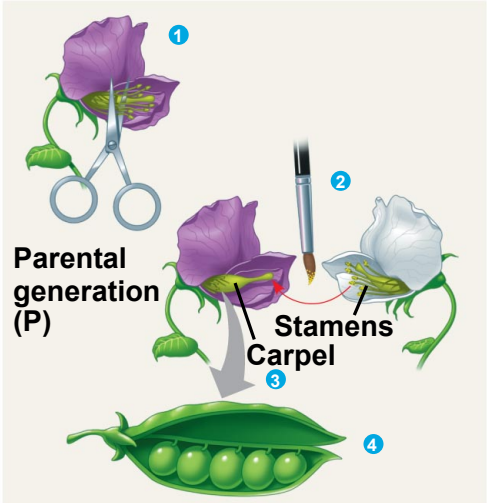
TECHNIQUE



RESULTS

EXPERIMENT

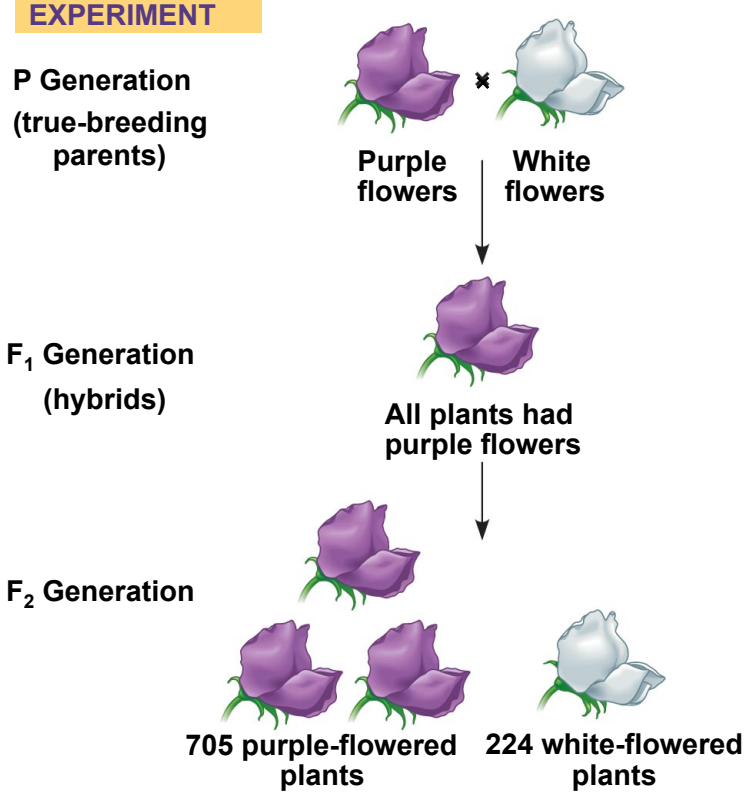
