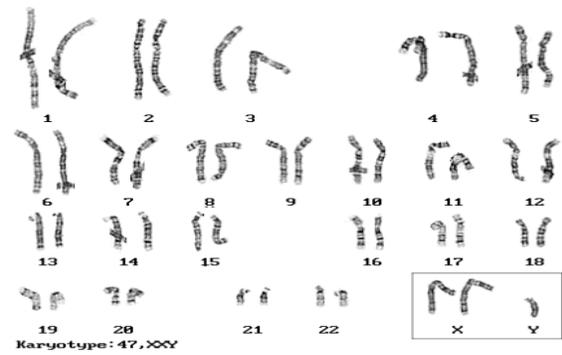


Name _____

Period _____

Mitosis; DNA; Inheritance REVIEW



Part I: CELL CYCLE, MITOSIS & MEIOSIS

1. Draw and Label the Steps of Mitosis.

Interphase					

2. a. What would happen to a cell if it lost its Nucleus?

b. What would happen to a cell if it lost its DNA?

3. Where does Mitosis happen?

3. What is Meiosis and WHERE does it happen?

4. When one cell undergoes meiosis, how many cells do you get in the end?

5. What kind of organisms undergo meiosis?

6. What is asexual reproduction?

a. Is there Genetic variability in asexual reproduction? Explain.

7. What is sexual reproduction?

a. Is there Genetic variability in sexual reproduction? Explain.

Part II: DNA BASICS

8. Draw a sub-unit of DNA... one nucleic acid and label the parts.

9. What is a chromosome?

Males and Females have 23 pairs of chromosomes. 22 of those code for autosomal traits (or body traits). The 23rd pair are sex chromosomes. Label each as Male or Female:

10. XX _____ XY _____

XXY Klinefelter Syndrome (Males born with an extra X chromosome). They tend to have some physical traits that are unusual for males (sparse body hair, enlarged breasts, wide hips, voices not as deep etc.)

11. Why would someone with Klinefelter's Syndrome be unable to father children?

Just as a side note, there is also XXX syndrome (girls that are unusually tall, delayed motor skills, weak muscle tone). You can also have a girl with one X - Turner Syndrome (short, ovarian malfunction; brown spots; fold of skin on neck etc.)

PART III: PROTEIN SYNTHESIS

12. For this section, draw the process of protein synthesis. You should include the words or concepts below:

DNA
Base Pairs ATCG
DNA Polymerase
Replication
Nucleus
RNA Polymerase

mRNA (Messenger RNA)
Base Pairs AUCG
Ribosome
t RNA (Transfer RNA)
Amino Acids
Protein

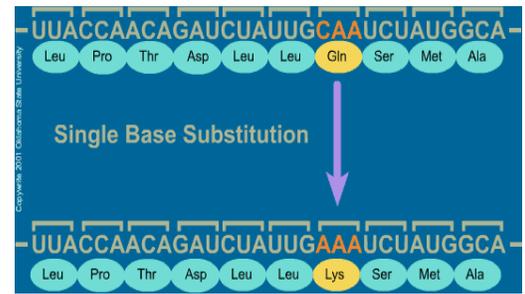
Codon – know that base pairs are read in groups of 3. AGG – CTC – AAG etc.

PART IV: MUTATIONS

13. What is a mutation?

14. What is a point mutation?

a. Draw an example using base pairs (letters)



15. What is a frameshift Mutation?

a. Draw an example

16. Why are mutations usually such a problem? (Use the word protein)

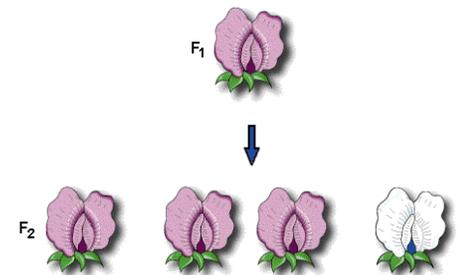
17. Give an example of a mutation being a good thing (think about Black Plague):

PART V: BASIC INHERITANCE

18. What is Gregor Mendel called?

19. What plant did he work with?

20. Is the color the phenotype or Genotype?



Using the words: Homozygous; Heterozygous; Dominant or Recessive, classify the following genotypes:

21. HH _____

22. Hh _____

23. Hh _____

23. One bunny carries heterozygous, long-haired traits (Rr), and its mate carries homozygous short-haired traits (rr). Use a Punnett square to determine the probability of one of their offspring having long hair.

24. If the bunny has 2000 offspring (yes, busy parents), how many will have long hair according to your answer above?

25. Now, put your answer into a phenotypic ratio (1:1; 1:2:1; 3:1).

26. Describe what it means to be type: A blood?

27. Fill in the following chart:

pheno- type	genotype	antigen on RBC	antibodies in blood	donation status
A	AA or Ai	<u>type</u> _____ antigens on surface of RBC	<u>anti-B</u> antibodies	___
B	BB or Bi	_____ antigens on surface of RBC	_____ antibodies	___
AB	AB	_____ antigens on surface of RBC	_____ antibodies	
O	ii	_____ on surface of RBC	_____ antibodies	

28. When we talk about pedigrees, we are often dealing with sex linked traits (meaning traits found on the X or Y chromosome). If a trait is found on the X chromosome, what would it take for a female to manifest the trait?

29. What would it take for a female to be a carrier?

30. Can a male be a carrier of an X-linked trait?

31. What does it mean to have a "Dominant " trait? Does it beat up your recessive trait? Explain and give an example.