Cell Transport and Homeostasis Investigations Interactive Booklet

Directions: You are in charge of creating an interactive booklet that shows your understanding of cellular transport and homeostasis. In your booklet include the following:

Pages 1-2: Draw a lightbulb in the middle of the page and divide the lightbulb into four sections. Label each section as follows:
Cellular Homeostasis is affected by:

1. How does salt water affect cells?
2. How does drinking too much water affect cells?
3. Why does dehydration shrink cells?
4. How do cells obtain the nutrients needed from its environment?

Write a detailed explanation to answer each of these lightbulb questions.

Pages 3-6: Scenarios/Questions about ways homeostasis imbalances affects cells
Choose one scenario from the provided list for each lightbulb question.
For each scenario design the page as follows:

Question/Scenario:

Claim:

Evidence: (What's Occurring)

Before	During	After
Draw:	Draw:	Draw:
Explain:	Explain:	Explain:

Lab Connection:

For your claim, include the following information:

- Your answer to the question
- Where is the hypertonic solution? Where is the hypotonic solution?
- In which direction is water and/or other particles moving across the cell membrane? Will the cell swell, shrink or remain the same size?

Teacher example: Create an example using the following scenario- A sore throat can be caused by swollen throat tissue and cells, which contain a lot of extra water. Why does gargling warm salt water relieve the sore throat pain?

Scenarios: (Students choose one scenario from each category)

1. How does salt water affect cells?
   - If you were lost at sea and drank salty seawater (3% salt), what would you expect to happen to cells in your body?
   - In the winter, grass often dies near the roads that have been covered in salt to remove the ice from the roads. Why does this grass die?
   - Why will sprinkling salt on a snail's body cause the snail to shrivel up and die?

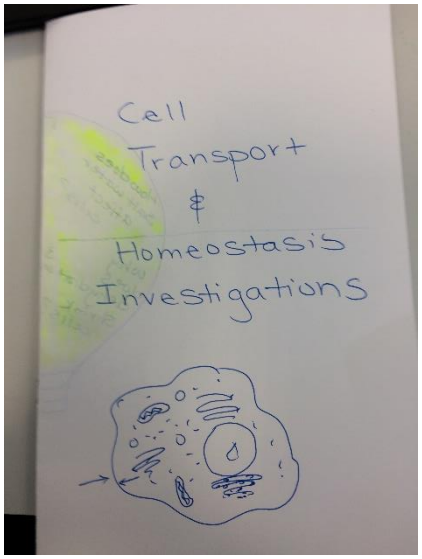
2. How does drinking too much water affect cells?
   - If a sea star egg (type of cell) is taken from the ocean and put in a fresh water lake, what would you expect to happen to the egg?
   - Crunchy vs wilted salad: Why do grocery stores continue to spray lettuce and other vegetables with sprinklers?
   - Why does drinking too much water lead to Hyponatremia (not enough salts in your body cells)?

3. Why does dehydration shrink cells?
   - Why do plants that are not watered for several days wilt?
   - Grapes and other fruit can be left out in the dun for extended periods of time. Why does this fruit decrease in size and become shriveled and smaller than the original fruit creating dehydrated fruit?
   - Cholera is caused by a bacterium, which enters the body and settles in the intestines. Once in the intestines the bacteria pull water from the body and intestinal cells causing extremely watery diarrhea. How does this dehydration lead to cell death?

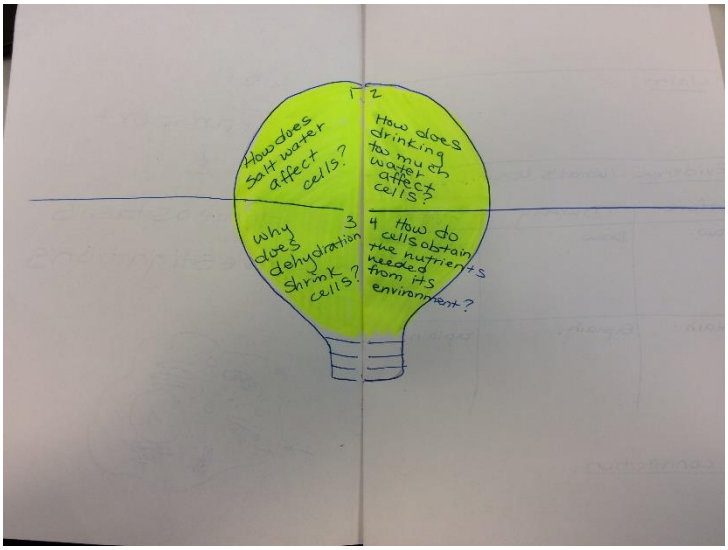
4. How do cells obtain the nutrients needed from its environment?
   - A person has low blood sugar and eats a snickers bar. How does the sugar from the snickers enter the cells?
   - Amoeba are non-photosynthetic single-celled organisms that live in pond water. How do amoeba gain the sugar necessary for their survival?

Example Booklet:

Title Page:



Lightbulb Page: (1-2)



Scenario pages: (3-6)