

Children are naturally curious. They want to know all that there is about the world. But how can anyone learn about the world without first knowing about themselves, or more importantly, about their bodies? The study of human anatomy is an essential part of provincial grade-school curricula across Canada. Currently, children learn about the importance of their bodies; how their bodies work; how they develop; and, what their bodies are made of! Let's supplement this learning with fun and engaging hands-on activities that will reinforce ideas while clarifying concepts. Our goal is to help children understand how their bodies work so they take good care of them while going through the natural process of growing up.

How can educators further engage their students' knowledge about human biology and anatomy? We've found that the easiest, most enjoyable way to engage students is through hands-on demonstrations, art experiences and dramatic play. We've put together 30 ideas and more for your classrooms that take into account your busy schedules and limited budgets. Wherever possible we've tried to use the same materials in more than one way to get the most bang for your buck while reducing the amount of time you need to spend acquainting students with new tools and learning aids.

We've separated our ideas into three important categories: **The Senses**, the **Skeleton** and **Body Systems**. These ideas will captivate and impress your students as they study each new aspect of the body. Encourage students to discuss their discoveries with their parents to show what they've learned. Most materials can be used as versatile study tools. Send the materials home with students so they can demonstrate key learning aspects with their parents and caretakers. This is a great way to include parents in the day to day activities of your class. Students can sign out the materials just like you would sign out a library book. Ask students to return them the next day.

## THE FIVE SENSES (Touch, Smell, Taste, Hearing and Sight)

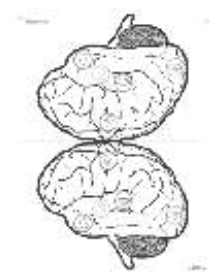
### 1. BRAIN HAT

The brain is the most important organ in our bodies because it controls all the body's functions. Everything from breathing automatically to dreaming or breaking down food in our stomachs are processes that are controlled by the brain. Have fun discovering all the multitasking abilities of the brain with this engaging project. Use the template on page 14 of the handout as a guide for photocopying and cutting out special Brain Hats for children to wear.



The brain is separated into different lobes or major parts. Each part is separated into even smaller parts and each of these parts controls various functions of the body. These functions can include emotions, regulation (such as

breathing or blood flow), movement, critical thinking, behaviors and the senses. The brain template features little icons indicating the specialized function areas. Color each area a different color and have your students label the areas, such as "Frontal Lobe" or "Parietal Lobe." Cut the brain template out along the solid edge. Note: Do not cut across the point where the two brain halves meet. Instead, fold the two brain halves together so that the image is visible on either side.



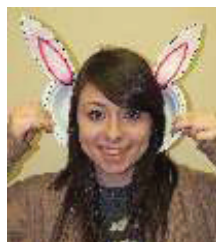
Take an 8.5 x 11" sheet and position it so that the short edges are at the top and bottom. Fold the paper in half horizontally. This will make two halves of the hat. Tape a strip of paper across the front and back openings of the hat to secure it to the wearer's head. Paste the two brain halves on either side of the brain hat. Wear the hat while playing critical thinking games like the one below!

Play a mystery game! Find out which of the brain parts control which body processes. Divide your class into groups. As the children are coloring, labeling and assembling their brain hats, give each group a single process that is unique from other groups—such as "Touch Sensation" or "Happiness," something that isn't indicated by the icons on the brain—and show students what part of the brain causes this process to occur. They must label the location you indicate with the name of this process. Once the children are wearing their hats, they must circulate to all the different groups and communicate with their peers to find out the locations of the rest of the processes. Sounds like a brainload of fun!

### 2. ANIMAL EARS

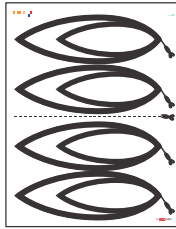
Learn about our sense of hearing by studying animal ears! Engage children's love of animals and use it to explore anatomy. Start with Roylco's R52084 Barnyard and R52083 Wild Animal Masks. Fold up the masks according to instructions. It's easier for children to decorate their masks before you fold them up. Talk to your students about the different kinds of ear each animal has. For instance, the elephant has big ears on the side of its head that can flap, while the hippo has tiny ears on the top of its head that can pivot. Examine each animal and make a list of characteristics for the ears. What do they have in common and what is different? Can you think of reasons for the differences between animals?

