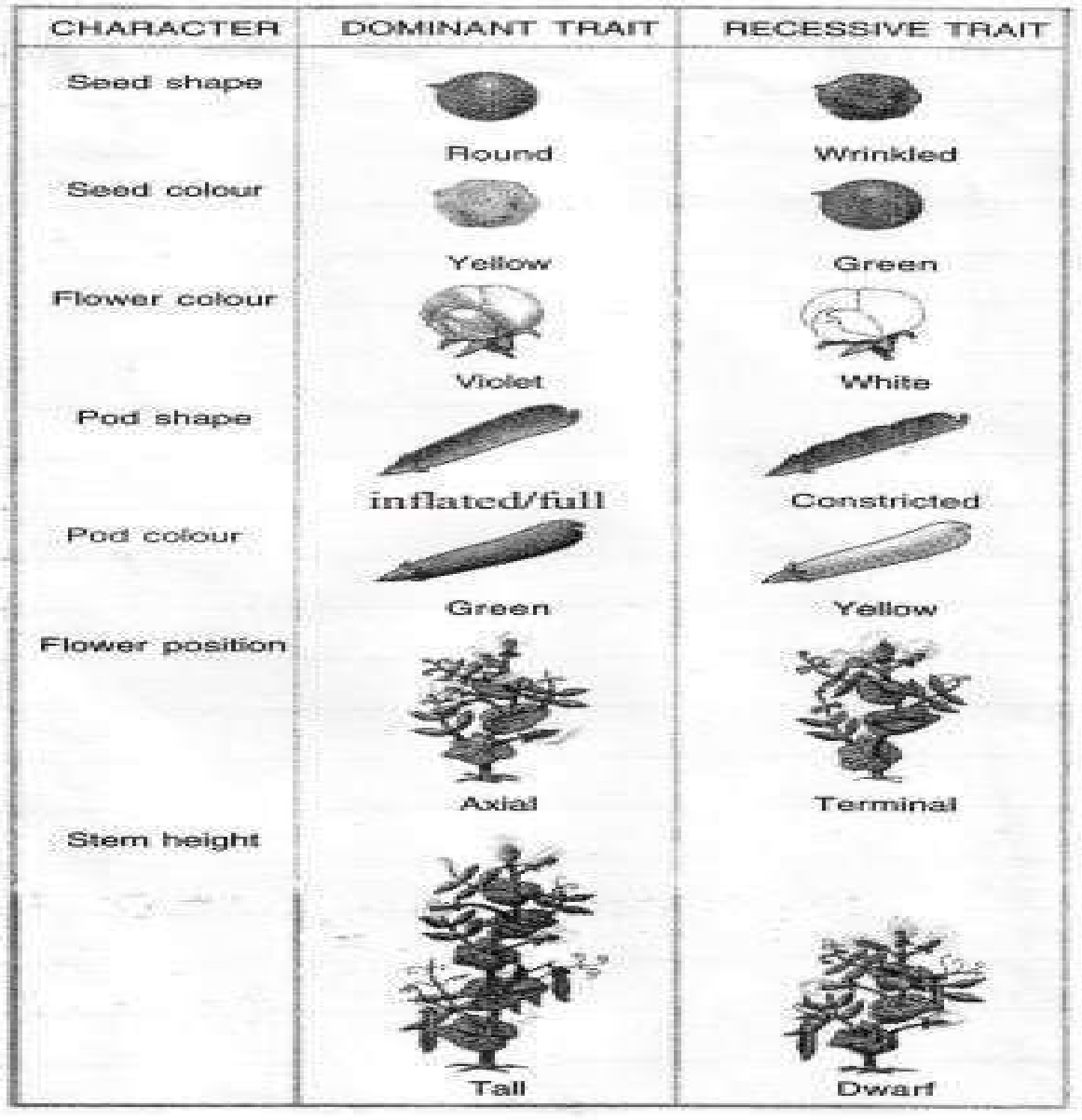
PLANTS SELECTED BY MENDEL

Pisum sativum (garden pea). Mendel used a number of 7 contrasting characters for garden peas

(TABLE OF CONTRASTING CHARACTERS. SEVEN PARTS)		
CHARACTER	**DOMINANT TRAIT**	**RECESSIVE TRAIT**
Flower colour	Violet	White
Flower position	Axial	Terminal
Seed colour	Yellow	Green
Seed shape	Round	Wrinkled
Pod shape	Inflated	Constricted
Pod colour	Green	Yellow
Height of plant	Tall	Dwarf/Short

