



By: Mark S. Riddle, MD, DrPH (Captain, US Navy, retired), University of Nevada, Reno School of Medicine and the VA Sierra Nevada Health Care System, Reno, NV. Edited by: Shanti Eswaran, MD Associate Professor, Internal Medicine, Division of Gastroenterology, University of Michigan, Ann Arbor, MI

International Foundation for Gastrointestinal Disorders ([www.iffgd.org](http://www.iffgd.org))

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## Where does the Digestive System fit among all the other systems of the body?

The human body is amazing and also complicated. While one could argue that ‘everything’ has an impact on ‘everything’ else in the body (which it often does), for the purpose of understanding our health and disease we tend to organize the body into 12 major organ systems. These include the integumentary (skin), skeletal, muscular, lymphatic, respiratory, digestive, nervous, endocrine, immune, cardiovascular, urinary, and reproductive systems. Each of these systems can be seen as a collection of different body parts and organs that serve an overall vital function or purpose.

- Stomach – A muscular organ between the esophagus to the small intestine. Food is broken down by in the stomach using enzymes and acid.
- Small intestine - The longest part of the digestive tract that is located between the stomach and the large intestine. Its function is to break down and absorb nutrients while mixing and moving the intestinal contents along the digestive tract into the large intestine.
- Large intestine - The large intestine, also known as the colon, connects the small intestine to the rectum and performs the vital task of absorbing water and vitamins while converting digested food into bowel movements.
- Rectum - The rectum is the final section of the large intestine where bowel movements are stored before being emptied through the anus.
- Anus - The anus is the lower opening of the GI tract where bowel movements exit the body.

In addition, there are a number of organs that work really closely to these parts of the digestive tract, such as the pancreas, gallbladder and liver. These organs make digestive juices to help break down and absorb the food we eat.

### Digestive System Fun Facts

1. The average person produces 2 pints of saliva every day. That’s about 2 ½ cans of soda.
2. Your gut and brain are connected. Emotions (including stress) and brain disorders affect how your body digests food.
3. Stain removing laundry detergents have some of the same enzymes (special proteins that break things down) that are found in your digestive system.
4. Your body has more microbial cells (bacteria, yeast, fungi, viruses) than your own human cells- most of these are in your digestive system (and keep you healthy)

## What makes up the digestive system?

The main parts of the digestive system make up is what we call the digestive tract. It can basically be considered an open tube that carries things that go in the body to the point where they go out. This includes

- Mouth - The upper opening of the digestive tract. This is where food enters the body and is broken down by chewing. The mouth includes the lips, teeth, gums, and tongue.
- Esophagus - The muscular tube through which food passes from the mouth to the stomach.

## But wait, there’s more...

In addition to the organs in our GI tract, we couldn’t survive and be healthy without the ‘good’ micro-organisms that are a part of us -- in particular, the billions of them in our digestive system. The GI microbiome is vital to help us digest what we eat, prevent infection, and keep inflammation in check.

**GI microbiome** includes all the bacteria, viruses, fungi and yeast that are in your digestive track.

## What is the purpose of our digestive system?

Probably the most obvious reason we have a digestive system is to take in food and liquids so that we can get the

important nutrients and water that our entire body needs to survive. The digestive system mixes and moves food through the body, breaks food down into smaller pieces (nutrients), absorbs these nutrients, and finally gets rid of whatever is left over (and we can't use).

However, functions that may not come to mind when one thinks about the digestive system are also very important to maintain health and prevent disease. These include:

- neutralizing toxins that we may take into our bodies when we eat, and
- preventing infection from bad bacteria, viruses and parasites that could potentially cause us harm.

#### **Digestive System by the Numbers**

**22 feet** – The length of your small intestine (the main part of your system that absorbs nutrients)

**345 square feet** – about the size of a studio apartment, but also the surface area of your intestine which is needed to absorb everything to make you healthy!

**100 trillion** – estimated number of bacteria that are in your intestine (which is also about the same number of stars in the galaxy)

**1 nanometer** – the speed at which a fingernail grows each second. Also, the size of the particle that your digestive system needs to break down in order for it to be easily absorbed in your small intestine.

#### **How are the GI tract and the brain related?**

One of the most important interactions between your digestive system and other body systems is with the neurological system, and particularly the brain. The digestive system can interact with our brains through nerves that connect these two systems directly, through hormones that your gut makes that can affect the brain, and through food and bacterial byproducts which can get absorbed into our blood streams and go to our brain. The brain can interpret these signals as satiety (fullness), hunger, and even pain or distress. And it's not just a one-way street: The brain also sends signals to the digestive system to tell it to rest, or to get more active.

#### **How can we keep our digestive system healthy?**

1. **Eat a diverse diet full of fruits, vegetables, grains** - your body needs a lot of different types of nutrients and vitamins and minerals. But you also want to have a diverse microbiome and therefore eating a lot of different types of fruit and vegetables (fiber) helps to maintain a healthy variety of organisms

2. **Eat slow and chew your food well** – By doing this you swallow less air and will have a better sense when you are full. Also, chewing well will really help your body get the most out of the food you take in.
3. **Enjoy smaller meals** – your digestive system doesn't work that well when it must tackle a lot of food. Also, a packed stomach can cause problems such as reflux—a situation where your food comes back up.
4. **Set a bedtime for your gut** – your GI track needs rest just like you. Eating before bedtime isn't the best for digestion and can often result in the food energy being stored as fat.
5. **Manage stress** – stress can affect how well your body can digest food.
6. **Exercise** – we aren't sure exactly how, but there is evidence that exercise can reduce the risk of colon cancer, diverticular disease, and constipation. It can also help the pain related to irritable bowel syndrome. People who exercise have a more diverse microbiome which is important for health in general.

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#### **About IFFGD**

The International Foundation for Gastrointestinal Disorders (IFFGD) is a 501(c)(3) nonprofit education and research organization. We work to promote awareness, scientific advancement, and improved care for people affected by chronic digestive conditions. Our mission is to inform, assist, and support people affected by gastrointestinal disorders. Founded in 1991, we rely on donors to carry out our mission. Visit our website at: [www.iffgd.org](http://www.iffgd.org).

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537 Long Point Road, Unit 101  
Mt Pleasant, SC 29464

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