Name: _____ Class: _____ Date: _____ ID: A

human genetics Chp 14

Multiple Choice
Identify the letter of the choice that best completes the statement or answers the question.

____ 1. How many chromosomes are shown in a normal human karyotype?
a. 2
b. 23
c. 44
d. 46

____ 2. Which of the following are shown in a karyotype?
a. homologous chromosomes
b. sex chromosomes
c. autosomes
d. all of the above

____ 3. In humans, a male has
a. one X chromosome only.
b. two X chromosomes.
c. one X chromosome and one Y chromosome.
d. two Y chromosomes.

____ 4. What is the approximate probability that a human offspring will be female?
a. 10%
b. 25%
c. 50%
d. 75%

____ 5. What percentage of human sperm cells carry an X chromosome?
a. 0%
b. 25%
c. 50%
d. 100%

____ 6. A pedigree CANNOT be used to
a. determine whether a trait is inherited.
b. show how a trait is passed from one generation to the next.
c. determine whether an allele is dominant or recessive.
d. none of the above

____ 7. Which of the following would you be least likely to see in a pedigree?
a. All of the symbols are unshaded.
b. All of the symbols are shaded.
c. All of the symbols are half-shaded.
d. About half of the symbols are circles.

____ 8. A person who has PKU
a. inherited the recessive allele for the trait from one parent.
b. inherited the recessive allele for the trait from both parents.
c. is heterozygous for the trait.
d. will not pass the allele for the trait to his or her offspring.

____ 9. Which of the following genotypes result in the same phenotype?
a. I^AI^A and I^Ai
b. I^BI^B and I^Bi
c. I^BI^B and I^AI^B
d. I^Bi and ii

10. Which of the following statements is NOT true?
a. A person with Huntington's disease might not pass the allele for the disease to his or her offspring.
b. A person with Huntington's disease might be homozygous for the disease.
c. Huntington's disease is caused by a recessive allele.
d. A person who inherits one allele for Huntington's disease will develop the disease.

____ 11. Sickle cell disease is caused by a
a. change in one DNA base.
b. change in the size of a chromosome.
c. change in two genes.
d. change in the number of chromosomes in a cell.

____ 12. In cystic fibrosis, a change in a single gene causes the protein called CFTR to
a. become less soluble.
b. fold improperly.
c. destroy the cell membrane.
d. transport sodium ions instead of chloride ions.

____ 13. Compared with normal hemoglobin, the hemoglobin of a person with sickle cell disease
a. is longer.
b. is shorter.
c. has a different sequence of amino acids.
d. is wider.

____ 14. Which of the following does NOT lead to cystic fibrosis?
a. missing codon in mRNA
b. shorter CFTR polypeptide chain
c. point mutation
d. absence of CFTR in cell membrane

____ 15. People who are heterozygous for sickle cell disease are generally healthy because
a. they are resistant to malaria.
b. they usually have some normal hemoglobin in their red blood cells.
c. their abnormal hemoglobin usually doesn't cause their red blood cells to become sickle-shaped.
d. they do not produce abnormal hemoglobin.

____ 16. The sequencing of human chromosomes 21 and 22 showed that
a. some regions of chromosomes do not code for proteins.
b. all of the DNA of chromosomes codes for proteins.
c. different chromosomes have the same number of genes.
d. different chromosomes contain the same number of DNA bases.

____ 17. Alleles found on the same chromosomes
a. are dominant.
b. are never separated by recombination.
c. are linked.
d. contain repetitive DNA.

____ 18. Many sex-linked genes are located on
a. the autosomes.
b. the X chromosome only.
c. the Y chromosome only.
d. both the X chromosome and the Y chromosome.

____ 19. Colorblindness is more common in males than in females because
a. fathers pass the allele for colorblindness to their sons only.
b. the allele for colorblindness is located on the Y chromosome.
c. the allele for colorblindness is recessive and located on the X chromosome.
d. males who are colorblind have two copies of the allele for colorblindness.

____ 20. The formation of a Barr body
a. causes the genes on one of the X chromosomes in a female cell to be switched off.
b. always causes the same X chromosome in a female's cells to be switched off.
c. switches on the Y chromosome in a male cell.
d. none of the above

____ 21. A cat that has spots of only one color
a. has no Barr bodies.
b. must be a male.
c. must be a female.
d. may be a male or a female.

____ 22. The failure of chromosomes to separate during meiosis is called
a. nondisjunction.
b. X-chromosome inactivation.
c. Turner's syndrome.
d. Down syndrome.

____ 23. Because the X chromosome contains genes that are vital for normal development, no baby has been born
a. with one X chromosome.
b. with three X chromosomes.
c. without an X chromosome.
d. with four X chromosomes.

____ 24. Which of the following combinations of sex chromosomes represents a female?
a. XY
b. XXY
c. XXXY
d. XX

____ 25. If nondisjunction occurs during meiosis,
a. only two gametes may form instead of four.
b. some gametes may have an extra copy of some genes.
c. the chromatids do not separate.
d. it occurs during prophase.

____ 26. Nondisjunction can involve
a. autosomes.
b. sex chromosomes.
c. homologous chromosomes.
d. all of the above

____ 27. The process of DNA fingerprinting is based on the fact that
a. the most important genes are different among most people.
b. no two people, except identical twins, have exactly the same DNA.
c. most genes are dominant.
d. most people have DNA that contains repeats.

____ 28. What conclusion CANNOT be made from two DNA fingerprints that show identical patterns of bands?
a. The DNA from the two DNA fingerprints almost certainly came from the same person.
b. The DNA from the two DNA fingerprints definitely came from two different people.
c. The DNA from the two DNA fingerprints definitely came from the same person.
d. The DNA repeats that formed the bands in each DNA fingerprint are the same length.

____ 29. The Human Genome Project is an attempt to
a. make a DNA fingerprint of every person's DNA.
b. sequence all human DNA.
c. cure human diseases.
d. identify alleles in human DNA that are recessive.

____ 30. The human genome was sequenced
a. by sequencing each gene on each chromosome, one at a time.
b. using DNA fingerprinting.
c. by looking for overlapping regions between sequenced DNA fragments.
d. using open reading frames.

____ 31. Which of the following information CANNOT be obtained from the Human Genome Project?
a. causes of genetic disorders
b. amino acid sequences of human proteins
c. locations of genes on chromosomes
d. whether an allele is dominant or recessive

____ 32. The purpose of gene therapy is to
a. cure genetic disorders.
b. determine the sequences of genes.
c. remove mutations from genes.
d. change dominant alleles to recessive alleles.

____ 33. Gene therapy is successful if the
a. viruses carrying the replacement gene infect the person's cells.
b. replacement gene is replicated in the person's cells.
c. replacement gene is transcribed in the person's cells.
d. replacement gene is successfully spliced to viral DNA.