

Chapter 11

REPRODUCTION -- Meiosis and Sexual Reproduction

OVERVIEW: Hurdles necessary to complete sexual reproduction; meiosis and fertilization

BLUEPRINT: Chapter 11, pages 231-243, will be the primary focus of this assignment. As you read pages 236-239, please consult pages 9-10 of your laboratory procedure for this week on "Life Cycles and Genetics." Biological and biblical significance of human sexuality is addressed in pages 239-243. Human sexual reproduction will be emphasized more in Assignments #25-26.

VOCABULARY:

meiosis	haploid number*	crossing over
reduction division	diploid number*	genetic variation
genome*	homologous pair*	
	independent assortment*	

LEARNING GOALS:

1. What are three hurdles of sexual reproduction? In general what processes must occur in each?
2. In what ways are diploid cells genetically different from gametes? Use the starred (*) terms above in your answer.
3. What is meiosis, and why is it essential. Sketch a "life cycle diagram" to illustrate.
4. In what particular way is reduction division more than just a mathematical reduction?
5. Distinguish independent assortment from crossing over. How do each contribute to genetic variation?
6. Describe the events of *meiosis*, and contrast them with those of *mitosis*.
7. How do mitosis and meiosis contribute to the overall life cycle of an organism?
8. State one or two biological aspects of human sexual reproduction that are unique among members of the Animal Kingdom, and discuss the possible spiritual significance. See Question #10 in your text.

INTERNET: See "BIO 100 Web Links" Page, Assignment #21 for meiosis graphics (some animated).

LECTURE EMPHASIS will be upon the following topics:

1. Biological significance of sexual reproduction
2. How meiosis promotes genetic recombination through
 - a. homologous pairing
 - b. independent assortment
 - c. crossing over.
3. Introductory concepts of Genetics from Chapter 11, pages 247-251 in preparation for this week's lab.

TAKE-AT-HOME QUIZ #6

Lab Section (Day of Week –Hour – e.g. W-3) = _____

INSTRUCTIONS: Select the correct choice in response to each question and, in the correspondingly numbered box near the bottom of the quiz, write the UPPER CASE letter of the correct choice. Do NOT score your answers by circling or otherwise making marks on the letters of the individual choices. Otherwise, you may write on the quiz if it helps your thinking process. **You should have this quiz completed and ready to hand in when requested during lecture either on or after the date of the assignment to which this quiz is attached. You may complete the quiz alone or work with others, but be sure you are mentally involved in answering the questions. You must be present on the day the quiz is requested to receive credit.**

1. Which of the following is not a role of mitosis and cytoplasmic division?
 - a. cloning
 - b. healing of wounds
 - c. producing gametes (sperms and eggs)
 - d. asexual reproduction (e.g. budding in *Hydra*)
 - e. producing two identical daughter cells from one cell

2. The principle function of meiosis is
 - a. DNA replication
 - b. zygote production
 - c. cytoplasmic division
 - d. producing two identical nuclei from one nucleus
 - e. reducing the chromosome number from the diploid to the haploid number

3. The division of one diploid cell into two diploid cells requires
 - a. mitosis and meiosis
 - b. two mitotic divisions.
 - c. meiosis I and meiosis II
 - d. mitosis and nuclear division
 - e. mitosis and cytoplasmic division

Score Answers Here -->	1.	2.	3.
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FILL IN the correct number: NOTE: Numbers aren't usually emphasized, but here they can help you understand the genetic make-up of cells.

4. Number of chromosomes in a human sperm or ovum is _____.

5. The estimated number of genes represented in the human genome is _____.

6. Approximate number of nitrogen base pairs in the human genome is _____.