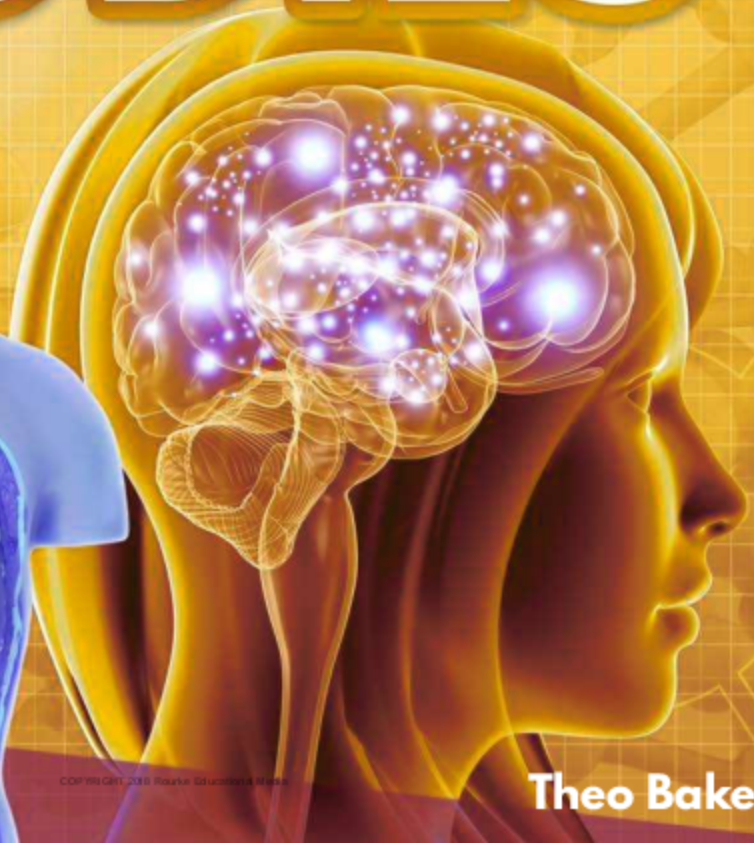
WEIRD, TRUE FACTS

HUMAN BODIES



Theo Baker

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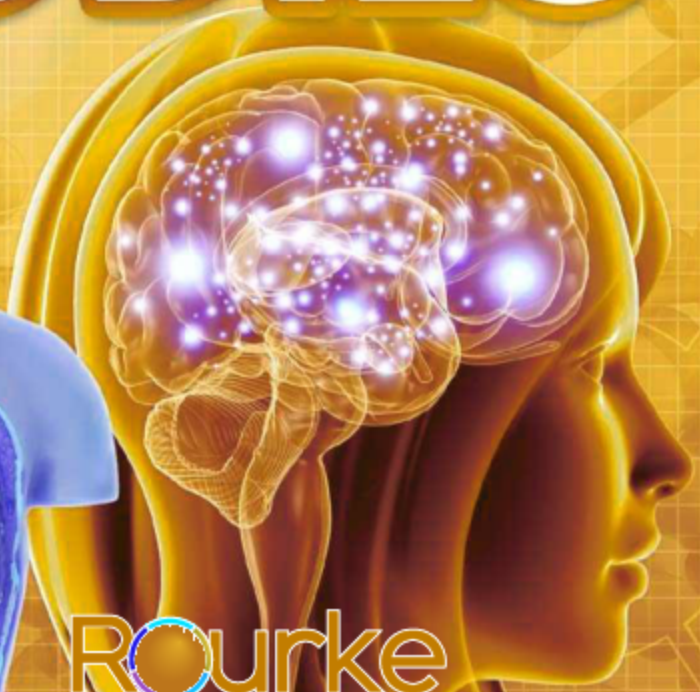

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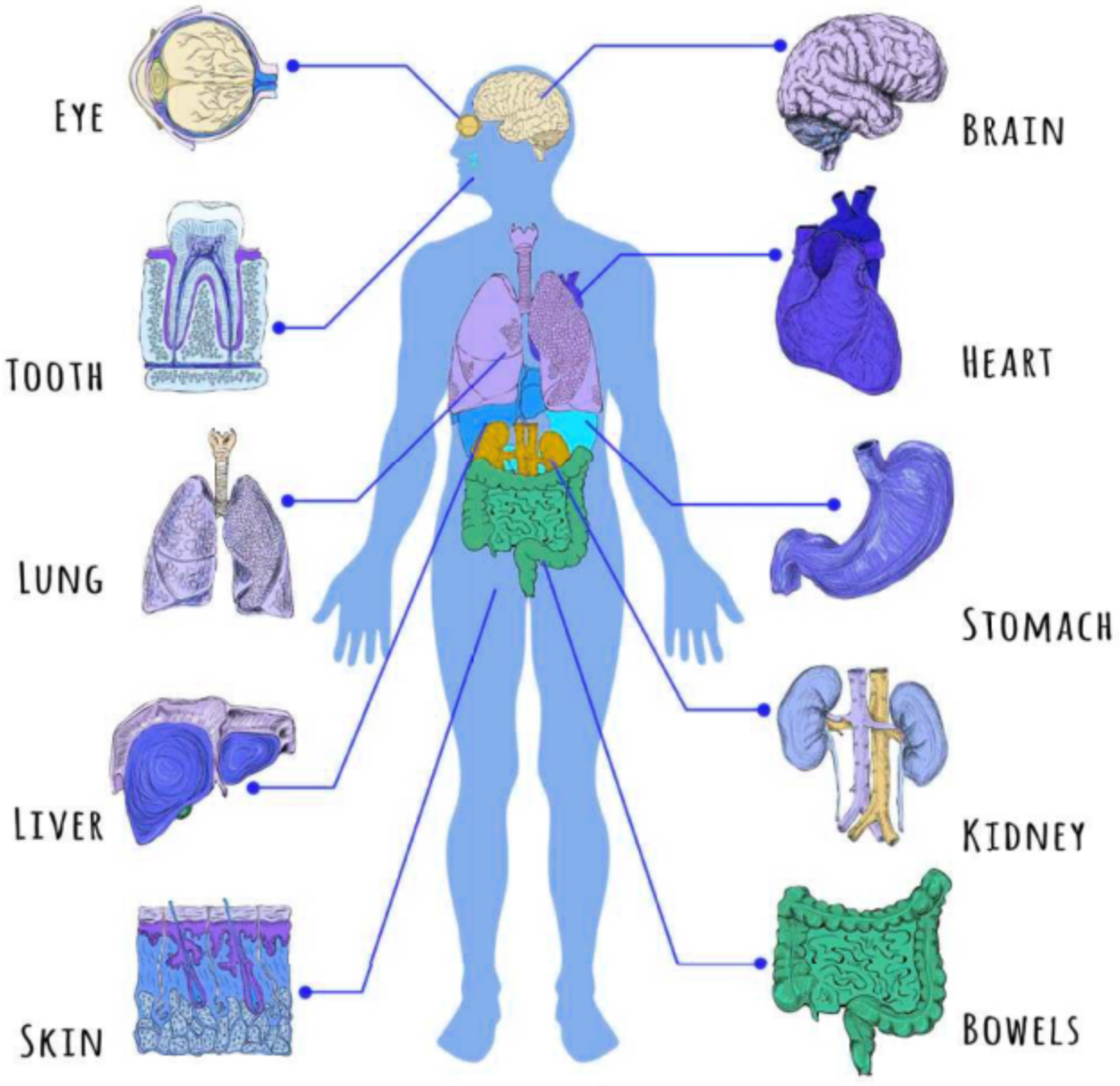
The Human Body