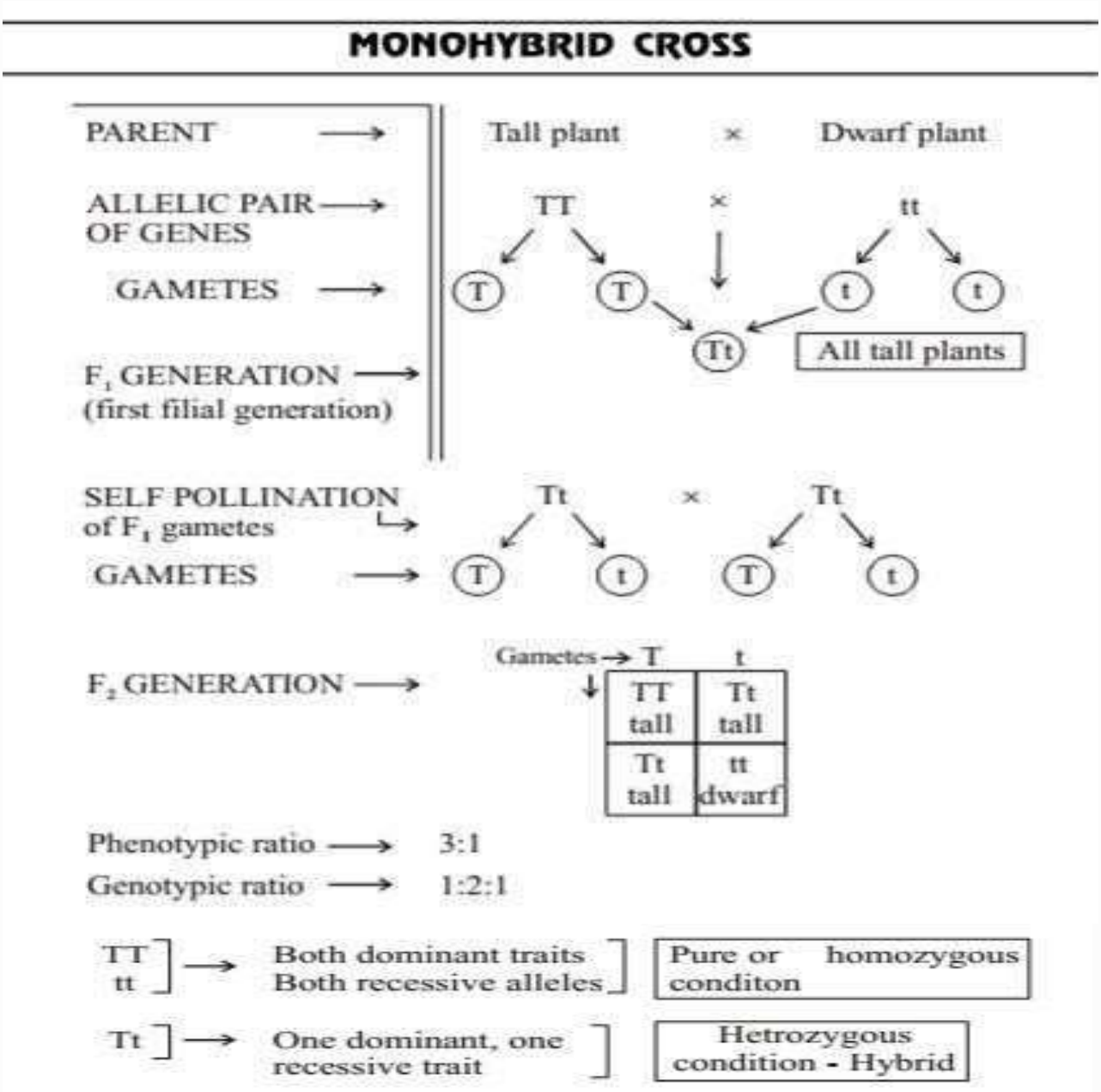
Seven pairs of contrasting characters in Garden Pea.



Mendel's Experiments

Mendel conducted a series of experiments in which he crossed the

- A Cross between two pea plants with one pair of contrasting characters is called a monohybrid cross.
- Cross between a tall and a draft plant (short).



Phenotype ® Physical appearance [Tall or Short]

Genotype ® Physical appearance [Tall or short]

Observations of Monohybrid Cross

characteristic)

