**Heredity Web Quest**

**DNA from the Beginning – Mendelian Genetics**

Go to [http://www.dnaftb.org/dnaftb/1/concept/index.html](http://www.dnaftb.org/dnaftb/1/concept/index.html)

**Children resemble their parents**

**Read the text and answer the following questions**

1. How have useful traits been accumulated in plants and animals over the centuries?

2. Was there a scientific way to predict the outcome of a cross between two parents? 

3. Who determined that individual traits are determined by discrete “factors”? In what year?

4. These “factors” are now known as ____________________.

5. Summarize what Mendel did?

**Click on Animation at the bottom of the page. Move through the animation and answer the following questions.**

1. Why did Mendel work with pea plants?

2. A) In the flower the male sex part is the ________________.
   B) What does it drop inside the immature flower? ________
   C) Name the female sex part? _____________
   D) What are the sex cells that develop there? ________
   E) What fertilizes the eggs? _______
   F) Why do you think this is called self-fertilization? ______

3. The next question deals with how pea plants cross-fertilize

4. Summarize how cross-fertilization is accomplished?

Why is it different from self-fertilization?

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Self-fertilization

Cross-fertilization
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On the right menu bar click on number 2 “Genes come in pairs”. Then at the bottom click on Animation.
Click through the animation and answer the following questions
1. What is a phenotype? _________________________
2. What are the seven pairs of traits Mendel worked with in pea plants?
   a. ____________ b. ______________ c. _______________ d. ______________
   e. ____________ f _____________ g. ______________
3. Explain what Mendel reasoned from the existence of yellow and green seed colors
   _______________________________________________________________________
   _______________________________________________________________________
4. What is an allele? ___________________________________________________________
5. What is a genotype? _________________________________________________________
6. If a pea plant has the two alleles YY. What is its phenotype? ____________________________
   What is its genotype? ___________________________________________________________

On the right menu bar click on number 3 “Genes don’t blend”. Then at the bottom click on Animation.
Click through the animation.
2. What observations did Mendel make and what problem did he have to solve?
   _______________________________________________________________________
   _______________________________________________________________________
   _______________________________________________________________________

On the right menu bar click on number 4 “Genes don’t blend”. Then at the bottom click on Animation.
Click through the entire animation. Answer the following using the type of diagram that is found in the animation
1. Diagram the cross & offspring between pure-bred green with pure-bred yellow.
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3. Diagram the cross between two heterozygous plants (Yy x Yy)

On the right menu bar click on number 5 “Gene inheritance follows rules”. Then at the bottom click on Animation.
Click through the animation.

1. Explain Mendel’s law of segregation

2. Draw a Punnett square showing the heterozygous cross of two yellow seeds Yy x Yy.

Which genotype gives the green phenotype? ______________ Which genotype gives the yellow phenotype? ______________

Give an example from above that explains the 3 to 1 ratio.

_______________________________________________________
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Part 2 – Problem Sets & Tutorials
Go to http://www.biology.arizona.edu/mendelian_genetics/mendelian_genetics.html

Take out a piece of scratch paper. Diagram the problem on a Punnett square before looking at the tutorial. Good Luck!

Click on Monohybrid Cross. Do problem set #1-13. Use the tutorial to help you understand the problem.

Click on Dihybrid Cross. Do problem set #1-9. Use the tutorial to help you understand the problem.

Click on Sex-linked Inheritance I. Do problem set #1-10. Use the tutorial to help you understand the problem.