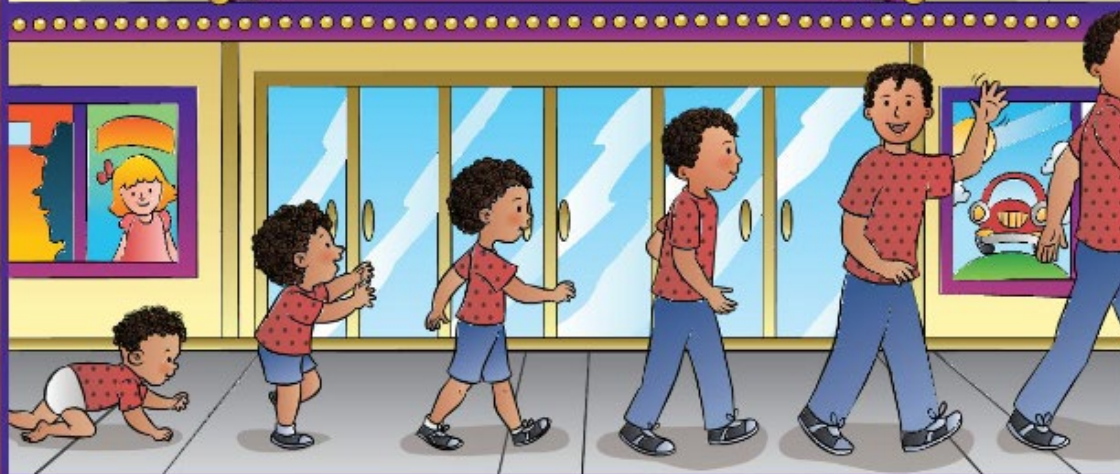


GREAT THE BODY SHOP

Come in and learn about your body!

NEW MODEL
COMING SOON

NEW AND IMPROVED
BIGGER! STRONGER!



Growing Up

All through your life, your body keeps growing and changing. When you were born, for example, you probably weighed about 8 pounds. But by your first birthday, you could have weighed as much as 24 pounds—you tripled your size in just one year!

Of course, growing slows down after that. After all, you don't grow three times your size every year. If you did, you would already be a giant!

But even though you're not growing as fast, your body never stops changing. Pretty soon, your body will start changing to look like an adult's—maybe that's already started to happen.

This time of changing is called **puberty** (pyou-ber-tee). It takes about four to six years for all the changes to happen. Puberty starts because of chemicals in your body called **hormones**. Hormones tell your brain . . . "Okay brain—Listen up! This person isn't a little kid anymore! It's time to start GROWING UP!"

Name: _____

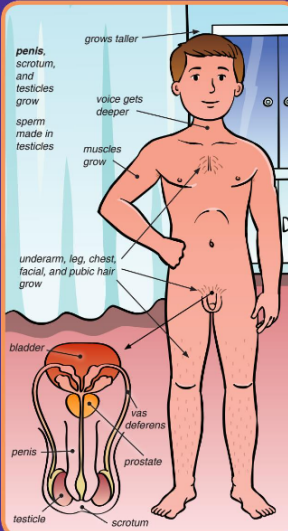


Hormones

Scientists are not sure how many hormones are in everyone's body. But they do know that there is one special hormone that goes to work to make you taller, another that controls your appetite, and another that makes your hair grow.

Males and females both have these hormones, but the levels of hormones are different. That's why some of the changes their bodies go through are so different.

Let's see what some of those changes are.



When a Male Goes Through Puberty

As we said, growing slows down after your first year. But for most males, there's one year when the body suddenly starts to grow really fast all over again. It can be at age 11, or 14, or 15. The age is different for everyone—and this is okay!

During this time, it is likely that a male might notice a few things. For example, the pants that fit last month might be too short the next month. The shirt that fit perfectly might all of a sudden feel tight around the neck and chest. This can be a total bummer if it is a favorite shirt! While this is happening, family members might be commenting, "Where are you putting all that food? Do you have a hollow leg or what?" The body needs more food to keep up with all of the changes that are happening. Hormones are telling the male's brain to make him taller, stronger and hungrier!

Most males will also notice other changes too. Body hair starts to grow on the arms, legs, and chest. A couple of years later, his voice will get deeper; and by the time a male is 17 or 18 he may have enough hair on his face to shave once in a while. It is likely that he will start to make these changes about the same age as his father did. Physical traits and the start of puberty are controlled by his genes.

Males Should Know That . . .

Some males grow a lot of hair on their chests, arms, and legs, and some don't. If your father has a lot of hair, you probably will too.

When your voice starts to change, it may sometimes crack. That is, it might suddenly change from high to low. Don't be embarrassed—it happens to most males.

When a male reaches puberty, his body begins to make millions and millions of tiny sperm in his **testicles**, which are inside the **scrotum** (see diagram). Sperm are a male's reproductive cells. If one of these sperm comes in contact with a female's egg, the egg becomes fertilized.

