**Snurfle Meiosis and Genetics 2**

Go to <http://www.biomanbio.com/GamesandLabs/Genegames/snurflemeiosis2diversity.html>

Click on Start a new game

Click on Continue

Click on Continue

Click on Meiosis and Genetics Interactive and follow directions as you answer the following questions.

**Crossing Over**

1. What process in cells undergoing meiosis increases genetic diversity?
2. How many cells are produced by meiosis?
3. How many varieties of gametes are produced by meiosis without crossing over?
4. In the interactive activity, what are the possible phenotypes for fur color and what gene represents each?
5. In the interactive activity, what are the possible phenotypes for wings and what gene represents each?
6. What are the phenotype possibilities for the gametes in question 3 given this information?
7. What do you call two genes that are often inherited together?
8. When does crossing over start? When does it end?
9. What is crossing over?
10. What exchanges DNA during crossing over?
11. How many cells are produced by meiosis in cells that do crossing over?
12. How many varieties of gametes are produced by meiosis with crossing over?
13. What is another term the chromosomes that result from crossing over?
14. What are the phenotype possibilities for the gametes in a Snurfle cell that does crossing over?
15. Does crossing over occur for every chromosome every time gametes are produced?

**Independent Assortment**

1. When does Independent Assortment occur?
2. The way each chromosome lines up during metaphase I is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. What are the two possible phenotypes for the fin trait in Sunrfles?
4. Which of the following statements is true as a result of independent assortment?
   1. The allele ‘G’ will ALWAYS be passed on with the allele ‘F’ in the example cell shown.
   2. The alignment of the top pair of chromosomes will NOT affect the alignment of the bottom pair.
   3. Green fur must ALWAYS be passed on with the fin trait.
   4. All of these are true.
   5. None of these are true.
5. How many different genetic combinations are possible in the first part of meiosis because of independent assortment?
6. What separates during anaphase II of meiosis II?
7. How does independent assortment affect genetic diversity?

**Random Fertilization**

1. What are the two types of gametes?
2. What process occurs when the sperm and egg combine?
3. For human beings there are \_\_\_\_\_\_\_\_\_\_ possible sperm and \_\_\_\_\_\_\_\_\_\_\_\_ possible eggs which can be produced which results in \_\_\_\_\_\_\_\_\_\_\_ possible genetic combinations.
4. A genetic cross that looks at two traits is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cross.
5. What goes inside the boxes of a Punnett square?
6. How many gene combinations are possible in gamete production for a dihybrid cross? Why so many?
7. What is the term for a fertilized egg?
8. The genotypes in a Punnett square can be read to determine the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a possible offspring.
9. What phenotype ratio should you expect with a dihybrid cross of heterozygous individuals?

**Click on Take the Quiz! Answer the questions.**

 **Click on Score Sheet. Type in your name. Record Your Scores.**

Overall Score: \_\_\_\_\_\_ Crossing Over: \_\_\_\_\_

Independent Assortment: \_\_\_\_\_\_\_ Random Fertilization: \_\_\_\_\_\_ Quiz: \_\_\_\_\_\_\_

**Click on Submit Your Scores Online to Your Teacher. Type in your Teacher’s email address.**