INVESTIGATION
1-E

STRUCTURED INQUIRY

Skills and Strategies

- Processing and Analyzing Data
- Evaluating
- Communicating

What You Need

- prepared microscope slides of whitefish embryo cells showing phases of mitosis, interphase, and cytokinesis
- light microscope
- Appendix A, Care and Use of the Microscope

Observing the Cell Cycle in Animal Cells

In the cell cycle, a precise sequence of events leads to the production of new cells. In this investigation, you will observe and compare the stages of the cell cycle using prepared slides of whitefish embryo cells. An embryo is the stage in an organism's development in which a fertilized cell has divided into many cells that continue to grow and divide. Whitefish embryos are in a period of rapid growth.

Question

How can the features of a cell be used to identify the different phases of mitosis?

Procedure

1. Use Appendix A at the back of this textbook to review how to care for and use a microscope
2. Obtain a microscope and a prepared microscope slide of whitefish embryo cells.
3. Identify one cell in each of the following stages.
   - interphase
   - prophase
   - metaphase
   - anaphase
   - telophase
   - cytokinesis

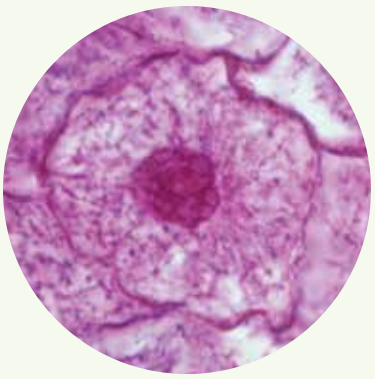
   Use the images on the opposite page to help you identify the correct stage of the cell cycle.
4. Look again for an area of dividing cells on your slide. Move the slide until you are viewing about 100 cells. Record how many cells are dividing and how many are not dividing within your field of view.

Process and Analyze

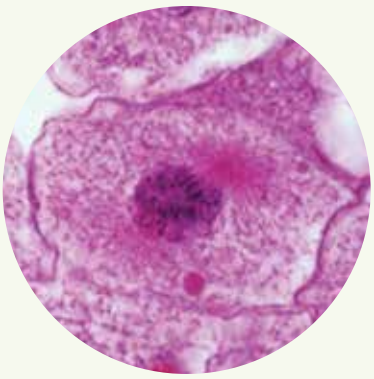
1. Explain how you decided whether a cell was dividing.
2. Were most of the cells you examined in step 4 dividing or not dividing? Explain your observation.
3. Draw a pie graph to show the relative number of cells dividing and not dividing. How does your pie graph compare with **Figure 1.10** in this Topic?

Apply and Communicate

4. In this investigation, you observed cells from a whitefish embryo. Why do you think embryo cells were used instead of cells from an adult whitefish?
5. Assume that you repeat this investigation using plant cells. Do you think plant cells go through the same phases of the cell cycle? Why or why not? How would the plant cells appear different from the cells you viewed in this investigation?

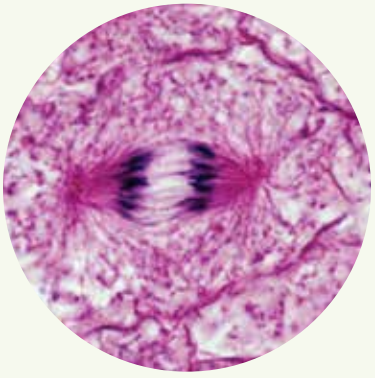


interphase



prophase

metaphase



anaphase

telophase

cytokinesis