

TEST CROSS

Test cross is crossing an individual of unknown genotype with a homozygous recessive. In Mendel's monohybrid cross all the plants are tall in F1 generation. In F2 tall and dwarf plants were in the ratio of 3:1. Mendel self pollinated dwarf F2 plants and got dwarf plants in F3 and F4 generations. So he concluded that the genotype of dwarf was homozygous (tt).

The genotypes of tall plants TT or Tt from F1 and F2 cannot be predicted. But how we can tell if a tall plant is homozygous or heterozygous? To determine the genotype of a tall plant Mendel crossed the plants from F2 with the homozygous recessive dwarf plant. This he called a test cross.

The progenies of the test cross can be easily analysed to predict the genotype of the plant or the test organism. Thus in a typical test cross an organism (pea plants) showing dominant phenotype (whose genotype is to be determined) is crossed with the recessive parent instead of self crossing. Test cross is used to identify whether an individual is homozygous or heterozygous for dominant character.

If heterozygous tall test cross

Parental (P) F_1 Heterozygous tall X Homozygous dwarf

Phenotypes

Genotypes

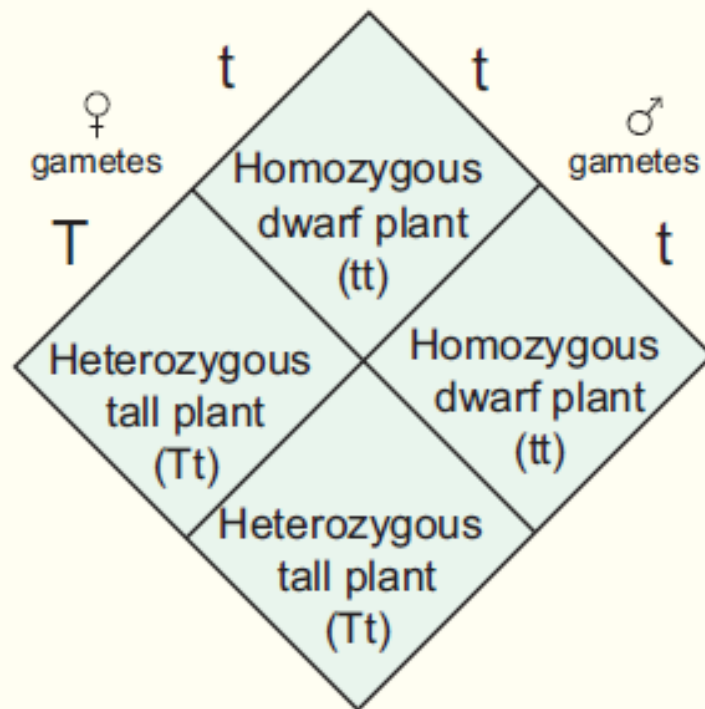
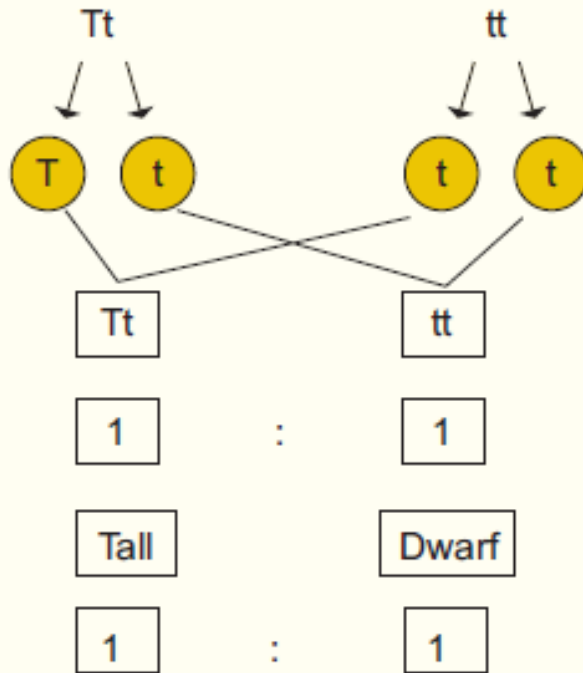
Gametes

Offspring (F_1)
genotypes

Genotypic Ratio

Phenotypes

Phenotypic Ratio



If homozygous tall test cross

