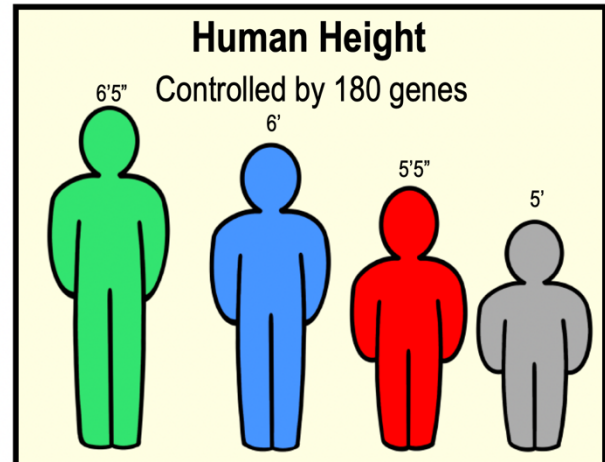
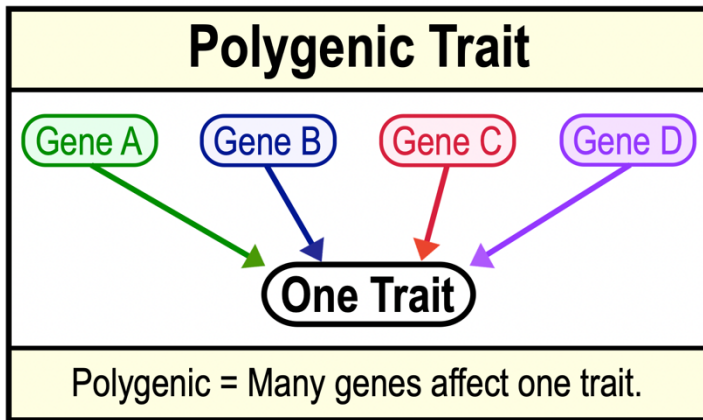


CONCEPT: NON-MENDELIAN GENETICS

Polygenic Inheritance

- Most inherited traits are _____.
- **Polygenic Trait:** a *single* phenotypic trait affected by _____ genes.

EXAMPLE: Polygenic Inheritance.



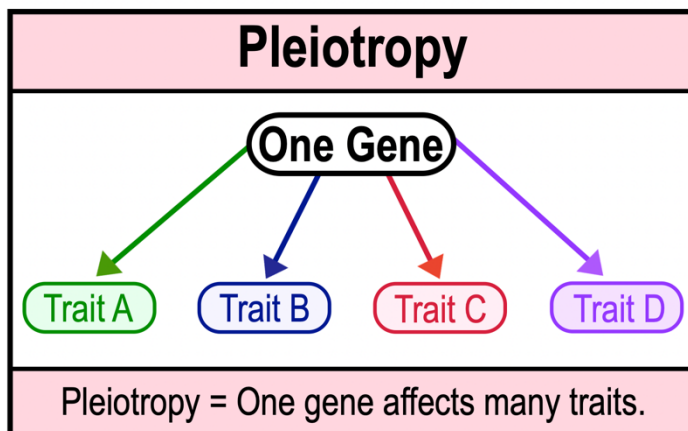
PRACTICE: Which of the following phenotypes is an example of polygenic inheritance?

- a) White or purple flower color in pea plants.
- b) Yellow or green pea color in pea plants.
- c) The ABO blood groups in humans.
- d) Skin pigmentation in humans.

Pleiotropy

- Pleiotropy is practically the _____ of polygenic.
- **Pleiotropy:** a *single* _____ has effects on _____ phenotypic traits.

EXAMPLE: Marfan Syndrome.



Marfan Syndrome

Mutation of the **FBN1** gene

Limits the body's ability to build connective tissue.

Marfan Syndrome Phenotypes:

- Tall and slender body.
- Long arms, legs, & fingers.
- Curved spine.
- Crooked or crowded teeth.
- Heart disease & heart murmurs.
- Eye conditions (Ex. Vision Loss).



CONCEPT: NON-MENDELIAN GENETICS

PRACTICE: A pleiotropic genetic disorder typically has what characteristics?

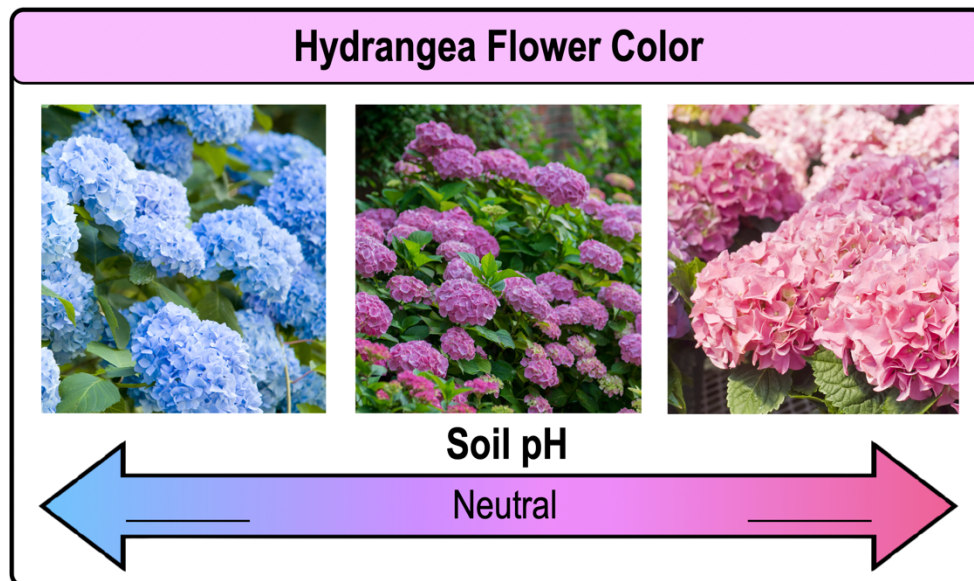
- a) A single gene is mutated resulting in the change of one phenotypic trait.
- b) A single gene is mutated resulting in the change of many phenotypic traits.
- c) Many genes are mutated resulting in the change of one phenotypic trait.
- d) Many genes are mutated resulting in the change of many phenotypic traits.

Multifactorial Characters

● **Multifactorial Characters:** inherited features or phenotypes that are influenced by _____ types of factors.

- These include *genetic* factors (alleles) & _____ factors (Ex. pH, temperature, etc.).

EXAMPLE: Effects of Environment (pH of soil) on Flower Color Phenotypes.



PRACTICE: Hydrangea plants of the same genotype are planted in a large flower garden. Some of the plants produce blue flowers and others pink flowers. This can be best explained by which of the following?

- a) The knowledge that multiple alleles are involved.
- b) The allele for blue hydrangea is completely dominant over the allele for pink hydrangea.
- c) The alleles are codominant.
- d) Environmental factors such as soil pH affect the phenotype of flower color.

PRACTICE: A phenotype is controlled by gene A and gene B. Gene B controls the expression of gene A. This is an example of _____.

- a) Incomplete Dominance.
- b) Epistasis.
- c) Codominance.
- d) Multifactorial characters.
- e) Alleles.