

Name: \_\_\_\_\_

Period: \_\_\_\_\_

# BIOLOGY NTI DAY 5 ASSIGNMENT

## Directions:

1. Read, highlight or underline, AND annotate the article below.
2. Write a 4 sentence summary of the entire article using complete sentences.
3. Write a 4 sentence reflection explaining your internalization of the article? You may use the questions below to help you write your reflection.
  - Did you find the article interesting, informative, relative, etc.? Support your claim.
  - Can you see yourself implementing any of the suggestions that were mentioned?

## Our microbiome: Understanding bacteria as friend not enemy

Elizabeth Lindsey, M.D., for Williamson Medical Group Published 10:38 a.m. CT Jan. 10, 2018 | Updated 10:41 a.m. CT Jan. 10, 2018



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There is one word that probably isn't in your health and wellness vocabulary but will be soon: microbiome.

The New England Journal of Medicine defines the human microbiome as the collection of all genomes of microbes — or microscopic living organisms — in the ecosystem that is our body. The majority of these colonize in the gastrointestinal tract and other sites including our nasal passages, urinary system and reproductive organs.

### Microbiomes 101

Why is our microbiome important?

Approximately 100 trillion microbes inhabit our body — 10 times the number of cells within us. Those bacteria grow and are influenced by many factors including mode of delivery at birth, diet, environment, medication use and overall hygiene.

These organisms coexist with us and help maintain our health. There is a great deal of research being done on the human microbiome, and we are only now starting to understand its relationship to health and disease. The Human Microbiome Project was established in 2008 to define the "normal" human microbiome. To date, 2,800 different microbes have been identified with over 10 million different microbial genes isolated.

### Understanding dysbiosis

The bacteria in your GI tract aid in digestion, produce vitamins, fight off harmful bacteria, maintain the lining of the GI tract and interact with the immune system (training it to

identify friend or enemy). We know that bacteria can even interact with our own genetic code, resulting in over or under expression of certain genes related to disease.

For example, autoimmune disorders such as celiac sprue, inflammatory bowel disease (Crohn's disease, ulcerative colitis), rheumatoid arthritis and multiple sclerosis have baffled the medical community for years. The exact trigger of these disorders is unclear. Genetics? Environment? Infection? Behaviors?

We are now starting to understand that dysfunction of our microbiomes, or dysbiosis, may play a critical role in the development of these disorders. When good bacteria are overtaken by bad, conditions like obesity, depression and even acne may develop.

Other factors believed to trigger dysbiosis include chronic medication use (steroids, antibiotics, non-steroidal anti-inflammatories and antacids such as proton pump inhibitors), diet (in particular low fiber/high fat/high sugar diet), infections, artificial sweeteners and alcohol. A classic example of dysbiosis is the vaginal yeast infection that often develops after a woman takes a round of antibiotics. There is also data to suggest that symptoms such as chronic fatigue, headaches, joint pain, brain fog, abdominal bloating and pain may be related to dysbiosis.

**Restoring function** Doctors now believe that healing dysbiosis involves removing that which is damaging your microbiome — replacing essential bacteria through probiotics — and restoring the overall health of your gut.

Changes in diet can be effective and may, in turn, alleviate symptoms. A diet low in simple sugars and carbohydrates like sodas, white flour and processed grains maintains stable glucose and insulin levels in the body, helping to reduce obesity and the risk of diabetes. Gluten-rich foods also are known to cause symptoms like bloating, abdominal pain, diarrhea, headaches and “brain fog.” Alternatively, high fiber, plant-based carbohydrates and proteins such as fruits, vegetables, beans, lentils and brown rice provide nutrients for the bacteria in your microbiome to grow and flourish.

**Leaky gut** How does diet affect gut health? Alterations in the bacterial environment increase permeability, or leakage, of the GI tract. This leakage allows harmful substances to pass through, resulting in a cascade of events with physical symptoms. Reducing simple sugars, carbohydrates and gluten-rich foods can improve the diversity of your microbiome and improve symptoms.

**A promising future** The next decade will be exciting for gastroenterologists as well as patients, as more and more is learned about the microbiome and dysbiosis. It's critical that we accept and appreciate our bacteria as friendly and do all that we can to cultivate, protect and encourage the growth of a robust microbiome to ensure a lifetime of overall good health.

Source:  
<https://www.tennessean.com/story/sponsor-story/williamson-medical-center/2018/01/10/our-microbiome-understanding-bacteria-friend-not-enemy/1018986001/>