Mr. Ulrich
AP Biology

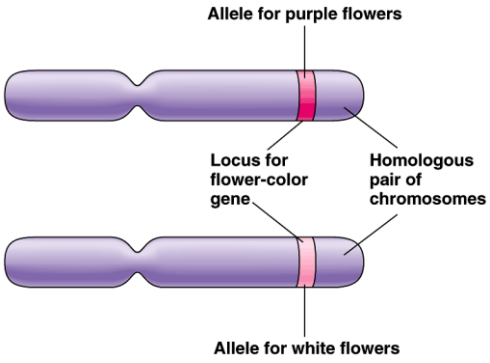
The Pea Man

Credited as first guy to use _____ to study inheritance of traits.

P= F_1= F_2=

Traits come in alternative versions

- purple vs. white flower color
- _____ vary in the sequence of _____ at the specific _____ of a gene



Traits are inherited as discrete units

For each characteristic, an organism inherits 2 alleles, 1 from each parent

- _____organism
  - inherits 2 sets of chromosomes, 1 from each parent
  - _____ chromosomes
  - like having 2 editions of encyclopedia or text book

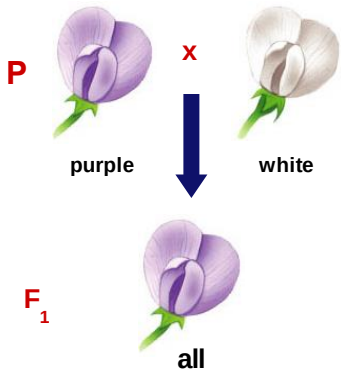
Law of Dominance =

<u>purple</u> & <u>white</u> flower colors are separate traits that do not blend

- purple x white ≠ light purple
- purple <u>masked</u> white

dominant allele = recessive allele =

Genotype = Phenotype =



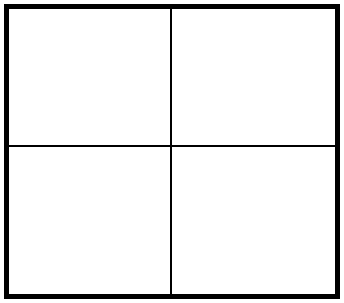
Representing alleles as letters

P

F_1

F_2

Punnett Squares



Heterozygous =

Homozygous =

2 organisms can have the same _____ but have different_____

Test cross

Breed the _____ (the unknown genotype) — with a _____ to determine the identity of the unknown allele

PP x *pp* OR P*p* x *pp*

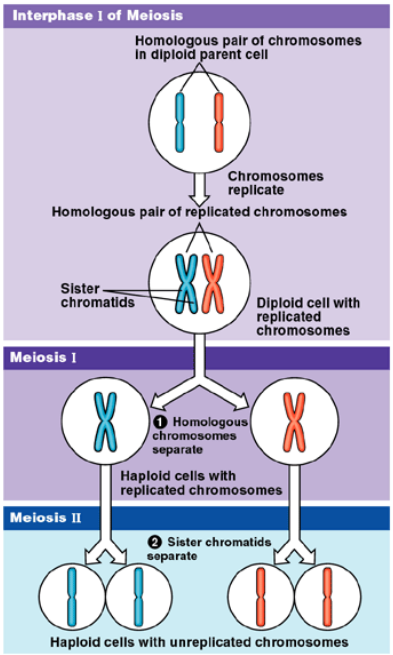
Law of Segregation =

During meiosis, _____

- _____ separate

one allele from each homologous pair is packaged into a separate gamete.

When?



Monohybrid crosses

Some of Mendel's experiments followed the inheritance of _____ characteristics.

- flower color
- seed color

Dihybrid Crosses

Some of Mendel's experiments followed the inheritance of _____ different characteristics

