# Exercise1:

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**TD 5 (Characteres Transmission)**

We cross 2 drosophila, purebred for all the genes involved in establishing the phenotype, one with red eyes, the other with white eyes. All the drosophila resulting from this cross (which we call individuals of la F1(offspring)) have red eyes. The self-crossing (self-fertilization) of individuals of la F1 gave 330 individuals with red eyes and 112 with white eyes.

1. Determine the number of studied characters and the dominance or recessivity of the phenotypes. Justify each statement.

A cross is made between an F1 female and a white-eyed male.

The experimental results were as follows: 249 individuals with red eyes and 244 individuals with white eyes

1. What such a crossing is called?
2. What does it allow to check ?
3. Test the two hypotheses by chromosomal representations and the writing of genotypes, and then conclude.

# Exercise 2:

A genetic model has been proposed to explain the inheritance of right-handedness or left- handedness in humans (laterality). This model is as follows: the quality of being right-handed or left-handed is controlled by a gene with two alleles:

- allele R Contribution to the right- handed phenotype (dominant)

- allele r undetermined laterality (recessive)

SO :

RR or Rr genotype gives right-handed phenotype

rr genotype gives an indeterminate laterality: half of these children become left-handed individuals and half become right-handed.

1. Based on this model, two Rr (right-handed) parents have a 1/8 chance of having a left- handed child. Explain why this is so.
2. According to this model, can a left-handed mother and a right-handed father have a left- handed child? Justify your answer.
3. According to this model, can two left-handed parents have a right-handed child? Justify your answer.

# Exercise 3:

In a hybridization experiment, if the allele for long-stemmed plants (T) was incompletely dominant over the allele for short plants (t),

1. What would be the result of crossing a homozygous long-stemmed plant (pure line) and a homozygous short plant?
2. What would be the result of crossing two heterozygous plants?

# Exercise 4:

codominant alleles. There are three different alleles, known as I A, I B, and i. The I A and I B alleles co -dominate, and the i allele is recessive. Possible human phenotypes for blood group are type A, type B, type AB, and type O.

What are the possible blood types of children from a marriage between a type AB woman and a type O man?

What are the possible blood types of children from a marriage between a type A woman and a type O man?