Make your own bunny ears! This is a fun activity that will turn all of your students into super-active listeners. For young children, cut small Dixie cups in half from top to bottom. Cut out slightly smaller inner bunny ears from pink construction paper. Flip the Dixie cups so that the bottom side is facing up and tape the pink paper cutout to the inside of the cups. Instruct students to hold the cups to their ears. Now they can hear



like a bunny! Children will immediately tell that they are hearing the world through different ears. The experience isn't exactly the same as what a rabbit hears. Rabbits hear higher frequencies than humans and they also devote more brain power to their sense of hearing, however, it is a good model. Encourage children to lower their ears, perk them up and rotate them in similar or different directions! Read a story about rabbits during circle time and ask the students to use their ears to listen!

Use larger cups for older children. You can also photocopy and cut out the bunny ears from page 15 of the templates and make additional versions of the bunny ears. Alternatively, you can use two halves of a paper plate and paste bunny ears onto the tops to help children get a real feel for bunny-hearing!



### 3. EARDRUM VIBRATIONS

Even though hearing comes naturally to us, not a lot of people know what sound really is! Sounds are made from a variety of air molecules bumping into each other when an object has hit another object. The objects release vibrations that cause the air molecules to bounce and continue creating more and more vibrations until the vibration becomes a sound. These are called sound waves. One of the best and simplest ways to demonstrate this is by using simple and readily-available materials such as a wire coat hanger, 3 feet of string and a wall or a student helper. You may decide to separate your students into groups and give each group a wire coat hanger and some string so that each child can participate in this activity.



If you are demonstrating in front of the class, ask for a volunteer from your class to help. Instruct the helper to take the string and wrap the ends of it around their pointer fingers. Wrap it no more than two or three times. Make sure that there is a 2-3 feet distance between each hand. Next, ask the student to place their strung-up fingers into their ears. Ask the student if they can hear you. Now hang the wire hanger from the middle section of the string. Ask them if they hear anything. Wait for

their response, then give the hanger a few taps. Most likely your student will be very surprised! They will hear chiming in their ears.

What happens is that the wire easily carries the vibrations you created when you tapped it. The vibrations then pass through the string which your student wrapped around their fingers. The vibrations then transfer from the string, through the bones of their fingers and into his or her inner ear where he or she may hear the vibrations reverberating like chime bells. This shows that sound is stronger when it uses a direct path to travel through!

### 4. R62330 MUSICAL EMOTIONS ART KIT

This kit provides students with great activities for exploring and expressing their emotions but also for exercising those listening ears. The kit provides a variety of short tracks. As kids listen, get them to talk about what they

heard.

Music is an important influence on our emotions. Lots of people feel different emotions when they listen to different types of music. This happens due to the tone of certain vibrations or sound waves that music gives off. Instrumental music that is calming and peaceful gives off more mellifluous vibrations that make us feel calm. This is different when listening to something like loud rock music, which gets us energized or feeling irritated or anxious. The brain senses these different vibrations and releases different types of "feel-good" chemicals throughout our bodies depending on how strong or how calming the sound vibrations are. These chemicals are special hormones called endorphins.

So, what did the song sound like? They can talk about how upbeat or slow or sharp the song sounded. In addition, you could ask them about what they felt when they heard the song. Did they feel happy or sad, energized or nervous? They can draw what they feel out onto the kit's shape paper, which is specially designed to help inspire your students' creativity. The rubbing plates in the kit can be used to give their artwork an edge. Just provide crayons for your students! This is a great tool for introduction to music classes and one that your students will love using and listening to over and over again!

