ORGAMITES®

IT'S WHAT'S INSIDE THAT COUNTS

DISCOVER MORE AT ORGAMITES.CA

TOOLKIT 1

MEET YOUR MIGHTY ORGANS

OBJECT LESSONS

OUR PARTNERS

Live Life Give Life · ONASSIS FOUNDATION · Canadian Blood Services (BLOOD PLASMA STEM CELLS ORGANS & TISSUES) · Team Margot · Giving to help others

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NHS Blood and Transplant · ORGAN DONATION SCOTLAND · ESOT

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ALL ABOUT THESE MIGHTY OBJECT LESSONS!

Let's make it stick!
To help kids really appreciate their mighty organs (and remember why and how they work for the rest of time) we've created a series of memorable and fun object lessons (one for each mighty organ). Read on to get inspired, then try them out with the kids in your care.

Two ways to use these object lessons:

1. **Make it an all-day affair.**
You could add these object lessons into the 'Meet Your Mighty Organs' Lesson Presentation (pausing at the end of each mighty organ's designated section to do that particular organ's object lesson). If you do this, the lesson and its related activities could stretch to fill the whole school day—perhaps you'd like to do this once a year in honour of Organ Donation Awareness?

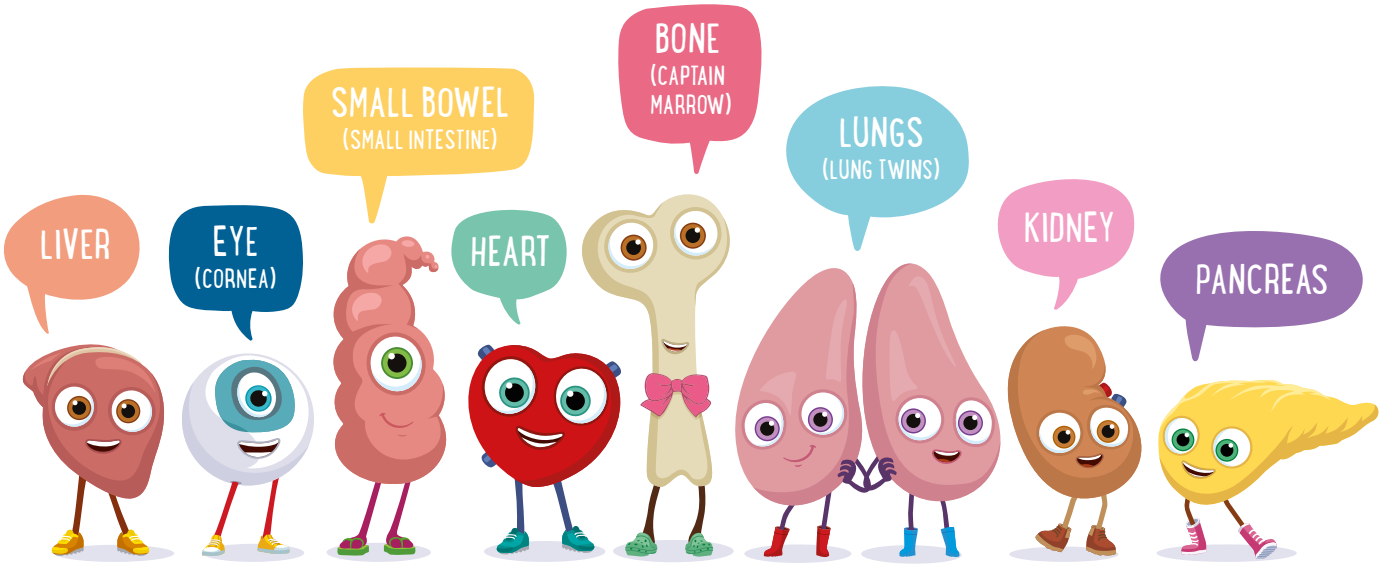
OR

2. **Break it up.**
If you choose to rather focus on just one organ per lesson/day/week, use the slides in our Full Version Lesson Presentation that pertain to that lesson's organ, and then use these organ-specific object lessons to really make the lesson come alive!

WHO ARE THE ORGAMITES?

A team of nine life-saving organs found in each one of us, the Orgamites are known as the 'mighty organs' because they represent the organs most needed for donation and transplantation.

Through an ever-growing range of fun, educational resources (geared toward children aged between 5 and 11), the Orgamites are on a mission to inspire and equip more students, teachers and families everywhere to talk more about organ donation and to take better care of their bodies, each other, and our world.



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MIGHTY CAPTAIN (BONE) MARROW

In this object lesson students will learn more about their bone marrow and stem cells, and why they're so important to their overall health.

Objects needed: No-cook playdough (simply mix together 2 cups plain flour, 1 cup salt, 1 tbs oil, 1 cup water and 2 drops food colouring), wooden skewers, drinking straws, adhesive tape.
Prep time: 10 minutes
Lesson time: 30-45 minutes

STEP 1: STRAWS AND STEM CELLS!

Captain Marrow, the leader of the mighty Orgamites crew, represents the bone marrow and blood stem cells found inside our bones. These are not typical organs like the rest of the Orgamites – but they're every bit as important, and just as needed for donations and transplants...

While our bones are really good at holding us up and keeping us from wobbling around like jelly, did you know that they aren't actually solid like this kebab stick?

In fact, they're more like this straw!

Teacher Tip: Hold up a straw, or pass them around so that each student has at least four to keep for the upcoming activity.

The hollow part in the middle is where the magic happens... this is where life-saving stem cells that make our blood are themselves made.

Red marrow stem cells make red blood cells (to carry oxygen), white blood cells (to defend your body against infections) and platelets (to clot your blood and stop the bleeding when you scrape a knee or cut your finger).

Yellow bone marrow is made mostly of fat and contains stem cells that can become cartilage, fat, or bone cells.

Our stem cells are very special because, unlike other cells, they can divide over and over again to produce new cells. As they divide, they can change into whatever other types of cells the body needs!

Teacher Tip: While you continue, you can either mix the playdough ingredients together while your class watches or make it beforehand and hand it out at this stage.

They're almost like your very own super-cool shape shifters! Just like this playdough—which you can roll and make into any shape or form you like—our stem cells can become almost any cell we need them to become... from blood cells to heart cells, bone cells to brain cells. They're like our very own spare parts factory – right in the very middle of our bones!

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STEP 2: LET'S MAKE LIKE MARROW!

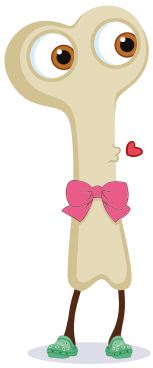
Let's make like your marrow and build something great today!