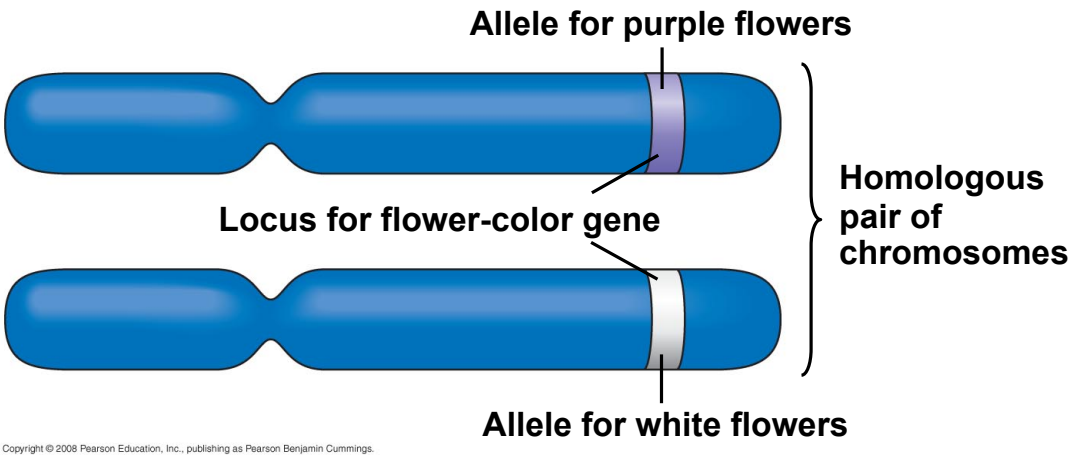
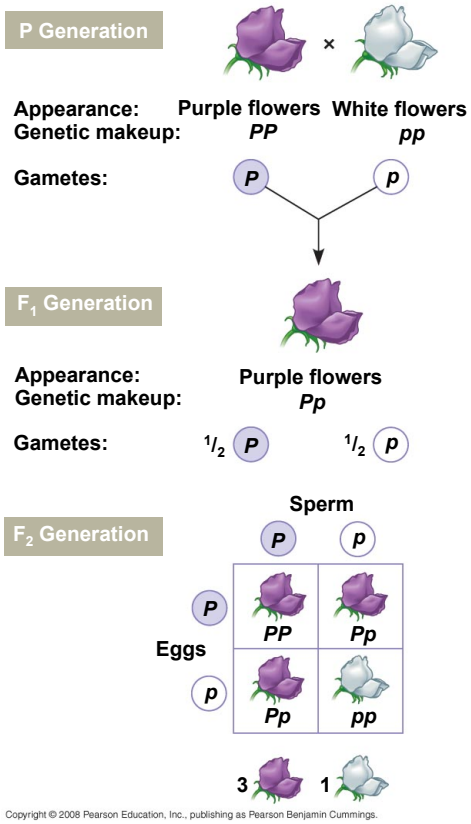
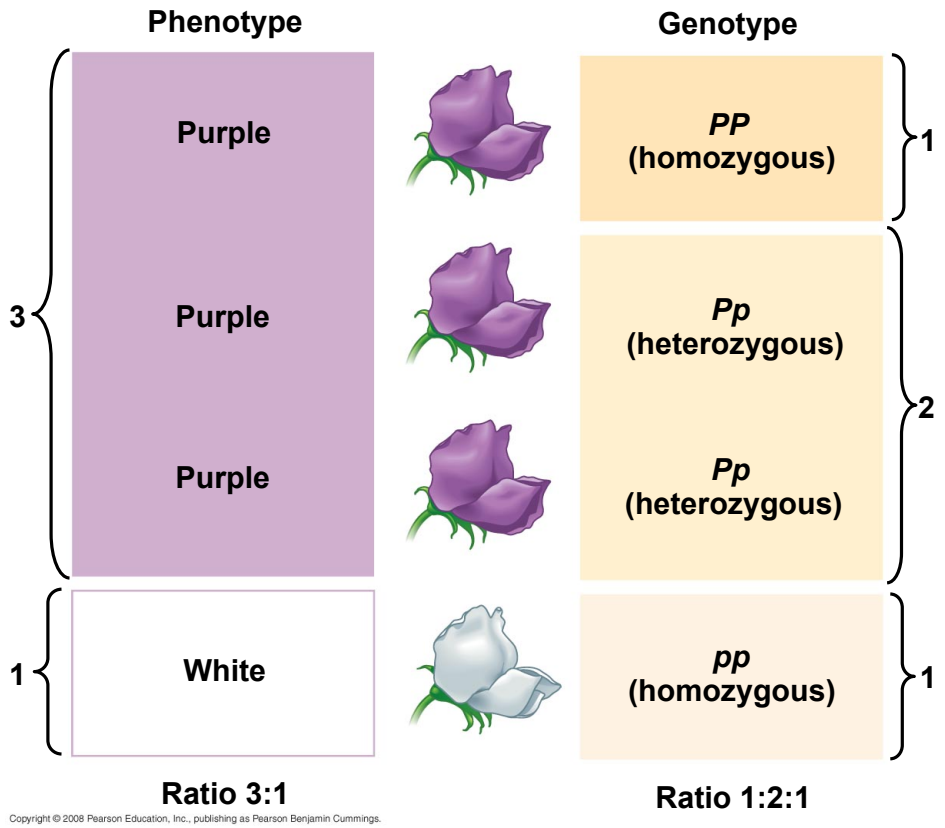