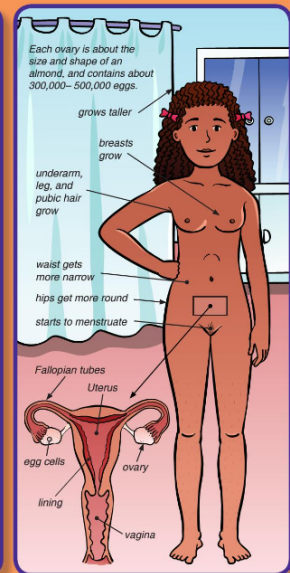
When a Female Goes Through Puberty

Most females start to go through puberty a year or two before males. While there is no exact age, many females start puberty between 8 and 13 years of age.

Just like males, a female will suddenly start to grow taller and her body will begin to change shape: weight and height may increase, and her hips may get wider as well. Her breasts will start to become a little bigger too. And, like males, females will start to grow hair under their arms, on their legs, and between their legs.

Sometime after these changes start, a female will get a **menstrual period**. Here's what happens:

- Females are born with two **ovaries** inside of their bodies, in the lower belly. The ovaries contain tiny **eggs** (see diagram). Eggs are a female's reproductive cells. Once a female starts to go through puberty, one ovary will send one or more eggs to the **uterus** every month.
- The uterus is the organ in a female's body where a baby would grow. It is inside the body below the belly button (see diagram). Now, the egg will stop and stay in the uterus only if the egg is fertilized. To become fertilized, the egg has to combine with a sperm.
- Just before the ovaries send out that egg(s), the uterus is getting ready for the egg(s) by making a thick lining full of the blood needed to feed it. But if the egg(s) is not fertilized, it won't stay in the uterus, and the lining won't be needed at all. So what happens? The lining simply falls away and the waste blood comes out little by little through the **vagina** (see diagram).
- The bleeding is called the **menstrual period** ("period" for short) and it usually lasts for a few days. Even though the menstrual period may seem like a lot of bleeding, it's really only a few tablespoonsful of blood every month.



Females Should Know That . . .

You may get your period once or twice, and then it may stop for a while. This is perfectly normal. Sometimes it takes a while for your body to get in the habit of sending out an egg every month.

Once ovulation begins (where the egg leaves the ovary and waits in the Fallopian tube), it means you can get **pregnant**. It doesn't mean, of course, that you should. You have many more years of growing up to do first.

Most females feel a little different just before or during their periods. That's how they know that it is coming. Some have aches, or cramps, in the lower belly. Others might have back aches or say that their breasts feel sore. For most females, these problems are no big deal. They can still ride bikes or go swimming or run around like they always do. However, there are a few females who have very bad cramps. They should talk to their doctors about the problem.

page 2

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page 3

The Puzzler's Challenge

The Puzzler wants to see how grown up you are! Circle the right answer. (Answers are on page 7)

- The years that your body changes to become more adult-like are called _____.
acne puberty hormones
- The chemicals that tell your body to grow are:
hormones ovaries sperm
- Females typically start to change _____.
males do.
later than earlier than at the same time that
- Once a male is old enough, his body will make millions of _____.
hormones pimples sperm
- Once a female is old enough, she will have one of these every month:
ovary menstrual period hormone
- When an egg comes out of a female's ovary, it will go to her _____.
stomach uterus Fallopian tube
- Preteens need to take _____ baths or showers than children do.
fewer more the same number of
- Pimples are caused by _____.
oil in your skin junk food baby fat

Keeping Clean

When you were little, you needed to take a bath only once in a while, or if you got really dirty. Once you reach puberty, you'll find that your body starts producing different smells. You may want to change your hygiene routines. Regular baths or showers will help.

Hormones, the chemicals that make you grow and change, also make you sweat more and direct your skin to make more oil. It's this extra sweat and oil that you'll want to wash off when you shower. Bathing also cuts down the bacteria that cause body odor.

You may want to wash your hair more often too. Shampoo, soap, and deodorants are all hygiene products you need to think about.



The Pimple Problem

There's one part of puberty that's no fun at all, and that's pimples (zits).

Pimples pop up because your skin is making more oil than when you were a little kid. When the oil gets trapped under your skin, it creates a pimple.

Some kids are fortunate and don't get many pimples. Some aren't as fortunate, and get a lot of pimples, or acne. Ask your parents if they had acne when they were younger. Your skin will probably be like theirs. Pimples are usually more of a problem for males. That's because males have more of the hormone that causes them.

If you do get pimples, there are special soaps and creams that help dry them up. It will also help if you keep your hair away from your face, and keep your face and hair clean. But just remember that pimples aren't your fault—some kids just have more oil in their skin than other kids have.

Pimples are a real pain, but the good news is that they will likely get better in a few years, or sooner.

Don't Pop That Pimple!

Has anyone ever told you that the best way to get rid of a pimple is to pop it? It is a common myth. It is so common, that there are how-to videos on the Internet! The fact is, popping a pimple is a bad idea. Here are 5 reasons to never pop a pimple.

- Popping a pimple usually inflames your skin, making the area look worse.
- It can also cause additional acne, by getting bacteria from the original pimple into your surrounding pores.
- You will probably end up with a scar, which can take longer to heal than a pimple.
- What is worse than a scar? A permanent scar reminding you of every place you have ever had a pimple.
- When you pop a pimple you leave an open wound. If bacteria gets into the wound, you could end up with a nasty skin infection.