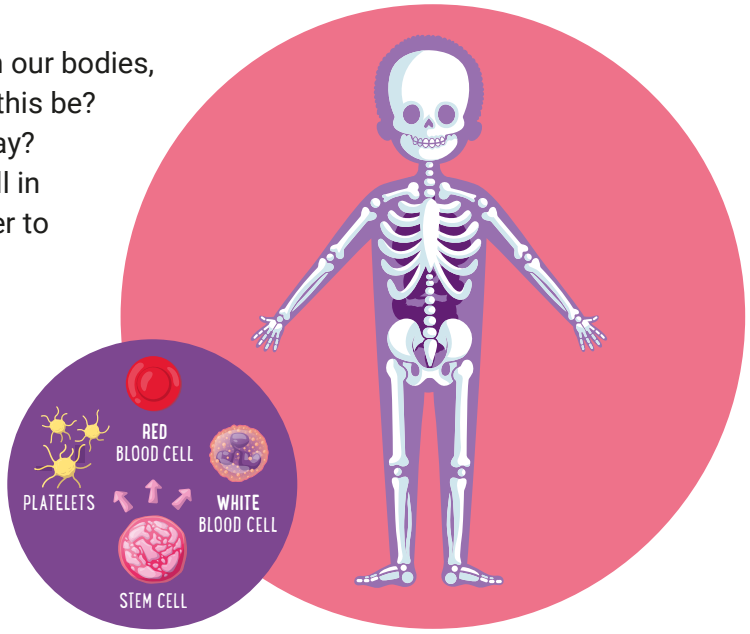
Using your own small ball of playdough and the few kebab sticks and straws you have – can you build something spectacular?

Teacher Tip: Give each student a small ball of playdough and a few wooden skewers and straws. Let them create whatever they would like to with these objects. At the end of the allotted time, let the class have a look at one another's work and draw attention again to the fact that all of these different creations were made from the same basic building blocks – just like our stem cells can morph into a myriad of different cells we need!

MORE MIGHTY CAPTAIN MARROW FACTS

- You can grow up to be a superhero! Healthy grown-ups can donate their stem cells and help someone whose blood needs fixing! A bone marrow transplant can even save the life of someone battling leukemia, lymphoma, or another blood cancer. In fact, over 80 serious diseases can be treated from these super stem cells!
- At birth all your bone marrow is red. It takes 7 years for half of it to be converted to yellow marrow.
- All your bone marrow together weighs about 2.5kg (5.5 pounds)!
- Your marrow makes about 2 to 3 million red blood cells every second, and about 173 to 259 billion red blood cells every day!
- Over 1 million stem cell transplants have been performed so far!
- When we are born, we have about 300 bones in our bodies, but grown-ups are only left with 206. How can this be? Do some of our bones just fall out along the way? Or worse... get stolen? Have no fear: they're still in there - they've just joined forces, fusing together to form bigger, stronger bones!





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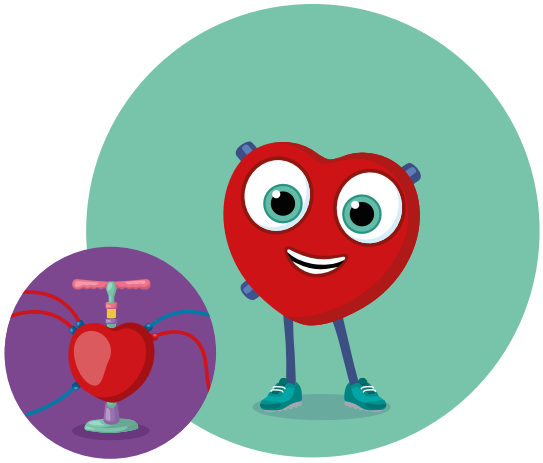
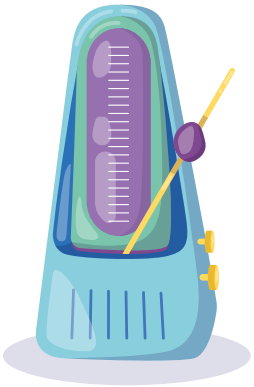
MIGHTY HEART OBJECT LESSON



In this object lesson students will learn more about their hearts and how to count their own pulses.

Objects needed: Drum or metronome, stopwatch to measure pulse, bonus extra: music and sound system.
Prep time: 0 minutes
Lesson time: 20 minutes

STEP 1: CAN YOU HEAR THE BEAT?



Teacher Tip: Play the sound of a metronome, or bring one to class if you can.

Today we're going to learn a bit more about the boss of the beat: our hearts.

Let's start by placing our hands on our hearts. Can you feel its beat? Just like the beat that holds each song together, our heart keeps everything moving and grooving with its steady rhythmic beat.

Here are some amazing facts about that heart that's pumping just beneath your hand...

- Your heart pumps around 7 litres of blood every minute. Over the course of a day, that adds up to over 1,000 litres, and over 100,000 beats!
- Heart pumps oxygenated blood (filled with oxygen and nutrients) through a maze of tubes called arteries. Other tubes - called veins - then bring the deoxygenated blood (filled with CO^2) back to your heart.
- The right side of your heart pumps blood into your lungs. The left side of your heart pumps blood back through your body.
- An adult heart is about the size of 2 hands clasped together. A child's heart is about the size of your fist.
- There are 60,000 miles of blood vessels in your body. That's enough to go around the world twice.
- On average, our hearts will beat almost FOUR BILLION times over the course of our lives!

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STEP 2: NOW LET'S COUNT OUR PULSE!

Your pulse is the average number of times your heart beats per minute.

You can find your pulse by gently pressing one of your thumbs onto the side of your neck, just below your jaw, between your jaw and ear.

Teacher Tip: Wait until students have found their pulses before continuing. Ask them to raise their spare hand when they have found their pulse.

Let's count how many times our hearts beat for 15 seconds, and then, when we multiply that number by 4, we'll be able to work out our average resting pulse rate!

Teacher Tip: Keep a stopwatch to start and end the count after 15 seconds. Clearly communicate when students must start counting, and when they must stop. Ask them to write down their numbers. Perhaps do this a few times to determine an average number. Then, ask your students to work out their pulse rate by multiplying this number by four. Perhaps your class can measure their pulse rate again now, to see how much it has increased.

STEP 3: MOVE TO THE BEAT

Now that everyone has worked out their resting pulse rate, let's get those hearts working a little bit harder!

Teacher Tip: Students can now do some high impact activity (like star jumps or running or perhaps dancing to some energetic music) before measuring their pulses again. This will highlight how our hearts work harder when we exercise.

MORE FUN FACTS ABOUT OUR MIGHTY HEARTS

- Thanks to your heart's home-grown electrical supply, it can carry on beating even when separated from the body! This is really useful in heart transplants – when a healthy heart from a donor is given to someone in desperate need!
- No two hearts are alike! Every heart is as unique in appearance as its owner's face!
- The fairy fly, which is a kind of wasp, has the smallest heart of any living creature. Measuring just 0.1524mm (0.006-inch) long, you'd need a really big microscope to see this tiny heart!
- The blue whale has the largest heart of all. This big-hearted fellow has a heart the size of a Mini car, weighing over 680kg (1,500 pounds)!
- Around the world, someone gets a heart transplant every two hours! Not the same someone obviously – that would be terrible for them!

