

More Cheese, Please

Introduction

When Kim eats certain dairy products, like cheese, she often experiences gas, bloating and diarrhea. However, other dairy products do not make her feel this way. Because she likes to eat dairy products, she wants to better understand why she can eat some but not others. Help Kim figure out how her body is responding when she eats different dairy products.

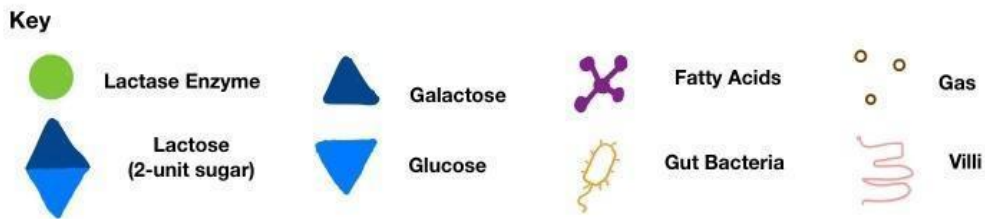
If you would first like a review of the digestive system, watch the [video](#) (from 0:00 -1:10).

Prompt 1

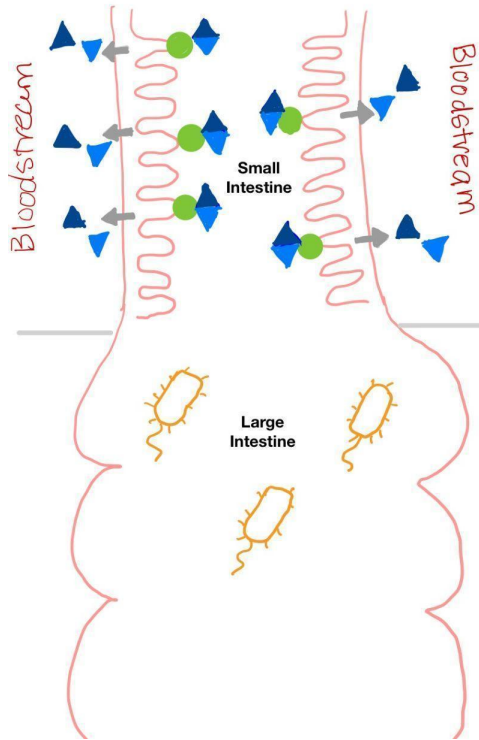
In this task, you will use models to figure out what happens in Kim's body after she eats dairy products. Both models show how lactose, a two-unit sugar found in dairy products, is digested in two important subsystems, the small intestine and the large intestine.

- The first model shows how a **lactose-tolerant** person digests lactose
- The second model shows how a **lactose-intolerant** person, like Kim, digests lactose

Go to the next page to see the models and answer the prompts.

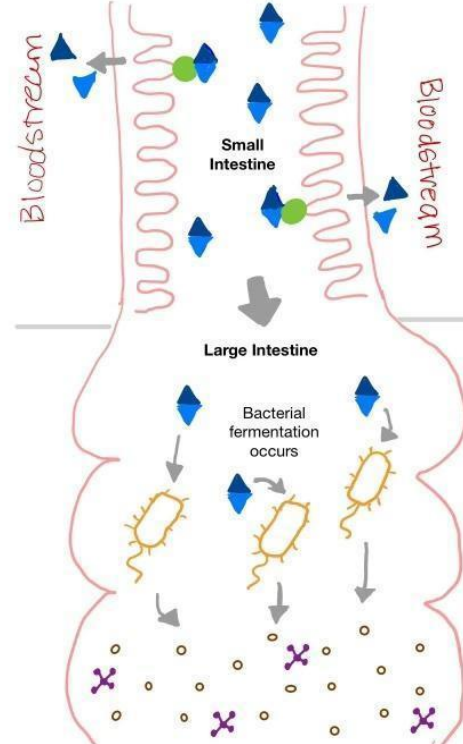


How a Lactose-Tolerant Person Digests Lactose

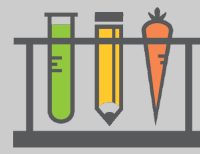


Describe what happens when a **lactose-tolerant** person digests the dairy product. Include interactions between parts of the system.

How a Lactose-Intolerant Person Digests Lactose



Describe what happens when a **lactose-intolerant** person digests the dairy product. Include interactions between parts of the system.



Prompt 2

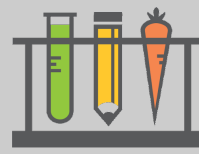
For this prompt, use the models on the **previous page**.

a. Add to the models to help you compare what is happening in a lactose-tolerant versus a lactose-intolerant digestive system.

- Circle the key differences between the two digestive systems
- Write captions to describe each difference you circle

b. **Villi** and **enzymes** are specialized structures in the digestive system that are very important to the digestion process. Use the models and what you know about these structures to explain how villi and enzymes work together during digestion.

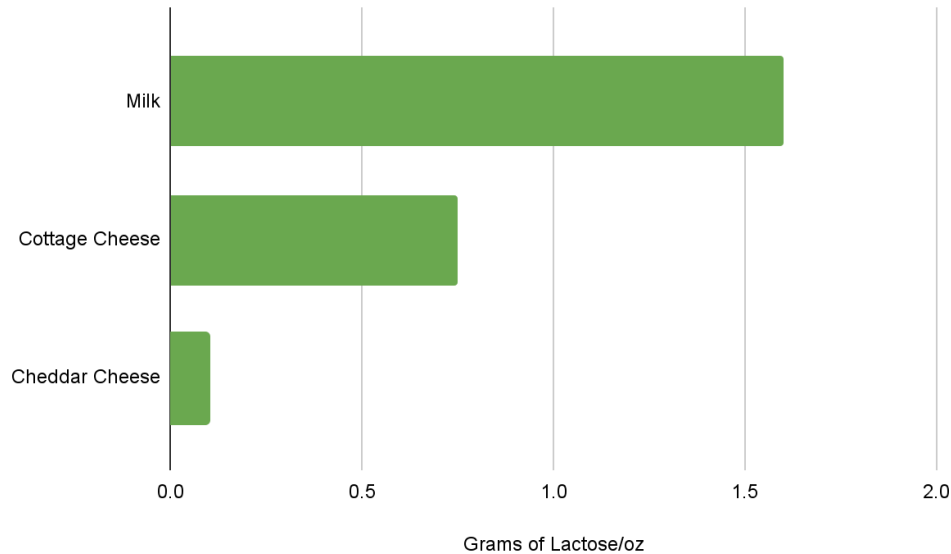
c. Use the models to explain to Kim why only lactose-intolerant people experience painful symptoms like gas when they eat dairy products.



Prompt 3

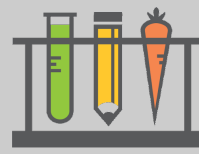
Now that Kim understands what is happening in her digestive system when she eats dairy products, she knows what to avoid. She does some research to find out if there are different amounts of lactose in dairy products, which is shown in the chart below.

Amount of Lactose in Dairy Products



Which dairy product would cause Kim to experience the fewest symptoms (if she ate an equal amount of each)? Support your answer using **all** of the following:

- Data about amount of lactose in dairy products from the chart above
- Information about lactose digestion from the models on Page 2, and
- What you know about how different parts of the body work together as a system



--	--