Table 14.1 The Results of Mendel's F_1 Crosses for Seven Characters in Pea Plants

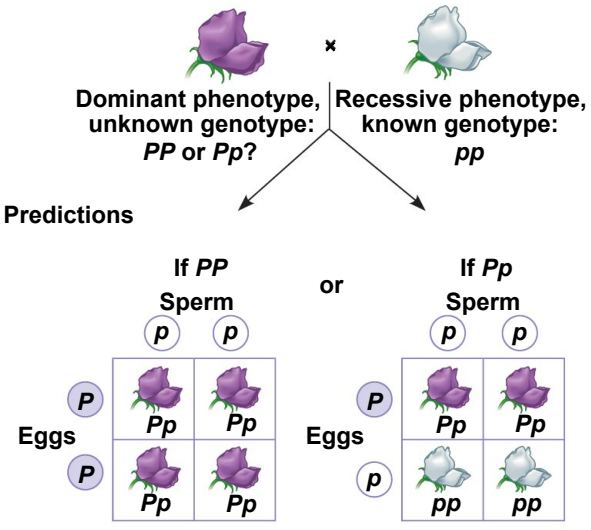
Character	Dominant Trait	x	Recessive Trait	F_2 Generation Dominant:Recessive	Ratio
Flower color	Purple	×	White	705:224	3.15:1
Flower position	Axial	×	Terminal	651:207	3.14:1
Seed color	Yellow	×	Green	6,022:2,001	3.01:1
Seed shape	Round	×	Wrinkled	5,474:1,850	2.96:1
Pod shape	Inflated	×	Constricted	882:299	2.95:1
Pod color	Green	×	Yellow	428:152	2.82:1
Stem length	Tall	×	Dwarf	787:277	2.84:1