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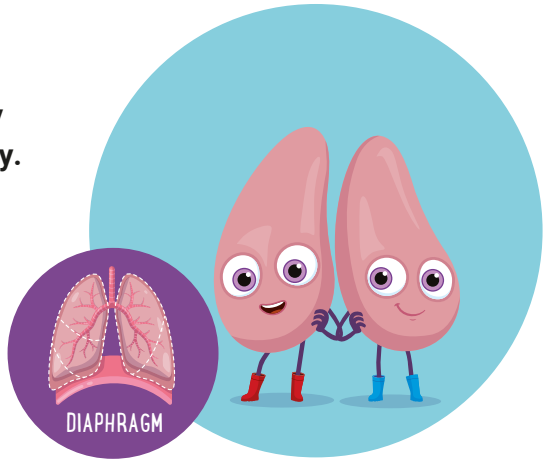
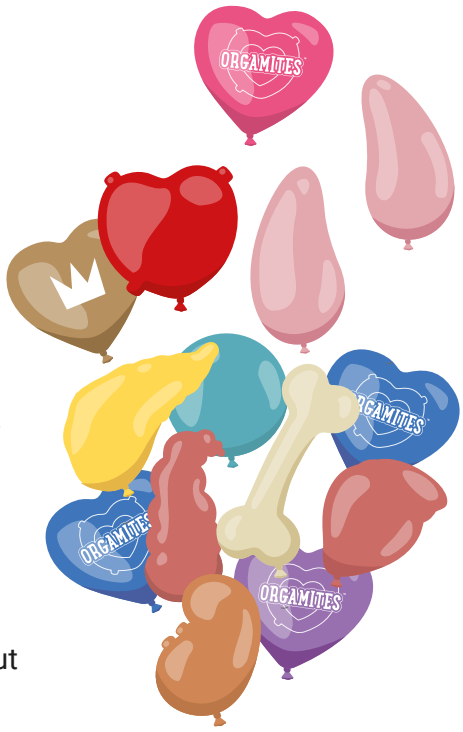
MIGHTY LUNGS OBJECT LESSON



In this object lesson we'll learn more about how our lungs actually work, as well as why it's important to take a few deep breaths daily.

Objects needed: One balloon per student, or per class if you'd like to just do a class-wide demonstration.
Prep time: 0 minutes
Lesson time: 15-20 minutes

STEP 1: BALLOONS!



Teacher Tip: Start by giving each child a balloon.

This session is all about our breathing buddies—that most dynamic of duos—our lungs. So to start, can you use your mighty lungs to blow up a balloon?

Try to blow it up to roughly the same size as one of your actual lungs.

Teacher Tip: While students are doing this, explain that our lungs are a little like spongy balloons – filling up with air every time we breathe in.

Did you know?

The average person breathes in around 11,000 litres of air every day! This is about 915 balloons' worth of air! Can you imagine blowing up that many big balloons? Well, you kind of do – every day! We breathe in and out about 20,000 times a day without even really trying.

STEP 2: BALLOONS IN BALLOONS!

Teacher Tip: Once everybody has blown up and tied their own balloon, blow them away with this crazy fact...

Not only are our lungs a little like balloons – but they have millions of smaller balloons inside each one of them! Can you guess how many smaller balloons filled with air are in each of your lungs?

Each of our lungs contains about 300 million tiny balloon-like structures called alveoli.

When we breathe in (also called inhaling) these alveoli fill with air, and the oxygen in the air is absorbed into our blood stream. When we breathe out (also called exhaling) the carbon dioxide waste in our blood stream is released back through the alveoli and we breathe it back out into the air around us.

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STEP 3: LET'S BREATHE A LITTLE DEEPER

Teacher Tip: After all the excitement of balloons, let's restore some calm by practising some deep breathing exercises.

Did you know that breathing deeply is one of your body's top secret weapons to making you feel better – super fast?

While shallow breathing gets the job of keeping us alive done, taking a few minutes every day to breathe deeper and slower is really good for our bodies, minds and feelings too!

LET'S BREATHE BETTER RIGHT NOW!

1. Start by making sure you're sitting comfortably.
2. Close your eyes.
3. Now slowly breathe out through your mouth for a count of six, getting as much air out of your lungs as possible. As you do, try to relax all the muscles you can – from your face muscles, to your shoulders, right down to your toes.
4. Now inhale, breathing in through your nose for a count of four.
5. Hold your breath for another count of four, then let's breathe out again.

Teacher Tip: Repeat this cycle four times, and we guarantee your class will feel much calmer! After the exercise, ask your students to share how they feel. If they had a positive experience, encourage them to practise deeper breathing whenever they next feel anxious, scared or upset.

Let's end by puffing out your chest and being proud of these superhoeroes inside!

MORE FUN FACTS ABOUT OUR MIGHTY LUNGS

- The average person takes 16 breaths every minute—kids take a little more.
- Horses can only breathe through their nostrils.
- Most snakes only have one functioning lung! Horses can only breathe through their nostrils, and one turtle species can breathe through its bottom! The Fitzroy River turtle has a very cool party trick indeed!

Did you know you can live with just one lung?

It might limit the amount of exercise you can do, but many people around the world live with just one lung. Healthy lungs can also be donated after we die and given to someone who might really need them!

What amazing organs our lungs are.

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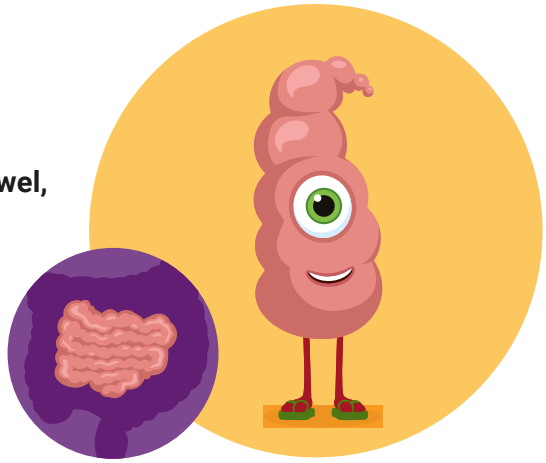
MIGHTY SMALL BOWEL OBJECT LESSON



In this object lesson students will learn more about their small bowel, how it works, and why it's so important to their overall health.

Objects needed: Two clear drinking glasses, some food colouring, a paper towel, and a rope or piece of string measuring 8 metres in length.
Prep time: 5 minutes
Lesson time: 20 minutes

STEP 1: SMALL BOWEL, BIG BENEFITS

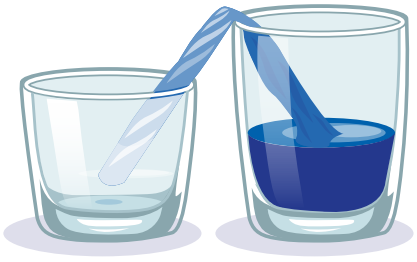
Your small bowel (also known as your small intestine) is not only big on benefits, but surprisingly big in size too! In fact, this mighty organ is one of the longest organs in your body—measuring about four times your height when unfolded!

