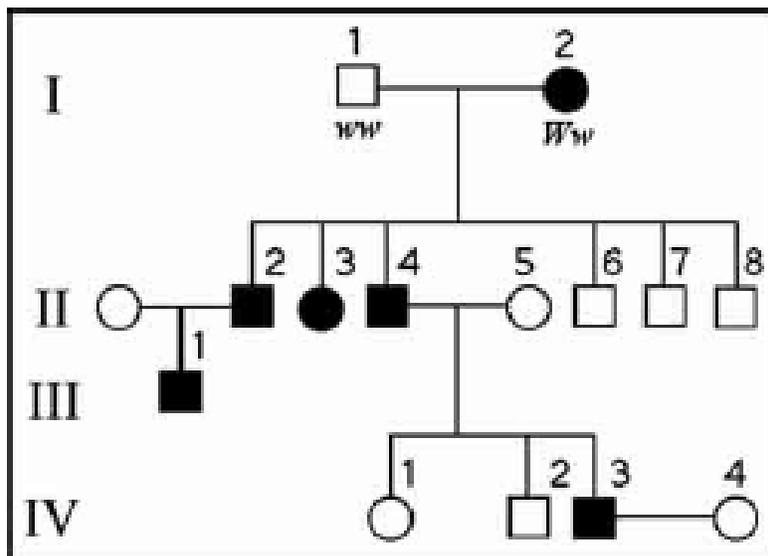


Honors Biology Practice Test

- The exceptions to the rule that every chromosome is part of a homologous pair are the
 - sex chromosomes.
 - autosomes.
 - linked chromosomes.
 - linked autosomes.
- A sex-linked gene is usually located on a (an)
 - X chromosome.
 - male autosome.
 - Y chromosome.
 - female autosome.
- In codominance, the alleles for both traits
 - blend.
 - are not expressed.
 - combine.
 - are expressed.
- If a man has type O blood, his red blood cells have
 - A markers only
 - B markers only.
 - neither A nor B markers
 - both A and B markers
- In the alleles that determine blood type,
 - A and B are codominant.
 - A and O are codominant.
 - B and O are codominant.
 - O is dominant.
- Each of the following is true of colorblindness in humans EXCEPT that
 - the gene is carried on the X chromosome.
 - the cones in the retina are not sensitive to red and green light.
 - it is a dominant trait.
 - females can be carriers.
- The sex of a human infant is determined by the
 - number of X chromosomes.
 - presence of two X chromosomes.
 - presence or absence of X chromosome.
 - presence of a Y chromosome.
- There are more male babies born with hemophilia than female babies because
 - males need only one gene for hemophilia to occur.
 - males need two genes for hemophilia to occur.
 - females need only one gene for hemophilia to occur.
 - females need three genes for hemophilia to occur.
- If inheritance of a human trait is sex-linked (on the X chromosome) and recessive, any of the following could result EXCEPT that
 - expression of the trait might "skip" a generation.
 - the trait could be more common in females than males.
 - all females might become homozygous for the trait.
 - the gene for the trait might mutate to a dominant allele.
- A man who carries an X-linked allele will pass it on to
 - all of his daughters.
 - half of his daughters.
 - all of his sons.
 - half of his sons.

12. In cats, black color is caused by an X-linked allele; the other allele causes orange color. The heterozygote is tortoise-shell. What kinds of offspring would you expect from the cross of a black female and an orange male?
- tortoise-shell female; tortoise-shell male.
 - black female; orange male.
 - orange female; black male
 - tortoise-shell female; black male.
13. A albino father and a normal mother have one albino child. (being albino is caused by a recessive allele). The couple decides to have a second child. What is the probability that this child will be albino?
- zero
 - 1/4
 - 1/2
 - 3/4
14. The mother is now pregnant for a third time, and her doctor tells her she is carrying fraternal twins. What is the probability that both children will have normal pigmentation?
- 3/4
 - 1/4
 - 1/16
 - 9/16
15. If a child belonged to blood type O, he or she could not have been produced by which set of parents?
- Type A mother and type B father
 - Type A mother and type O father
 - Type AB mother and type O father
 - Type O mother and type O father
16. Genes that affect or control the expression of another set of genes are said to be
- Epistatic
 - Codominant
 - Llinked
 - Alleles
17. Suppose a hemophilic male (x linked recessive) and a female carrier for the hemophilic trait have a nonhemophilic daughter with Turner syndrome. Nondisjunction could have occurred in
- both parents
 - neither parent
 - the father only
 - the mother only
18. Refer to the pedigree chart below for a family, some of whose members exhibit the dominant trait, wooly hair. fill in the Genotypes of as many individuals as possible, leaving a blank where you are unable to figure out an allele.



19. Explain how to distinguish between complete dominance, incomplete dominance, and codominance. How do you recognize a trait as showing polygenic inheritance?
20. You find a male tribble that has blue plaid fur. When you cross this male with a purebred solid blue female, all the offspring are solid blue in color. A cross between two of these offspring produces $\frac{3}{4}$ solid blue and $\frac{1}{4}$ blue plaid. All of the blue plaid tribbles are male.
- a. How is plaid fur inherited in tribbles (Assume sex determination is the same in tribbles as in humans)? Explain how you know this. (3 points)
- b. What cross would produce offspring that are $\frac{1}{2}$ solid blue and $\frac{1}{2}$ blue plaid? (2 points)
21. Name and describe an autosomal recessive human disease. Name and describe an X linked recessive human disease. (4 points)

22. What technology made the Human Genome Project possible?
- A. DNA sequencing
 - B. RNA replication
 - C. protein synthesis
 - D. enzyme activation
23. What were the “markers” that the researchers of the Human Genome Project used?
- A. restriction enzymes
 - B. gel electrophoresis
 - C. base sequences
 - D. restriction fragments
24. What does “shotgun sequencing” do?
- A. separate fragments using gel electrophoresis
 - B. find overlapping areas of DNA fragments
 - C. cut DNA into millions of “puzzle pieces”
 - D. bind colored dyes to base sequences
25. What are SNPs?
- A. points where a restriction enzyme cuts a DNA molecule
 - B. missing sequence of base pairs in a restriction fragment
 - C. proteins formed by a mutated gene
 - D. differences in a base between two individuals
26. Bioinformatics would not have been possible without
- A. microscopes.
 - B. genes.
 - C. computers.
 - D. genomics.
27. In humans, single-base differences
- A. occur at about 3 million sites.
 - B. occur rarely in the sex chromosomes.
 - C. seldom occur in normal DNA.
 - D. cannot be identified from DNA analysis.