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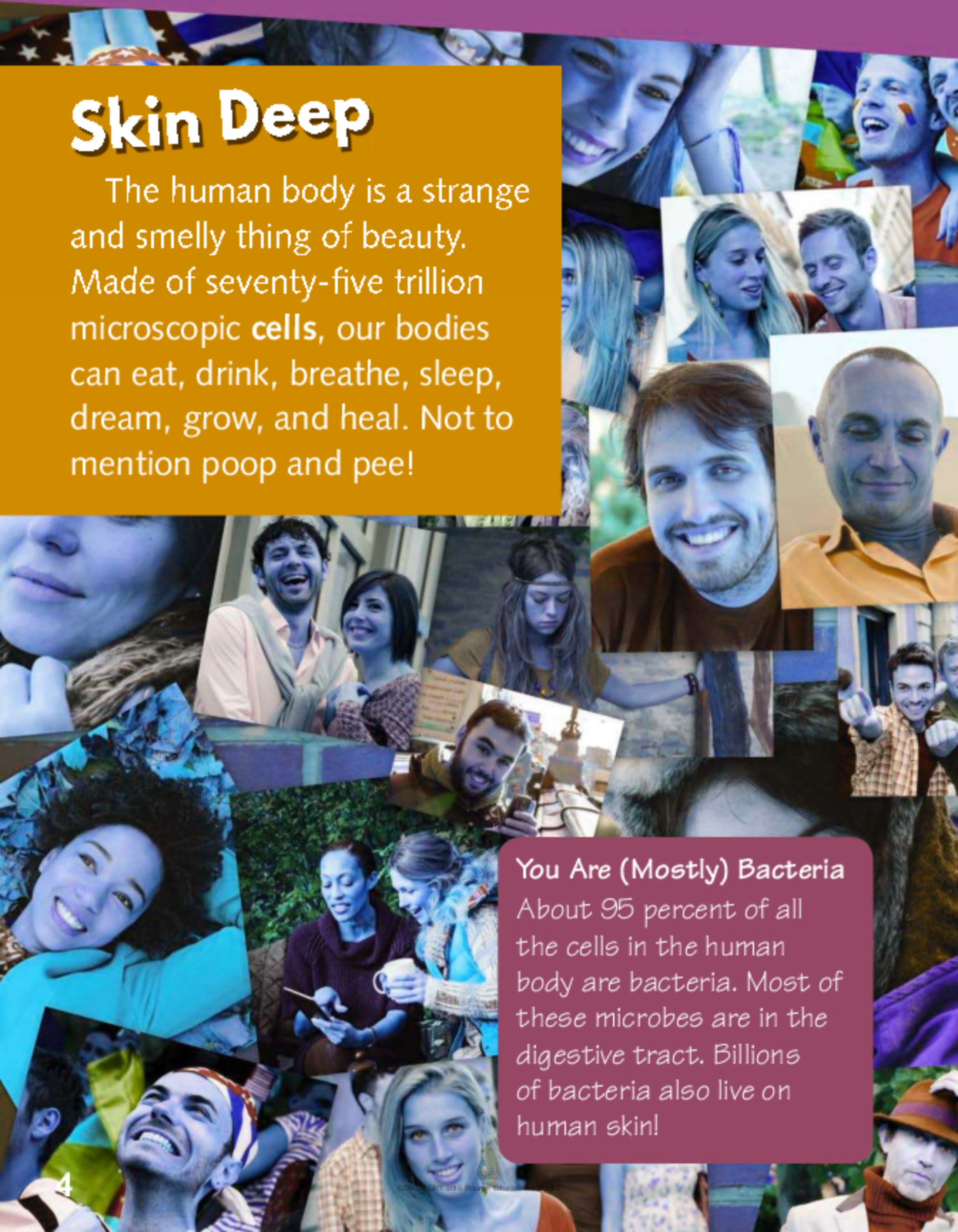
Skin Deep

The human body is a strange and smelly thing of beauty. Made of seventy-five trillion microscopic **cells**, our bodies can eat, drink, breathe, sleep, dream, grow, and heal. Not to mention poop and pee!



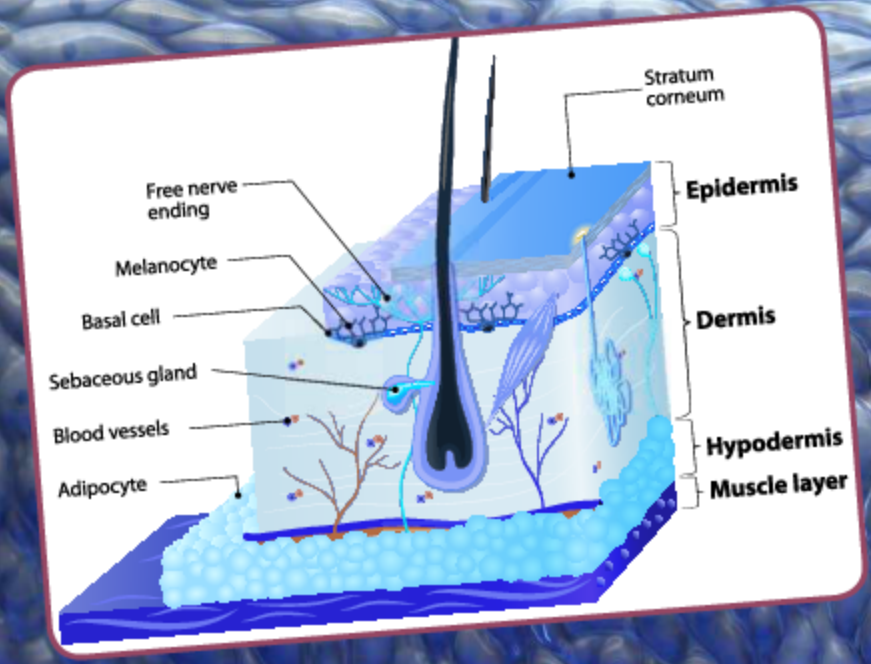
You Are (Mostly) Bacteria

About 95 percent of all the cells in the human body are bacteria. Most of these microbes are in the digestive tract. Billions of bacteria also live on human skin!

