



## CHAPTER 23

# Your Body Has Many Parts That Purify

But now, God has set the members [body parts], each one of them, in the body just as He pleased. (1 Corinthians 12:18)

**T**here are many organs and parts of your body that work to purify. We have learned about many of these in earlier chapters. But in this chapter, we will be looking at what they do to keep you clean inside. Let's be amazed at the wonderful way God put us together and keeps our bodies pure!

### Large Organs That Purify

Your lungs, liver, intestines, and kidneys are large organs that have several jobs. But the job of purifying takes up a lot of their



This verse says that God put all your body parts inside you! He put them in the right places and gave them their jobs so your whole body would work well. God put this verse in the Bible to show that He has made you a special part of Christ's body—His people!

energy! Let's look at these organs again and review the way they clean you inside.

Hi! I'm Scrub. I **LIKE** to keep things clean! Don't you? Let's review some of the ways God purifies your body.



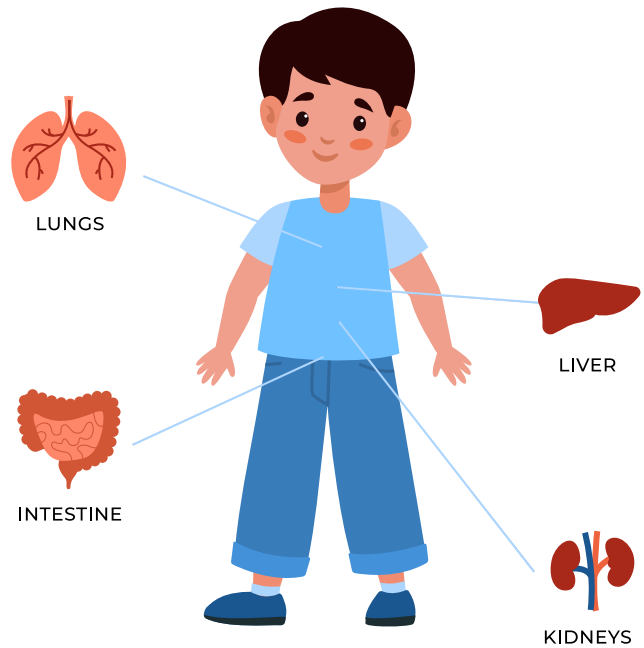
**Lungs:** As you breathe, your lungs bring in oxygen for your body to use. But your lungs also collect waste that your body must get rid of. This waste is the gas we call carbon dioxide. Your blood brings carbon dioxide to your lungs and drops it off. Your lungs blow it out each time you exhale.

If we could collect all the carbon dioxide an adult exhales each day, it would weigh a little over two pounds (1 kg). It's very important that your lungs purify your body by removing carbon dioxide!

**Liver:** Sometimes you might have to take medicine that helps a problem. But then your body needs to get rid of the medicine because it could make you unhealthy if it stayed inside you. Thankfully, your liver is able to take these chemicals out of your blood.

Sometimes we may accidentally eat food that contains harmful chemicals. We may eat the green part of a potato, which has a little poison in it. Or we may accidentally eat spoiled food. Spoiled food may contain chemicals made by the germs that cause mold or rotteness. Thankfully, God made our livers able to remove these chemicals.

Your body makes its own poisons! Your body breaks down the food you



Your lungs, liver, kidneys, and intestines do much of the purifying in your body. But if more than half the cells in these organs stopped working, a person could still live. God is very generous to give you extra!



All toxins are poisons. All poisons are not toxins.

Your liver puts some wastes, like urea, into your blood so your kidneys can remove them from your body. Your liver puts other wastes into bile for your intestines to remove.





## Definitions

**Poison** — a chemical that could harm a living thing.

**Toxin** — a poison that's formed by a living thing. We can say that a poison dart frog makes a poison, or we can say it makes a toxin. We can say gasoline is a poison. We cannot say gasoline is a toxin because it's not made by a living thing.

