

# Mendelian Genetics Notes

## Ch. 6.3 - 6.5

### Gregor Mendel

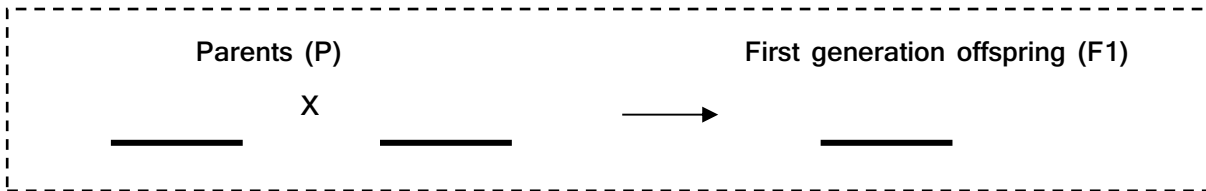
- Known as " \_\_\_\_\_ "
- Genetics --the study of \_\_\_\_\_ patterns and \_\_\_\_\_ in organisms
- Genes--segments of \_\_\_\_\_ that direct a cell to \_\_\_\_\_
- Traits-- \_\_\_\_\_ that are \_\_\_\_\_
  - Ex:

### Mendel's Experiment

- Mendel used \_\_\_\_\_ to study patterns of inheritance.
- Mendel studied \_\_\_\_\_ in pea plants by \_\_\_\_\_ that had variations of each trait:

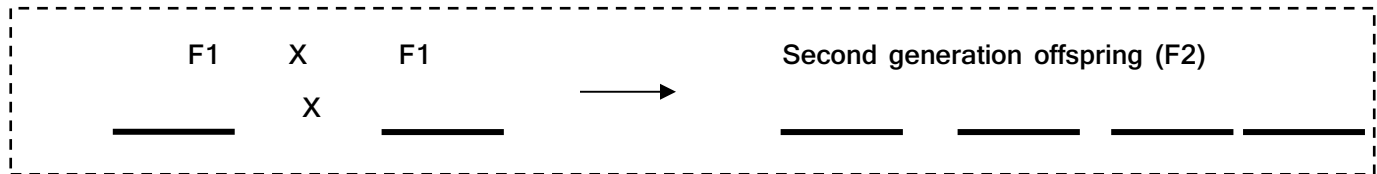
### Mendel's 1<sup>st</sup> Experiment

- He only used \_\_\_\_\_ (purebred) plants so he could \_\_\_\_\_
- First experiments were \_\_\_\_\_ (cross one trait at a time)
- Only used true-breeding ( \_\_\_\_\_ ) plants so he could \_\_\_\_\_ the outcome



### Mendel's 2<sup>nd</sup> Experiment

- He allowed the F1 offspring to \_\_\_\_\_ to produce F2 offspring.



**Results:** One particular variation of each trait showed up in offspring more often. Which one?

### Mendel's Conclusion

1. Biological inheritance is determined by factors ( \_\_\_\_\_ ) that are passed from one generation to the next.

#### 2. Law of Segregation:

- Organisms inherit \_\_\_\_\_ copies of each gene, \_\_\_\_\_.
- Organisms donate only \_\_\_\_\_ copy of each gene to their offspring.
- \_\_\_\_\_ - only testing only ONE trait at a time


- "Principle of Dominance" = some alleles are \_\_\_\_\_ and some are \_\_\_\_\_
- Alleles = \_\_\_\_\_
  - Dominant alleles are \_\_\_\_\_ recessive alleles  
(Recessive characteristics of a trait are "hidden" if a dominant allele is present)
  - Dominant alleles use \_\_\_\_\_ letters, recessive alleles use \_\_\_\_\_ letters

Homozygous alleles:	Homozygous dominant:	Homozygous recessive:
Heterozygous alleles:		

Genotype vs. Phenotype	
Genotype = *the alleles that an organism has for a trait	Phenotype = *what the alleles stand for
Examples:	Examples:

Genome = \_\_\_\_\_

### Traits & Probability

- Probability = the likelihood that \_\_\_\_\_
  - Probability is used to predict outcomes of \_\_\_\_\_
- \_\_\_\_\_ are used to calculate the probability that offspring will inherit certain traits from their parents.
  - Yields the ratio of possible \_\_\_\_\_ and \_\_\_\_\_
  - *The letters inside the Punnett square represent \_\_\_\_\_*

	A	a
A	AA	Aa
a	Aa	aa

\* **Monohybrid Crosses** - Involves \_\_\_\_\_ trait

1. Homozygous Dominant x Homozygous Recessive

\_\_\_\_\_ x \_\_\_\_\_


Genotypic Ratio

Phenotypic Ratio

2. Heterozygous x Heterozygous

\_\_\_\_\_ x \_\_\_\_\_


Genotypic Ratio

Phenotypic Ratio

3. Heterozygous x Homozygous recessive

\_\_\_\_\_ x \_\_\_\_\_


Genotypic Ratio

Phenotypic Ratio

- **Dihybrid Crosses** - involves \_\_\_\_\_ traits

1. Heterozygous (RrYy) x Heterozygous (RrYy)


Genotypic Ratio

Phenotypic Ratio

### Mendel's Conclusions

3. **Law of Independent Assortment** = \_\_\_\_\_

- When Mendel studied two traits at a time, he realized that just because peas are green does not necessarily mean they will also be wrinkled. He called this the...

### **Review:**

- Gregor Mendel used \_\_\_\_\_ to study patterns of inheritance.
- Mendel developed 2 major conclusions from his research:
  - 1.
  - 2.
- We use \_\_\_\_\_ and \_\_\_\_\_ to predict the outcome ( \_\_\_\_\_ ) of offspring.
- Mendel's genetic principles apply to \_\_\_\_\_.