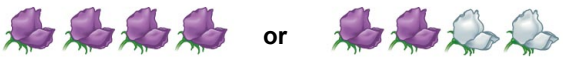




TECHNIQUE



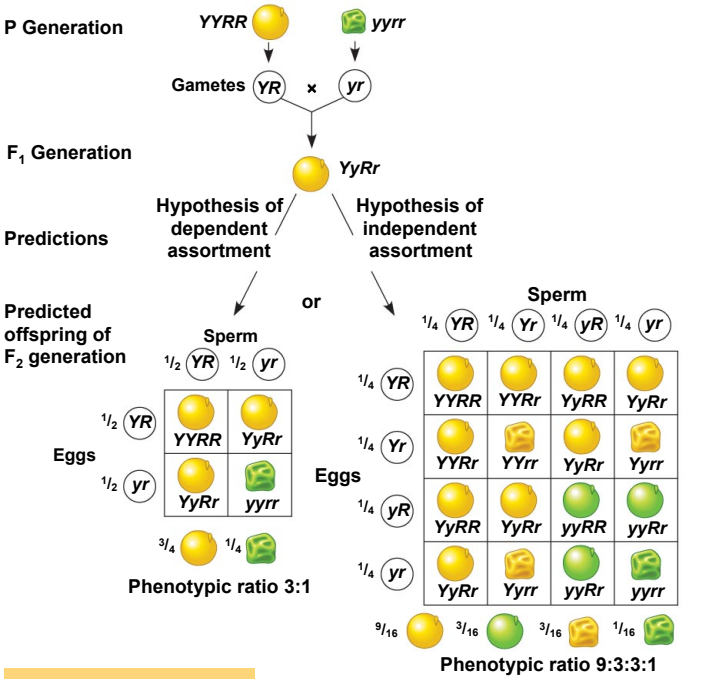
RESULTS



All offspring purple

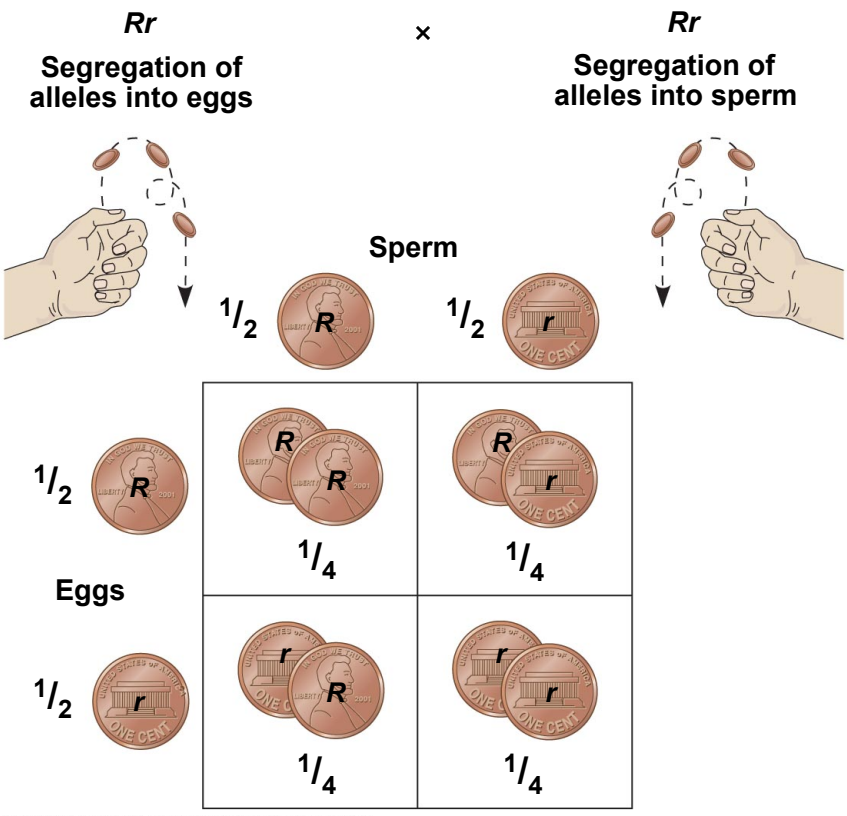
1/2 offspring purple and 1/2 offspring white