2. F2 progeny ¼ were short, 3/4 were tall
3. Phenotypic ratio F2 – 3 : 1 (3 tall : 1 short)

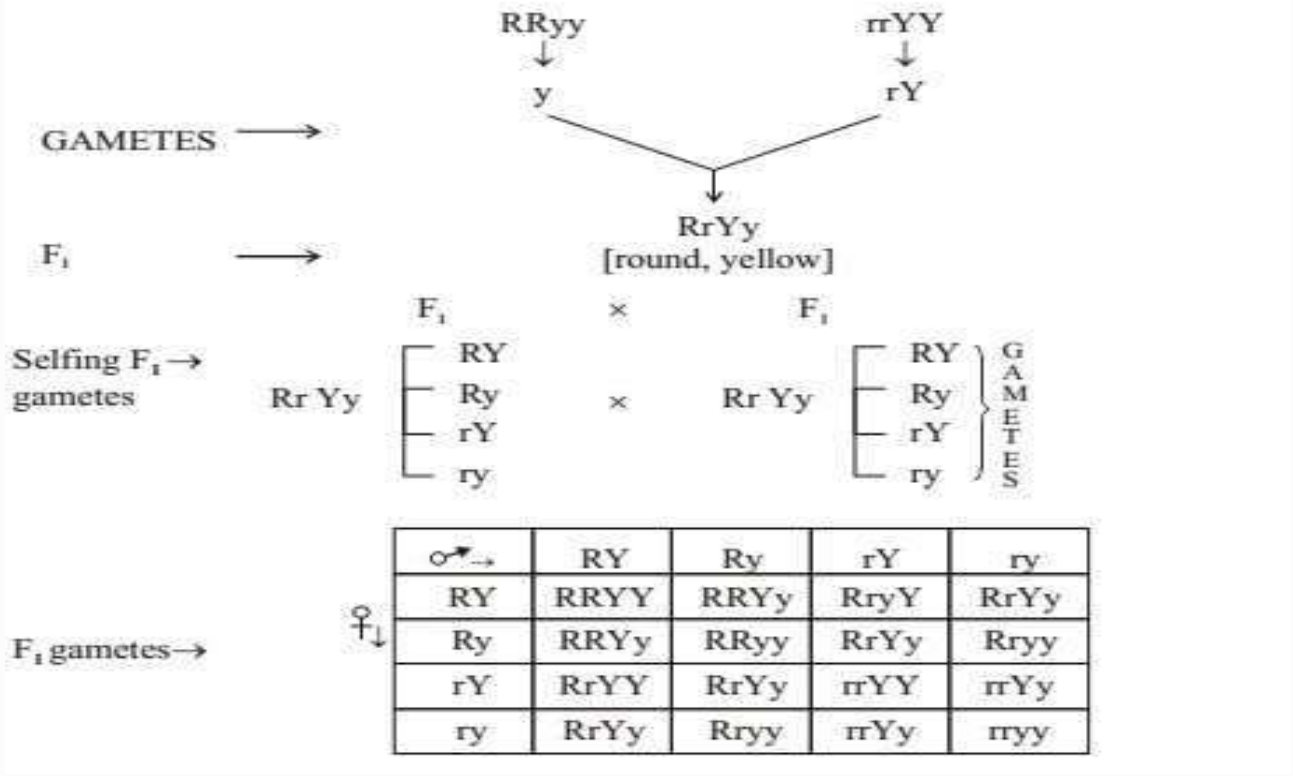
$$\begin{pmatrix} TT : Tt : tt \\ 1 : 2 : 1 \end{pmatrix}$$

Genotypic ratio F2 – 1:2:1

Dihybrid Cross

A cross between two plants having two pairs of contrasting characters is called a dihybrid cross.

Parent → *Round* × *Wrinkled*
Generation *Green seeds* *Yellow seeds*



♂→	RY	Ry	rY	ry
RY	RRYY	RRYy	RryY	RrYy
Ry	RRYy	RRyy	RrYy	Rryy
rY	RrYY	RrYy	rrYY	rrYy
ry	RrYy	Rryy	rrYy	rryy

Phenotypic Ratio

Round, yellow: 9
Round, green: 3
Wrinkled, yellow: 3
Wrinkled, green: 1

Observations

1. When **RRyy** was crossed with rrYY in F1 generation all were Rr Yy round and yellow seeds.
2. Self-pollination of F plants gave parental phenotype and two mixtures (recombinants round yellow & wrinkled green) seeds plants in the ratio of 9:3:3:1

Conclusions

1. Round and yellow seeds are **DOMINANT** characters
2. The occurrence of new phenotypic combinations shows that genes for round and yellow seeds are inherited independently of each other.

From these observations, Mendel put forward the rules of inheritance

Mendel's law of dominance states that

When parents with pure, contrasting traits
form of trait appears in the next generatio . The hybrid off springs will exhibit only the dominant trait in the phenotype." Law of dominance is known as the first law of inheritance.

Law of Segregation

Every individual possesses a pair of alle from the alleles. A gamete formation, a gamete receives only dominant or recessive in a particular gen

Law of Independent Assortment

Alleles of different characters separate during gamete formation. In the above true were independently from those of seed colour.

SEX DETERMINATION

Determination of the sex of an offspring.