

For eg. in Drosophila, the locus for eye color is located on the X-chromosome.

The allele for Red eye color, which is normal in wild flies, is dominant to the mutant allele for white eyes.

As females have two chromosomes X (with a locus for eye color) they might be homozygous / heterozygous for either allele.

Males, who carry only one X-chromosome, are always hemizygous. They carry only the one X-chromosome inherited from their mother & it determines their eye colour.

II In left hand example, homozygous Red eyed females ( $RR$ ) mate with hemizygous white eyed males ( $w^-$ ). In the offspring, all the daughters are Red eyed heterozygotes ( $Rw$ ) & all sons are Red eyed hemizygous ( $R^-$ ).

In the Right hand, homozygous white eyed females ( $w^-w^-$ ) mate with hemizygous red eyed males ( $R^-$ ).

In the offspring, all the daughters are Red Eyed heterozygotes ( $Rw$ ) & all sons are white eyed hemizygotes ( $w^-$ ).