

March 20, 2017

1. What is **cytokinesis** called in a plant cell?
2. What is **cytokinesis** called in an animal cell?
3. Look on page 294

What is meant by the vocabulary, **totipotent, pluripotent, and multipotent?**

4. Read pages 296-97
Why are embryonic stem cells controversial?

March 21, 2017

See book page 288 Analyzing Data answer questions 1-3

Analyzing Data

The Rise and Fall of Cyclins

Scientists measured cyclin levels in clam egg cells as the cells went through their first mitotic divisions after fertilization. The data are shown in the graph.

Cyclins are continually produced and destroyed within cells. Cyclin production signals cells to enter mitosis, while cyclin destruction signals cells

Cyclin Levels in Fertilized Clam Eggs

Minutes After Fertilization	Cyclin Concentration (Relative)	Phase
60	Low	Interphase
75	High	Mitosis
80	Low	Interphase
105	High	Mitosis
110	Low	Interphase
135	High	Mitosis
140	Low	Interphase

1. **Interpret Graphs** How long does cyclin production last during a typical cell cycle in fertilized clam eggs?
2. **Infer** During which part of the cell cycle does cyclin production begin? How quickly is cyclin destroyed?

March 22, 2017



Analyzing Data

Cellular Differentiation of *C. elegans*

The adult microscopic worm *C. elegans* contains 959 cells. The data table shows some of the different cell types in this worm. Copy the data table into your notebook and answer the following questions.

1. **Calculate** Calculate the percentage of the total cell number represented by each tissue or organ listed by using this formula:

$$\frac{\text{Number of cells in adult}}{\text{Total number of cells}} \times 100$$
2. **Calculate** Find both the number of cells and the percentage of the total represented by cells in tissues or organs not listed ("other"). The category includes cells from, among other organs, the intestine. Record the

Cell Type	Number of Cells in Adult	Percent of Total
Cuticle	213	22%
Gonad (excluding germ line cells)	143	
Mesoderm muscle	81	
Pharynx	80	
Other		

3. **Infer** Why does *C. elegans* make an ideal model for studying cellular differentiation?
4. **Infer** Why would it be more difficult to map the differentiation patterns in a different organism, such as a mammal?

Analyzing Data

A scientist performed an experiment to determine the effect of temperature on the length of the cell cycle in onion cells. His data are summarized in the table below.

Effect of Temperature on Length of Onion Cell Cycle	
Temperature (°C)	Length of Cell Cycle (hours)
10	54.6
15	29.8
20	18.8
25	13.3

38. **Interpret Tables** On the basis of the data in the table, how long would you expect the cell cycle to be at 5°C?
- a. less than 13.3 hours
 - b. more than 54.6 hours
 - c. between 29.8 and 54.6 hours
 - d. about 20 hours
39. **Draw Conclusions** Given this set of data, what is one valid conclusion the scientist could state?