- seed color and seed shape
- Pod color and flower color

The Dihybrid Cross

P

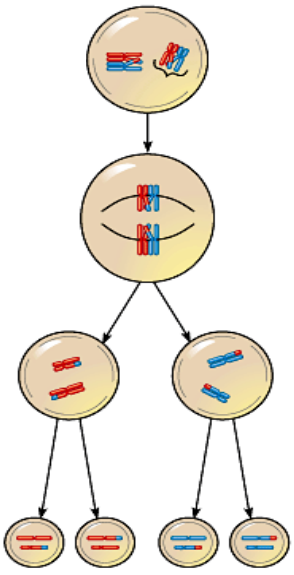
F_1

F_2

Law of independent assortment =

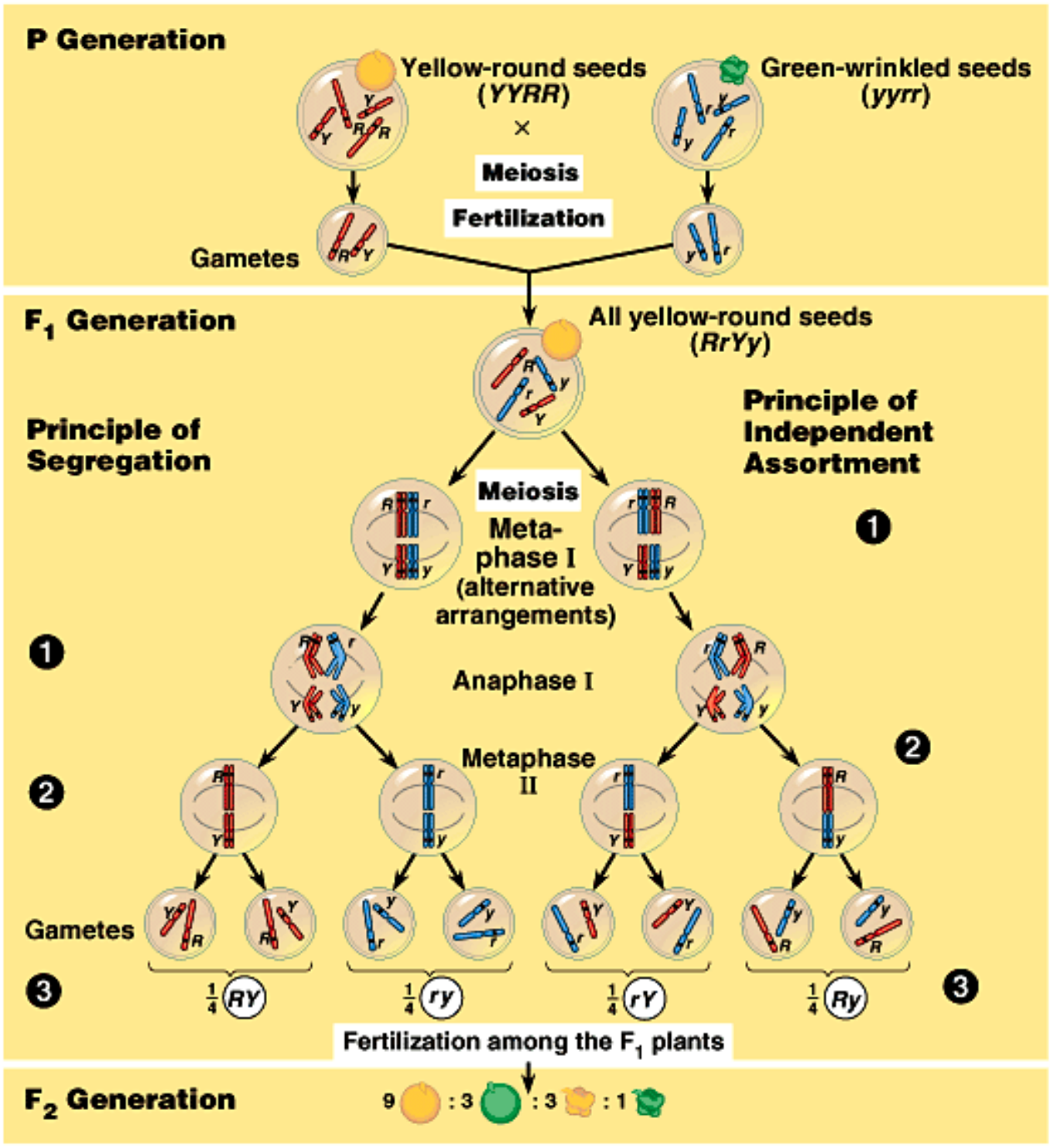
- _____ chromosomes align independently
- Possible allele combinations produced in equal amounts
  YR = Yr = yR = yr
- only true for genes on _____ or
  on same chromosome but so far apart that _____ happens frequently

When?



Big exception
If genes are on _____ & close together

- will usually be inherited together
- rarely crossover separately
- "_____"


P Generation
Yellow-round seeds (YYRR)
×
Green-wrinkled seeds (yyrr)
Meiosis
Fertilization
Gametes
F1 Generation
All yellow-round seeds (RrYy)
Principle of Segregation
Principle of Independent Assortment
Meiosis
Meta-phase I (alternative arrangements)
Anaphase I
Metaphase II
Gametes
1/4 RY
1/4 ry
1/4 rY
1/4 Ry
Fertilization among the F1 plants
F2 Generation
9 : 3 : 3 : 1