

4 EXERCISE

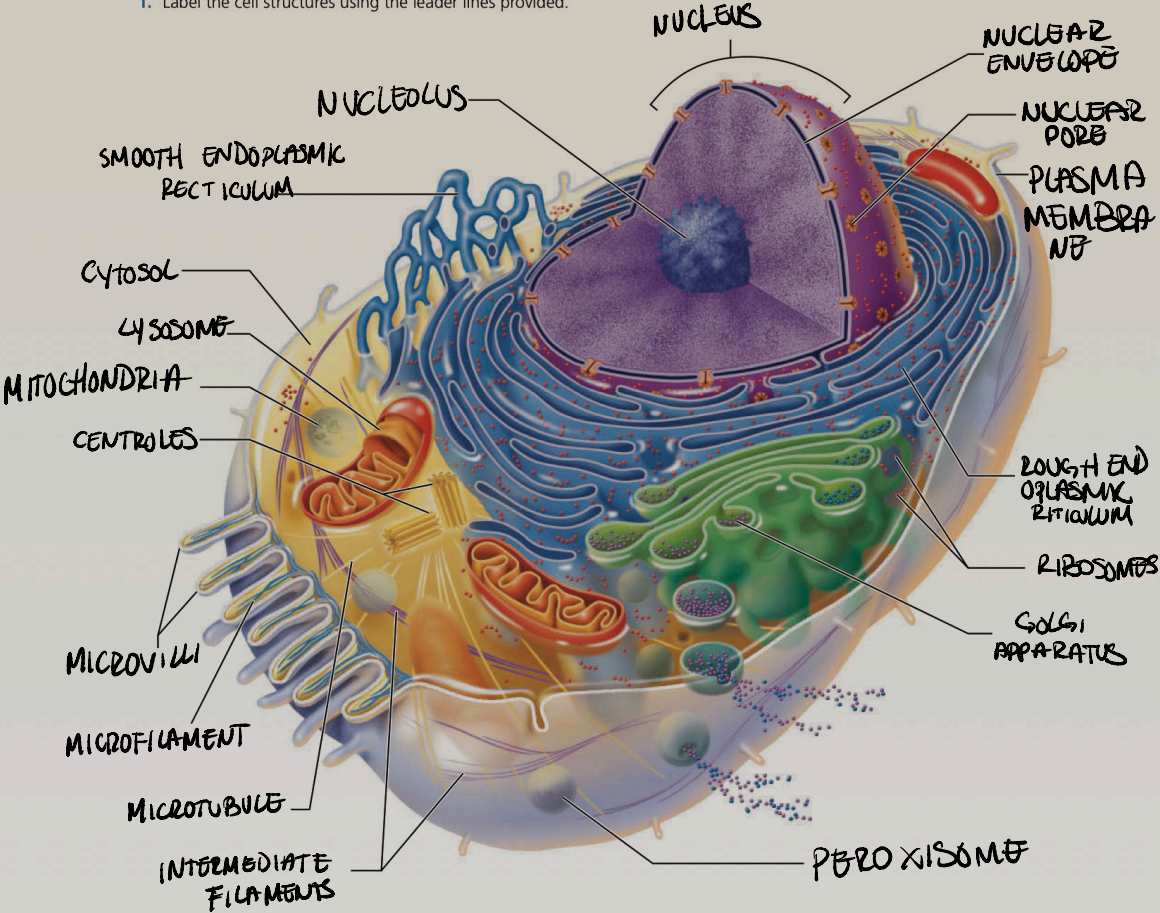
REVIEW SHEET

The Cell: Anatomy and Division

Name FREEDOM ALMANZAR Lab Time/Date _____

Anatomy of the Composite Cell

1. Label the cell structures using the leader lines provided.



2. Match each cell structure listed on the left with the correct description on the right.

- | | | |
|----------|---------------------|--|
| <u>F</u> | 1. ribosome | a. main site of ATP synthesis |
| <u>H</u> | 2. smooth ER | b. encloses the chromatin |
| <u>A</u> | 3. mitochondrion | c. sac of digestive enzymes |
| <u>B</u> | 4. nucleus | d. examples include glycogen granules and ingested foreign materials |
| <u>J</u> | 5. Golgi apparatus | e. forms basal bodies and helps direct mitotic spindle formation |
| <u>C</u> | 6. lysosome | f. site of protein synthesis |
| <u>E</u> | 7. centriole | g. forms the external boundary of the cell |
| <u>K</u> | 8. cytoskeleton | h. site of <u>lipid synthesis</u> 2 |
| <u>D</u> | 9. inclusion | i. packaging site for ribosomes |
| <u>G</u> | 10. plasma membrane | j. packages proteins for transportation |
| <u>I</u> | 11. nucleolus | k. internal cellular network of rodlike structures |

Differences and Similarities in Cell Structure

3. Choose the specimen observed in Activity 5 (squamous epithelium, sperm cells, smooth muscle, or human red blood cells) that fits the description below.

