

Laws of inheritance-6

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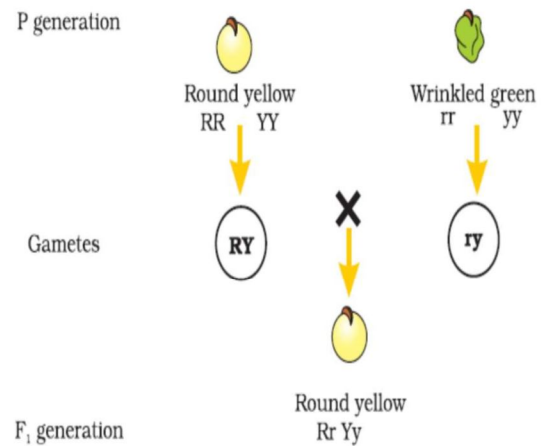
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INHERITANCE OF TWO GENES

Mendel also performed dihybrid cross. He crossed pea plants that differed in two characters, pea plant seeds with yellow colour and round shape and seeds of green colour and wrinkled shape.

Results: All plants have yellow coloured and round shaped seeds.

Interpretation: 1. Yellow colour was dominant over green
2. Round shape dominant over wrinkled



These results were identical to separate monohybrid crosses between
yellow — green seeded plants and round — wrinkled seeded plants

Let us examine with the genotypic symbols:

Y — dominant yellow colour; y — recessive green colour

R — round shape; r — wrinkled shape

Genotype of the parents — RRYY and rryy

Gametes RY and ry unite to produce the F₁ hybrid RrYy

On self-hybridization, the F₁ plants produced F₂ generations that were:

1. 3/4th yellow seeds
2. 1/4th had green.

Yellow and Green colour segregated in a 3:1 ratio.

Round and Wrinkled seed shape also segregated in a 3:1 ratio (a monohybrid cross).

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In the dihybrid cross, following phenotypes were produced in the following ratios:

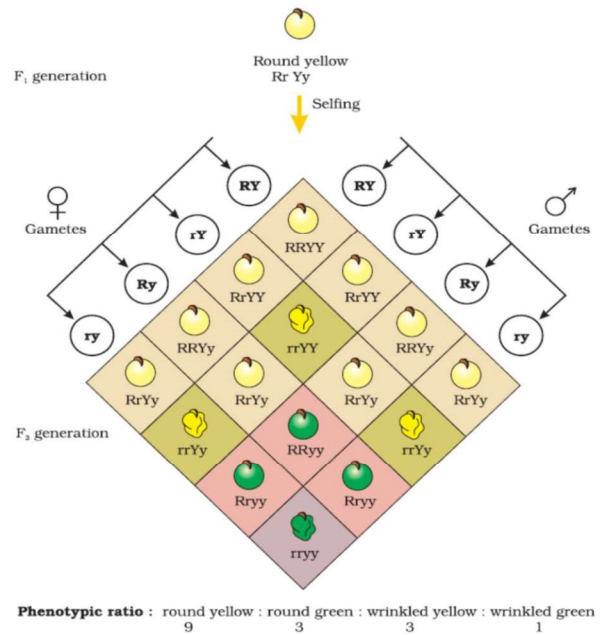
round, yellow = 9

round, green = 3

wrinkled, yellow = 3

wrinkled, green = 1

Similar ratio was obtained for many pairs of characters.



Based upon these observations of *dihybrid crosses*, Mendel proposed a second set of generalisations that we call *Mendel's Law of Independent Assortment*.

'when two pairs of traits are combined in a hybrid, segregation of one pair of characters is independent of the other pair of characters'.



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