

Answers to Mitosis and Meiosis Crossword Puzzle

Across:

1. cyclin
4. chromatid
6. mitosis
9. haploid
12. centromeres
13. Down Syndrome
16. metaphase
18. nondisjunction
20. telophase
21. Klinefelters
23. autosomes
24. karyotype
25. spindle

Down:

2. cytokinesis
3. tetrad
5. diploid
7. Turners
8. interphase
9. homologous
10. crossing over
11. cancer
14. meiosis
15. gamete
17. anaphase
19. centrioles
22. prophase

Answers to textbook questions Ch. 14 p. 363

Multiple Choice:

1. B 2. A 3. C 4. B 5. D 6. A 7. D

Short Answer:

11. Biologists photograph cells in mitosis, cut out the chromosomes from the photographs, and group them together in pairs. They then check whether any chromosomes are missing or have extra copies.

12. The sex chromosomes, X and Y, determine whether an individual is male (XY) or female (XX).

13. A pedigree shows how a genetic trait has been passed from one generation to the next. This information can be used to infer the genotypes of family members and predict the likelihood that a child will have the disorder.

14. Mothers 1 and 6 are carriers. Person 3 can pass his affected X chromosome only to his daughters; his sons inherit his Y chromosome and an X chromosome from their mother.

15. No, the I^A and I^B alleles are codominant. When both alleles are present in an individual, that person has blood type AB.

16. Giving a person a transfusion of blood with the wrong Rh factor could be fatal.

18. The nature of the gene's protein product and its role in the cell; for example, if one copy of the normal allele can supply cells with enough protein to function, then the normal allele is dominant. If both alleles contribute to the phenotype, they are codominant.

19. A chromosomal disorder occurs when abnormal numbers of chromosomes find their way into the gametes. Chromosomal disorders resulting from nondisjunction include Down syndrome, Turner's syndrome, and Klinefelter's syndrome.

25. There is a 50% chance that either a son or a daughter will have the disorder.

26. 0.1% (under 30); 0.2% (age 35); 1.0% (age 40); 8.0% (age 50). The incidence of Down Syndrome increases as the mother ages.

27. No, cystic fibrosis is caused by a gene mutation. Karyotypes can only detect abnormalities in chromosome number.

28. Possible genotypes of the parents of a male child with colorblindness are X^cX and XY ; X^cX and X^cY ; X^cX^c and XY ; or X^cX^c and X^cY . Note that the father's genotype does not affect his son's likelihood of having colorblindness. Sons inherit colorblindness from their mothers; she can also be colorblind, or be a carrier.

29. Turner's Syndrome; only one X chromosome is present, and there is not Y chromosome.