

MENDEL GENETICS

MENDEL WORKED WITH PEA PLANTS FROM ABOUT 1856-1865.

GENETICS TERMINOLOGY:

PARENT GENERATION = P1, FIRST GENERATION = F1, SECOND GENERATION = F2.

HOMOZYGOUS = BOTH GENES ARE THE SAME TT OR tt.

HETEROZYGOUS = BOTH GENES ARE DIFFERENT Tt.

ALLELE = A FORM OF A GENE (RED OR WHITE FLOWERS).

GENOTYPE = THE GENES OF AN ORGANISM (Tt).

PHENOTYPE = THE PHYSICAL APPEARANCE (TALL OR SHORT).

DOMINANT = AN OVERRIDING GENE.

RECESSIVE = A MASKED GENE.

PUREBRED = TT OR tt (2 IDENTICAL) HOMOZYGOUS.

HYBRID = Tt (DIFFERENT) HETEROZYGOUS.

MENDEL'S HYPOTHESES:

HYPOTHESIS #1 INHERITED TRAITS ARE CONTROLLED BY FACTORS (GENES) THAT OCCUR IN PAIRS (ONE FROM EACH PARENT).

HYPOTHESIS #2 ONE FACTOR (GENE) MAY MASK THE OTHER PREVENTING THE MASKED ONE FROM HAVING AN EFFECT.

PRINCIPLE (LAW) OF DOMINANT AND RECESSIVE.

HYPOTHESIS #3 A PAIR OF FACTORS (GENES) MUST SEPARATE DURING THE FORMATION OF SEX CELLS (GAMETES) (MEIOSIS)!.

PRINCIPLE (LAW) OF SEGREGATION.

HYPOTHESIS #4 A PAIR OF FACTORS (GENES) SEPARATE COMPLETELY INDEPENDENT OF OTHER FACTORS (GENES).

PRINCIPLE (LAW) OF INDEPENDENT ASSORTMENT.

16 SQUARE PUNNETT SQUARE PROBLEMS. DIFFERENT CHROMOSOMES!

PUNNETT SQUARE:

	MALE GAMETES	MALE GAMETES
FEMALE GAMETES	OFFSPRING GENOTYPE	OFFSPRING GENOTYPE
FEMALE GAMETES	OFFSPRING GENOTYPE	OFFSPRING GENOTYPE

INTRODUCTION TO FOUR SQUARE PUNNETT SQUARE PROBLEMS:

PEA PLANT/PEA TRAITS

ROUND = DOMINANT – R WRINKLED = RECESSIVE – r

#1 CROSS A HYBRID ROUND X PURE WRINKLED
Rr X rr

	MALE GAMETES r		MALE GAMETES r	
FEMALE GAMETES R	OFFSPRING GENOTYPE Rr	OFFSPRING GENOTYPE Rr		
FEMALE GAMETES r	OFFSPRING GENOTYPE rr	OFFSPRING GENOTYPE rr		

#2 CROSS A HYBRID ROUND X HYBRID ROUND
Rr X Rr

LIST THE PERCENT OF GENOTYPE AND PHENOTYPE OFFSPRING