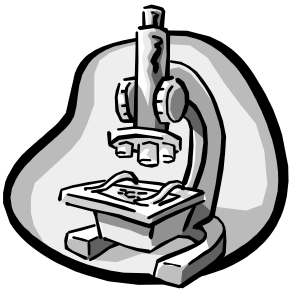
Science 10-Biology

Activity 12

Experiment on Observing Cell Division



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Name _____

Due Date _____

Show Me ☐ Hand In ☐

Correct and Hand In Again By _____

Purpose:

To observe and sketch plant cells and animal cells in various stages of their life cycle.

Equipment and Materials:

Compound Microscope
Prepared Slide of Onion Root Tips
Prepared Slide of Whitefish Mitosis

Part 1-Plant Cells

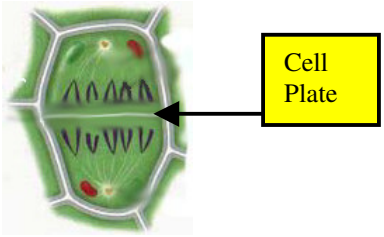
Procedure:

1. Take a prepared slide of an **onion tip root** and observe it under low power (40X). Move the slide around until you have a section near the tip that is in clear focus. Select an area and count out about 100 cells (approximately).
   Notice if the cells are **dividing** (chromosomes visible, no nucleus),
   or are **not dividing** (nucleus visible, no chromosomes)
   Fill in the following table:

Out of about 100 cells:	
Number of Dividing Cells	Number of Cells Not Dividing

At any one time are most cells **dividing** or **not-dividing**? _____

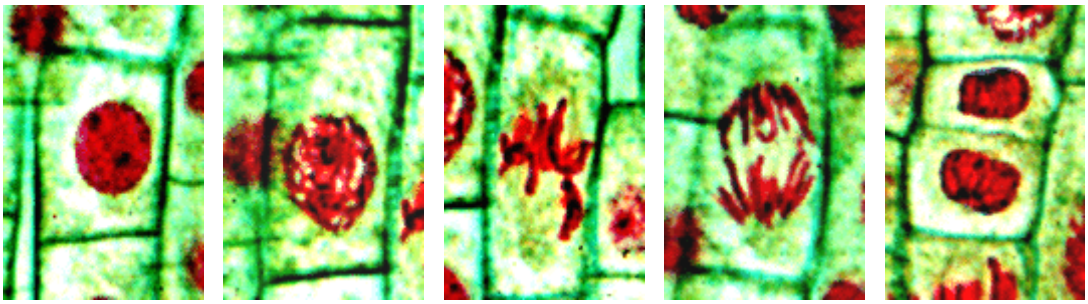
Look at the diagram of a plant cell undergoing **cytokinesis**. Notice the thin layer of membrane in the center. This is called the **Cell Plate**.



Can you see any cells that appear as if they are undergoing **cytokinesis**?

_____

2. The following diagram shows onion root tip cells in the various stages of mitosis. Study these pictures.



If you need to look at more images of mitosis in onion root tips, log on to a computer and go to the web sites: http://micro.magnet.fsu.edu/micro/gallery/mitosis/mitosis.html or http://www.biology.arizona.edu/cell_bio/activities/cell_cycle/cell_cycle.html or or http://biog-101-104.bio.cornell.edu/BioG101_104/tutorials/cell_division/onion_review_fs.html

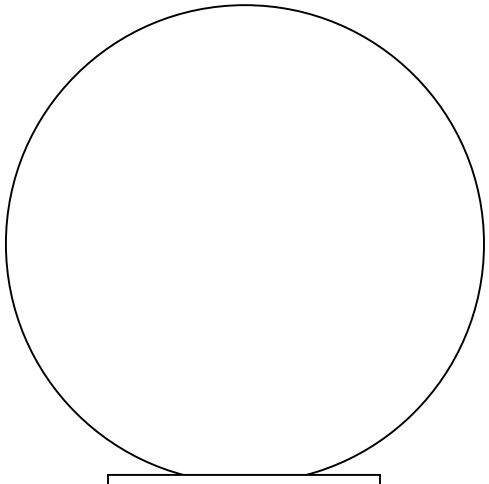
You can link to these more easily by going to Mr. Colgur's Science 10 Web page, scrolling down to "Biology" and finding "Mitosis Sites for Experiment on Observing Cell Division:" You can get the four web pages by clicking on "onion root tip mitosis 1" etc.

3. Now go back to your microscope and focus on a portion near the tip of the root. Focus in medium power, then in high power (400 X) .

