

Lesson 1.3: Evaluating Initial Claims About Elisa

What's going on with Elisa? Could it be something happening in her cells? Today, you will learn more about the molecules that cells need to function in a healthy body. Cells are everywhere in your body and make up most of your living tissue—for example, your heart, lungs, skin, and muscles are all made of different types of cells. When your cells don't get the molecules they need, you can feel sick and tired, as Elisa does. Today, you will also get new evidence about Elisa—the results from food and sleep journals she kept. You'll evaluate this evidence and decide whether it supports any of our possible claims.

Unit Question

- How do the trillions of cells in the human body get what they need to function, and what do the cells do with the things they absorb?

Chapter 1 Question

- Why does Elisa feel tired all the time?

Key Concept

- A functioning human body has molecules from food (glucose and amino acids) and molecules from air (oxygen) in its cells.

Vocabulary

- cells
- claim
- evidence
- glucose
- metabolism
- molecules
- oxygen

Digital Tools

- *Metabolism* Modeling Tool activities: 1.3 Warm-Up and 1.3 Molecules in a Cell
- *Metabolism* Sorting Tool activity: 1.3 Evaluating Evidence
- Scale Tool

Name: _____

Date: _____

Warm-Up

Launch the *Metabolism* Modeling Tool activity: 1.3 Warm-Up.

- The *Metabolism* Modeling Tool is a tool you will use often to show your thinking about how the human body works.
- Spend the next few minutes trying out different things in the Modeling Tool to get familiar with how it works.
- Try moving the molecules around the body to show your ideas about what happens inside a human body.
- When your model is complete, press HAND IN. If you worked with a partner, write his or her name here: _____

Goal: Explore the Modeling Tool.

Do:

- Try moving the molecules around the body to show your ideas about what happens inside a human body.

Name: _____

Date: _____

Reading “Molecules Cells Need”

1. Read the article “Molecules Cells Need.” Add annotations as you read.
2. Choose and mark annotations to discuss with your partner. Once you have discussed these annotations, mark them as discussed.
3. Read the article a second time, focusing on the questions your teacher wrote on the board.
4. Answer the reflection question below.

Rate how successful you were at using Active Reading skills by responding to the following statement:

As I read, I paid attention to my own understanding and recorded my thoughts and questions.

- Never
- Almost never
- Sometimes
- Frequently/often
- All the time

Active Reading Guidelines

1. Think carefully about what you read. Pay attention to your own understanding.
2. As you read, annotate the text to make a record of your thinking. Highlight challenging words and add notes to record questions and make connections to your own experience.
3. Examine all visual representations carefully. Consider how they go together with the text.
4. After you read, discuss what you have read with others to help you better understand the text.

Name: _____ Date: _____

Modeling Molecules in a Healthy Cell

1. Launch the *Metabolism Modeling Tool* activity: 1.3 Molecules in a Cell.
2. Use the information from the article you have just read to model the molecules you think should be in the functioning cells of a healthy body.
3. When your model is complete, press HAND IN. If you worked with a partner, write his or her name here: _____

Goal: Show which molecules should be in the functioning cells of a healthy body.

Do:

- Add molecules to the cell.

Evaluating New Evidence About Elisa

Part 1

Work with your partner to decide which card offers higher quality evidence, based on how much evidence was collected.

- Be prepared to explain your evaluation.

Evidence Card A

John observed his 14-year-old brother's sleep for one night. His brother slept for 10 hours. Based on this, John concluded that all 14-year-olds need 10 hours of sleep a night.

Evidence Card B

Scientists observed the sleep of 2,000 healthy 14-year-olds every night for a month. The average number of hours the 14-year-olds slept was 9.4 hours. Based on this, the scientists concluded that 14-year-olds need about 9 hours of sleep a night.

Name: _____

Date: _____

Evaluating New Evidence About Elisa (continued)

Part 2

Launch the *Metabolism* Sorting Tool activity: 1.3 Evaluating Evidence.

1. With your partner, examine the evidence cards and consider where these cards would be placed on the Evidence Gradient.
2. Discuss if there are any low-quality pieces of evidence that should be eliminated.
3. Decide whether this evidence supports or contradicts any of the possible claims about Elisa.
4. When you have finished sorting the evidence, press HAND IN. If you worked with a partner, write his or her name here: _____

Claims

Elisa is feeling tired:

- because she isn't getting enough sleep.
- because she is not eating enough food or not eating the right foods.
- because she has a medical condition.

Evaluating Claims About Elisa

Healthy Sleep Comparison

Average Teenage Sleep Patterns	Elisa's Sleep Pattern
<p>Many scientific studies of teenagers show that most healthy teenagers get between 8 and 10 hours of sleep each night.</p>	<p>Elisa's sleep journal shows that she is getting about 9 hours of sleep every night.</p>

Healthy Eating Comparison

Average Teenage Eating Habits	Elisa's Eating Habits
<p>A scientific study done on 1,000 healthy 14-year-olds found that they ate between 5 and 8 servings of starch per day and between 1 and 4 servings of protein per day.</p>	<p>Elisa's food journal shows that she ate between 6 and 8 servings of food that contained starch every day. She ate between 2 and 4 servings of food that contained protein every day.</p>

Name: _____

Date: _____

Homework: Exploring the Relative Scale of Molecules

Molecules, even though they are very tiny, can be different sizes. Below is a list of some of the molecules that are in the *Metabolism* Simulation.

- glucose molecule
- starch molecule
- protein molecule
- carbon dioxide molecule
- water molecule
- amino acid molecule
- oxygen molecule

1. In the space below, list the molecules in order from smallest to largest. It is okay if you aren't sure.

Smallest

Largest

2. Do you think these molecules are larger or smaller than a cell in the human body? Explain your answer.

3. Explore the Scale Tool if you want to learn more about these different-sized molecules that can be found in the human body.

Name: _____

Date: _____

Homework: Check Your Understanding

This is a chance for you to reflect on your learning so far. This is not a test. Be open and truthful when you respond to the questions below.

Scientists investigate in order to figure things out. Are you getting closer to figuring out why your patient, Elisa, could be feeling so tired?

1. I understand what molecules Elisa's cells need and where they come from.

yes

not yet

Explain your answer choice above.

2. I understand how those molecules get to the cells in Elisa's body.

yes

not yet

Explain your answer choice above.

3. I understand how the cells use those molecules to release energy for Elisa's body to function.

yes

not yet

Explain your answer choice above.

Name: _____ Date: _____

Homework: Check Your Understanding (continued)

4. What do you still wonder about Elisa's condition or how her body gets what it needs to function?