**Detoxify** (dee-tox-if-eye) — to remove a poison or toxin from somewhere it shouldn't be. You have several organs that detoxify your body.

eat, and your cells use the food. As your body does this, wastes are created. One of these wastes is *ammonia* (uh-moan-yuh). Ammonia is produced when your body breaks down protein. But ammonia is poisonous. Your liver changes ammonia



Chocolate is poisonous to dogs. A dog's liver is different than a human liver. Dog livers can't break down certain chemicals in chocolate quickly enough, so the chocolate will make the dog very sick.



Even though ammonia is poisonous inside our bodies, it's a helpful ingredient in many glass cleaners.

into *urea* (yur-ee-uh) and puts it into your blood. Urea is not poisonous.

**Kidneys:** After certain wastes leave your liver, they enter your blood. The wastes travel with your blood until they arrive at your kidneys. Your kidneys remove these wastes from your blood and make them a part of your urine. Soon the urine travels out of your body.

**Intestines:** During digestion, your digestive tract saves all the things your body needs from food. It puts those good things into your blood. All that's left is waste you can't use. Your intestines help purify your body by removing that waste as stool.

The main waste in urine is urea. Do these two words sound similar to you?





Time to do Activity 67 in the Activity Book!

## Other Parts That Purify

Now let's look at other parts of your body that help keep you pure. These parts are not big organs, but they still do important jobs. We're going to review your lymph, blood, skin, and other body parts to see how they help purify.

**Blood:** Your blood is an important part of keeping you pure. Your blood carries harmful chemicals and wastes away from your cells. It carries this waste to the places that know how to get rid of it.

Your blood collects carbon dioxide waste from cells. Then it takes the carbon dioxide to your lungs so your lungs can get rid of it.

Your blood also travels directly from your small intestine to your liver before it goes to your heart and the rest of your body. God designed it to work this way so unhealthy chemicals you may have eaten can be **detoxified** in your liver before they travel anywhere else.

As your body changes food into energy in your cells, poisonous wastes are left over. Your blood delivers these wastes to your kidneys so they can

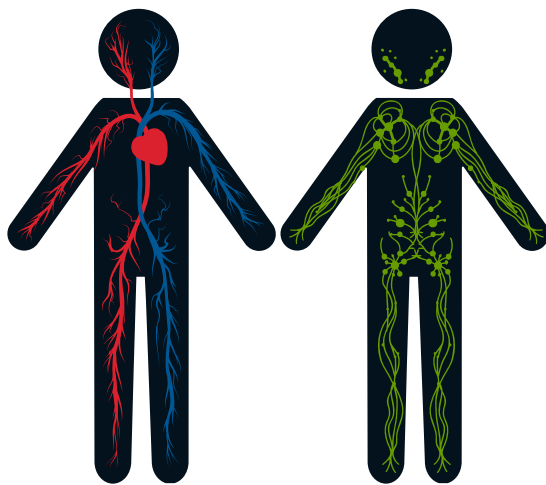


A trash service takes neighborhood trash and gets rid of it at the right place. Your blood also takes waste from your cells and gets rid of it at the right place.

be removed from your blood and sent out of your body in urine.

**Lymph:** Remember, the liquid in your blood is called *plasma*. The liquid surrounding your cells is called *lymph*. These liquids have different names in the two places, but they are the same liquid. This liquid is constantly being traded back and forth between your body cells and your blood. It's traded though the capillary walls.

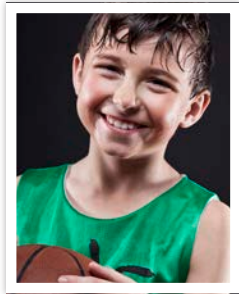
A small amount of your lymph is not traded back into your capillaries. It has the job of collecting certain wastes that your capillaries can't take.



Circulatory and Lymphatic Systems

This lymph collects germs and damaged cells and takes them to your lymph nodes. There, they are destroyed and turned into waste. Then your lymph system empties this waste into your blood. Your blood takes the waste to your liver or kidneys to be removed and sent on its way.

**Sweat glands:** God formed sweat glands on the palms of your hands and soles of your feet when you were four months old inside your mother. They did not start working until soon after you were born.



One of the jobs God gave sweat glands is to remove wastes. Sweat is mostly water, but it also has salt and a small amount of wastes. Your sweat glands help your kidneys by removing a little urea. Your sweat glands also help your lungs by removing a little carbon dioxide from your body. But there are some poisonous chemicals that sweat glands can remove more quickly than the kidneys and lungs can.