### 5. BALANCE FLUIDS

The ear is separated into three parts, the outer, middle and inner ears. The outer part is what we call the ear, which can be seen on either side of a person's head. The inner ear is a delicate series of bone structures. It analyzes sound waves and maintains the body's balance. It is made up of winding passages, called the "labyrinth." The cochlea in the inner ear looks like a snail's shell and deals with hearing. The middle ear is made up of tissue that forms the eardrum and a special chamber that holds balance fluid. When you move your head, the liquid moves and pushes against hair-like nerve endings in the semi-circular canals. These endings respond by sending messages to the brain. These messages let the brain know what the orientation of the body is.

Fill a cup halfway with water. Ask a volunteer from your class to help you out with this activity. Give them the cup and ask them to swirl it in a circle and then suddenly stop. The water keeps swishing around, even after the cup is still. That's what happens in your semicircular canals when you spin in circles. When you stop spinning, the fluid in the semicircular canals is still moving. This makes the hairs of the sensory cells bend in different directions, so the cells' signals confuse the brain. That's why you might feel dizzy — your brain is getting different messages and is confused about the position of your head. Once the fluid in the semicircular canals stops moving, your brain gets the right message and you regain your balance.

To demonstrate this effect even more, take your students to the school field or the school gymnasium and instruct them to get into groups of 3-4. Each group chooses one person to be "it" but instead of playing a regular game of tag, the chosen person is the one who must run away from all the others! The remaining 2 or 3 people must close their eyes and spin themselves 3 times in a circle. Once they are done, they will open their eyes and attempt to catch the un-spun person. After the game, ask the spun students how

they felt while trying to catch the un-spun student. Did it seem easy or difficult and why?

6. MYSTERY SOUNDS

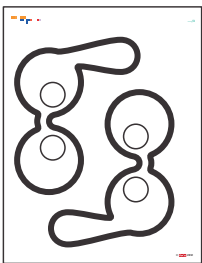
Exercise more functions of the ear with a great auditory game for your students. Gather a bag of materials to use such as pennies, chalkboard erasers and other items that can make noise. Walk to the back of the classroom. Your students should sit in a group on the floor or at their desks with their backs facing you. Nobody should turn around so keep an eye on them to make sure they don't peek! Start by producing a sound from one of the following types of materials.

Make the following sounds one at a time to let students first guess what the material or action is before moving onto the next sound. They must face away from you even while answering! You can hide the materials behind a desk or under a cloth cover. You can shake coins in your hand; clap chalkboard erasers together; close a book really loudly; clap your hands; tap a pencil or pen on a desk; crumple up sheets of paper; stomp your feet on the floor; tear up some paper; bounce a ball; juggle your keys. See if you can't come up with your own mystery sounds!

7. IN THE MIDDLE

For this activity, set one of your students in the center of the room and have the rest of your class form a circle around them. The student in the center should close their eyes; make sure they don't peek! While the student's eyes are closed, point to a student in the circle and ask them to say the name of the person in the middle. Once his/her name was mentioned, the person in the middle should then try and identify who said his/her name. For a challenge, have the student in the middle close both eyes AND plug an ear. That should get them guessing!

8. GREAT GOGGLES



Learn all about sight with our Masquerade Glasses! Photocopy and tape the glasses artwork on page 16 of the handout onto card stock or purchase a pack of Roylco's R52023 Masquerade Glasses. Decorate them with markers, crayon, paint or collage material. Ask children to put them on and take a

color vision test. Simply point to colors and ask for the names or use Roylco's 59421 Color Vision Perception Kit. This kit lets you give students a fun color vision test and helps children understand the mechanics of color vision while giving them a taste of what it's like to be color blind!



9. AROMATIC SCENT ACTIVITY

The olfactory system is the part of our heads that controls the way we smell. When we smell something, we get an immediate response from our brain because the olfactory system is in direct contact with the limbic system, or the part of our brains that control our emotions.

Sometimes the response tells us that the scent is bad-smelling or undesirable somehow while other responses may tell us that the smell is sweet or calming. Each response is unique just as each scent is unique.

