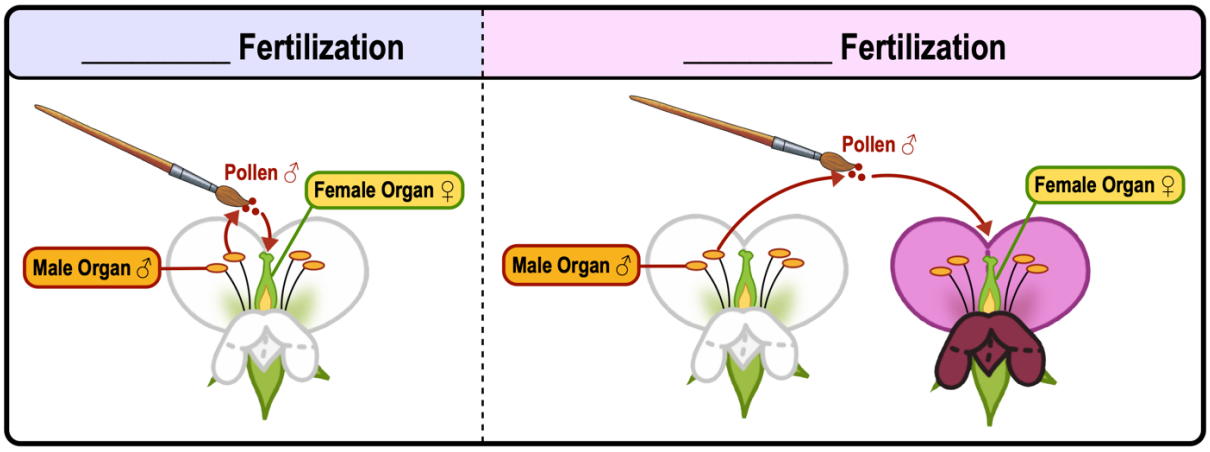
CONCEPT: MENDEL'S EXPERIMENTS

●Mendel used *two* types of *fertilization* (gamete fusion) in his experiments, using either _____ or _____ parent organisms.

1) Self-Fertilization: apply pollen from a male organ to a female organ on the _____ plant.

2) Cross-Fertilization: cross pollen from a male organ to a female organ on _____ plants.

EXAMPLE: Self-fertilization vs. Cross-fertilization.



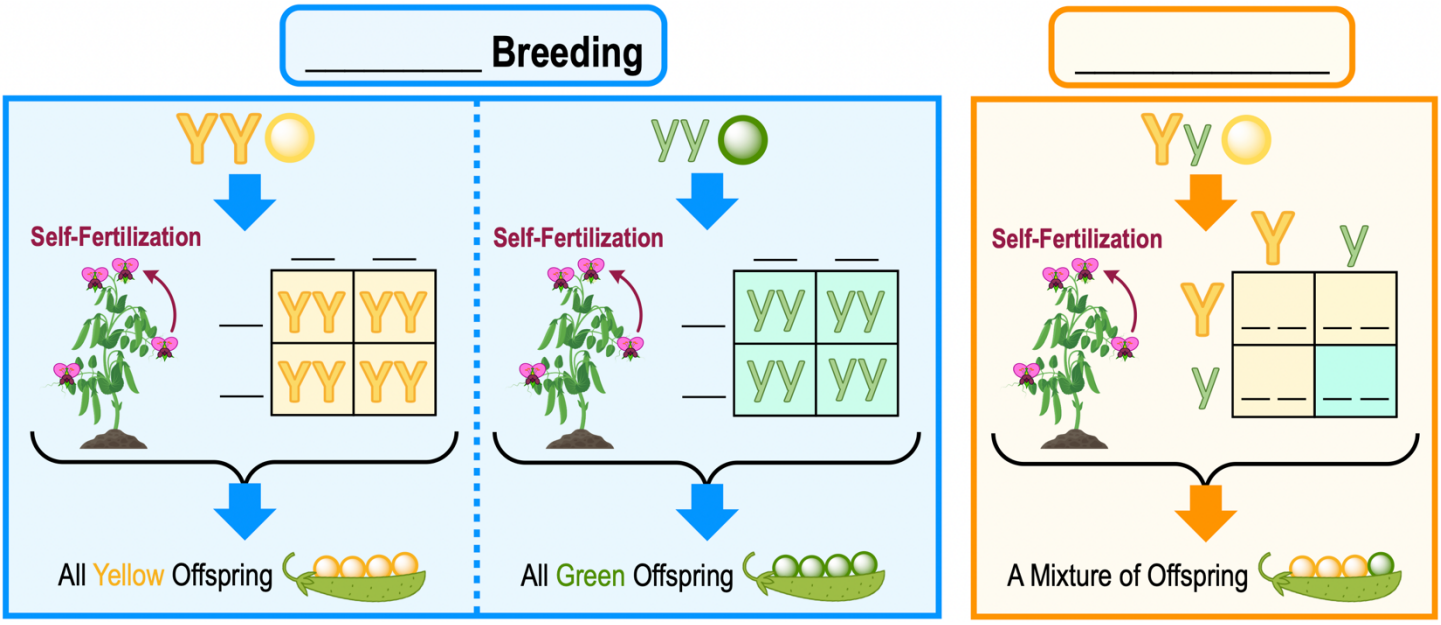
Self-Fertilization Experiment: True-Breeding vs. Hybrid Plants

