**Genetics Study Guide**

1. What is the difference between dominant and recessive?
2. What is the difference between homozygous dominant and homozygous recessive?
3. What does heterozygous mean?
4. What is the difference between phenotype and genotype?
5. Who is Gregor Mendel?
6. What is an allele? How many do you have per trait/gene?
7. How did Mendel cross the P1 generation to get the F1 generation?
8. How did Mendel cross the F1 generation to get the F2 generation?
9. What is the probability of having 4 daughters in a row?
10. What is the probability of flipping a coin and getting 2 heads in a row?
11. Cross 2 heterozygous round seeds. List ALL of the genotypes, phenotypes, recessive and dominant amounts.
12. Cross a heterozygous brown haired male and a blonde female. List all of the genotypes, phenotypes, recessive, and dominant amounts.
13. How do you solve a dihybrid cross?
14. Complete a dihybrid cross with a heterozygous brown hair and eyed male and female. List all the genotypes and phenotypes.
15. What is incomplete dominance?
16. Using incomplete dominance, Cross a white snapdragon and red snapdragon flower. List the phenotypes and genotypes of the resulting offspring.
17. Define codominance.
18. Using codominance, cross 2 roan cattle. List the phenotype and genotypes of the resulting offspring.
19. What does it mean to have multiple alleles for a trait?
20. Explain the purpose of the Human Genome Project.
21. What is a karyotype?
22. When can a karyotype be seen?
23. What are the male sex chromosomes?
24. What are the female sex chromosomes?
25. Why do males mostly ends up having this a sex-linked disorder?
26. Why do geneticists use pedigree diagrams?
27. Can you identify all parts of a pedigree?
28. What does it mean to be a carrier?
29. Fill in the following information for each of the following diseases.

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|  | Describe the disease | Population  Who tends to get this disease? | Dominant/recessive | Autosomal/sex-linked |
| Sickle cell anemia |  |  |  |  |
| Huntington’s disease |  |  |  |  |
| Color blindness |  |  |  |  |
| Achondroplasia |  |  |  |  |
| Tay-Sach’s disease |  |  |  |  |
| Cystic fibrosis |  |  |  |  |
| Hemophilia |  |  |  |  |