Tiny Helpers

Bacteria produce chemicals that help us use energy and nutrients from food. Scientists think intestinal bacteria helps us maintain healthy immune systems.

Skin protects our squishy insides from the outside world. You're probably familiar with skin, but did you know that the skin that we see—the epidermis—is made of dead skin cells?

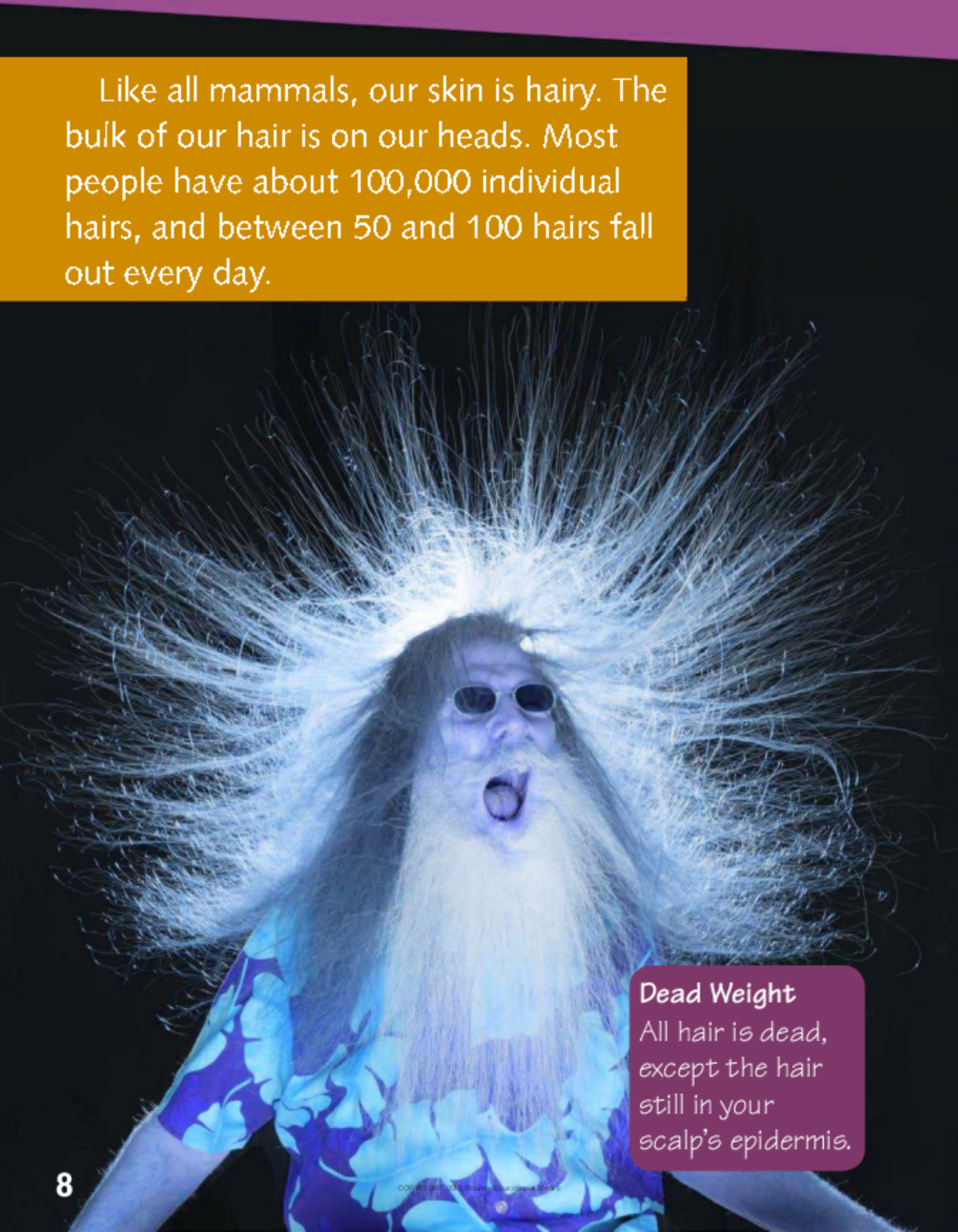


Your skin makes up about 15 percent of your body weight. And every 27 days, our bodies make a completely new layer of skin for us to show off. Where does the old layer go? It flakes off and becomes household dust.

Clean Yourself Up

Almost all household dust is dead skin cells. Next time you're vacuuming, remember that you're vacuuming up yourself!

Like all mammals, our skin is hairy. The bulk of our hair is on our heads. Most people have about 100,000 individual hairs, and between 50 and 100 hairs fall out every day.



Dead Weight
All hair is dead, except the hair still in your scalp's epidermis.

Hair is the second-fastest growing tissue in the human body. Only bone marrow grows faster. Hair grows about five inches (10.16 centimeters) a year. If you dream of sporting a head of floor-length hair, you better start growing it out now!

The Hair Knows

Hair contains information about substances that have been in a person's bloodstream, including medications and drugs.

Fingernails and toenails also grow out of the skin. They are made of a tough, flexible protein called **keratin**. Like hair and skin, our nails are mostly made of dead tissue. Nails are useful tools. They protect our fingertips from injuries and make our fingertips more sensitive. And in a pinch, they can open a can of soda, pop a balloon, or scratch a really good itch.

It Itches!

