

>Mouse 53 length=10,997

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### Supplemental data 1.

**The sequences of P23H locus of homozygote mice.** Compared to rhodopsin locus of C57BL/6J mice, both P23H homozygote mice had P23H missense mutation in exon 1, targeting vector backbone sequences (174 bp) in intron 1 and silence mutations in exon 3 and exon 4. Those silence



mutations were 129Sv/Ev strain variant. Nucleotides different from C57BL/6J mouse genome (NT\_03935.7) are indicated by gray highlight. Dark gray highlight indicate mutations conserved in both 53 and 62 mice. Fine gray highlight indicate mutations not conserved in 53 and 62 mice. Black highlight indicate targeting vector homologous region start (G), mRNA start (C), start codon (ATG), targeting vector homologous region end (A) and stop codon (TAA). Underlines indicate transcription factor binding sites and exons. From top, retina-specific region 1 (Ret 1)/photoreceptor conserved element (PCE-1) (1,2), OTX site (3), Nrl response element (NRE) (4), retina-specific region 4 (Ret 4) (5), TATA box, exon 1, exon 2, exon 3, exon 4 and part of exon 5.

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