Teacher Tip: Why not consider measuring this length out with rope? Or, if you don't have rope or a piece of string, simply estimate by walking the approximate length across your classroom (from point A to point B). It really is impactful to see just how long this mighty organ inside each one of us really is!

A long and winding tube that connects your stomach to your large intestine, your small bowel needs to be really long so that it has lots of space and time to absorb all the nutrients from everything you eat and drink. These nutrients then fuel all the cells in your body.

STEP 2: LET'S SEE HOW SMALL BOWEL ACTUALLY WORKS

Teacher Tip: Take a clear glass and fill 1/3 of it with water. Add a few drops of food colouring into the water. Place this glass alongside an empty glass. Now, take a piece of paper towel or blotting paper, and roll it so that it resembles a piece of rope. Explain that the walls of the small bowel are a little like this paper towel. They aren't waterproof; in fact, they're really good at absorbing nutrients as the food we've eaten passes through them. Dip one end of the paper 'rope' into the coloured water, and arch the other end into the empty glass alongside it. The blue liquid should start visibly travelling up the paper.



Your small bowel sucks up (or absorbs) 90% of your body's nutrients along the way! Just like this paper towel, our small bowels are experts at taking the nutrients from our food and transferring them into our bloodstream which then takes them everywhere else they need to go.

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MORE AMAZING FACTS ABOUT SMALL BOWEL

- Although our stomachs and large intestines are also very important, only the small bowel is transplantable. This means that when we no longer need it, once we pass on, we can choose to donate it to someone who's small bowel might be too damaged or diseased to work properly.

- Your gut is home to tens of billions of really tiny organisms called microbes. Together – they make up your very own, totally unique micro biome. Made up of hundreds of different species of bacteria and fungi - there's no other micro biome quite like yours in the world!

- There are 10 times as many microbes as there are cells in your body!

- Your gut feeling is real! Your gut has more neurotransmitters than the brain! These are nerves that affect how you feel and act!

- It usually takes your food about 4 hours to travel from the start of your small bowel to the end. Travel times vary depending on what kind of food you eat!

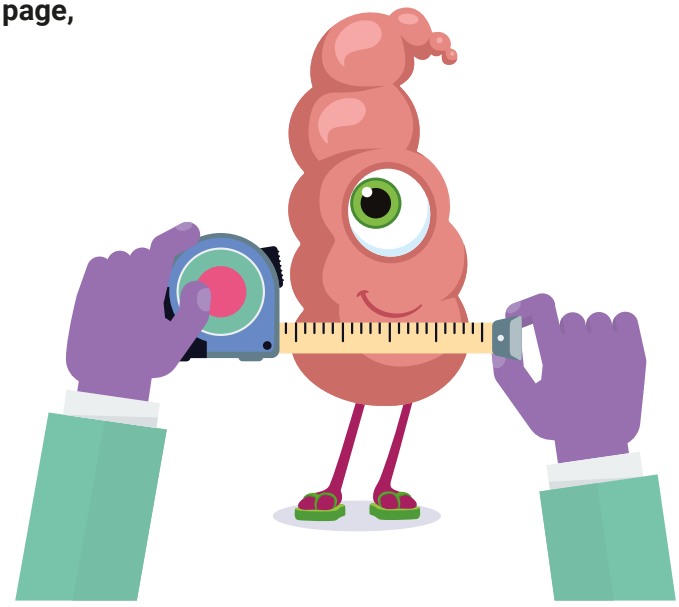
STEP 3: WHEN SMALL BOWEL SMILES, WE DO TOO!

Did you know that your gastrointestinal tract contains most of your serotonin? This is a super-special hormone that your body makes that helps us to feel happy and to sleep well.

We keep our small bowel smiling when we eat healthy food, drink enough water, and get enough rest.

But speaking of smiling, let's show our small bowels how we smile.

Teacher Tip: Get your students to pair with a partner and measure each others' smiles with a tape measure or a piece of string. If time allows, students can draw their own grin on a page, and make a list of what makes them smile.



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MIGHTY PANCREAS OBJECT LESSON

In this object lesson we'll learn where our pancreas is and what it actually does that makes it so mighty. We'll also look at important health issues like diabetes, and learn about the different kinds of sugars out there – and where they hide!

Objects needed: Sugar/sugar cubes, an apple, a carrot and a selection of the food and snack options listed in Step 3. Optional extra: A glass of water and an effervescent tablet to dissolve in it.
Prep time: 10 minutes
Lesson time: 20 minutes

STEP 1: FIND YOUR PANCREAS

Today we're going to put one of our most shy organs under the spotlight... it's our pancreas.

He's the guy that hardly anyone ever thinks about – until something really goes wrong. So long before that, let's start by working out where he lives in us!

Do you know where your pancreas is?

Teacher Tip: Perhaps playfully point at a few possible options – like your head, elbow, or ear before indicating the right spot.

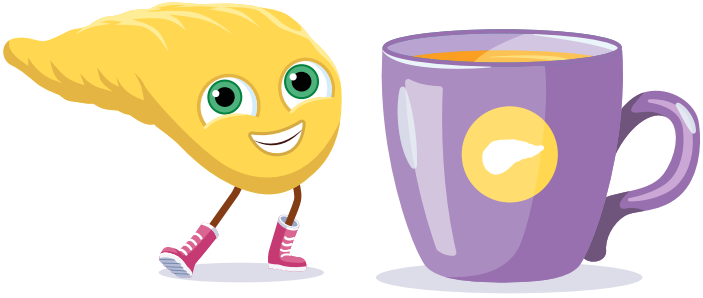
Your pancreas is hiding just behind your stomach and is about the size of a squishy pear.

Although we hardly ever think about this mighty little organ, without this super sneaky superhero producing our essential digestive juices, our blood sugar levels would not be able to stabilise and then we'd have no energy at all. We'd also not be able to properly digest, break down and absorb all the nutrients in the food we eat.

Teacher Tip: If you have an effervescent tablet, pop it into a clear glass of water now. Explain that in the same way this tablet is dissolving in the water, our pancreatic digestive juices help to break down and dissolve the nutrients in the food we eat so that it's easier for our intestines to absorb.

Did you know?

Our pancreas produces about 250 ml (1 cup) of digestive juices every single day!



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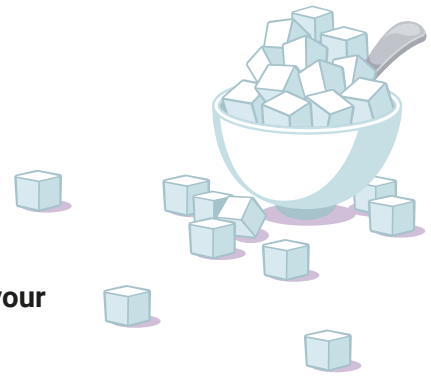
STEP 2: KNOW YOUR SUGARS

To understand the pancreas better, we need to know a bit about the different kinds of sugars it helps to break down.