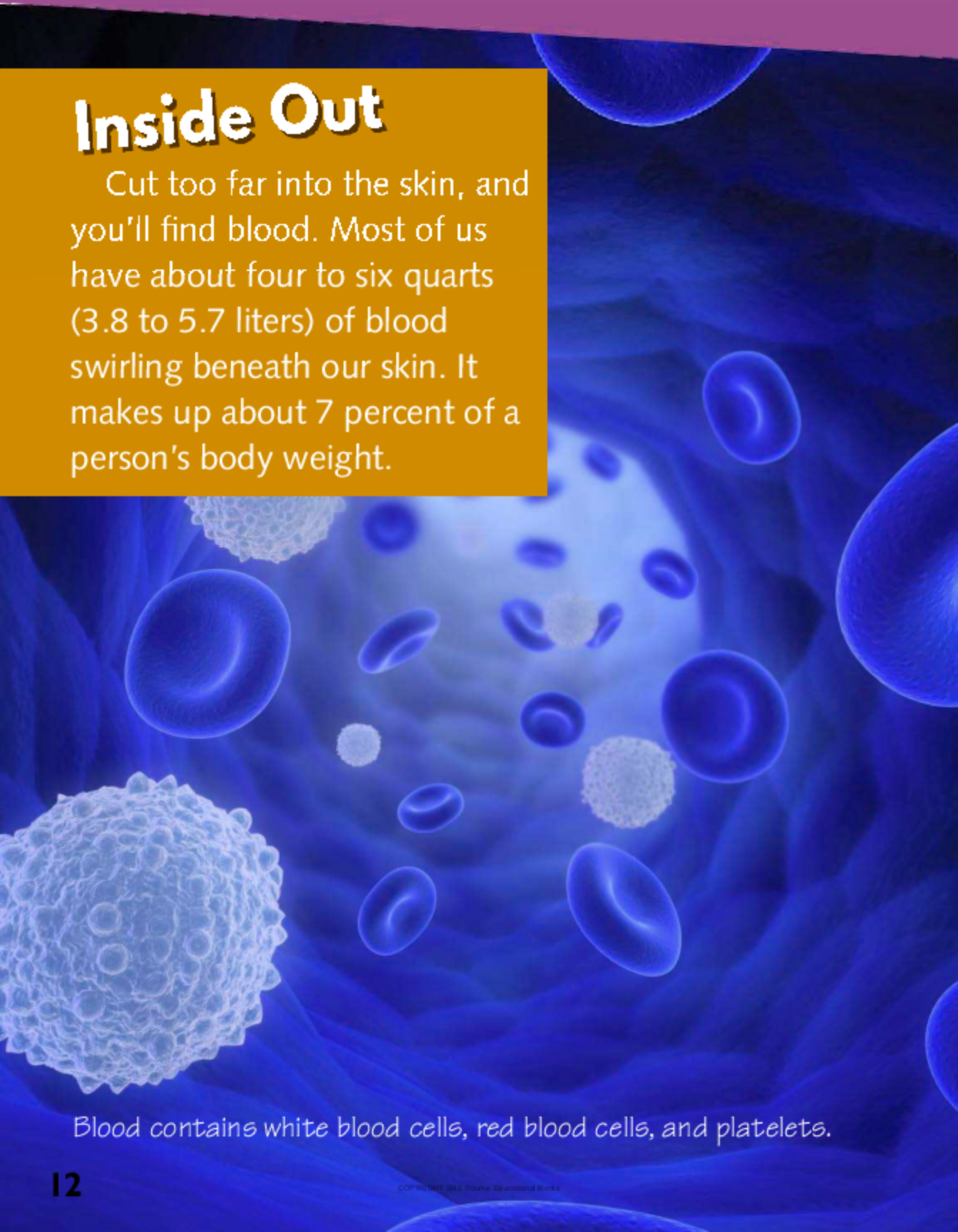
From fish to humans, almost every animal gets itchy. But why? Scientists recently discovered specialized neurons that produce a chemical called Nppb. This chemical triggers the body's itch response.

Did You Know?

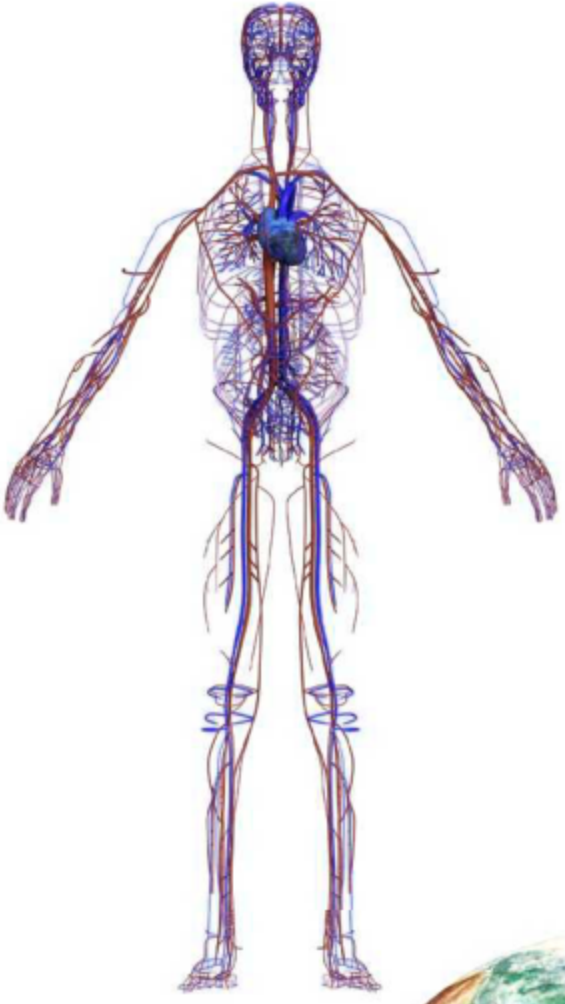
The scientific word for an itch is *pruritus*. According to scientists, the reason scratching an itch makes it feel better is because scratching causes pain! The pain overpowers the itchy feeling temporarily. Research also shows that the cells and circuits that transmit pain and itch are somewhat overlapped.

