Name: _____ Block:_____ Date: _____

Genetics Test Study Guide

1. What are the four chemical bases that make DNA?

2. Show the combinations bases pair into:

3. Where in your body is DNA found? Be as specific as possible.

4. Approximately how much of your DNA is identical to other humans?

5. Approximately how much of your DNA is identical to a chimpanzee's?

6. How many chromosomes do humans have?

7. Do all species have the same number of chromosomes? Explain.

8. How many chromosomes did you get from each biological parent?

9. What does *genome* mean?

10. A child's chromosomes are XX. What is the sex of the child and what chromosomes did each parent give?

11. A child's chromosomes are XY. What is the sex of the child and what chromosomes did each parent give?

12. Today, scientists can look at your DNA and know if you are likely to get certain kinds of genetically-linked cancers, but they cannot look at your DNA and see of you will get a virus like HIV. Why can they detect one disease on the DNA and not the other?

13. How is a recessive trait different than a dominant trait?

14. What is an allele?

15. George the dragon has no wings. His alleles are ww. What is his genotype?

16. What is George's phenotype?

17. Circle the genotypes that are heterozygous:

TT hh Cc BB Ee Ww

18. Circle the genotypes that are homozygous:

TT hh Cc BB Ee Ww

19. Being able to roll your tongue is a dominant trait. Which of the following genotypes will produce a child with a rollable tongue?

_____ T T

_____ T t

_____ t t

20. Freckles are a dominant trait. Fill in the Punnett Square showing the possible genetic outcomes for the child of a father who has freckles (F f) and a mother that does not have freckles (f f):

		_____	_____
			Mother
Father	_____		
	_____		

What is the probability that the child will have freckles? _____

21. Unattached earlobes are a dominant trait. Fill in the Punnett Square showing the possible genetic outcomes for the child of a father who has unattached earlobes (E e) and a mother that has unattached earlobes (E e):

		_____	_____
			Mother
Father	_____		
	_____		

What is the probability that the child will have unattached earlobes? _____

22. Explain using words and a Punnett square how a child could have attached earlobes (a recessive trait) when both parents have unattached earlobes (a dominant trait)? (Your answer should be 3-5 sentences long).

23. Bob is left handed. His mom is right handed. He does not know if his father is left handed or right handed. Which of the Punnett squares could be a possibility for his parents' genes? Circle ALL that are possible:

Father \ Mother	h	h
H	Hh	Hh
h	hh	hh

Father \ Mother	H	H
h	Hh	Hh
h	Hh	Hh

Father \ Mother	H	H
H	HH	HH
H	HH	HH

Father \ Mother	h	h
H	Hh	Hh
H	Hh	Hh

Father \ Mother	H	h
H	HH	Hh
h	Hh	hh

Father \ Mother	H	h
h	Hh	hh
h	Hh	hh

List the father's possible genotypes: _____

24. Make a series of Punnett Squares to show how generations of right-handed people could have a left handed child:

Right- Handed Grandpa

Right- Handed Grandma \		
_____		
_____		

Right- Handed Grandpa

Right- Handed Grandma \		
_____		
_____		

Right- Handed Dad

Right- Handed Mom \		
_____		
_____		

Left- Handed Child

What is the probability that the child will be left handed? _____

Baby Mice Analysis

1. Seif's pet mouse had babies. Four of the babies were gray (T) and three were brown (t). The father mouse was gray. The mother mouse was brown. Use what you know about genetics to explain how this happened. Include a Punnett square in your answer, use T for gray and t for brown

2. Is it possible for two gray mice to have brown offspring? Explain and use a Punnett Square to support your answer.

3. Is it possible for two brown mice to have gray offspring? Explain and use a Punnett Square to support your answer.