●_____-**Breeding (Homo**zygous): self-fertilization produces offspring with _____ phenotypes as the parent.

● _____ (**Hetero**zygous): *self-fertilization* produces offspring with _____ phenotypes.

□ **Mono***hybrids*: are *heterozygous* for _____ specific trait/gene.

EXAMPLE: True Breeding Pea Plants vs. Hybrid Pea Plants.



●Mendel's discoveries using *self-fertilization* intrigued him, so he began _____-*fertilizing* pea plants.

CONCEPT: MENDEL'S EXPERIMENTS

Cross-Fertilization Experiment: Dominant vs. Recessive Alleles

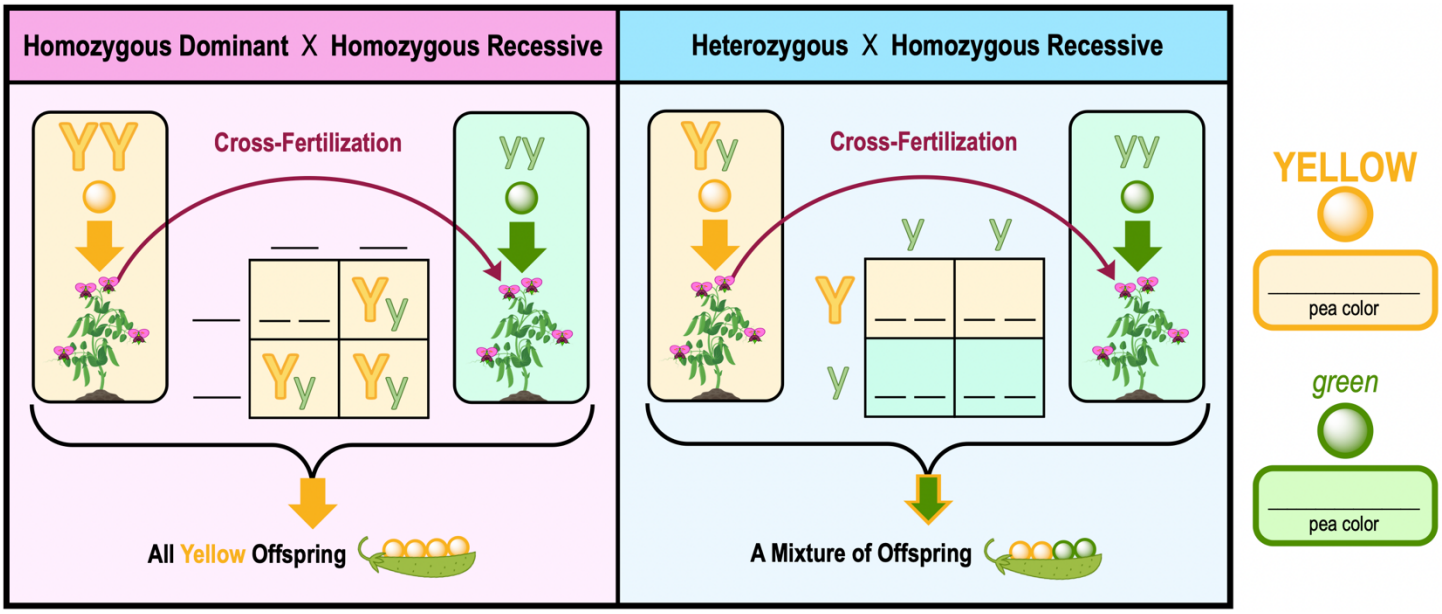
●Mendel discovered *dominant* & *recessive* traits when he _____*-fertilized* yellow & green pea plants.

□ When analyzing offspring, Mendel *always* found yellow peas (yellow = _____ trait).

□ *Sometimes* Mendel found a _____ of phenotypes, but *never* all green offspring (green = *recessive* trait).

□ This gave Mendel a clue that some yellow pea plants are _____*zygotes*.

EXAMPLE: Cross-Fertilization Experiment.