So next time you have a pimple, just reach for the acne cream. You will be better off, and that is a fact!



Don't Sweat It!

A lot of preteens worry that they sweat too much. It's true that the sweat glands may work overtime during puberty. Sweating is also worse when a person is under stress, and puberty can be a time of stress. The good news is that the sweat glands will learn to regulate themselves. In the meantime, taking regular showers or baths and using a deodorant will help.



My Hygiene Routine

What routine do you follow to keep your body clean and healthy?

List your top 5 hygiene practices here.

- _____
- _____
- _____
- _____
- _____

Maturity is Part of Growing Up

We have spent a lot of time talking about our great bodies, and the changes that happen between puberty and adulthood. This period of emotional and physical growth is called adolescence, and everyone goes through it differently. During this time, you may begin to have new emotions and feel shy about yourself and your growing body. Maybe you feel you don't look as good as your friends do, or that your body is not changing at the same rate. These are common concerns. Adolescence is a time to learn more about your emotions, your values, and how to be more responsible for yourself. This is all part of the process of becoming mature (having more adult-like characteristics).

Becoming mature also means making more healthful decisions. This can be difficult, especially if you feel negative pressure from your peers to do things that are

risky or go against your personal values. Being mature means handling these situations responsibly by using refusal skills and assertive communication. Sometimes you have to get help from adults and other resources, and that is okay. Knowing when and how to get help is an important skill as well.

Maturity also means having an open mind and willingness to learn about others and the world around you. A mature person treats all people with dignity and respect, follows rules and laws, and takes responsibility for their actions.

Growing up is a lifelong process. We all make mistakes, but learning from them and making better choices the next time is a sign that you are maturing too!



page 4

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page 5

Bullying is Bad News

Being a kid can be great and a lot of fun, but it can also be tough. What is the hardest part of being a kid for you? Some kids say it is tough having so many new responsibilities and expectations at school and at home. For others, they say it is the way that some kids treat them at school and on the bus that is the toughest. No one likes to be teased, called names, pushed around, embarrassed, or made to feel like they do not belong.

Even though puberty is a normal part of growing up, all kids have different experiences: some may start puberty before others and some start later. Sometimes kids notice their feet grow first, or their hands, legs, or some other body part. This process can feel awkward, but it is important to remember that however you go through puberty is perfectly fine.

Puberty is also a time when some people use these physical differences, and/or other differences such as how someone dresses or expresses themselves, to repeatedly make fun of, tease or harass others. This bullying behavior can happen face-to-face or behind one's back through rumors, messages, posts, or pics. How would you feel if this was happening to you? Bullying behavior can make the person being bullied feel lonely, sad, and anxious.



Bullying is unwanted, aggressive behavior that is often repeated. Bullying can be physical (hitting and punching), social (spreading rumors or excluding people), or verbal (teasing and threatening). Bullying also occurs online, like sending or sharing pictures, posts, or messages. This is called cyberbullying. All bullying, no matter what type, is harmful to everyone involved.

Part of growing up is having respect for other people, even when their beliefs, values, attitudes and/or mannerisms are different from yours. Respect is shown through words and actions. If you witness bullying behavior during puberty and beyond, you can show respect for others by being an upstander and an ally (a supportive friend). Upstanders and allies do not pretend that they are not seeing or hearing about the bullying behavior, they stand up to it.

They are courageous, speak out against bullying, and support the person who is being bullied. Sometimes the best option is to ask for help from a trusted adult and keep asking until someone takes action. This is another way to be an upstander.

Be courageous and help make your school a great place to be a kid—take a stand against bullying and be an upstander and ally!

What Do You Think?

Different people have different ideas about what males and females can and cannot do. What do you think? Use the following code on the left to mark your answers on the right two columns:

Okay for males to do—M	crying when upset _____	becoming an engineer _____
Okay for females to do—F	kissing parents _____	baby-sitting _____
Okay for both to do—MF	playing computer games _____	taking dancing lessons _____
	growing hair long _____	playing baseball _____
	wearing a bracelet _____	fixing the tire on a bike _____
	wearing an earring _____	liking nice clothes _____

What influences us to believe we need to act a certain way, dress a certain way, like certain things, and/or select a specific career path?

Ask the Expert

Dear Expert,

In school we learned about hormones but I'm still not sure where hormones come from and what they do to our bodies. Can you tell me? — Maria, grade 5

Dear Maria,

These are excellent questions. Hormones are produced by a group of glands known as your endocrine system. These include the hypothalamus, pituitary, thyroid, parathyroids, adrenals, pineal body, ovaries and testes. Your pancreas is what we call a glandular organ, and it also produces hormones. I like to think of glands as captains, and hormones as tiny chemical messengers, sent to boss around your different body systems. Your hormones tell your metabolism to work faster, your body to grow taller—they can even affect your stress level! We often associate hormones with puberty, because specific growth and development hormones are released at this time. However, you have always had hormones and you always will! I hope this answers your questions.

