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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 Chinaa B- cchd- D- E | (Black) Sealaa B- cchlcchl D- E- | (Black) Sable (Siamese Sable)aa B- cchl- D- E- | Black Himalayanaa B- ch- D- E- | Whiteaa B- cc D- E- |
| Chocolate (self)aa bb C- D- E- | Choc. Self Chinaa bb cchd- D- E- | Chocolate Sealaa bb cchlcchl D- E- | Chocolate Sableaa bb cchl- D- E- | Choc. Himalayanaa bb ch- D- E- | Whiteaa bb cc D- E- |
| Blue (self)aa B- C- dd E- | Blue Self Chinaa B- cchd- dd E- | Blue Sealaa B- cchlcchl dd E- | Blue Sable(Smoke Pearl)aa B- cchl- dd E- | Blue Himalayanaa B- ch- dd E- | Whiteaa B- cc dd E- |
| Lilac (self)aa bb C- dd E- | Lilac Self Chinaa bb cchd- dd E- | Lilac Sealaa bb cchlcchl dd E- | Lilac Sableaa bb cchl- dd E- | Lilac Himalayana bb ch- dd E- | Whiteaa bb cc dd E- |
| Black Tortoiseaa B- C- D- ee | Sallander aa B- cchd- D- ee | Seal Pointaa B- cchlcchlD- ee | Sable Pointaa B- cchl- D- ee | (Blk) Himalayan,Extendedaa B- ch- D- ee | Whiteaa B- cc D- ee |
| Chocolate Tortaa bb C- D- ee | Choc. Sallanderaa bb cchd- D- ee | Chocolate Pointaa bb cchlcchlD- ee | Chocolate Pointaa bb cchl- D- ee | Choc Himalayan, Extendedaa bb ch- D- ee | Whiteaa bb cc D- ee |
| Blue Tortoiseaa B- C- dd ee | Blue Sallanderaa B- cchd- dd ee | Blue Point (Siamese)aa B- cchlcchldd ee | **Blue Point** (Siamese)aa B- cchl- dd ee | Blue Himalayan, Extendedaa B- ch- dd ee | Whiteaa B- cc dd ee |
| Lilac Tortoiseaa bb C- dd ee | Lilac Sallanderaa bb cchd-dd ee | Lilac Pointaa bb cchlcchldd ee | Lilac Point **(Cream\*)**aa bb cchl- dd ee | Lilac Himalayan, Extendedaa bb ch- dd ee | Whiteaa bb cc dd ee |
| Black Otterat B- C- D- E- | Black Silver Martenat- B- cchd- D- E- | Black Seal Martenat- B- cchlcchl D- E- | Black Sable Martenat- B- cchl- D- E- | Black Otter Himalayanat- B- ch- D- E- | Whiteat- B- cc D- E- |
| Chocolate Otterat bb C- D- E-  | Chocolate Silver Martenat- bb cchd- D- E- | Chocolate Seal Martenat- bb cchlcchl D- E- | Chocolate Sable Martenat- bb cchl- D- E- | Chocolate Otter Himalayanat- bb ch- D- E- | Whiteat- bb cc D- E- |
| Blue Otterat B- C- dd E- | Blue Silver Martenat- B- cchd- dd E- | Blue Seal Martenat- B- cchlcchl dd E- | Blue Sable Martenat- B- cchl- dd E- | Blue Otter Himalayanat- B- ch- dd E- | Whiteat- B- cc dd E- |
| Lilac Otterat bb C- dd E- | Lilac Silver Martenat- bb cchd- dd E- | Lilac Seal Martenat- bb cchlcchl dd E- | Lilac Sable Martenat- bb cchl- dd E- | Lilac Otter Himalayanat- bb ch- dd E- | Whiteat- bb cc dd E- |
| Tort Otter/Foxat B- C- D- ee | Otter Ermine (Otter Frost Point)at- B- cchd- D- ee | Otter Seal Pointat- B- cchlcchlD- ee | Otter Sable Point(Sable Point Marten)at- B- cchl- D- ee | Black Otter Himalayanat- B- ch- D- ee | Whiteat- B- cc D- ee |
