

Merle: Length Classes & Double-Merle Risk

Seven length classes, the double-merle rule, and how to read a base-pair result

Merle is a SINE insertion in the PMEL gene, and the LENGTH of the insertion defines the allele (Langevin 2018). It is not a simple dominant or recessive. Seven classes:

Class	Insert (bp)	One copy	Two copies
m	-	Non-merle	Non-merle
Mc	200-230	Non-expressing (cryptic)	Usually none
Mc+	231-246	Non-expressing (cryptic)	May express faintly
Ma	247-254	Non-expressing	Ma/Ma expresses weakly
Ma+	255-264	Non-expressing (slight greying at most)	Marked pattern; length-dependent
M	265-268	Classic merle	DOUBLE MERLE
Mh	269+	Strong; can delete to white	Severe

- "No visible pattern" is not "no allele." A cryptic merle passes its allele to half its offspring, exactly like any other merle. Only the DNA report can clear a dog.

Double-merle risk (two merle alleles)

Published studies report roughly 25-30% deaf in one or both ears and up to about 25% with eye defects (microphthalmia, coloboma, retinal dysplasia). Some are born deaf, blind, or both. The rule that avoids all of it: never breed merle x merle.

Naming (keys on B and D)

Black-based merle (B_ D_) - Blue merle (B_ dd, the dilute merle) - Brown-based merle (bb D_) - Lilac merle (bb dd). A merle that clears through progressive greying keeps its name, flagged "(possibility of clearing/fading due to progressive greying influence)" - it is never renamed.

BEFORE ANY MERLE BREEDING

- Never pair merle with merle - every such cross risks double merles.
- ee hides merle. Test any red/apricot dog for merle before pairing it with a merle.
- BAER (hearing) and eye (CAER) exams on every merle puppy.

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