Your Friendly Expert

If you have a question for the Expert, ask your teacher to send a letter to P.O. Box 7294 Wilton, CT 06897 or email AskTheExpert@TheGreatBodyShop.net. Be sure your first name, grade, school, and school address are included.

Peer Pressure

Do you remember when some older kids in Tito's building tried to convince him to drink beer? How about the time Betty was riding her bike home from school and some eighth graders dared her to play "chicken"? These are both examples of peer pressure.

Peer pressure occurs whenever kids around your age try to influence you to do something that you wouldn't do otherwise. During middle school and high school, many kids feel pressured to do what their friends are doing, even if they know it is unhealthy or unsafe. It can be tempting to drink alcohol or smoke cigarettes, e-cigarettes, or marijuana in order to fit in.

It is important to remember that alcohol, tobacco, nicotine, and marijuana are all drugs and not safe for your growing body! Even e-cigarettes, which are advertised as a "safe, tobacco-free alternative to traditional cigarettes," contain nicotine and other chemicals that are unhealthy and dangerous for developing brains. Also, these drugs are addictive, which means that your body can get used to (dependent upon) them easily. Starting an unhealthy habit now is a sure way to cause you a lot of problems when you're older. Protect your body by standing up to peer pressure. Better yet, use positive peer pressure to help your friends say "no" to drugs as well!

Word Wise

puberty (pyou-ber-tee)—the 4 to 6 years between childhood and adulthood when the body develops and matures

hormones—chemicals that control growth and appetite, and that start the changes in one's body associated with puberty

eggs—a woman's reproductive cells, located in her ovaries

ovaries (o-vuh-reez)—the two organs in a female's body that contain eggs

uterus—the organ in a female's body where a baby could grow

menstrual (men-strool)
period—the monthly bleeding that a female has

once she goes into puberty

vagina (vuh-jih-nuh)—the opening in a female through which her menstrual blood comes out

sperm—the reproductive cells produced by a man in his testes

testicles—the two organs under a male's penis where sperm is made

pregnant—when a fertilized egg implants in the uterus and starts to grow

penis—the male genital organ which includes a tube (urethra) inside that allows body fluids, such as urine, to leave the body

scrotum—a sac like pouch of skin that holds the testicles just below the penis

Answers to "The Puzzler's Challenge":





Growing Up

This month in THE GREAT BODY SHOP, your child studied growing up. The Student Issue covers the physical changes that happen to the body during puberty. We urge you to reinforce the material by discussing it with your child, if you have not already done so.

Lesson 1: Hormones and Your Body

Lesson 2: Puberty: Growing and Changing

Lesson 3: Hygiene and You—Keeping Clean

Lesson 4: Growing Up with a Healthy Attitude

Talking About Puberty

With this Student Issue in hand, ask your child if there was any material that he or she did not understand. Don't wait for your child to introduce the subject . . . it might never happen.

Here are some suggestions to help ease any embarrassment or discomfort while talking about puberty:

- If you are uncomfortable with the subject, say so. Admitting your own discomfort will make your child feel easier. You might tell your child, "I know that talking about this is a little embarrassing. It's embarrassing for me too. But even though it's a little uncomfortable, we should talk because this is so important."
- Try talking while you are both doing something together: driving on your way to school, taking a walk, fixing dinner, etc.
- The goal of your discussion should be to create an atmosphere in which your child feels free to ask questions. It's OK if you don't know the answer to every question. You can look up the answer together.

Parent to Child

Your child should know that, to some degree, his or her experience with puberty will be similar to yours. Relating a humorous story about your own growing-up years can lighten the discussion.

While it is natural for children to wish to discuss some matters privately with their mothers or a female, or to discuss some things with their fathers or a male, remember you can talk to your child whether you are the same gender or not. Help your child understand the physical and emotional changes that most males and females experience at this time in life. This can

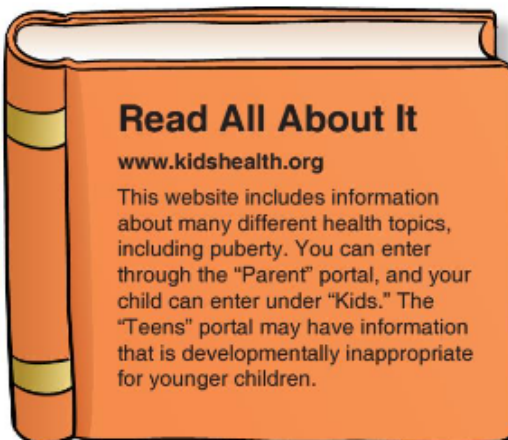
help your child develop respect and understanding for themselves, and their classmates.

Be sure to stress the need for better hygiene during puberty. Encourage your child to bathe regularly, to use a deodorant, and to put on clean clothes each day.

Remind your child that he/she is going through the same growing-up process that every adult in the world has also experienced. Acknowledge that he or she may feel awkward at times, but it is unlikely anyone else notices.

Having one or two reference books at home for more information can be helpful. Consider a visit to the local library, either with your child or alone to select a few to bring back home. There are also some great websites to help parents talk to their children about puberty. Here is one good place to start:

KidsHealth.org.