**Tears:** Tears contain enzymes that can break down harmful things and wash them out of your eyes. Tears trap small things like dust and dirt that accidentally get in your eyes. Your eyelids can then sweep them away through the tiny tube that leads from the inside corner of your eye into your nose.

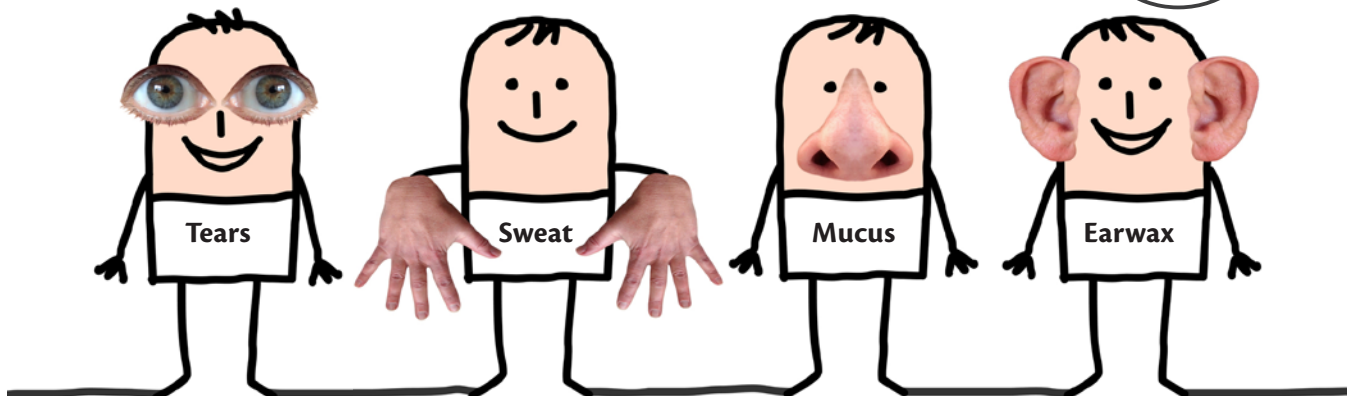
While you sleep, tears keep moving toward the corners of your eyes. Your eyes are drier at night, and you may wake up with dried tears in those corners. Scientists don't have a name for these eye globs or crumbs. Does your family have a name for them?

Your eyes make a small amount of tears normally. But if something irritates your eyes, or if you cry, they make a large amount. In one year, your eyes make about 15-30 gallons (55-110 L) of tears.

**Put my tears into Your bottle;  
Are they not in Your book?  
(Psalm 56:8)**

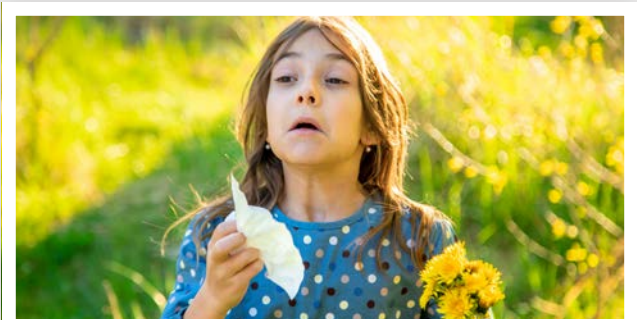


This verse shows us that God keeps track of our troubles. It's as though He has a special bottle for measuring tears!



**Mucus:** Mucus protects many of your body’s openings. It’s thick and sticky. Mucus helps trap dirt, germs, and other things that shouldn’t be inside you. And if something is already in (like germs that have reproduced), mucus helps move it out. You probably notice nose mucus more than mucus from other places. Mucus is also made in your eyes, mouth, urethra, and digestive tract.

**Earwax:** Earwax starts with a mixture of products made by tiny glands in your ear canal. This mixture cleans your outer ear by trapping dust, dirt, and dead skin cells. The



Mucus helps move pollen out of your nose when you sneeze.

movement of your jaw helps earwax move toward your ear canal’s opening, where it can fall out of your ear or be removed.