- SPERM CELL cell has a flagellum for movement
- SMOOTH MUSCLE cells have an elongated shape (tapered at each end)
- SQUAMOUS EP. cells are close together
- RED BLOOD CELL cells are circular
- SQUAMOUS EP. cells are thin and flat, with irregular borders
- RED BLOOD CELL cells are anucleate (without a nucleus)
- SPERM CELL longest cell

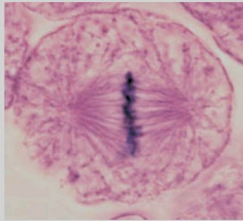
Cell Division

4. What is the function of mitotic cell division? PRODUCE SOMATIC CELLS AND REPAIR CELLS

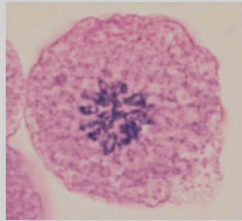
5. Identify the four phases of mitosis shown in the following photomicrographs, and select the events from the key that correctly identify each phase. On the appropriate answer line, write the letters that correspond to these events.

Key:

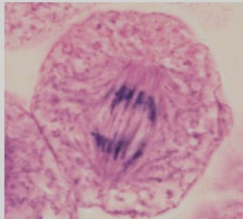
- a. The nuclear envelope re-forms.
- b. Chromosomes line up in the center of the cell.
- c. Chromatin coils and condenses, forming chromosomes.
- d. Chromosomes stop moving toward the poles.
- e. The chromosomes are V shaped.
- f. The nuclear envelope breaks down.
- g. Chromosomes attach to the spindle fibers.
- h. The mitotic spindle begins to form.



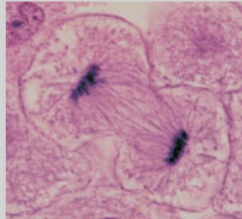
1. Phase: METAPHASE
 Events: B, G



2. Phase: PROPHASE
 Events: C, F, H

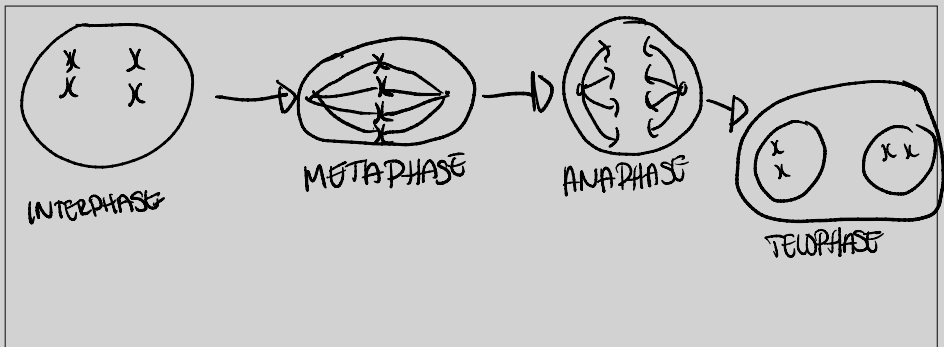


3. Phase: ANAPHASE
 Events: E



4. Phase: TELOPHASE
 Events: A, D

6. Draw the phases of mitosis for a cell that contains four chromosomes as its diploid, or 2n, number.



7. Describe the events that occur during interphase.

8. Complete or respond to the following statements:

~~Division of the 1 is referred to as mitosis. Cytokinesis is division of the 2. The major structural difference between chromatin and chromosomes is that the latter are 3. Chromosomes attach to the spindle fibers by undivided structures called 4. If a cell undergoes mitosis but not cytokinesis, the product is 5. The structure that acts as a scaffolding for chromosomal attachment and movement is called the 6. 7 is the period of cell life when the cell is not involved in division. Three cell populations in the body that do not routinely undergo cell division are 8, 9, and 10.~~

1. NUCLEUS
2. CYTOSOL
3. COILED/CONDENSED
4. CENTROMERES
5. A BINUCLEATE CELL
6. SPINDLE
7. INTERPHASE
8. NEURONS
9. SKELETAL MUSCLE CELL
10. CARDIAC

9. **+** Plasma cells are key to the immune response because they secrete antibodies. Given that antibodies are made of protein,

which membrane-enclosed cell organelle would you expect the plasma cells to have in abundance? Why? RIBOSOMES ARE LOCATED IN ROUGH ER + ASSIST IN PRODUCING PROTEIN

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10. **+** Name which organelle you would expect to play the largest role in decomposition of the human body. Why? _____

LYSOSOMES BECAUSE THEY DEGRADE

11. **+** Some antifungal medications work by blocking DNA synthesis in the fungal cell. Describe where in the cell cycle such a medication would halt the fungal cell and the consequences of this early termination of the cycle. _____

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