GREAT THE BODY SHOP

Come in and learn about your body!

Your brain depends on the oxygen that blood brings it!

Blood drops off oxygen to every cell in your body.

Blood carries waste gas (carbon dioxide) away from all of your cells.

Every part of the body depends on blood!

The heart has a left side and a right side. This keeps blood that's rich in oxygen from mixing with blood that has "given" its oxygen to body cells.

Veins carry blood back to the heart.

Arteries carry blood from the heart out to the rest of the body.

Capillaries are the tiniest blood vessels. They bring blood to every cell in the body.

Special cells in your blood attack and kill germs.

Blood carries nutrients and chemicals called hormones to every cell.

About Blood and Disease

Your body's blood system is called your **circulatory system**. It starts with your heart—your body's most important muscle. Your heart pumps blood all over your body, from your brain right down to your toes.

Just why is blood so important? And how is it harmed by disease? Let's go inside and take a closer look.

Name: _____



The Big Squeeze

Before you were even born (and right up until the minute you die) your heart squeezes in and out. It squeezes about 70 to 100 times a minute when you're just sitting still, and a lot more often when you're running around. It pumps all night long while you're sleeping, too. The only rest your heart ever gets is a split second between beats!

Heart Parts

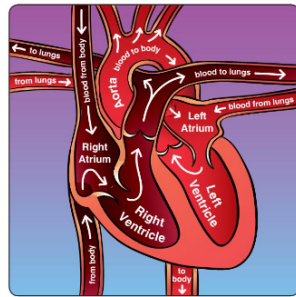
Your heart is actually made up of two pumps that sit side-by-side. Each pump is divided into two parts, an atrium and a ventricle (check out the diagram to the right). There is an atrium and a ventricle on the left side, and an atrium and a ventricle on the right side.

The word atrium means room. Think of the atria as waiting rooms for blood that flows into the heart. The atria pump blood into the ventricles. The ventricles then squeeze to pump the blood out again.

How the Heart Works

The right atrium receives blood from the body and pushes it into the right ventricle.

The right ventricle pushes blood out to the lungs.



The left atrium receives blood from the lungs and pushes it into the left ventricle.

The left ventricle pushes blood out to the rest of the body.

How Blood Gets Around

When the right ventricle squeezes, the blood inside is pushed out into **arteries** that take it to your lungs. Arteries are the **blood vessels** that carry blood away from the heart. When the left ventricle squeezes, the blood inside is pushed out into the aorta (a-or-ta), which is your biggest artery.

From the aorta, blood travels all through you. Let's follow the blood from the left ventricle as it goes through the body.

Many arteries branch out from the aorta. The arteries near the heart are big, but as they go through the body they get thinner and thinner. Some are thinner than the hair on your arm! Arteries that are this thin are called **capillaries**.

There are so many tiny capillaries that almost every cell in your body touches one. That's important, because the blood in the capillaries carries the oxygen, nutrients, and chemicals that these cells need.

Some of the chemicals carried by the blood are called hormones. Hormones control many different body functions, such as growth, appetite, and body temperature.

The oxygen, nutrients, and chemicals pass out of the capillaries and into all of the cells of the body. These cells make up your skin, organs, tissues, and muscles. Every one of them needs nutrients and oxygen to live. The only way cells can get oxygen, nutrients, and chemicals is from your blood.

How Blood Gets Back

Once the **red blood cells** have unloaded all of the oxygen and nutrients they were carrying, they must go back to the heart. But they can't go back the same way they came because arteries only carry blood away from the heart.

Instead, the blood goes from the tiny capillaries into bigger blood vessels called **veins**. Veins lead back to the right side of the heart.

The next time the heart squeezes, this blood will get sent to the lungs. Blood goes into the lungs to get cleaned up. It drops off the carbon dioxide (waste gas) that it picked up from the cells. Your lungs get rid of carbon dioxide when you breathe out. Then, the lungs give the red blood cells more oxygen.

The blood, with its new supply of oxygen, goes into the left atrium of the heart, then down to the left ventricle. Because this blood is now fresh and filled with oxygen, it is important that it doesn't mix with the blood in the right atrium or ventricle.

The next time the left ventricle squeezes, the fresh blood inside will begin its journey all over again.

What Do You Think?

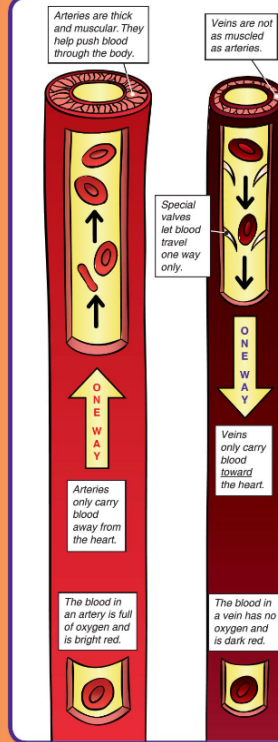
How long do you think it takes your blood to go from your heart, around your body, to your lungs, and back to your heart again? (Answer is on page 8)

1 minute 10 minutes a half hour

Fascinating Facts!