You see, not all sugars are created equal. There are natural sugars (like those found in fruits, vegetables and dairy products), and then there are artificial sugars that are often added to the foods we eat. These are also known as free sugars (because they're added to certain foods, not just found there in the first place).

Although the first type of sugars are not bad for us, too much of the second kind isn't good at all. In fact, we shouldn't have any more than:



19 grams or five sugar cubes for children aged four to six per day
24 grams or six sugar cubes for children aged seven to ten per day
30 grams or seven sugar cubes for anyone 11 years and over per day

Teacher Tip: If possible, measure these amounts of sugar out in front of your class – so they can visually gain a sense of how much sugar this really is.

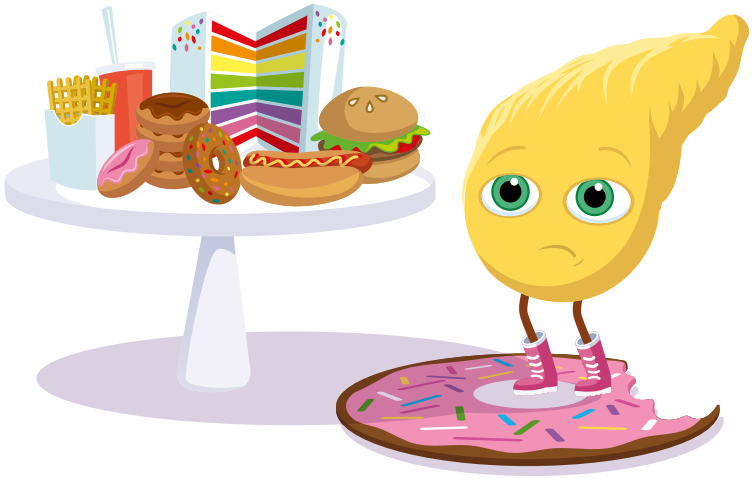
STEP 3: SUPER-SNEAKY SUGAR SMUGGLERS

Although that might sound like a lot of sugar, it might surprise you to know just how much free sugar there is in some of our favourite foods and drinks...

Teacher Tip: Choose a couple of the products below and have them on display – then in a separate clear container beside each object, measure out the amount of sugar that each contains.

A can of soda 39g
Small carton of apple juice 23g
A bowl of cereal 19g
The average chocolate bar..... 20g
A small flavoured yoghurt 12g

An orange 9g
A pear 10g
A carrot 4g
A glass of water 0g



Teacher Tip: After you've laid out and revealed the quantities of sugar, ask your class what they think of all of this. Which items are they going to try and have less of and which will they try to have more of?

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STEP 4: SUGAR SPIES!

Did you know that a lot of snacks try to sneak loads of sugar into them by calling sugar loads of fancy names?

That's why you have to be a super spy detective to spot them.

Teacher Tip: Break into smaller groups, and hand out some of the snack wrappers and soda cans you have upfront to each of the groups. Ask them to try and work out what sneaky names in the ingredients might actually mean sugar.

Did you know?

In the past 300 years, the average person's intake of sugar has risen from four pounds a year to almost 200! That's fifty times more sugar in our diets!

Ingredients are listed by quantity from high to low: the closer to the front of the list a form of sugar is, the more sugar that snack/food contains.

Why not take some time later to look at some food wrappings you might have in your lunch box or kitchen at home, and see if you can work out how much super-sneaky sugar they've snuck in!

Look out for fancy names for sugar too... dextrose, fructose, galactose, glucose, sucrose, corn syrup and maltodextrin are all just sugars in disguise.

MORE FASCINATING FACTS ABOUT YOUR MIGHTY PANCREAS

- Diabetes can occur when your pancreas stops making insulin—causing the levels of sugar in our blood to shoot up and then crash down.
- Pancreas transplants are not as common as kidney or liver transplants and are often conducted as a double transplant with the kidney. It's a really tricky operation too, so donating your pancreas (when you're done using it) could lead to one of just 200 pancreas transplants performed each year!
- Your pancreas contains approximately 1 million cells that make two very important hormones (glucagon and insulin).
- Your pancreas can taste! The pancreas has taste receptor cells that let it sense the presence of sugar in your blood. It uses this info to work out how much insulin or glucagon to add to your blood!
- Up until the 19th century, doctors believed that the pancreas was simply a fancy-shaped shock absorber to protect your stomach!

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MIGHTY LIVER OBJECT LESSON

In this object lesson students will learn more about their livers, and why they're so important to their overall health.

Objects needed: Soft balls or mini bean-bags, some plant off-cuts to re-grow (optional).
Prep time: 0 minutes
Lesson time: 20 minutes

STEP 1: LET'S GET JUGGLING!

While hardly a flashy hero, did you know that your liver is one of the busiest organs in your body? It cleans your blood, builds up your energy stores, helps your kidneys slow down and encourages your bowels to speed up! As if that's not enough, your liver also acts a bit like a sieve: anything that you eat or drink—from food and juice, to milkshakes and medicine—gets filtered through it.

To really appreciate just how much our livers do for us – how about we try juggling a lot of things at once too?

Teacher Tip: Invite a few eager students to try their hand at juggling with several soft balls or mini bean-bags. If you don't have either – scrunched up balls of paper will do!

Now that we see just how hard juggling is – we can all have more respect for our livers – they easily juggle 500 different and important jobs at once!

STEP 2: RE-GROW LET'S GO!

After our skin, our liver is the second biggest organ in our bodies. Not only mighty in size – it also has another mighty cool superpower... Incredibly, it can RE-GROW!

That's why when living donors choose to donate half their liver, the remaining part of their liver regenerates the part that was removed. In fact, just a quarter of your liver can 're-grow' to its original size (and function just as well) within a few weeks!

There are a number of plants that are like this too – if you take just a small cutting of them and look after them well, they can grow back into a full plant.

Teacher Tip: Perhaps your class can put this into practice and re-grow something too! Spring onions, lettuce, carrot tops and ginger are just a few of the plants that you only need a small portion of to grow again.

Here's some more inspiration:
www.squaremilefarms.com/post/10-plants-you-can-regrow-from-kitchen-scraps
As you watch nature's amazing ability to regenerate life through these plant off-cuts, remember to take a moment to thank your lovely liver for all the work it does... it's your very own superhero, on the inside!

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MORE FASCINATING FACTS ABOUT YOUR MIGHTY LIVER

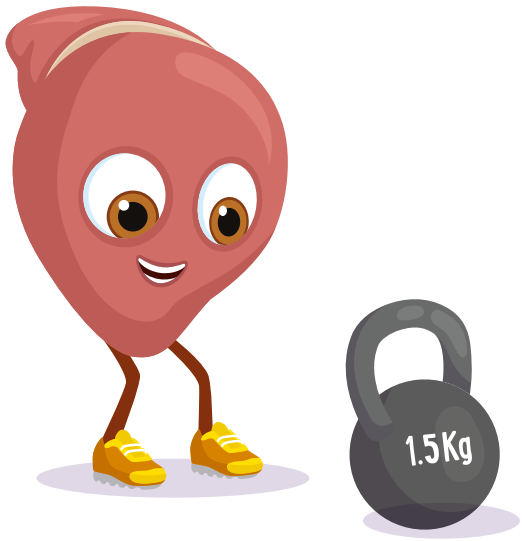
- It's the only organ that has a dual blood supply from both the portal vein and the hepatic artery, 1.5 litres of blood is pumped through your liver every single minute!

