

Guided Reading Questions

Gut Microbiome and the Production of Short Chain Fatty Acids

The purpose of these questions is to guide you through your readings on the gut microbiome. For many of you, this will be your first time learning about the gut microbiome so you are encouraged to take notes and look things up on the internet to answer these questions.

Reading: Stevens and Hume (1998). Contributions of Microbes in Vertebrate Gastrointestinal Tract to Production and Conservation of Nutrients. *Physiological Reviews*, 78

- **Read sections IV and V only.**

Q1: Describe how the forestomach of ruminants (e.g., a cow) is colonized by bacteria. Could the human gut be colonized similarly? Explain your reasoning.

Q2: List the functions of the bacteria found in the gut of a ruminant. Do these functions occur in your own gut?

- 1.
- 2.
- 3.
- 4.
- 5.

Q3: Define *Defaunation* in your own words. Can you think of any human equivalent event that could be harmful?

Q4: Is the human small intestine composed of mostly anaerobic or aerobic organisms? Why might this be?

Q5: Define the following terms

1. Cellulolytic:
2. Amylolytic:
3. Acetate:
4. Propionate:
5. Butyrate:

Q6: Spend some time with Figure 11 on page 410. Write down any thoughts, connections, patterns, etc., that you see in the diagram.

****You do not need to memorize or know the process presented here****

Q7: Is the process of converting pyruvate into a SCFA anaerobic or aerobic? Explain.

Q8: Why might soluble carbohydrates (e.g., glucose) have a higher rate of SCFA production than pectin or cellulose?

Section 2: Watch the Paper Presentation video posted

There are no questions associated with this video; rather watch and take note of the health effects of different diets.

Section 3: Connections

Q9: In a brief paragraph, summarize what you have learned from your readings. Consider connections between species, patterns you may have noticed, etc.