Name _____ Date_____

Study Guide 5.5: Multicellular Life

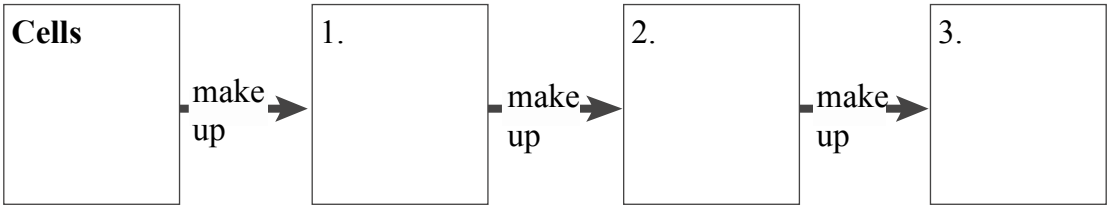
KEY CONCEPT
Cells work together to carry out complex functions.

VOCABULARY

tissue	organ system	stem cell
organ	cell differentiation	

MAIN IDEA: Multicellular organisms depend on interactions among different cell types.

Complete the diagram below, which represents organization in multicellular organisms.



4. There are several types of tissues found in plants. Two examples are _____ tissue and _____ tissue.

5. Two examples of organ systems found in plants are the _____ system and the _____ system.

Circle the <u>two</u> statements that accurately complete the sentence.

6. An organism benefits from organ systems that work together and communicate, because these systems help an organism to
   a. maintain heterogeneity.
   b. maintain homeostasis.
   c. carry out cell differentiation.
   d. carry out complex, specialized functions.

MAIN IDEA: Specialized cells perform specific functions.

7. What is the process by which unspecialized cells develop into specialized cells?
   a. cell development
   b. cell differentiation
   c. cell expansion
   d. cell unification

8. Is the following statement *true* or *false*?

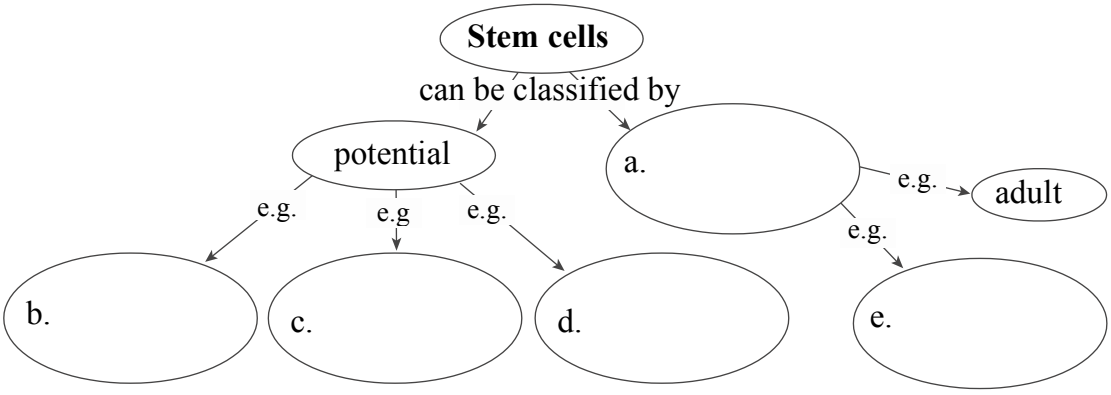
   All cells have the same DNA, but different types of cells express different sets of genes.

9. What role does cell location play within a developing embryo?
   a. It helps determine how the cell will grow.
   b. It helps determine how the cell will function.
   c. It helps determine how the cell will differentiate.
   d. It helps determine how the cell will communicate.

MAIN IDEA: Stem cells can develop into different cell types.

10. Use the words below to complete the Concept Map about stem cell classification.

embryonic	multipotent	origin	pluripotent	totipotent



Circle the word or phrase that best completes the statement.

11. Stem cells have three identifying characteristics:
    i. They divide and renew themselves for *short* / *long* periods of time.
    ii. They remain *differentiated* / *undifferentiated* in form.
    iii. They develop into a variety of *specialized* / *unspecialized* cell types.

12. Place a check mark in the appropriate box to indicate whether the following statements are advantages of using adult stem cells or advantages of using embryonic stem cells.

Advantages	Adult stem cells	Embryonic stem cells
They can be grown indefinitely in culture.		
They do not raise as many ethical concerns.		
They could avoid rejection issues when used in a patient.		
They can develop into virtually any type of cell.		

Vocabulary Check

Circle the word that best completes the statement.

13. Cell differentiation is the process by which a(n) *specialized* / *unspecialized* cell becomes *specialized* / *unspecialized*.

14. Write the following words in order from the largest structure to the smallest structure: *cell, organ, organ system, tissue*.

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