Inside Out

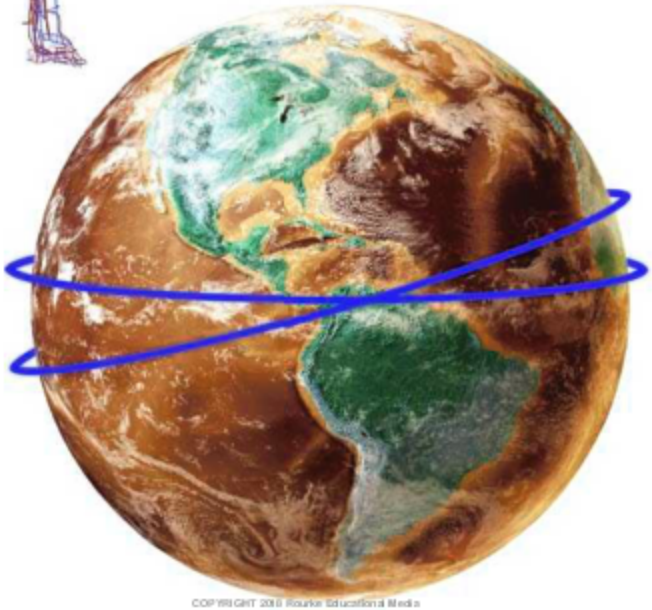
Cut too far into the skin, and you'll find blood. Most of us have about four to six quarts (3.8 to 5.7 liters) of blood swirling beneath our skin. It makes up about 7 percent of a person's body weight.



Blood contains white blood cells, red blood cells, and platelets.



Blood moves things such as oxygen and nutrients around our bodies. It also takes away unwanted waste products. Blood travels in a complex web of tubes called blood vessels. The body has more than 60,000 miles (96,561 kilometers) of blood vessels. That's enough to wrap around the entire planet … twice!



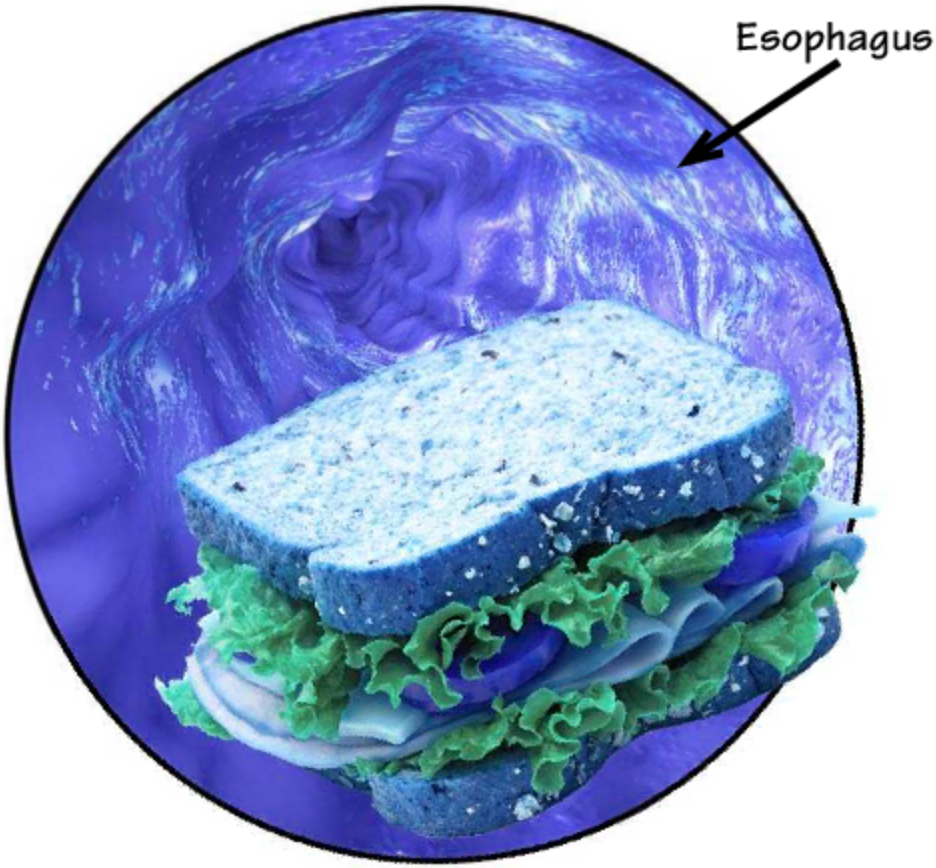
Beneath our skin—and a layer of fat—are our muscles. They make the body move. We have hundreds and hundreds of connected muscles.

Some muscles we can control, like the ones in our arms and legs and butts. (The butt muscle is called the *gluteus maximus*, in case you were wondering.) But other muscles move all by themselves, like the muscles in our hearts and those we use to swallow.

Feeling Down Is Hard Work

You may have heard the old saying, "It takes more muscles to frown than it does to smile!" Science hasn't proven this. Some studies have shown it takes 10 to 12 muscles to smile, and six to 11 muscles to frown. But, since people tend to smile a lot, the smiling muscles are stronger. Frowning takes more effort because those muscles are weaker.

To preserve, grow, and energize our bodies, we need food and water. When you eat, the muscles in your esophagus tighten and relax in a wave-like manner, pushing the food down into your stomach. This is called *peristalsis*.

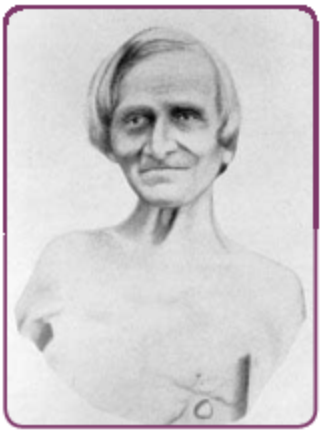


Strange Cravings

In rare instances, our bodies can crave food that isn't actually food, such as hair, detergent, ashes, or plastic. This condition is called *pica*.

Thanks to peristalsis, you could eat while hanging upside down, and the food would still go down to your stomach!

The human body cannot use the big chunks of food we swallow. It needs to break them down into tiny pieces. This process is called digestion. For a long time, digestion was a complete mystery. But then in 1822, a French-Canadian fur trapper named Alexis St. Martin took an accidental shotgun blast to the stomach.

