



High School Science Virtual Learning

Applied Biological Science

The Human Microbiome

May 8, 2020



High School Applied Biological Science

Lesson: May 8, 2020

Objective/Learning Target:

Define the human microbiome and explain its importance to human health.



Let's Get Started:

1. Are all bacteria bad? Watch [this video](#) to learn about the scope and scale of bacteria.
2. Which do you have more of- your own cells or bacteria living in your body?
3. What are some of the positive roles bacteria have for humans?



Let's Get Started: Answers

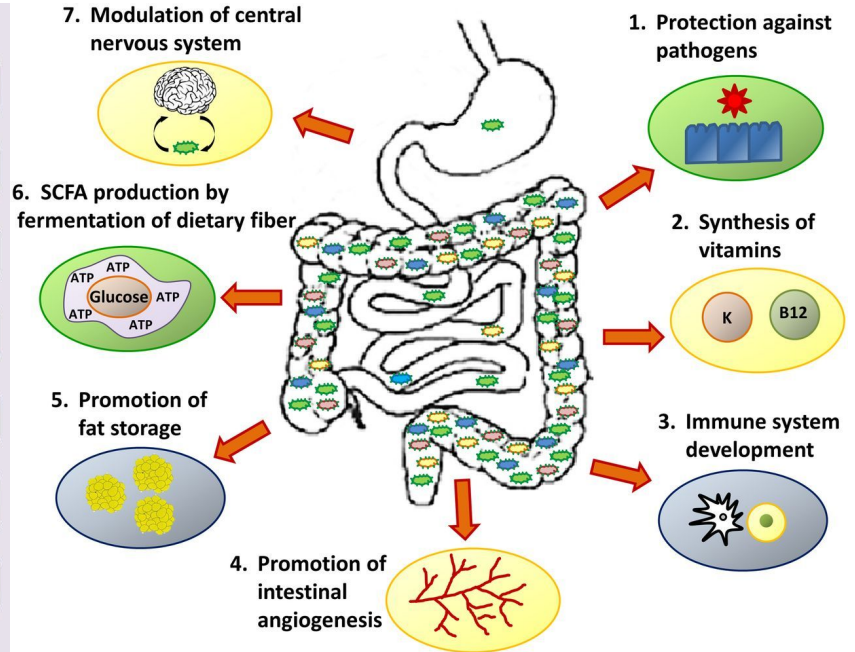
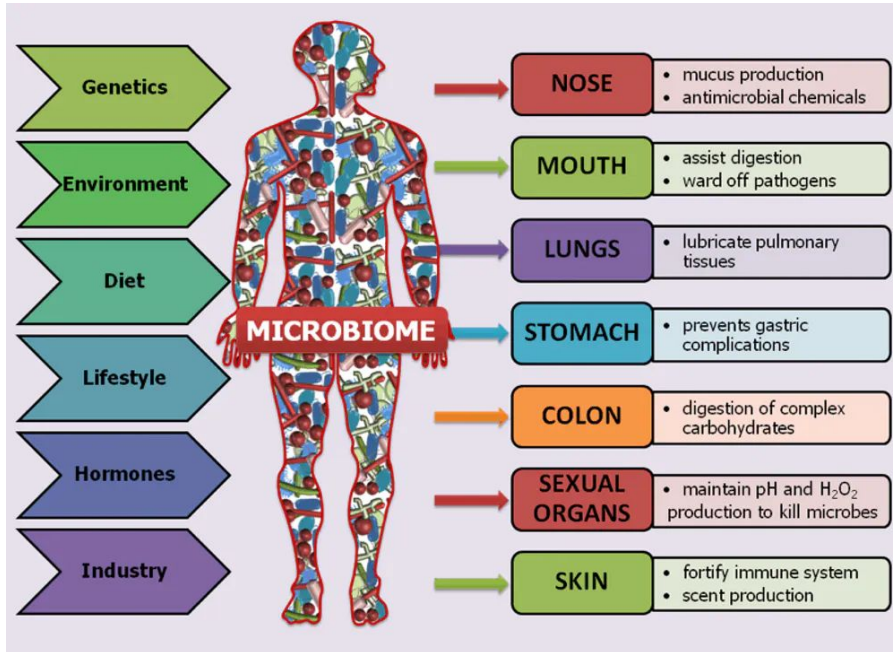
1. Are all bacteria bad? Watch [this video](#) to learn about the scope and scale of bacteria.
2. Which do you have more of- your own cells or bacteria living in your body?
 - a. bacteria
3. What are some of the positive roles bacteria have for humans?
 - a. Help digest food, get nutrients, provide immunity/protection, make foods, fixes nitrogen, produce oxygen, etc.



Lesson Activity:

What is the microbiome? Watch this video from [NPR](#) and describe the importance of the microbiome to your health. Organize this information in to a graphic organizer.

Lesson Activity: Possible Answers



Practice Questions

Click through this [interactive](#) on the human microbiome and answer the questions below.

1. How do microbes play a role in nutrition?
2. How do microbes boost immunity?
3. How do microbes protect us from infection?
4. How do microbes maintain protective barriers?
5. What 2 organs do microbes help develop?
6. How do microbes protect us from toxins?



Practice Questions - Answers

Click through this [interactive](#) on the human microbiome and answer the questions below.

1. Producing vitamins that we can't, Controlling metabolism and nutrient storage, Extracting nutrients, by breaking down foods that we can't
2. Decreasing inflammation, Training the immune system (by stimulating surrounding tissues to produce antibodies)
3. Competing with other microbes for resources and keeping them out (creating a biofilm), Producing antimicrobials, Changing abiotic factors/environmental factors (making the environment too acidic for other microbes to grow)
4. Keeping skin supple (by breaking down skin oils into natural moisturizers), Promoting healing (by signaling other cells to divide after nearby cells are damaged), Maintaining tissue integrity (by producing an energy source for cells that also strengthens connections between cells)
5. Brain, Lymphatic System and Capillaries
6. Keeping toxins from other bacteria from passing through the intestinal wall in to the bloodstream

Additional Practice

1. How do bacteria work together to either cause disease or provide benefits to other organisms? Watch the [Ted Talk](#) on how bacteria can “talk” to each other.
2. Check your understanding of the human microbiome by completing these [quiz questions](#).
3. Read more about the links with the gut microbiota and obesity, cancer and even autism [here](#).