The left side of your heart is a lot stronger than the right.

The reason is logical: The left side has to pump with enough force to get blood traveling through your whole body. The right side just has to get blood to your lungs.

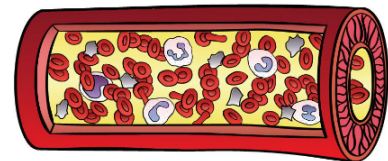


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page 3

What Makes Up Blood?

Can you identify all these parts of the blood? If not, keep reading and you will!



Plasma

Blood is a lot more complicated than it looks. For one thing, about half of the volume of blood is a pale yellow liquid called **plasma**. Plasma carries food and hormones for your body's cells.

Platelets

When you get cut, **platelets** do something quite amazing. They gather around the cut and weave thin, sticky threads over it. After a minute or two, the threads cover the cut so that no more blood can get out. We call this clotting. The scab you get over the cut is just dried-up blood.

Platelets may be tiny, but they have a big job to do. Why do you think platelets are important? What would happen if your blood didn't clot? Why is it important to leave a scab on a cut?

Some people are born with a disease that prevents their blood from clotting. Do you know what this disease is called? (Answer is on page 8)

Red Blood Cells

Red blood cells look a little like a donut with no hole in the middle. They are so tiny that many hundreds would fit into the period at the end of this sentence.

These cells carry oxygen to all of the cells in your body. Then, they pick up carbon dioxide, a waste gas that cells give off as they work. Since carbon dioxide is not needed, it's important for red blood cells to carry it away.

White Blood Cells

White blood cells look like tiny blobs of jelly. There are only one or two of them for every 1,000 red blood cells. All blood cells are made in your bone marrow.

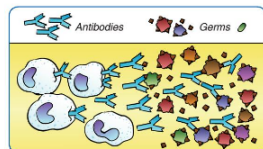
There are several different kinds of white blood cells. Basically, their job is to attack the germs that get in your body every day. Germs are in the air you breathe and the food you eat, and they can wiggle their way inside of a cell. As a matter of fact, your hands are probably loaded with germs right now!

Most germs don't make you sick because your white blood cells destroy them. If you do get sick, it's because the germs were able to multiply before your white blood cells could stop them.

Your Immune System

White blood cells and **antibodies** are key players in your immune system (the part of the blood that keeps germs from making you sick). There are many types of white blood cells and each type has a special job. Here's how the immune system works in a healthy body.

1. A germ sneaks in. Chemicals in your body tell your white blood cells that a germ has gotten inside of you. The white blood cells rush over to the germ.
2. One type of white blood cell makes chemicals called antibodies. Antibodies lock up and inactivate the germs.



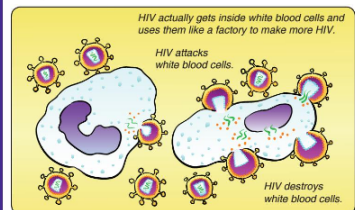
3. Another type of white blood cell eats the germ.
4. The white blood cells keep traveling through your blood until they find another germ. After two or three weeks, many of the white blood cells die. That's no problem though, because your body is always making more.

Diseases and Blood

There are many different kinds of diseases associated with blood. Leukemia, anemia, hepatitis, and **AIDS** (acquired immune deficiency syndrome) are just a few of them. These diseases affect the body in very different ways. Leukemia is a type of cancer that makes abnormal white blood cells in the bone marrow. Anemia is the condition where the body isn't producing enough red blood cells. Hepatitis is caused by different viruses that damage the liver. AIDS is caused by a virus called HIV (human immunodeficiency virus) that spreads through certain body fluids and attacks the body's immune system. Let's take a closer look at HIV and what happens to the body when HIV gets in the blood:

HIV in the Blood

HIV travels in the blood to every corner of the body and in the process, destroys white blood cells.



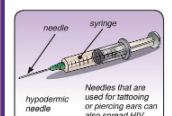
Remember how we were just learning about the immune system and how white blood cells make chemicals called antibodies that go after germs in the body? Some of the antibodies lock up germs so you won't get sick and another type of white blood cell eats the germ. Well, the problem with HIV is that instead of being destroyed by the immune system, it actually destroys the white blood cells and makes more HIV. After a while, without medical intervention, the body will be weakened and much more likely to get other diseases such as tuberculosis or some types of cancer. When the white blood cell count falls below certain levels or the person acquires certain opportunistic illnesses, he/she is said to have AIDS. Currently, there is no cure for AIDS. However, medications referred to as antiretroviral therapy (or ART) can reduce the amount of HIV in an infected person's body. This can slow the progression of the virus, reduce the risk of transmitting HIV to someone else, and help people live healthier and longer lives.

How HIV Spreads

Unlike the virus that causes COVID-19, HIV (the virus that causes AIDS) is not an airborne pathogen and therefore is not easy to catch. You cannot catch the virus if you stand less than six feet apart or from hugging or kissing the cheek of someone with HIV. It is not spread by birds, mosquitoes, bats, dogs, or any other animal. HIV is primarily transmitted from coming into contact with infected body fluids. Blood is one example of a body fluid. Other bloodborne diseases, such as hepatitis B and C, are transmitted this way as well. For these reasons, it is very important to never touch another person's blood. This is why healthcare providers wear medical gloves when taking care of patients.

