Heredity - Internet Assignment

DNA from the Beginning – Mendelian Genetics

Go to <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 top of the page. Move through the animation and answer the following questions.

1. Why did Mendel work with pea plants?

7. The next questions deal with how pea plants self-fertilize

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? \_\_\_\_\_\_

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

A) Summarize how cross-fertilization is accomplished?

B) Why is it different from self-fertilization?

9. Draw a Venn Diagram for Self-fertilization and Cross-fertilization

On the right menu bar click on number 2 “*Genes come in pairs”.* Then at the top click on

*Animation.* Click through the animation and answer the following questions

10. What is a phenotype?

11. What are the seven pairs of traits Mendel worked with in pea plants?

12. Explain what Mendel reasoned from the existence of yellow and green seed colors

13. What is an allele?

14. What is a genotype?

15. If a pea plant has the two alleles YY,

A) What is its phenotype?

B) What is its genotype?

On the right menu bar click on number 3 “*Genes don’t blend”.* Then at the top click on

*Animation.* Click through the animation.

16. What observations did Mendel make and what problem did he have to solve?

On the right menu bar click on number 4 *“Some* *genes are dominant”.* Then click on

*Animation.* Click through the entire animation. Answer the following using the type of diagram that is found inthe animation.

17. Diagram the cross & offspring between pure-bred green with pure-bred yellow.

18. Diagram the cross between two *heterozygous* plants (Yy x Yy)

A) What happened to the recessive phenotype?

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

19. Explain Mendel’s law of segregation

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

A) Which genotype gives the green phenotype?

B) Which genotype gives the yellow phenotype

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

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. Write the correct letter answer, the actual answer, and the explanation for the answer.

Click on *Dihybrid Cross*.

Do problem set #1-9. Use the tutorial to help you understand the problem. Write the correct letter answer, the actual answer, and the explanation for the answer.

Click on *Sex-linked Inheritance l*.

Do problem set #1-10. Use the tutorial to help you understand the problem. Write the correct letter answer, the actual answer, and the explanation for the answer.

Click on *Vocabulary* at the bottom of the page. Then on *Terms to Know in Mendelian Genetics.*

Scroll through the list and identify and define the following:

Co-dominant alleles Hybrid Incomplete dominance

Lethal alleles Mendel’s Law of Independent Assortment of Alleles Mendel’s Law of Segregation Mono-hybrid cross Mutation

Sex-linked True breeding