You may want to demonstrate the connection between the nose and the brain by using our R62305 Scent Swooshers to identify the types of emotions your students feel when they smell particular scents. Each student can pick up a Scent Swoosher and spend a few moments swaying it back and forth. Instruct them to take deep breaths through their noses to really feel the scents. On a piece of paper, children can then record their feelings. Did the scent make them feel good? Why?

A great activity to lead into any discussion about developing emotions.

10. BLOOD HOUND

Did you know that dogs' olfactory systems (the part of the head that detects scent) make up a large portion of their brain? Dogs have about 400 million cells that help with detecting scent which is more than humans have (we only have about 5 million). It is well known that dogs can smell more than 1000 times stronger than humans can. For this reason, dogs are often used for police searches and investigations when trying to find an item or a person.



Test your students' scents of smell with this fun investigation activity.

Put together a selection of scented oils, potpourri and other aromatic scents that can be used in this activity (or use our R62310 Flower Scent Pastels). Rub the aromas onto cardstock or an 8.5 x 11" sheet in a continuous, winding line then hand out the sheets to your students. The scent should not show up too much on the paper, which will help children focus on using their noses to complete the activity. Instruct children to hold the sheet up to their noses and find the start of the trail. Students should mark where the trail begins. Proceed to follow the trail, marking out the line with either a marker or pencil crayon.

11. FEATHERY TOUCH

We all know that our hands contain some of the most sensitive nerve endings in our bodies. We are capable of feeling and experiencing a variety of textures with our fingers. But how do other parts of the body such as the elbow, neck or cheek sense textures? Ask a student to volunteer with this activity. Instruct the student to stand in front of you, with their side facing the audience. Now tell them to close their eyes. Ask them to tell you what they feel while tickling their cheeks with the tip of a feather. Then tickle their elbow and wait for a response. Did that one take a bit of guessing? It's because there are very few nerves in our elbows as compared to our faces or our hands!



So why did the elbow not respond to the tickling as well as on the



cheek? The reason is that there aren't many nerves there to tell our brains that a sensation is being felt in that area. Nerves help control a variety of processes in the body. This activity will help children explore just how important the nerves are to the rest of the body. Cut out feathers using our R28421 Scissor Skills Paper. Tape the feather shaft point to the end of a pen.

### 12. TEXTURE CHIPBOARD KIDS



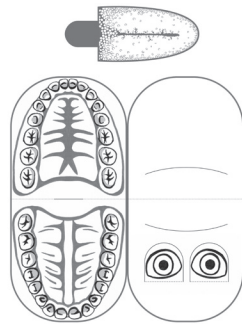
Use our R52100 Chipboard Kids to give your children a fun tactile experience. Provide your students with a variety of textured materials such as feathers, sequins, Styrofoam, beads and others. Students then paste some of the textured materials onto their chipboard kid. When the students are finished, they may then exchange their chipboard kids with their peers and feel over the materials their colleagues chose. Ask students to describe what they felt when they touched the different textures. Use

this activity to demonstrate the sense of touch.

## THE SKELETON

### 13. HAPPY MOUTH PUPPET

This activity will explore some aspects of the sense of taste while leading into activities about the skeleton. The Happy Mouth Puppet features a kit that includes a puppet template, a tongue template and a spot above the printed eyes for decorating. Children can use strips of tissue paper or yarn to make the hair for their puppets. There are two templates to this activity. There are the upper and lower jaws and the tongue, which you can use to talk about the different types of taste.



The 5 types of taste are sweet, salty, sour, umami and bitter. Lollipops are sweet, salt is salty, lemons are sour, cheese have an umami flavor and spinach is bitter! Have the students color the interior of the mouth, including the teeth, tongue gums and whatever else they can see on the illustrations. Encourage students to discuss these different types of taste while coloring the tongue.