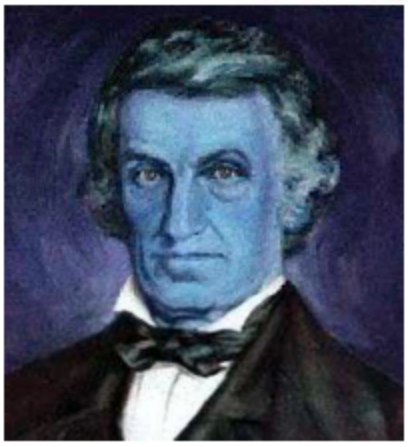


Alexis St. Martin
1794–1880

The Human Stomach

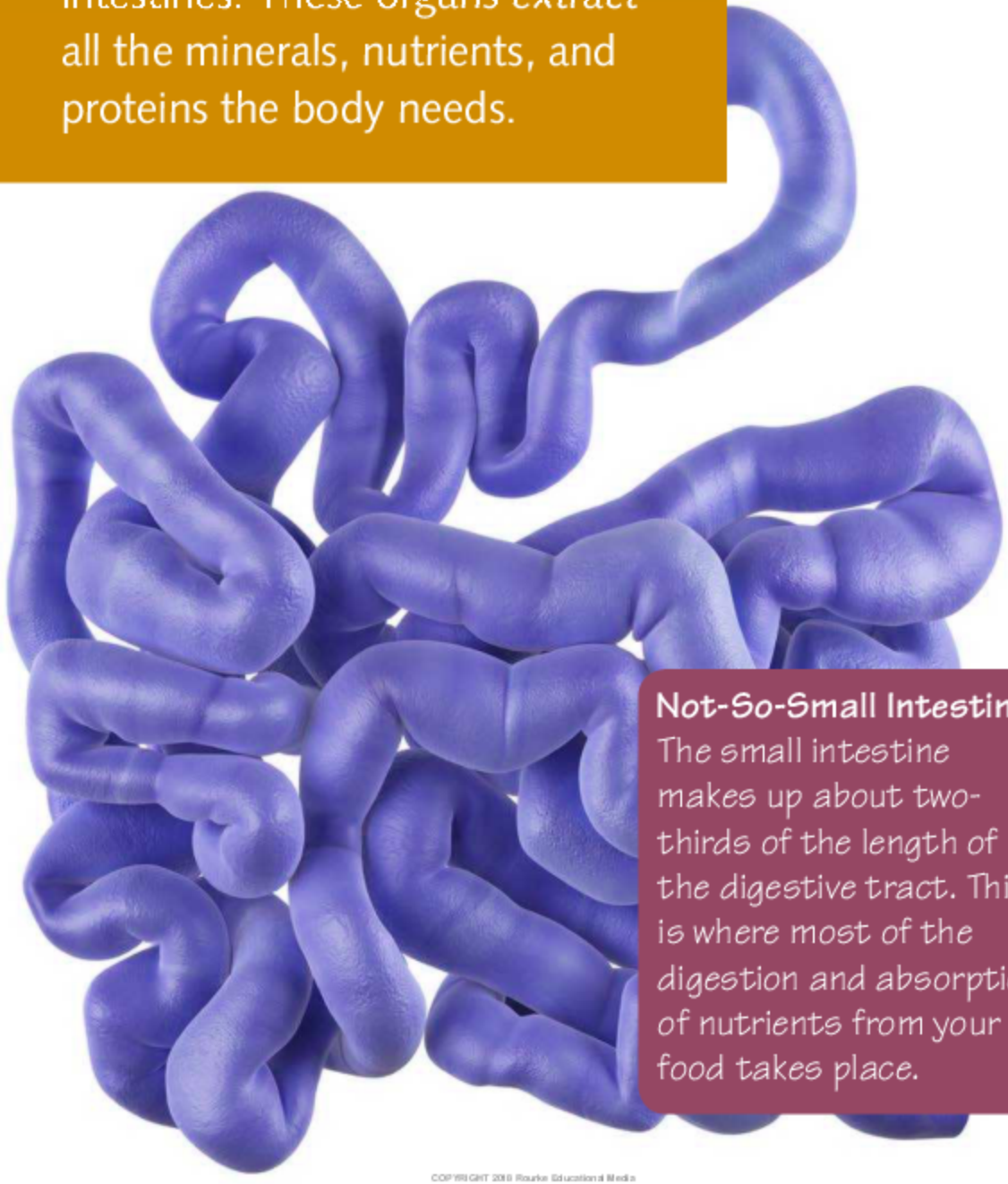
He lived, but the wound never closed all the way. Bad news for Alexis, but good news for his physician, Dr. William Beaumont. Every day for years, Dr. Beaumont looked through the hole and watched how Alexis's body digested food.

Dr. Beaumont observed that acid in the stomach broke down food into little **particles**. And from there, other scientists discovered how the rest of digestion worked.



Dr. Beaumont
1785–1853

After the stomach, food moves through the small and large intestines. These organs extract all the minerals, nutrients, and proteins the body needs.



Not-So-Small Intestine
The small intestine makes up about two-thirds of the length of the digestive tract. This is where most of the digestion and absorption of nutrients from your food takes place.

Waste Disposal

People eat a lot of stuff that the body doesn't need. After about fifteen hours of digestion, whatever has not been absorbed comes out the other end. You are probably familiar with this bodily function!