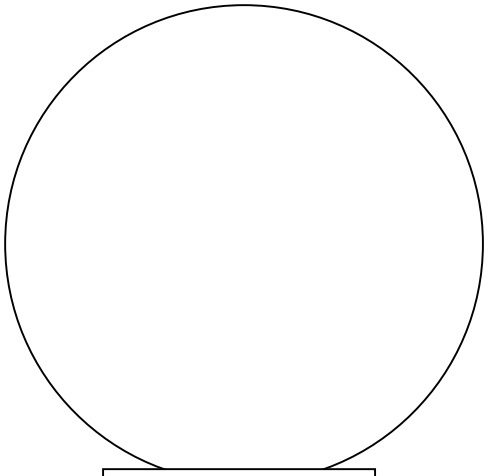
Try to find individual cells in each stage of **mitosis** and a cell undergoing **cytokinesis** (cell plate forming)

Make a neat sketch of each one of these cells on the next page:

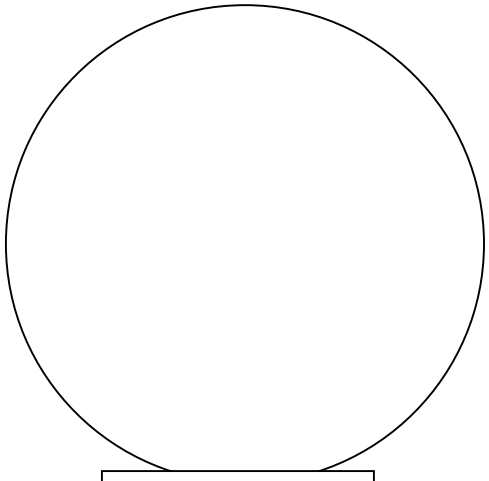
The Stages of the Cell Cycle in Onion Root Tip Cells



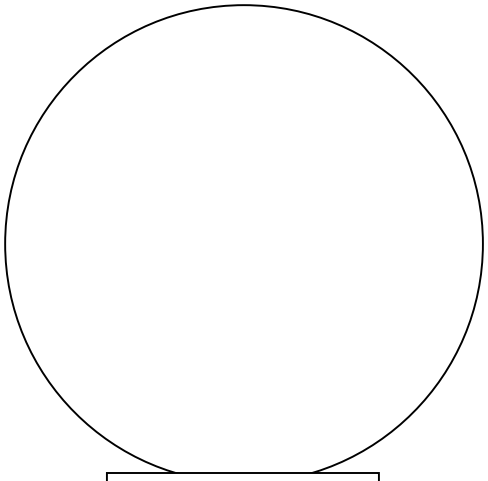
Interphase



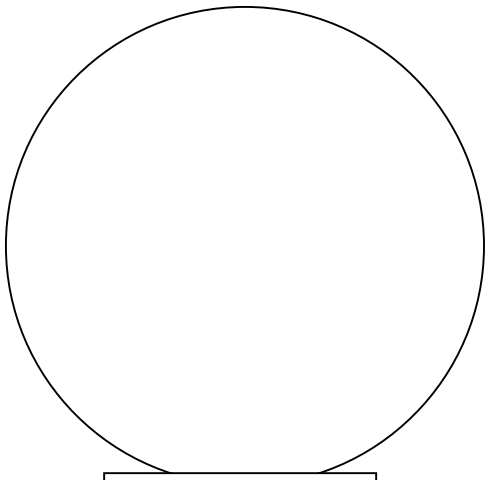
Prophase



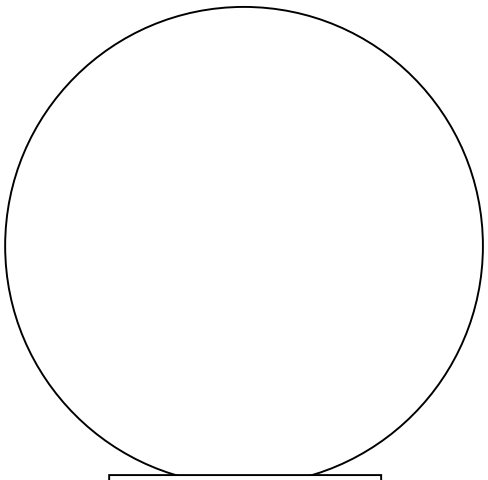
Metaphase



Anaphase



Telophase



Cytokinesis

Part 2-Animal Cells
Procedure:

