

Name _____

Date _____

What Does a Geneticist Do?

By Cindy Grigg

¹ Scientists who study genetics study genes and heredity: how certain characteristics are inherited by offspring because their parents had these characteristics. Do you have the same eye color as your mother or father? Do twins "run" in your family? These characteristics, or traits, are inherited. They are passed from your parents to you by genes. Genes contain DNA that occupies a specific place on a chromosome. DNA determines a specific trait in the organism. Even the fact that you were born a boy or a girl was determined by genes. DNA is found in the nucleus of each cell. When a baby is made, one cell from the father joins with one cell from the mother. This tiny cell contains all the information stored in DNA to make a new person - you! If you are a boy, you were given DNA from your father containing a "y" chromosome. If you are a girl, you were given DNA from your father containing an "x" chromosome. Your mother could only give you an x chromosome. Girls have two x chromosomes, and boys have an x and a y chromosome. The information in the DNA you inherited from your parents also determined what color of eyes you would have, the color of your hair, the type of ear lobes you have, and whether or not you can roll your tongue.



Gregor Johann Mendel

² The first geneticist was Gregor Mendel. In 1865 he published a paper describing experiments he did with garden peas. He noticed that certain traits in the parent plants could be predicted to occur in a certain percentage of the offspring. Traits like plant height, blossom color, color of peas, and whether the peas were wrinkled or smooth appeared to be passed down from the parent plant to the offspring. Mendel did not know about DNA or chromosomes, and he could not explain how these traits were passed down. His work was mostly ignored for many years.

³ Only recently did scientists finish mapping the human genome. This "map" shows all the genes in human DNA. Scientists believe this will help them understand many inherited diseases and could lead to the treatment and prevention of these diseases. This work is what a geneticist does. Many geneticists are doctors who treat and counsel patients who have a genetic disease. Some examples of these inherited diseases are Down's syndrome, Huntington's disease, sickle-cell anemia, muscular dystrophy, and cystic fibrosis.

⁴ Genetics is a very new career choice. Could it be the career for you?

1. What do geneticists study? <input type="radio"/> A Plants <input type="radio"/> B Genes and heredity <input type="radio"/> C Old people <input type="radio"/> D Babies	2. What determines a specific trait? <input type="radio"/> A Luck <input type="radio"/> B DNA
3. Where is DNA found? <input type="radio"/> A In the mitochondria <input type="radio"/> B In the nucleus of a cell <input type="radio"/> C In the cell wall <input type="radio"/> D In the cytoplasm	4. If you are a boy, what kind of chromosome did you get from your father? <input type="radio"/> A A y chromosome <input type="radio"/> B An x chromosome

<p>5. Girls have two _____ chromosomes.</p> <p><input type="radio"/> A Y</p> <p><input type="radio"/> B X</p> <p><input type="radio"/> C XY</p>	<p>6. Who was the first geneticist?</p> <p><input type="radio"/> A Gregor Mendel</p> <p><input type="radio"/> B Charles Darwin</p> <p><input type="radio"/> C Albert Einstein</p> <p><input type="radio"/> D Galileo</p>
<p>7. The first experiments on heredity used what kind of plants?</p> <p><input type="radio"/> A Peas</p> <p><input type="radio"/> B Green beans</p> <p><input type="radio"/> C Sunflowers</p> <p><input type="radio"/> D Corn</p>	<p>8. Mendel's work was an immediate success.</p> <p><input type="radio"/> A False</p> <p><input type="radio"/> B True</p>

Review the definitions of the terms. Then use the terms to fill in the blanks in the sentences below. You will not use all the terms.

diploid (DIH ployd)	crossing over	gametes (GAM eets)
haploid (HAP loyd)	meiosis (mi OH sus)	dominant
heterozygous	zygote (ZI goht)	pollination
sexual reproduction	genetic recombination	
homologous chromosomes (hoh MAW luh gus • KROH muh sohmz)		

9. A cell with two of each kind of chromosome is called _____ .
10. _____ are sperm or egg cells.
11. A cell with one of each kind of chromosome is a(n) _____ cell.
12. _____ chromosomes have genes for the same traits in the same order on both chromosomes.
13. Parent cells make gametes in a process called _____ .
14. A(n) _____ is the cell created when a sperm enters an egg.
15. _____ occurs when male and female gametes join to make a new living organism.
16. When nonsister chromatids exchange genes, it is called _____ .
17. _____ results in genetic variety.