People who use drugs sometimes use a hypodermic needle to inject certain drugs into their bodies. When they do this, blood gets on the needle and in the syringe. If a person then shares the needle, syringe, or drug equipment with another person who injects drugs, the virus can be transmitted. Sharing needles for any purpose, including tattooing or piercing, is not safe.

If a pregnant mother has HIV, she can pass the virus to her baby during pregnancy, birth, or breastfeeding. If a mom knows that she has HIV and takes her HIV medication as it is prescribed, her chances of passing the virus to her child are reduced.



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page 5

page 2

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page 4

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Pathogens

A microorganism is a plant, bacteria, virus, or animal that is too small to be seen without a microscope. Disease-causing microorganisms are called pathogens.

Some viruses, such as the ones that cause colds, spread through the air. They are called airborne pathogens. Of course, that makes these viruses very easy to catch. After all, you can't stop breathing air!

Other viruses, known as bloodborne pathogens, are found in human blood or body fluid and can cause serious diseases in humans. AIDS, for example, is caused by bloodborne pathogens.

There are other serious diseases contracted this way as well, such as hepatitis B and hepatitis C. These diseases can make you very sick and potentially do permanent damage to your liver.

While there is a vaccination for hepatitis B, there is currently no vaccination for hepatitis C. You can protect yourself from hepatitis B and hepatitis C the same way you protect yourself from HIV. This includes never touching a used needle or any item that has come in contact with another person's blood. While bloodborne pathogens are not as easy to catch as airborne pathogens, it is always important to practice your prevention skills!

COVID-19

This month you learned a lot about germs and the immune system. You learned that germs can be divided into two different groups, bloodborne pathogens and airborne pathogens (see above). You also learned that our bodies fight off germs by creating antibodies (page 4). Now that you have a bit of background, I'd like to talk with you about an illness you have heard a lot about: **COVID-19**.

COVID-19 is an example of a **communicable**, airborne disease. It is caused by a type of coronavirus. Most of us first learned about COVID-19 around mid-January, 2020. It is likely that you stopped going to school and participated in remote learning, while at the same time, some of your family members stopped working, or began working from home. These changes were recommended to prevent the spread of COVID-19 before we had a vaccine. Now that we have a vaccine, some people believe that the threat of COVID-19 is completely over. This isn't entirely true. Like a cold or the flu, there are different variants of the coronavirus that can cause COVID-19, and these variants will

change over time. Even if you are vaccinated, it is still possible to catch COVID-19 in the same way you catch a cold or the flu, by breathing in germ droplets in the air, or by touching something contaminated with the germs and then touching your face. However, a person who has received the COVID-19 vaccination is less likely to get COVID-19, and if they do get it, they are less likely to become very ill from it.

There is something else we all can do to prevent the spread of COVID-19 and other communicable diseases. What might that be? As fifth graders, you know about handwashing, but we still need to talk about its importance. You touch things all day long, including your desk, doors, playground equipment, and the food you eat! That is why you have learned since the time you were really young to wash your hands with soap and water several times a day. This includes before you prepare and/or eat meals or snacks and after you go to the bathroom. The next time you wash your hands, think to yourself, "Am I getting the backs of my hands and between my fingers with soapy water?"

Am I washing for a full twenty seconds and calling it good?"
Be honest with yourself. Remember, keeping your hands clean is one of the most important ways to protect yourself and others from getting sick.



page 6

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Word Wise

circulatory system—the entire blood system including your heart, arteries, veins, and capillaries

atria—"waiting rooms" in the heart that receive blood and then send it to the ventricles

ventricles—the heart's left ventricle pumps blood through the body; the right ventricle pumps to the lungs

blood vessels—any tube that carries blood

arteries—blood vessels that carry blood away from your heart to the rest of your body

veins—blood vessels that carry blood toward your heart

capillaries—tiny, thin blood vessels that connect arteries and veins and touch just about every cell in your body

platelets—tiny blood cells that weave thin threads over a cut to stop bleeding

COVID-19—a disease caused by the coronavirus

red blood cells—blood cells that carry oxygen to body cells and take away carbon dioxide

plasma—the liquid part of the blood

white blood cells—blood cells that attack and destroy germs

antibodies—the chemicals white blood cells make to help them destroy germs

communicable—contagious: an illness that can spread from person to person

AIDS—acquired immune deficiency syndrome, a disease that destroys the body's immune system; caused by a virus called HIV (human immunodeficiency virus)

Ask the Expert

Dear Expert,

Please tell me what to do so I do not get cancer.
—Connor, grade 5

Dear Connor,

Thank you for writing in with your question. Unfortunately, there is nothing you can do to 100% ensure that you will never get cancer. Cancer occurs when cells in your body reproduce uncontrollably and abnormally, forming hard tumors or flooding your blood stream. There are many different types of cancer, and each type of cancer can be caused by a combination of factors. Some of these factors, like genetics or pollution, are beyond our individual control. However, there are certain lifestyle choices you can make to reduce your risk of getting specific cancers. For example, you are less likely to develop lung cancer if you never smoke and you are less likely to develop skin cancer if you remember to wear sunscreen. It is also helpful to let your doctor know what cancers, if any, run in your family. This will help your doctor determine what types of cancer or pre-cancer screenings you might need when you get older. Finally, sleeping well, eating nutritious foods, exercising, and maintaining a healthy weight can reduce your risk of many diseases, including some types of cancers. Remember—don't forget to play actively every day and have some fun! This will also help keep your body and mind healthy.