| Chocolate Orange Otterat bb C- D- ee | Chocolate Otter Ermineat- bb cchd- D- ee | Chocolate Otter Seal Pointat- bb cchlcchlD- ee | Chocolate Otter Sable Pointat- bb cchl- D- ee | Chocolate Otter Himalayanat- bb ch- D- ee | Whiteat- bb cc D- ee |
| Fawn Otterat B- C- dd ee | Blue Otter Ermineat- B- cchd-dd ee | Blue Otter Seal Pointat- B- cchlcchldd ee | Blue Otter Sable Pointat- B- cchl- dd ee | Blue Otter Himalayanat- B- ch- dd ee | Whiteat- B- cc dd ee |
| Lilac Fawn Otterat bb C- dd ee | Lilac Otter Ermineat- bb cchd- dd ee | Lilac Otter Seal Pointat- bb cchlcchldd ee | Lilac Otter Sable Pointat- bb cchl- dd ee | Lilac Otter Himalayanat- bb ch- dd ee | Whiteat- bb cc dd ee |
| Chestnut (agouti)1. B- C- D- E-
 | (Agouti) ChinchillaA- B- cchd- D- E- | Seal Agouti SiameseA- B- cchlcchl D- E- | Sable Agouti SiameseA- B- cchl- D- E- | Agouti HimalayanA- B- ch- D- E- | WhiteA- B- cc D- E- |
| Cinnamon (choc. agouti)A- bb C- D- E- | Choc Agouti ChinA- bb cchd- D- E- | Choc Seal Agouti SiameseA- bb cchlcchl D- E- | Choc Sable Agouti SiameseA- bb cchl- D- E- | Chocolate Agouti HimalayanA- bb ch- D- E- | WhiteA- bb cc D- E- |
| Opal (blue agouti)A- B- C- dd E- | Squirrel (Blue Chinchilla)A- B- cchd- dd E- | Blue Seal Agouti SiameseA- B- cchlcchl dd E- | Blue Sable Agouti SiameseA- B- cchl- dd E- | Blue Agouti HimalayanA- B- ch- dd E- | WhiteA- B- cc dd E- |
| Lynx (lilac agouti)A- bb C- dd E- | Lilac Agouti ChinA- bb cchd- dd E- | Lilac Seal Agouti SiameseA- bb cchlcchl dd E- | Lilac Sable Agouti SiameseA- bb cchl- dd E- | Lilac Agouti HimalayanA- bb ch- dd E- | WhiteA- bb cc dd E- |
| Orange (agouti)A- B- C- D- ee | Ermine (Frost Point, Frosty, Frosted Pearl)A- B- cchd- D- ee | Seal Agouti PointA- B- cchlcchl D- ee | Sable Agouti PointA- B- cchl- D- ee | Agouti Himalayan, ExtendedA- B- ch- D- ee | WhiteA- B- cc D- ee |
| Chocolate OrangeA- bb C- D- ee | Choc. Ermine(Chocolate Frost Point)A- bb cchd- D- ee | Chocolate Seal Agouti PointA- bb cchlcchlD- ee | Chocolate Sable Agouti PointA- bb cchl- D- ee | Chocolate Agouti Himi., ExtededA- bb ch- D- ee | WhiteA- bb cc D- ee |
| Fawn (cream)A- B- C- dd ee | Blue ErmineA- B- cchd- dd ee | Blue Seal Agouti PointA- B- cchlcchldd ee | Blue Sable Agouti PointA- B- cchl- dd ee | Blue Agouti Himi., ExtendedA- B- ch- dd ee | WhiteA- B- cc dd ee |
| Lilac FawnA- bb C- dd ee | Lilac ErmineA- bb cchd- dd ee | Lilac Seal Agouti PointA- bb cchlcchldd ee | Lilac Sable Agouti PointA- bb cchl- dd ee | Lilac Agouti Himi,, ExtendedA- bb ch- dd ee | WhiteA- 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**