- The liver consists of 2 main lobes, made up of 8 segments each, with 1,000 lobules (small lobes) in each of those. Like a sieve, anything that you eat or drink (after being absorbed by the small bowel) gets filtered through these lobules—and any harmful toxins are swiftly removed from your system.

- Ideally positioned to detect pathogens entering the body via the gut, your liver is perfectly designed to detect, capture and clear bacteria, viruses and macromolecules from your system. It also gets rid of bilirubin, a yellowish substance that's made when old red blood cells are broken down. If there is too much bilirubin in your system, your skin and eyes turn yellow. In babies, this is called jaundice.

- The liver plays an important role in helping your body maintain healthy levels of sugar in your blood. It does this by storing sugar when you have too much, and releasing it when you need it for energy. This helps to keep your blood sugar levels stable.

- The largest gland in your body, livers weigh a hefty 1.5 kg (or around 3 pounds) on average.



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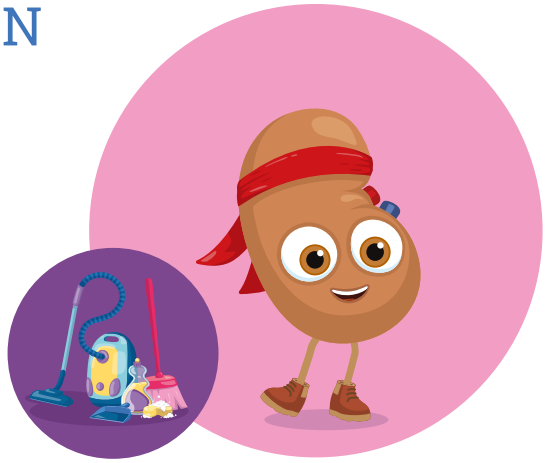
MIGHTY KIDNEYS OBJECT LESSON



In this object lesson students will learn more about their kidneys, how they work, and about the wonder of living donors.

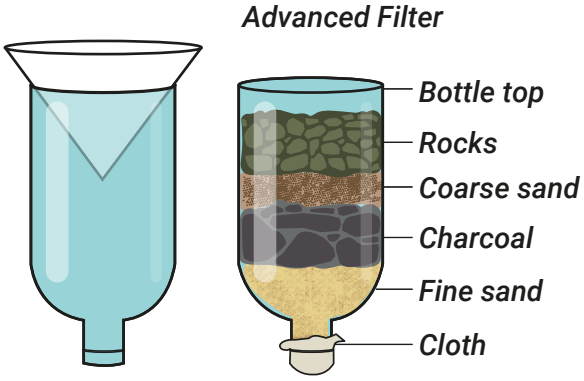
Objects needed: Coffee filter paper, handful of small stones, clear empty 2 litre bottle, cut in half, water.
Prep time: 10 minutes
Lesson time: 20 minutes

STEP 1: FABULOUS FILTERS

Our kidneys are constantly working, filtering waste and extra water out of our blood, and making sure we stay healthy and spotless on the inside. In fact, each of our kidneys has over a million little filters called nephrons. These catch all the stuff in your blood that you don't need or want floating around.

They also help control your blood pressure, aid in bone health, and create healthy red blood cells - that's a lot of work for such little guys!

Teacher Tip: To demonstrate how the process of filtration works, why not make a water filter? Using a clean, clear 2-litre soda bottle cut in half. Place a coffee filter over the top of the bottom half and secure with an elastic band. Explain to your class that the filter paper will filter out the unwanted stones and debris and only let the water through – then demonstrate this.



Did you know?

Your body can make stones too! But it's not nearly as cool as it sounds! Drinking too little water, or eating too much sugary and salty foods can lead to kidney stones. Formed inside the kidneys, these hard crystals are made up of calcium and uric acid and can be very painful.

Most people only get one or two kidney stones at once, but the world record for the number of kidney stones removed from one poor man once was over 170,000 - enough to gravel an entire driveway!

STEP 2: NOW LET'S ALL ACT LIKE FILTERS!

Just like our hard-working kidneys, let's play a game where we get to act a little like filters – trying our best to not let anything (or anyone) through!

Teacher Tip: Red Rover is an outdoor game involving two teams, or lines, of players that compete against each other. Each team must try to break through the other's line. Keys to winning are using strategy, strength and agility to outlast and beat the other team.

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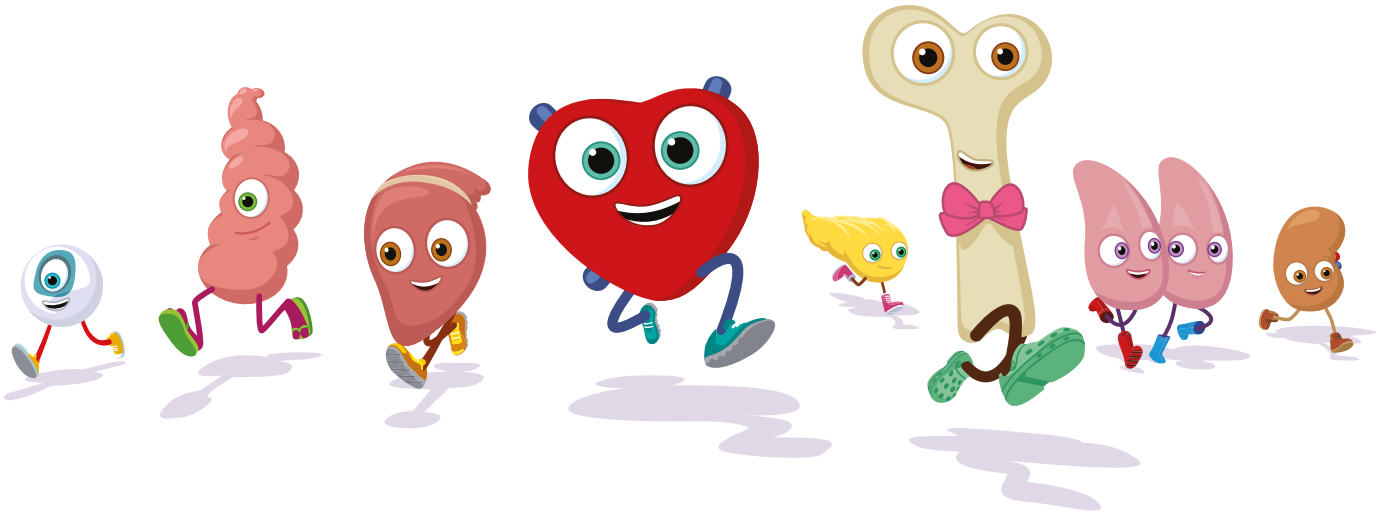
RED ROVER RULES:

Divide your class into two teams. Both teams line up on a field, facing each other with a good distance between the two lines. Team one decides who from the other team they want to call over, and shouts, “red rover, red rover, send (name) on over!” The chosen player then runs toward the other team, trying to break through the clasped hands of two team mates. If they don't get through, they have to join that team. If they do get through, they get to take those two players with them back to their original team.