Your Friendly Expert

If you have a question for the Expert, ask your teacher to send a letter to P.O. Box 7294 Wilton, CT 06897 or email AskTheExpert@TheGreatBodyshop.net. Be sure your first name, grade, school, and school address are included.

The Puzzler's Challenge

See if you can find 13 words about blood hidden in this block of letters.

A	N	T	I	B	O	D	I	E	S
O	N	I	A	O	X	C	V	T	C
R	A	A	O	C	Y	E	E	A	A
T	T	A	W	L	G	L	I	O	P
A	R	A	P	O	E	L	N	I	I
H	I	G	H	T	N	I	O	P	L
E	U	Q	A	R	T	E	R	Y	L
A	M	L	I	H	E	H	I	V	A
R	P	L	A	S	M	A	I	O	R
T	I	H	A	L	J	M	N	Z	Y

(Answers are on page 8)

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page 7



About Blood and Disease

This month in THE GREAT BODY SHOP, your child studied the circulatory system, the immune system, and how HIV destroys the immune system. The lessons contained in this unit include:

- Lesson 1:** Your Circulatory System
- Lesson 2:** Your Blood and Your Immune System
- Lesson 3:** HIV, Enemy of the Immune System
- Lesson 4:** Helping Hands

Beginning the Discussion

This month your student learned about communicable illnesses, including bloodborne diseases such as HIV/AIDS, hepatitis B and hepatitis C. Your child also learned that different diseases can be transmitted in different ways, and that safety measures should be taken to protect oneself from getting sick. As a parent, you play a vital role in educating your child about health and safety. Below you will find some universal guidelines for disease prevention. While your child has learned about universal precautions already, it is equally important to reinforce this information at home. Please review and discuss these guidelines with your child, as well as any others you feel are important!

Universal Precautions:

- Simple hand hygiene is the best defense against the spread of many germs. Wash your hands regularly with soap and water for at least 20 seconds. Avoid touching your face when your hands are not clean.
- Many illnesses, including COVID-19, are airborne. Respiratory hygiene (covering your mouth when you cough or sneeze) minimizes the chances of infecting others if you are carrying these germs. If you know you are sick with an airborne illness, and you must leave the house, you can help protect yourself and others by wearing a mask.
- Bloodborne diseases, such as HIV/AIDS, can be spread through infected needles, like the kind you see at the doctor's office. If you see a needle, do not touch it! Tell a responsible adult. Do not use sewing needles to pierce ears (or other body parts). If these needles are not disinfected they can also spread disease!
- Bloodborne diseases and STIs (sexually transmitted infections) can be transmitted through the exchange of bodily fluids. Protect yourself by saying "no" to drugs and abstaining from sexual activity.
- Never touch an area where bodily fluids, like blood or vomit, has spilled. Tell an adult so the area can be disinfected with the proper safety equipment.

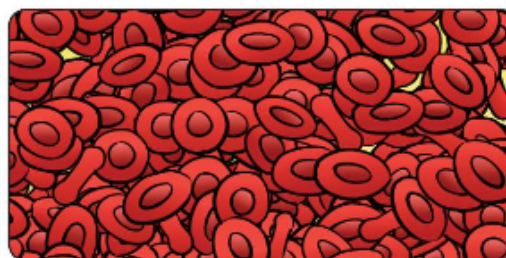
Is Your Child Immunized?

Vaccines are a useful defense against many diseases. They work with the immune system to protect the body from potentially life-threatening and disabling illnesses. Doctors recommend vaccination for 16 different preventable diseases

for children, including measles, mumps, rubella (German measles), varicella (chickenpox), hepatitis B, diphtheria, tetanus, pertussis (whooping cough), Haemophilus influenza type B (Hib), polio, influenza (flu), and pneumococcal disease. See your doctor or health care provider for a recommended immunization schedule. To date, there is no vaccine for HIV.

Fascinating Fact!

Two and a half million is a lot of anything! Yet that's how many red blood cells your body makes in one second!



Read All About It

AIDS & HIV: The Facts for Kids

by Rae Simons

This book gives kids the essential facts about HIV/AIDS in age-appropriate language. It covers how people contract HIV and how it affects the body.

The Heart: Our Circulatory System

by Seymour Simon

Colorful, detailed illustrations and fascinating information will help you understand the circulatory system.

Answers:

What Do You Think?
It takes blood less than one minute to go once around the body.
What makes up blood?
The disease hemophilia prevents blood from clotting.
The Puzzler's Challenge
antibodies; plasma; vein; capillary; oxygen; clot; aorta; platelets; artery; atrium; heart; HIV; cell

