ee | Chocolate Sable Agouti Point  A- bb cchl- D- ee | Chocolate Agouti Himi., Exteded  A- bb ch- D- ee | White  A- bb cc D- ee |
| Fawn (cream)  A- B- C- dd ee | Blue Ermine  A- B- cchd- dd ee | Blue Seal Agouti Point  A- B- cchlcchldd ee | Blue Sable Agouti Point  A- B- cchl- dd ee | Blue Agouti Himi., Extended  A- B- ch- dd ee | White  A- B- cc dd ee |
| Lilac Fawn  A- bb C- dd ee | Lilac Ermine  A- bb cchd- dd ee | Lilac Seal Agouti Point  A- bb cchlcchldd ee | Lilac Sable Agouti Point  A- bb cchl- dd ee | Lilac Agouti Himi,, Extended  A- bb ch- dd ee | White  A- bb cc dd ee |
| **BROKEN: En en** | **SOLID: en en** | **CHARLIE: En En** |  |  |  |

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It is important when discussing colors with Rabbit Breeders to separate Phenotype (Description of a rabbits Appearance) and Genotype (The Genetic Code Structure of the Animals Genes based on its DNA).

Inside most cells in every animal is DNA - the blueprint that dictates how the animal looks and behaves.

Genes always contain two copies for everything including fur color. The two copies might be identical coding for the same color or they might not be identical. They might each code for a different color or characteristic. If so, one characteristic will be dominant, and the other is simply a duplicate, or recessive.

One of these genes comes from the Sire and one from the Dam. They combine in the offspring, bringing the total gene count back up to two each.

Some genes are dominant, and some are recessive. The dominant gene is visible and the recessive gene is hidden unless it is paired with another recessive match. In fact, you might never know a recessive gene is there, unless it gets passed down to an offspring and paired with a matching recessive gene. Two matching recessive genes together in a pair are visible as is one dominant gene by itself. Some recessive genes however, do effect (alter) the expression of the paired dominant gene, making it appear darker or lighter for example.

**Genetically there are (3) Color Pattern Types:** Agouti, Tan and Self: The most dominant one is the Agouti Pattern. Next is the Tan Pattern which is slightly less dominant and then Self is the least dominant. An agouti can carry a duplicate gene for Agouti, or carry a recessive gene for either Tan or Self. A Tan can carry only Tan and Self. A Self can carry only Self. Examples of an Agouti are Copper and Chinchilla. Examples of a Tan are Otter and Marten. Examples of a Self are solid colors, solid Black or Chocolate or Blue or Lilac.

**Genetically, all colors start from Black or Brown (Chocolate):** Black is dominant, brown is recessive. With the dilute gene, however, Black can be modified into Blue and Brown (Chocolate) can be modified into Lilac. Therefore, all colors are a variation of those four, Black, Blue, Chocolate and Lilac. Black and Brown rabbits normally have Brown eyes and the dilutes, Blue and Lilac, normally have Blue-Gray Eyes.

Dominant genes are always written in upper case, whereas recessive genes are always written in lower case. Dominant genes cover up the expression of recessive genes, so it makes sense to put them in bigger, bolder letters. Since the dominant genes mask the little recessive genes, you can get colors in litters other than what the parents are, because they might both be hiding those little recessives.

When writing genotypes for rabbits, we always go in alphabetical order. There are five groups of genes commonly used in rabbit Genotypes, called loci, and they are as follows in order of most dominant to least dominant (recessive), with some common examples of colors displaying after the hyphens:

**A – Agouti locus** – “A” (Agouti) or “at” (Tan Pattern, such as Otters) or “a” (Self – solid colors).

**B - Brown locus** – “B” (Black) or “b” (Brown also known as Chocolate).

**C - Color locus -** “C” (Full Color) or “cchd” (Chinchilla Dark - Chinchillas) or cchm (Chinchilla Medium, a lighter version of the Chinchilla Dark) “cchl” (Chinchilla Light – Sable Point, Smoke Pearl) or “ch” (Pointed White - Himalayan, Californian, Pointed White) or “c” (REW – Ruby Eyed White – Albino).

**D- Dilute locus –** “D” (Dense – will have brown eyes, colors such as Black and Chocolate) or “d” (Dilute – will have blue-gray eyes, colors such as Blue and Lilac)

**E- Extension locus -** “E d” (Dominant Black) or “E s” (Steel) or “E” (Normal Extension - Black) or “e j” (Japanese Brindle – Harlequin, Tricolor) or “e” (Non-Extension - Torts, Orange).

Remember, every mammal has a pair of two genes. Every mammal inherits one gene from each “set” from the mother (DAM) and one from the father (SIRE) to make a complete paired set. Normally, never do the offspring get both genes from only one parent.

Broken Gene (Dominant) – En en – Like dwarfism, broken is a dominant trait. Only one parent needs to be a Broken to make a broken. Two solids **cannot** make a broken since it is not recessive. A Broken = En en, A Solid = en en, A Charlie (Overly Broken Broken) = En En – This is a broken with very little color, normally missing eyes rings and or nose markings and is called a Charlie since they resemble Charlie Chaplin.

**Written by Dan Erz, 5/12/2011**

**American Satin Breeders Association**