When only one player is left on a team, they must try to break through a link. If the player does not succeed, then the opposing team wins.

Teacher Tip: At the end of this game, remind your students that just like these two teams, there are a million little teams like this in each of our kidneys – constantly working to kick out the bad guys and keep our bodies and bloodstreams clean on the inside!



MORE CRAZY-COOL KIDNEY FACTS

- Most of us are born with two kidneys, but some are born with one, luckily you can live with just one.
- About a quarter of all the blood pumped from your heart goes straight to the kidneys! Every drop of blood in your body gets filtered through your kidneys every 30 minutes, which is about 50 times every day!
- Your kidneys also make sure you have just the right amount of water in your body. Otherwise, you’d swell up like a puffer fish or shrivel up like a prune!
- All the extra water and poisonous waste filtered from your bloodstream becomes the urine collecting in your bladder. On average, we each pee out enough urine every year to fill the tanks of 10 cars (around 600 litres)!

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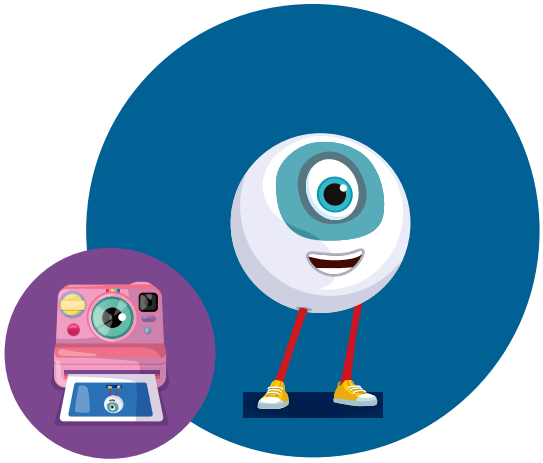
MIGHTY EYES OBJECT LESSON



In this object lesson students will learn more about their eyes, how they work, and what parts of these mighty organs can be transplanted and donated.

Objects needed: Cardboard and tinted acetate paper, a free printable template for making glasses is also available on page 20. Optional extra activity in Step 1 requires paper and colouring-in equipment per student.
Prep time: 10 minutes (if you choose to do Step 2 below, print out the template for glasses before the lesson).
Lesson time: 30-60 minutes (dependent upon how many of the suggested activities below you choose to do).

STEP 1: SEEING EYE TO EYE

Not only do our eyes allow us to see everything, but they're one of the most easy-to-spot organs themselves! Sitting right in the middle of our faces, we still manage to forget just how fabulous and fascinating these miraculous orbs truly are...

But not today!

Turn to the person sitting next to you look into their eyes. Look closer – really look at their eyes, and describe what you see to each other. What shape are their eyes?

What colour are their eyes? How big is the black dot (the pupil) in the middle?

Teacher Tip: Why not get these pairs to draw and colour-in a picture of each other's eyes? This activity need not take too long, but it will really help students to properly see one another's incredible eyes!

While you're having a real eye-to-eye, here are some amazing facts about our eyes:

- That black dot in the middle of the eye isn't actually a dot – but a hole that goes right into the centre of the eyeball! It expands or retracts to let more or less light in to help us see better.
- The part around this that is coloured is called the iris.
- The part of your eye that you can see is only about a sixth of your actual eye (don't try to see more of them though – they're really shy).
- We have two eyes, but six extra ocular muscles per eye to help us move and control them.
- 4,200,000 – that's how many times the human eye blinks on average every year.

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- Over 2 million – that's how many working parts are in just one of your eyes!

- 10 million – that's how many different colours your eyes can see!

Amazing, right?

Our eyes see light, shapes and colour, then send that information to the brain, where the images are finally put together. And hold onto your seats, because here's a crazy eye fact that's sure to make you look twice: your eyes actually see everything upside down! But your clever brain flips the images it gets sent over so you can see the world the right side up!

STEP 2: ROSE-TINTED LENSES

The cornea is the see-though layer at the front of our eyes. It's the only area of the human eye that does not have blood vessels or a blood supply (so that it can remain completely transparent for you to see through it). Instead of blood, our corneas are nourished by a fluid called aqueous humor and by our tears.

If our corneas did have blood vessels in them, our sight would be obstructed by hundreds of little lines and everything would look a little pink! Let's make rose-tinted glasses now to see what that would look like...

Teacher Tip: Create tinted glasses together – out of cardboard and red or pink cellophane paper. You could try out different colours and combinations (one lens red and one blue for example), and get the children to see the difference it makes. All the while, remind them that our actual corneas are like these lenses, except completely see-through.

STEP 3: BLIND MAN'S BLUFF

To appreciate just how amazing the gift of sight is, let's each take a turn to go without sight and see how it feels!

Teachers Tip: To play the standard game of Blindman's Buff, one player is blindfolded and then disoriented by being spun around several times. The other players, who are not blindfolded, call out to the 'blind man' and try to dodge away from them. If they are touched by the 'blind man' they must sit out of the game until only one person is left (the winner).

Alternatively, in pairs, players can take turns being the leader of their blind-folded partner. Followers are blindfolded and then led around a short course by their team mate who must ensure they can navigate the space safely by giving them correct instructions.

Did you know?

The cornea is the only part of our eye that can be donated and transplanted to restore the sight of a person with an eye condition or injury. We can only donate this part of our bodies once we no longer need them, but the gift of sight is an amazing gift to give.

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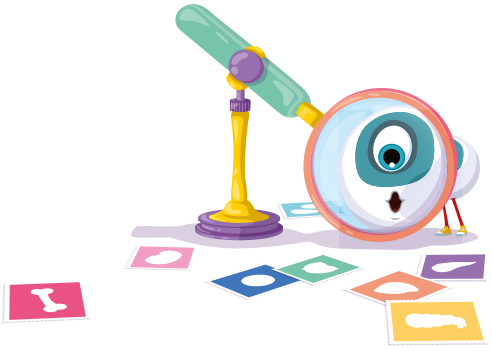
MORE EYE-POPPING FACTS:

- Believe it or not, shark corneas are very similar in structure and substance to our own corneas. That's why shark corneas are sometimes used in human cornea transplants!
- Our eyes stay roughly the same size throughout our life, while our nose and ears never stop growing.
- Humans can see more shades of green than any other color.
- Chameleons can move their eyes in two directions at once.
- Dolphins can sleep with one eye open.
- Dogs can't see the difference between red and green.
- Birds, cats and dogs have 3 eyelids!