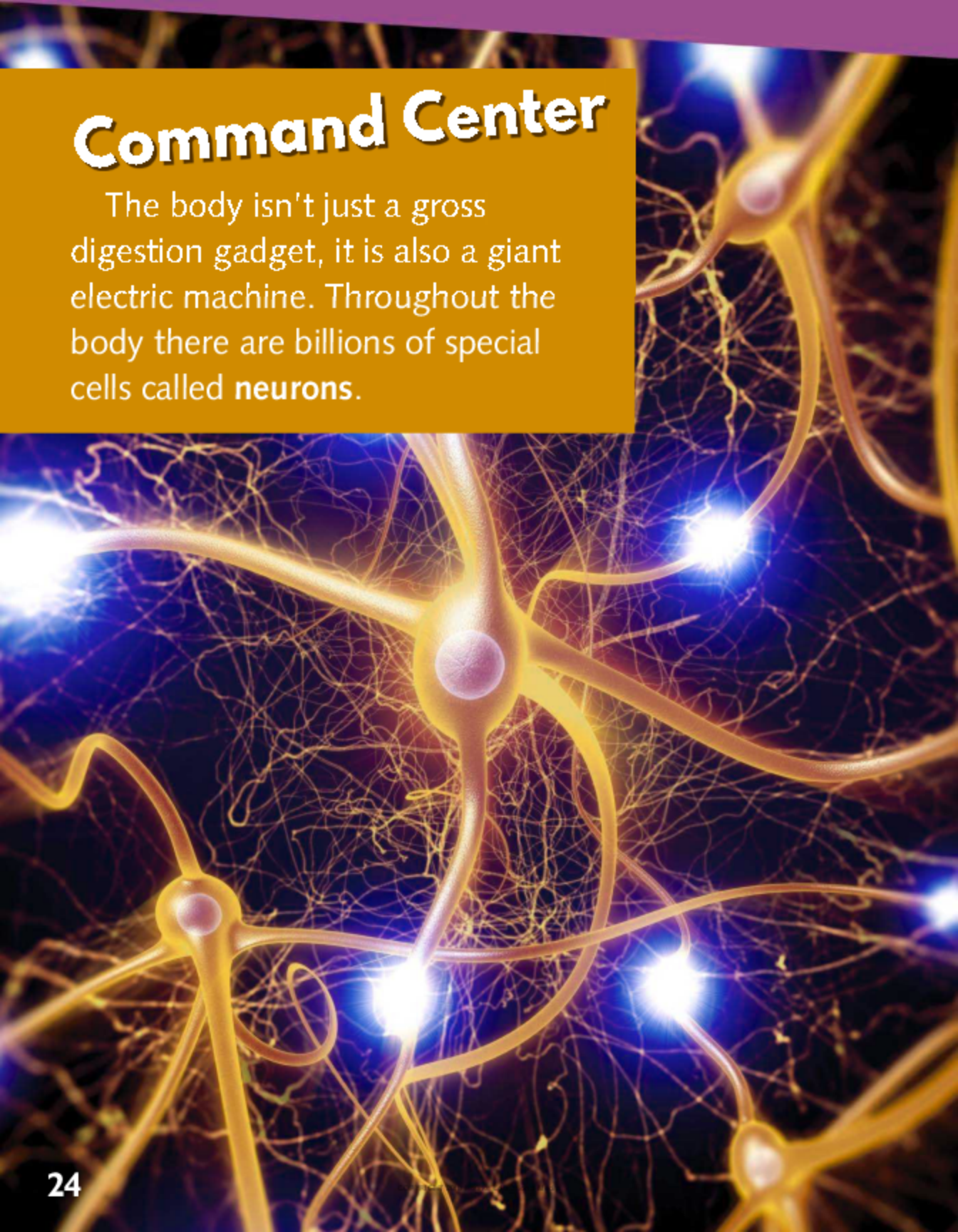
Poop is about 75 percent water. The other 25 percent is indigestible food, dead bacteria, fats, and protein.

The body's many other **systems** also produce a lot of waste. But unlike the digestive system's solid waste, this waste can dissolve into water. The water in our bodies gathers all this waste and flushes it out as urine.

How Many Pools Could You Fill?
During a person's lifetime, their kidneys will turn about a million gallons (3,785,411 liters) of water into pee.

Command Center

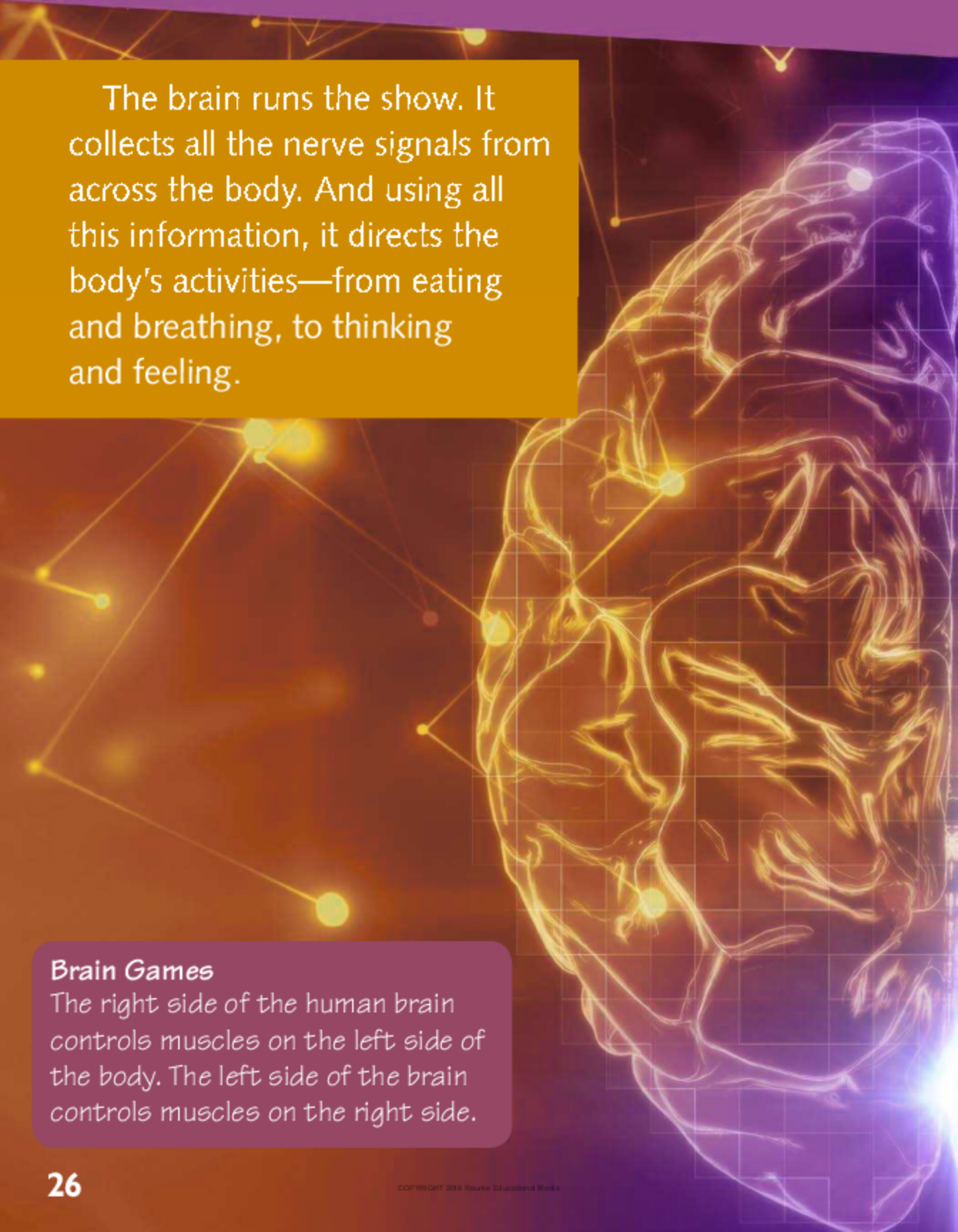
The body isn't just a gross digestion gadget, it is also a giant electric machine. Throughout the body there are billions of special cells called **neurons**.



