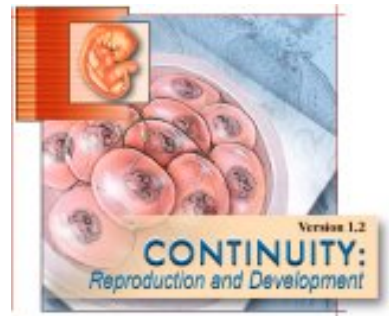


Gametogenesis

Directions:

- Click the "Contents" button.
- Open the *Reproductive System* File.
- Click *Animations*.
- Click *Gametogenesis*.



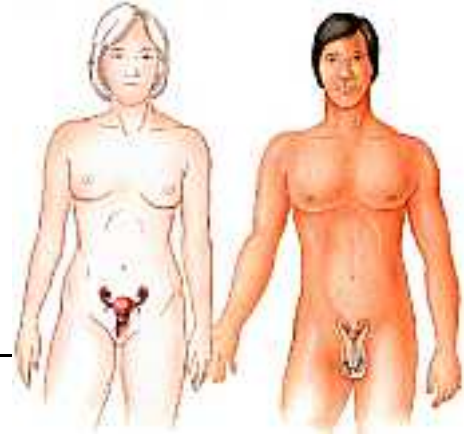
Introduction

- Define *gametogenesis*.

- What cells, in each gender, are *gametes*?

- Name the two cell division processes that occur during gametogenesis?

- Describe the cells that result from mitosis.



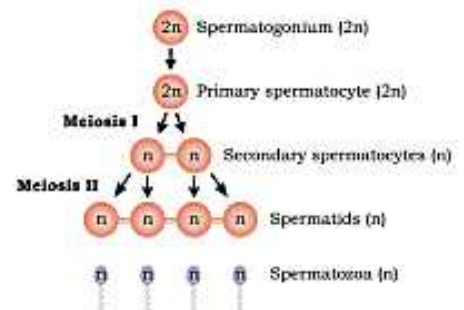
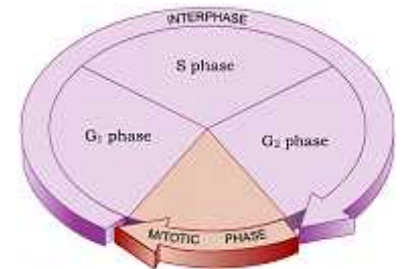
Meiotic Cell Division

- Meiosis is a cell division that creates "daughter cells" that are different from the parent cell. Explain.

- Somatic cells are "body cells", those other than reproductive. Contrast the chromosomes of somatic cells and gametes.

- Contrast meiotic and mitotic cell divisions. How do they differ as processes and how are their products different?

- Meiosis involves two cell divisions called Meiosis I and Meiosis II. Meiosis I is mechanically similar to mitosis with two notable exceptions.



a. What is *synapsis*? _____

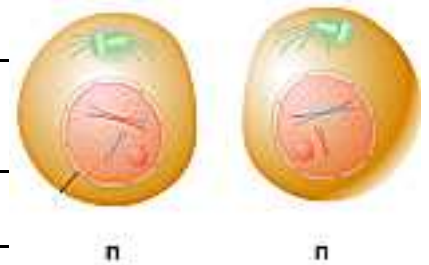
b. What is *crossing over*? _____

Genetic variation created by crossing over is beneficial. It shuffles human genes in new combinations providing variety and diversity essential to species survival.

c. Describe a meiotic difference that occurs during Metaphase I. _____

6. During interphase, the DNA has replicated so the chromosomes that appear during prophase are actually doubled. The structure they form is called a *tetrad*. During mitotic anaphase, the tetrad splits moving a copy of each homologous chromosome to each daughter cell. This produces two daughter cells identical to each other and identical to the parent cell. This ISN'T what happens in Anaphase I of meiosis, however. Explain.

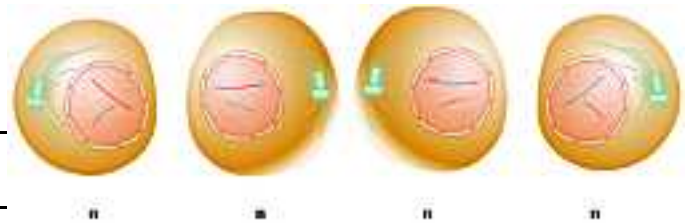
7. Explain why the daughter cells produced by Meiosis I are haploid?



At this point, the meiotic daughter cells contain BOTH copies of one chromosome. They are called "sister chromatids."

8. Why is the chromatid activity of anaphase II similar to the activity in mitotic anaphase? _____

9. Describe the chromosome complement of the meiotic daughter cells.



Spermatogenesis

10. a. Define spermatogenesis. _____

b. Where does this process occur? _____

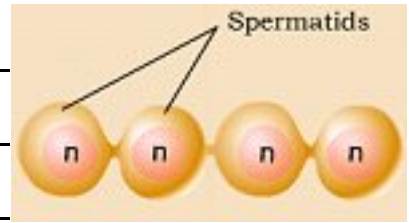


11. a. Describe the developmental events of the *spermatogonia* cells. _____

b. If you didn't do so above, describe development of a *primary spermatocyte*. _____

12. Describe how two secondary spermatocytes are formed. _____

13. Describe how spermatids are formed. _____



14. Describe *spermiogenesis*. _____



Oogenesis

15. a. Define *oogenesis*. _____

b. Where does the process occur? _____

c. When do oogonia cells develop? _____

16. Describe production of oogonia cells. _____

17. What is a *primordial follicle*? _____



18. a. Describe *primary oocyte development*. _____

b. Oogonia cells begin prophase I during fetal development. This division, however, is stopped prior to birth. When is meiosis I completed?

19. Following puberty, each month a primary oocyte is stimulated to complete the first meiotic division. Describe this development.

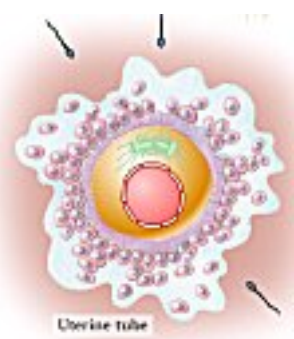


20. a. Describe *secondary oocyte formation* within a "graafian" follicle. _____

b. What is the function of the *first polar body* (you'll have to do some thinking on this one)? _____

c. Describe what happens to the secondary oocyte. _____

21. a. The secondary oocyte is suspended within meiosis II. Describe the development of these cells with and without fertilization.



b. If fertilization occurs, a second polar body is formed which then degenerates. What is the function of the polar body? (Again, a little thought is needed.)

22. Describe *zygote formation*. _____