Time to do Activity 68 in the Activity Book!

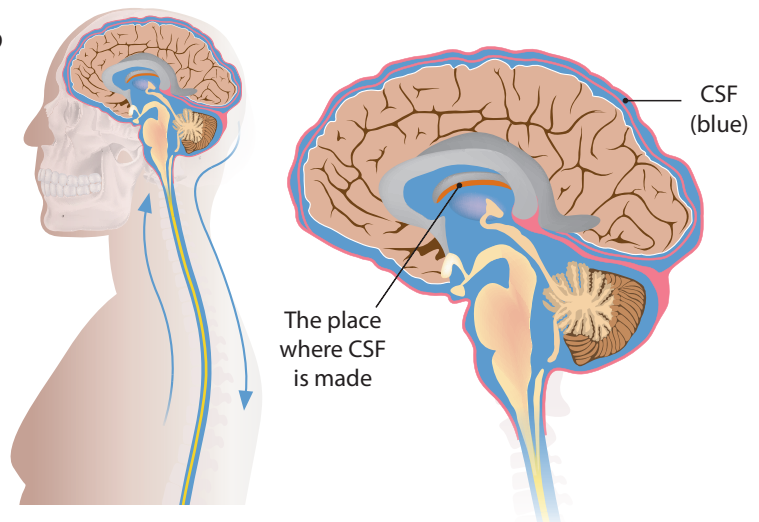
## A New Cleaning Service Has Been Discovered!

Scientists have recently discovered a body system that cleans waste out of your brain! They named it the **glymphatic** (glimf-attic) **system**. The glymphatic system uses a liquid called *cerebral spinal fluid*. We’ll just call that fluid CSF. Your brain and spinal cord are surrounded by CSF.

People used to think that the only job of CSF was to cushion the brain and spinal cord and protect them from bumps. But scientists have recently found that CSF also moves among your brain’s neurons, collecting wastes.

Your glymphatic system has no pump like your circulatory system has. And it doesn’t have vessels with muscles inside like your lymph system has. God designed a different way for CSF to move and purify your brain. Scientists still don’t know everything about it.

Your CSF is made deep within your brain. Then it uses an interesting way to travel among your neurons. Picture one of your arms as a blood vessel in your



brain. Now picture that arm wearing a long sleeve that's big and loose. Your brain's blood vessels are surrounded by tubes that are loose like big sleeves. Just like there would be air inside the big sleeve, there is CSF inside the tubes. And, just as the air can move through the sleeve's cloth, CSF can move through the walls of its tubes very easily.

As the CSF moves out of its "sleeves," it flows among your brain's neurons. It's busy picking up wastes. At the same time, it's delivering nutrients to your neurons. Then the CSF moves into a different sleeve, taking the wastes with it. The wastes will end up being dumped into your lymph system, and your lymph system will get rid of them!

Scientists think CSF flows by the help of the blood that moves in spurts through the vessels sharing its "sleeves." This may be why God put CSF's loose tubes around your brain's blood vessels.

Scientists are pretty sure that your lymphatic system is mostly active when you are sleeping. It seems to shut off when

you are awake. They believe it cleans out more waste during *deep* sleep and when you sleep on your side instead of your back or stomach. Scientists also believe that wastes can be moved out of your brain during exercise.

Not long ago, no one knew about the lymphatic system. But even though we didn't know about it, God has had this wonderful system working secretly and wonderfully, deep in brains, ever since creation!



**Oh, the depth of the riches both of the wisdom and knowledge of God! How unsearchable are His judgments and His ways past finding out! (Romans 11:33)**

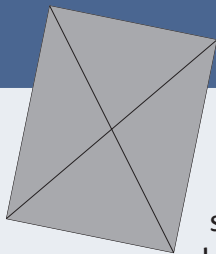


Now you see another reason why sleep is important! Be sure to get a good night's sleep every night.



**Time to do Activity 69 in the Activity Book!**

## Prayer



Dear God, it's nice to have a clean, pure body. We see that our bodies need to be purified in so many ways so we can live. Thank You for thinking of all these wise systems and processes in Your deep wisdom and knowledge! Help us to always be learning about You. Amen.