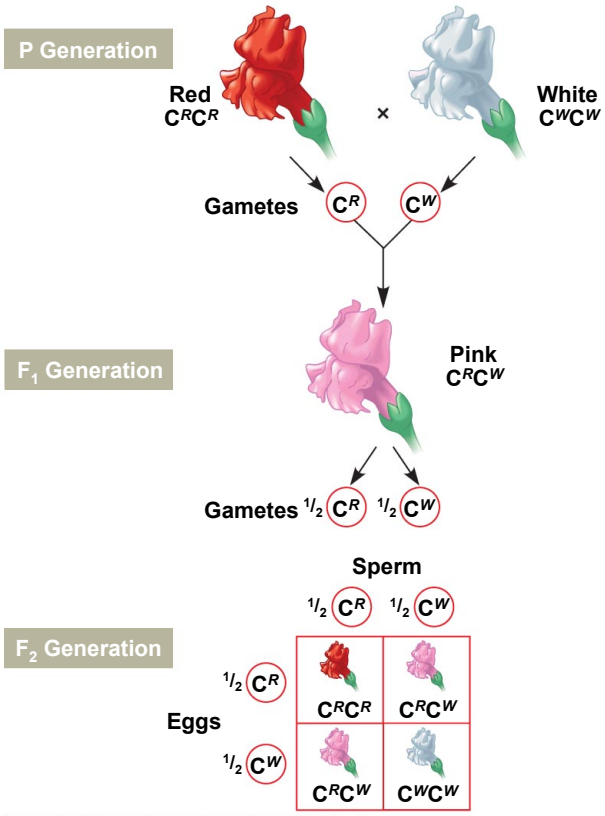
EXPERIMENT



RESULTS

315 108 101 32 Phenotypic ratio approximately 9:3:3:1



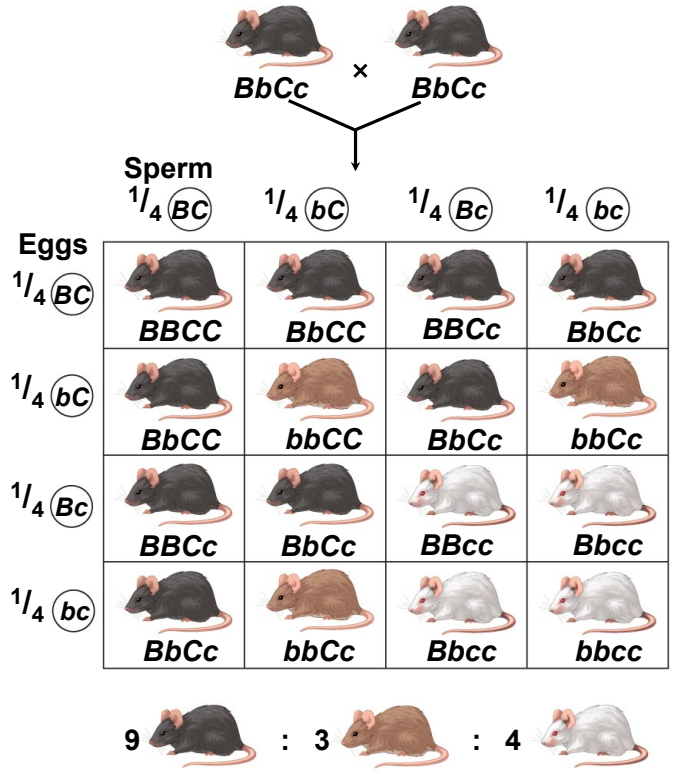


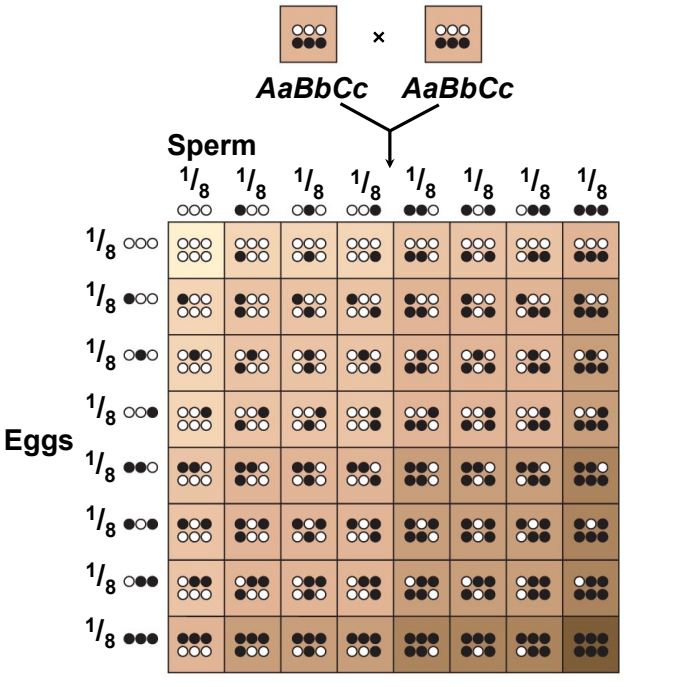
Allele	Carbohydrate
I^A	A △
I^B	B ○
i	none

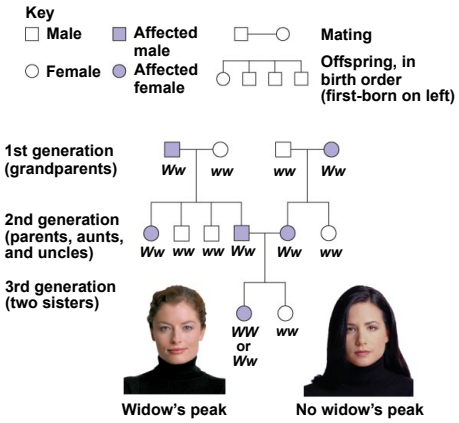
(a) The three alleles for the ABO blood groups and their associated carbohydrates

Genotype	Red blood cell appearance	Phenotype (blood group)
I^AI^A or I^Ai		A
I^BI^B or I^Bi		B
I^AI^B		AB
ii		O

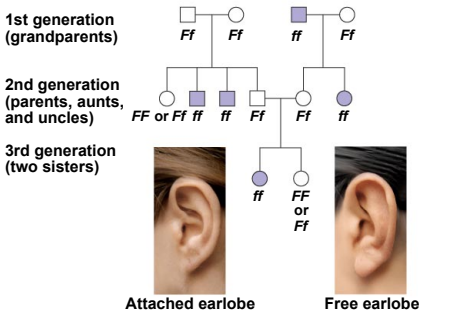
(b) Blood group genotypes and phenotypes



