

Essential Question: How do living things inherit their genetic characteristics?

Activity 5- Mendel discovers Genetics

Purpose: a. I can **explain** that **genes** are passed from parent cells to offspring during **reproduction**.

b. I can **describe** how offspring differ from the parents due to receiving **genetic information** from both parents through **sexual reproduction**.

BACKGROUND: Although offspring receive all of their genes from each their parents, the opportunity for variation is enormous. Just think about your own family....

- If you have siblings, do they look like you?
- How closely do you and your siblings resemble your parents or your grandparents?

Years ago an Austrian monk named Gregor Mendel studied the genetics of pea plants to figure out why this happens. After 10 years of experimenting with different pea plant traits Mendel proposed the first model that explained how organisms inherit traits from their parents.

INSTRUCTIONS: Read Activity 60: Mendel, First Geneticist. Answer all questions in complete, quality, and correct sentences.

1. Do Mendel's studies on pea demonstrate **sexual** or **asexual reproduction**? Explain why using technical terms.
2. Explain why Mendel used Pea Plants for his experiments AND why he needed to perform so many crosses for each characteristic.
3. Define a **dominant allele and** give an example of one.
4. Define a **recessive allele and** give an example of one.
5. Use Mendel's results (p. D-32) & tell the number of peas showing **dominant** and **recessive traits** for each characteristic on the table below. Then, calculate the ratio of **dominant to recessive alleles**.

Characteristic	# Dominant Trait	# Recessive Trait	Ratio of Dominant:Recessive
Ex:Flower color (purple or white)	<i>Purple 705</i>	<i>White 224</i>	<i>705/224 = 3.15 : 1</i>
Seed color (green or yellow)			
Seed surface (wrinkled or smooth)			
Pod color (green or yellow)			

If you unraveled all the chromosomes from all of your cells and placed the DNA end to end, the strands would stretch from the Earth to the moon about 6,000 times!

Student Review: 1-Below Standard, 2-Approaching Standard, 3-Standard, 4-Above Standard
Use the scale to evaluate completeness & correctness of the job. Put score, Initial & date in boxes.

Score

Initial/Date

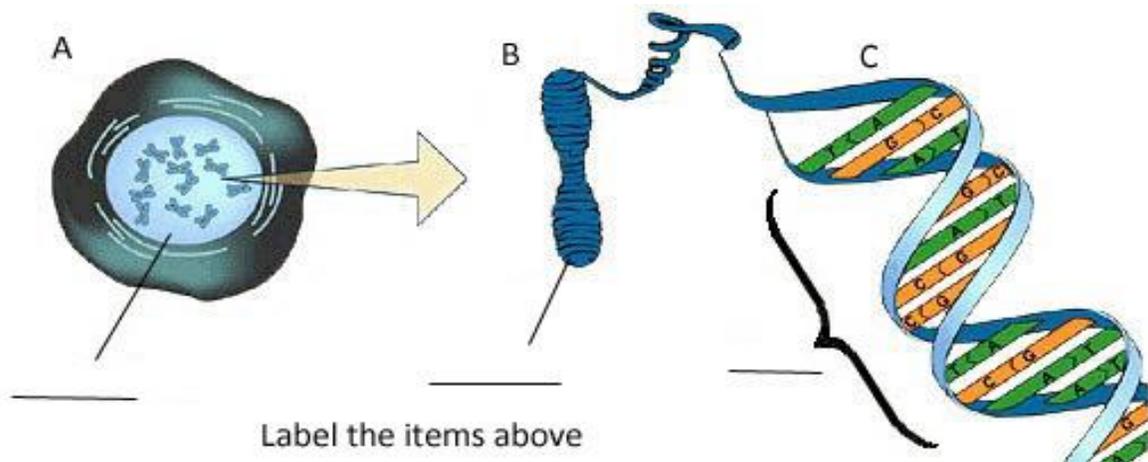
6. Explain why the ratios for each trait above are not exactly the 3 : 1 ratio one would expect.

7. Define these terms and give an example using Eye Color (BB, Bb or bb)

a. Genotype

b. Phenotype

8.



9. **EC/Challenge:** Go to: http://www.genomenewsnetwork.org/resources/whats_a_genome/Chp1_4_2.shtml and tell about how many base pair are (AT, GC, TA, CG) are there in a gene?

Write three questions w/answers you think might show up on a test about this activity:

Level 1 – Easy Piezy

Level 2 - Solid

Level 3 - Awesome