The neurons beneath our skin can sense things such as, *Ouch, too hot!* and *Brrrrr, I better wear a jacket!*

Whenever a nerve senses something, it sends an electric signal along a highway of neurons and up the spinal cord to central command, also known as the brain.

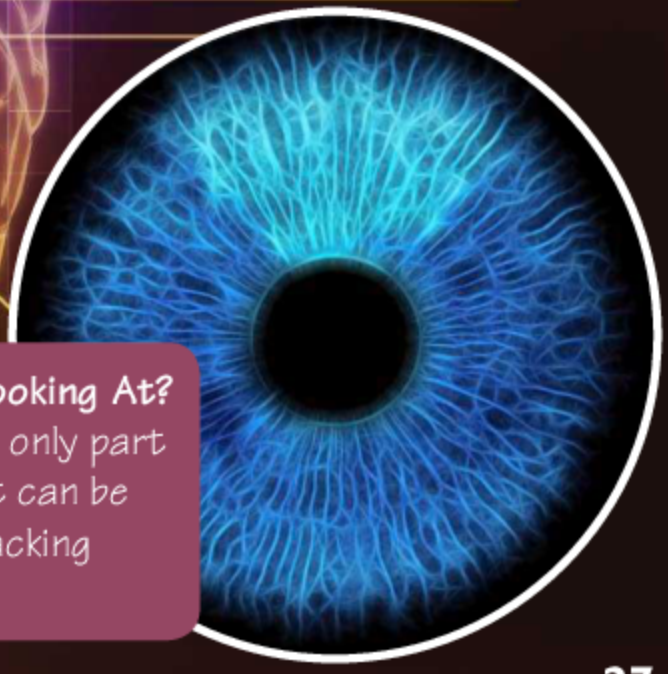
The brain runs the show. It collects all the nerve signals from across the body. And using all this information, it directs the body's activities—from eating and breathing, to thinking and feeling.



Brain Games

The right side of the human brain controls muscles on the left side of the body. The left side of the brain controls muscles on the right side.

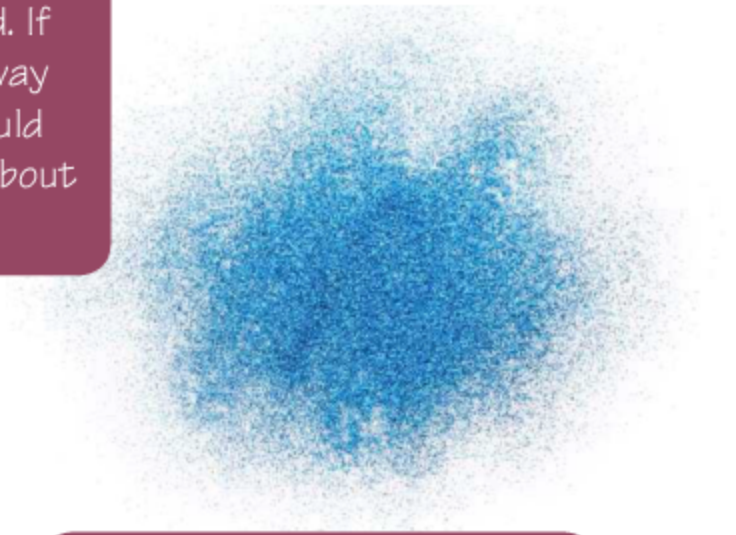
There are about 84 billion neurons in the average brain. And each neuron is connected to hundreds, if not thousands, of other neurons. All these connections create who we are, from our movements to our memories.



What Are You Looking At?
The eyes are the only part of the brain that can be seen without cracking open the skull.

More...Really Weird, True Facts!

Breathing clears carbon dioxide from your blood. If there was a different way to get rid of it, you would only need to breathe about once a minute.

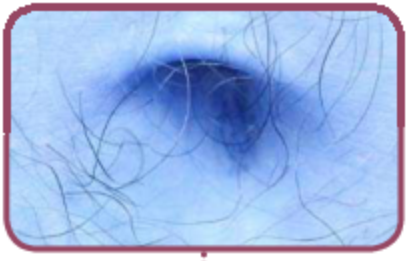


Some people can taste words or hear colors. This condition is called synesthesia. It causes senses to overlap.

The human body contains trace amounts of gold, most of which is in the blood.

The focusing muscles in your eyes move about 100,000 times a day. That's quite a workout!

The human brain can read up to 1,000 words per minute.



Thousands of bacteria form an ecosystem similar to a rainforest in your bellybutton!

For every pound (.45 kilograms) of fat or muscle gained, your body creates seven miles (11 kilometers) of new blood vessels.

Blood travels 12,000 miles (19,312 kilometers) throughout the body every day.

DNA contains the genetic information for people, plants, and animals. And though we may look different, our DNA is quite like other living things. In fact, humans share 60 percent of their DNA with bananas!

Glossary

cells (sels): the smallest units of living matter that can live on its own

keratin (KER-uh-tin): a protein found in dead outer skin, and in horns, hair, feathers, and hooves

neurons (NOOr-ons): specialized cells transmitting nerve implulses

particles (PAHR-ti-kuhls): tiny or very small bits of something

systems (SIS-tuhms): combinations of parts forming a complex whole

Show What You Know

1. Is it possible to eat while hanging upside down?
2. How many neurons does the average brain have?
3. How many days does it take our bodies to make a new layer of skin?
4. Why do we poop and pee?
5. How did Dr. Beaumont learn about digestion?

Websites to Visit

http://kidshealth.org/en/kids/htbw

www.kidsbiology.com

http://easyscienceforkids.com/all-about-your-amazing-brain

About the Author

Theo Baker is the author of several books for kids. He lives in Los Angeles with his wife and two daughters. When he isn't writing, he enjoys taking apart electronics, making weird noises with synthesizers, and programming video games. He encourages you to follow your passions and to try hard things, because most things that seem hard are actually pretty easy.

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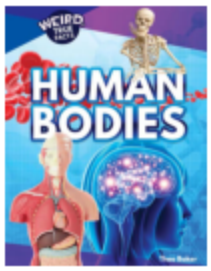

Human Bodies

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This book introduces readers to interesting facts about the human body and its processes.

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