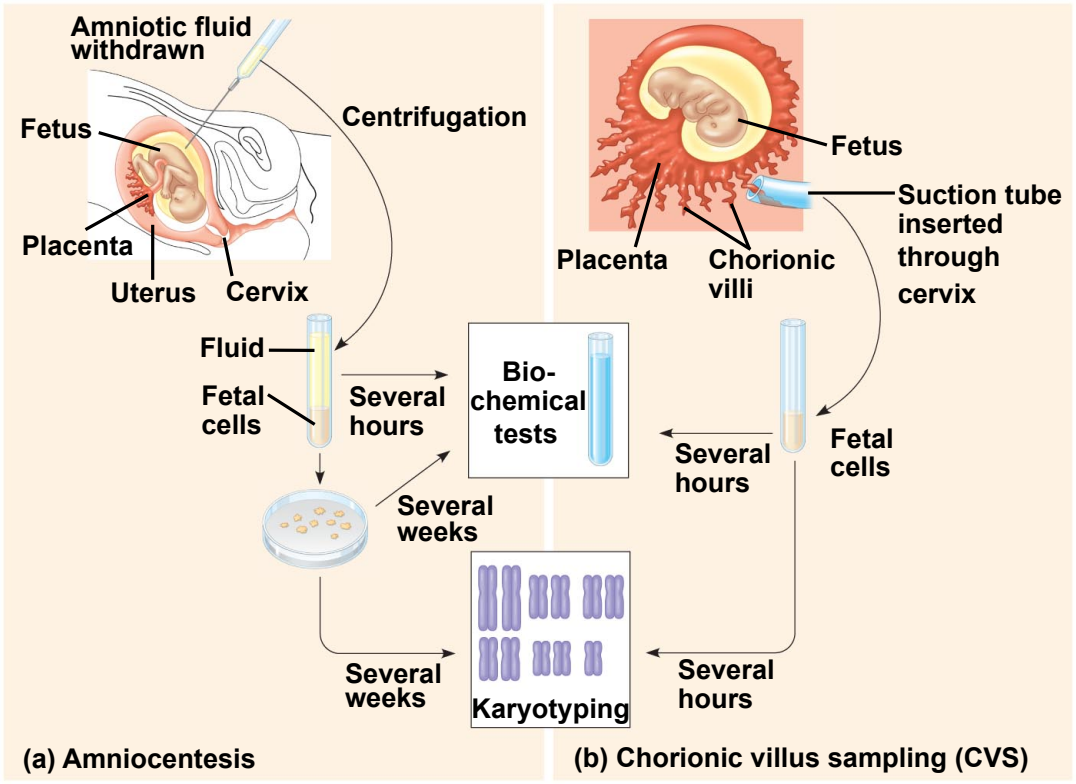




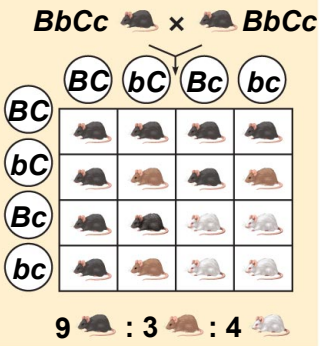
(a) Is a widow's peak a dominant or recessive trait?



(b) Is an attached earlobe a dominant or recessive trait?



Degree of dominance	Description	Example
Complete dominance of one allele	Heterozygous phenotype same as that of homozygous dominant	*PP* *Pp*
Incomplete dominance of either allele	Heterozygous phenotype intermediate between the two homozygous phenotypes	C^RC^R C^RC^W C^WC^W
Codominance	Heterozygotes: Both phenotypes expressed	I^AI^B
Multiple alleles	In the whole population, some genes have more than two alleles	ABO blood group alleles I^A, I^B, i
Pleiotropy	One gene is able to affect multiple phenotypic characters	Sickle-cell disease

Relationship among genes	Description	Example
Epistasis	One gene affects the expression of another	
Polygenic inheritance	A single phenotypic character is affected by two or more genes