PRACTICE: Mendel crossed a pea plant with yellow peas with a pea plant with green peas. All of the offspring created from this cross has yellow peas. What must be true about the parent plants of this cross for this to occur?

a) The parent with green peas was heterozygous for pea color.
b) The parent with green peas was homozygous recessive for pea color.
c) The parent with yellow peas was heterozygous for pea color.
d) The parent with yellow peas was homozygous dominant for pea color.
e) A and C.
f) B and D.

PRACTICE: You cross a pea plant with yellow peas (Yy) and a pea plant with green peas. How many unique genotypes are possible for pea color in the offspring? How many unique phenotypes are possible for pea color in the offspring?

a) 2 unique genotypes; 2 unique phenotypes.
b) 3 unique genotypes; 2 unique phenotypes.
c) 2 unique genotypes; 1 unique phenotype.
d) 1 unique genotype; 1 unique phenotype.

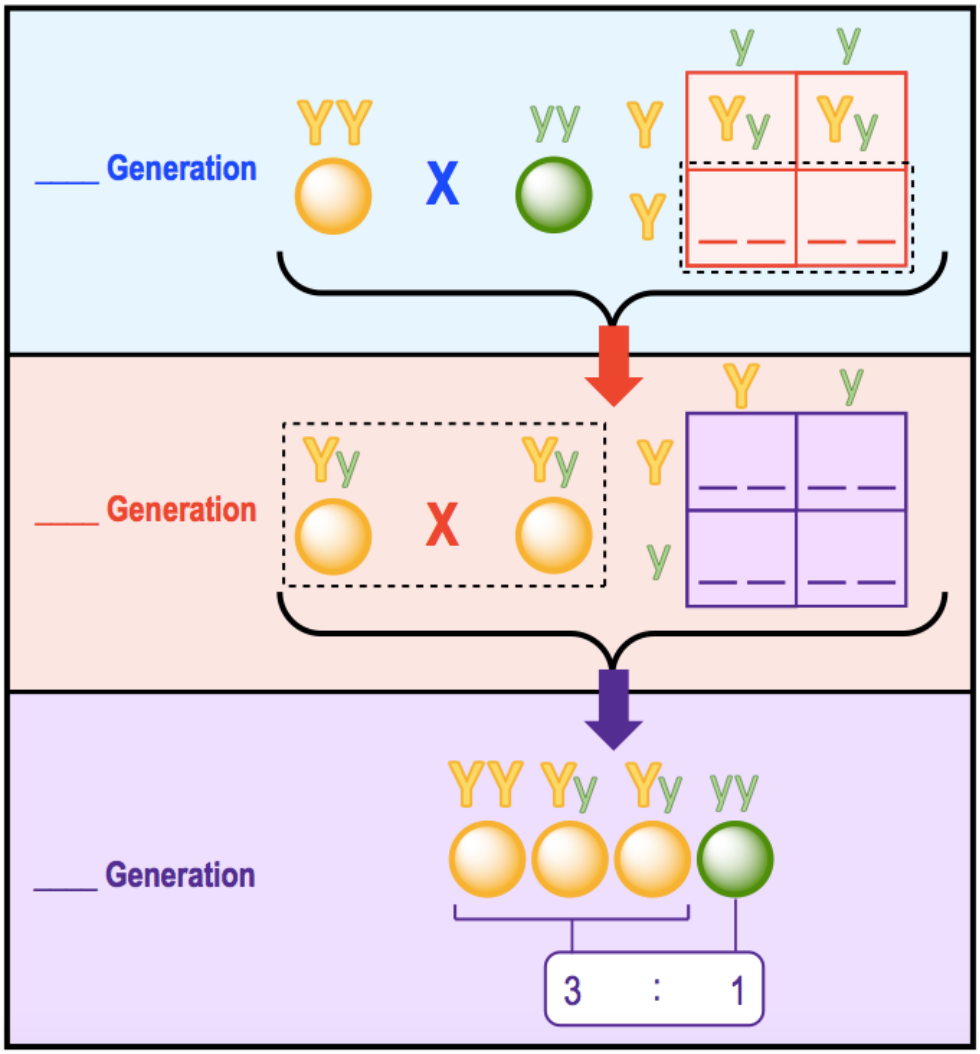
CONCEPT: MENDEL'S EXPERIMENTS

Generations of Mendel's Plants

●Mendel standardized the naming system of *generations* to track inheritance patterns:

1) _____ **Generation** (**P**): the _____ (*parent)* set of individual plants that are mated.
2) **First** _____ **Generation** (***F*$_1$**): the offspring of the P generation (*filial* = "_____").
3) _____ **Filial Generation** (***F*$_2$**): the offspring of the F_1 generation plants.

EXAMPLE: Mendel's generations of pea plant breeding.



PRACTICE: In the study of genetics the offspring of the parental generation is referred to as the:

a) Phenotype
b) P generation.
c) F1 generation.
d) F2 generation.