1. Take a prepared slide of an **whitefish mitosis** and observe it under a suitable power. Move the slide around until you have an area that you can count out about 100 cells (approximately).
   Notice if the cells are **dividing** (chromosomes visible, no nucleus),
   or are **not dividing** (nucleus visible, no chromosomes)
   Fill in the following table:

Out of about 100 cells:	
Number of Dividing Cells	Number of Cells Not Dividing

   At any one time are most cells **dividing** or **not-dividing**? _____

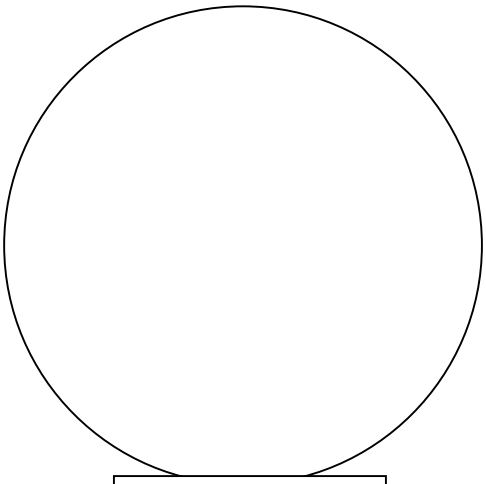
2. Now, go to a computer, log on and look at the stages in the cell cycle in whitefish cells. The site is listed here and are also available as "whitefish mitosis" on Mr. Colgur's Science 10 Web page.
   http://biog-101-104.bio.cornell.edu/BioG101_104/tutorials/cell_division/wf_review_fs.html
   After you have this web page up, bring the cursor over the slide that says "Telophase" and read the description below the pictures.
   Cytokinesis begins with the appearance of a _____ _____

3. Now go back to the microscope and try to locate whitefish cells in various stages of their life cycle. Sketch the cells in the circles on this page and the next page:

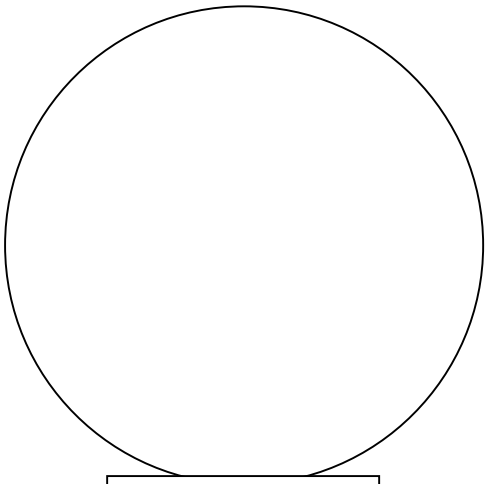
Stages in the Life Cycle of Whitefish Cells

Interphase **Prophase**

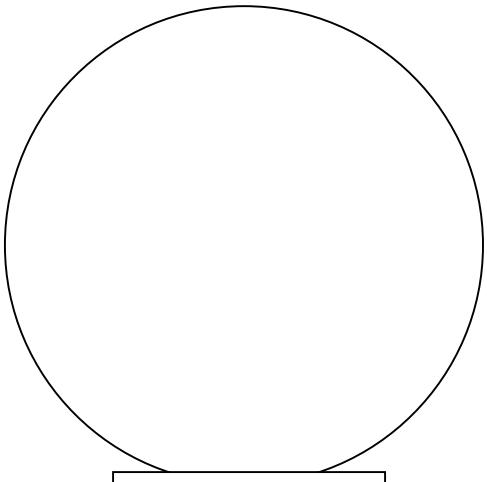
Stages in the Life Cycle of Whitefish Cells



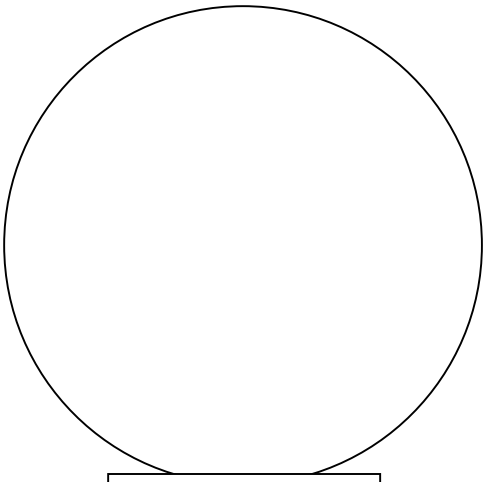
Metaphase



Anaphase



Telophase



Cytokinesis
(show and label the **cleavage furrow**)