Whatever you choose — may you see your own eyes in a new light! Look after them, and remember – it's always what's inside that counts!

Got questions or would like to share your Orgamites art?
For any questions or to share your Orgamites art with us, please write to **info@orgamites.ca**.
To register your school for 'Orgtober' and the 'Golden Heart Award' go to **Orgamites.ca/Orgtober**.
To download additional Orgamites educational tools and resources, please visit **Orgamites.ca**.

The Orgamites programme is brought to you by All Good Co. in partnership with Canadian Blood Services. Our mighty thanks go to all teachers, parents, and healthcare professionals for taking part in this programme.

YOUR INPUT MAKES A BIG IMPACT!

If you've introduced the Orgamites to your classroom, we'd love to know how it's going. Click on the link or scan the QR Code to provide us with much-needed feedback, and please encourage as many other teachers, students and parents to do so too. Don't forget to...

1. **Have the conversation** (talk about organ donation with your family)
2. **Make the Mighty Pledge** (with a pinky promise)
3. **Be Mighty Proud** (voice your choice wide and far)

Click here to give your feedback!

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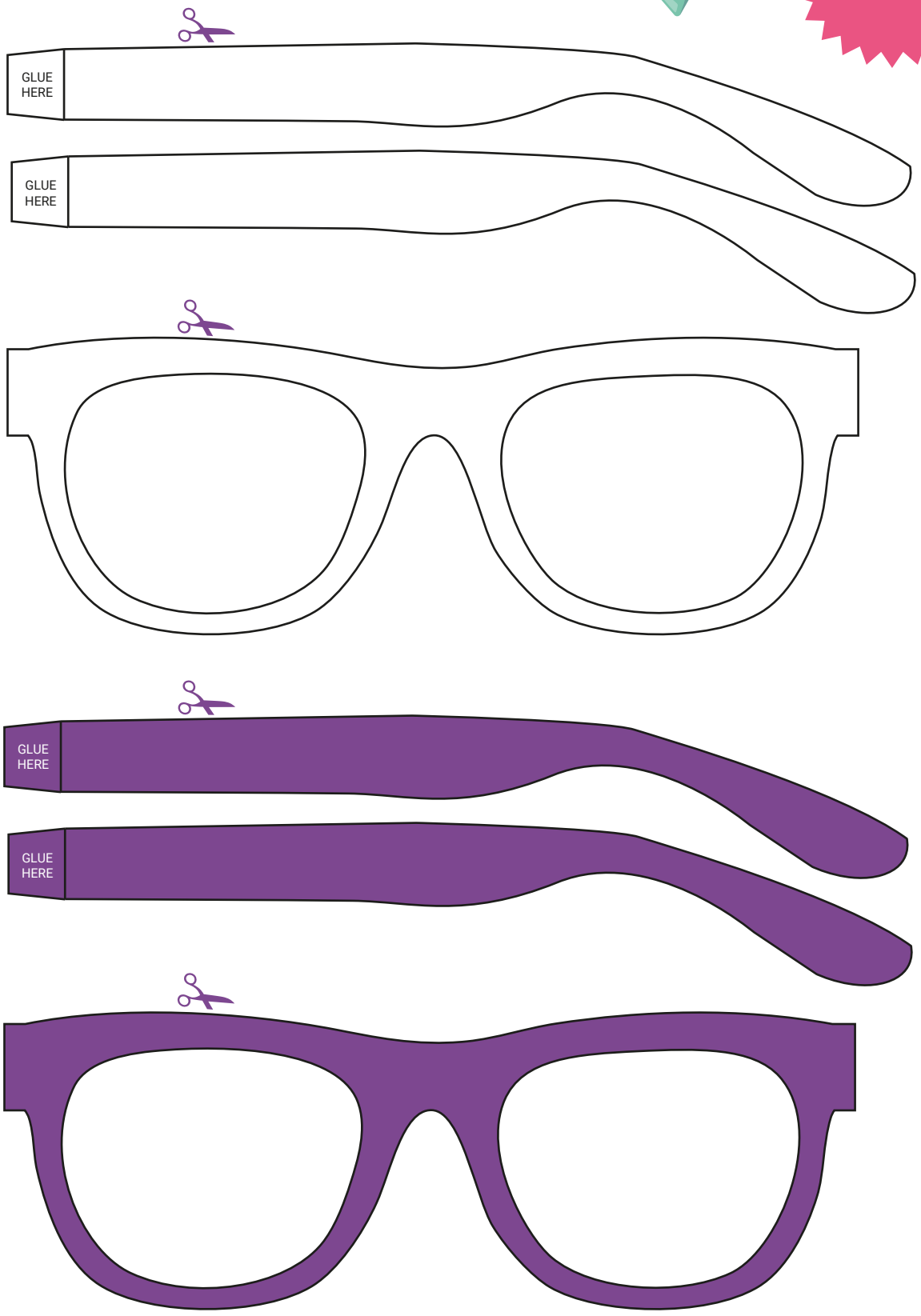
FREE PRINTABLE TEMPLATE

Print out template and stick on to card, then cut out.

DESIGN YOUR OWN DESIGN



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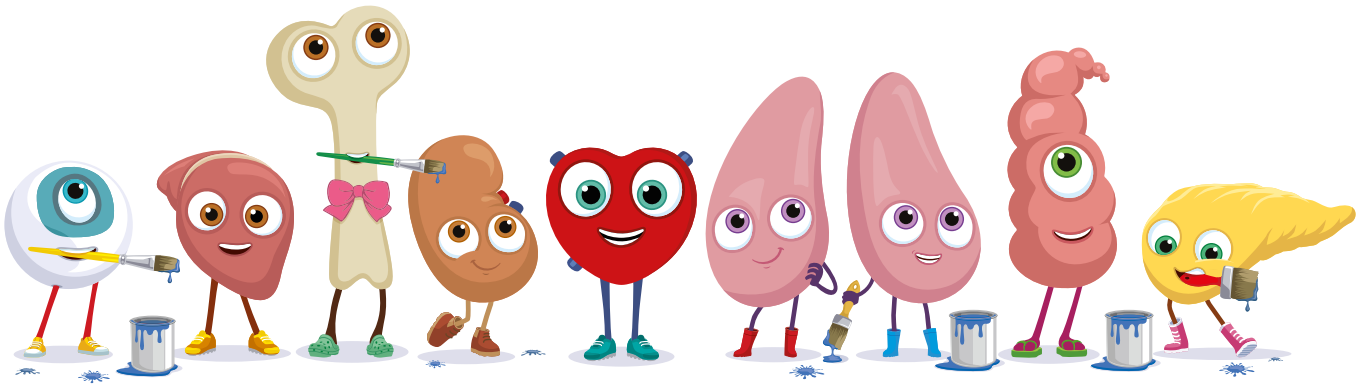
IT'S WHAT'S INSIDE THAT COUNTS!



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