

# The E & B Loci: Red, Black & Brown

*How red, black and brown are set - and what a lab result does and does not tell you*

## E Locus (MC1R) - the master switch

- E\_ : eumelanin (black or brown) can appear in the coat.
- ee : phaeomelanin only - red, apricot or cream. This masks every other colour locus in the coat.
- Shade within the red range (deep red vs apricot vs cream) is polygenic. It is recorded by eye, never read off a single test.

### Safety: ee also hides merle

A red or apricot dog can be merle and show nothing. Bred to a merle it produces double merles. Test any ee dog for merle before that pairing.

## B Locus (TYRP1) - black vs brown eumelanin

- B\_ : black eumelanin. bb : brown. Brown is the term in the breed - chocolate belongs to other breeds.
- Recessive: two copies (bb) are needed for a brown coat. One b is hidden by B.
- bb also gives a liver nose and amber/hazel eyes - visible even on an ee dog, where the coat is red.
- Some labs name specific TYRP1 sub-variants (ba, bd, bs, and others) instead of a plain "b" - any combination of these is still an ordinary brown dog, the same way the D locus's d1/d2/d3 combine.

## B Locus Cross Outcomes

| Cross   | Puppy colours (average)                                |
|---------|--------------------------------------------------------|
| BB x BB | All black. No brown, no carriers.                      |
| BB x bb | All black, and all carry brown (Bb).                   |
| Bb x Bb | 3 black : 1 brown (25% bb brown; 2 of 3 blacks carry). |
| Bb x bb | 1 black (carrier) : 1 brown.                           |
| bb x bb | All brown.                                             |

### Not the same thing

Café-au-lait and silver beige are NOT dilute browns. They are greying on a brown base (see the Silver & Blue card). bb + dd is lilac, born pale - a different dog.

## READING A DOG

- ee result? The coat is red, apricot or cream. The other colour loci will not show in it.

### THE POODLE GENETICS LAB REFERENCE SET

E & B Loci - Merle Health Risk - Phantom Matrix - Silver & Blue - Parti Planner - Full Loci Card  
Full guides, the calculator and sources at [poodlegenetics.com/genetics-guide](http://poodlegenetics.com/genetics-guide)