If you're planning to teach children about the different types of teeth, tell them to color each set of teeth differently so they can distinguish between the sets. Discuss the importance of each. We've provided a brief overview of definitions about permanent teeth below for you to refer to. Tip: Our R62021 All About Teeth Kit provides all the information you need to teach your students about healthy teeth.

Incisors are used for gnawing through food. These are found at the front of the jaw and are shaped flat like a fingernail. There are 12 incisors, which also consist of the canines. These are found on the sides of the front teeth and are generally sharp and pointy. These are used for tearing through food.

Premolars are placed beside the incisors. There are 8 in the

mouth in total. These are flatter at the top than the incisors. The flatness helps to capture and crush food into smaller pieces.

Molars consist of the last three teeth at the back of the jaw. These are flat like platforms with ridges in order for food to be minced before swallowing.

Once kids have finished coloring, they may start cutting. First cut out the tongue. Fold the tab under the tongue then glue it onto the lower jaw. Cut out the puppet along the outside edge. This should give you a butterfly-like shape. Cut out the bold lines around the eyes, avoiding the dotted fold line. This will allow you to fold the eyes forward over the dotted fold line.



First start out by assembling the tongue. Fold the tab at the back of the tongue then insert it in the slot between the two sets of teeth at the back of the mouth. Students can tape the tab down to hold the tongue in place. Pop up the eyes of the puppet up and out away from

the paper. Next, fold the eyes forward to make them stand up. Fold the entire puppet along the vertical dotted lines in the middle of the puppet. Tape the two halves of the puppet together. Fold the puppet a second time across the center horizontal line between the two sets of teeth. This will form the upper and lower jaws. To make your puppet speak, insert fingers into the curved slot behind the eyes and your thumbs through the curved slot underneath. Now you can start chat-tin'! Use the Teeth and Tongue model to discuss the various parts of the mouth and identify proper brushing techniques.

### 14. CLEAN TEETH

Teach children about brushing their teeth! On page 18 of the handout you will find a photograph of a set of teeth. You can find similar artwork on the internet. Print it off and insert it into one of Roylco's 59040 Dry Erase Worksheet Covers. Color over top of the photo with yellow dry-erase marker. Alternatively, you could also use highlighters since they dry in little spots which stand out a lot on the teeth! Just give the ink about three minutes to dry.

Give students a small sponge or piece of paper towel and ask them to remove the yellow stains. Explain that the photo is like their teeth and the sponge or paper towel is like their toothbrush. The yellow ink represents all the things that can get stuck to our teeth and cause discoloration or cavities. Cleaning teeth each morning and evening helps remove all of the things that can harm our teeth! If the ink doesn't come off entirely, try using a little bit of regular window cleaner to remove it.



Roylco produces a kit of activities and information about the teeth including a dry erase smile board and foam tooth brush. Check out R62021 All About Teeth.

### 15. SALT CLAY TEETH MODEL

Use the Baby and Permanent Teeth diagram from the

R62021 All About Teeth kit to design a teeth model from salt clay! We've provided our Best Ever Oven Bake Salt Clay recipe on page 19 of the handout. Our salt clay recipe is simple to make with flour, salt, some water and a bit of vegetable oil. Add food coloring to the mix to tint the salt clay. For this activity, you will need to use only a bit of red food coloring for the gums and jaw.

Separate the salt clay into two parts; one part will be used for the jaws while the second part will be used to make the teeth. Use card or chipboard to design the teeth models onto. Note: The following instructions are based on making a model of adult permanent teeth. If you wish to make a model of baby teeth, refer to the images in the All About Teeth kit or search online for images.

Take one part of the salt clay and divide into 32 pieces. Tip: You may add white watercolor paint to the clay to lighten it up if you wish. There are several different shapes you will need to make for the teeth. In the Teeth and Tongue Puppet activity, we already learned that there are different sets of teeth that can be distinguished by their function, placement on the jaw and appearance. Refer to the Teeth and Tongue puppet template for an idea of what these different kinds of teeth look like.

To make an incisor, roll the clay piece into a ball. Gently pinch one end into a taper to form a tear-drop shape. The tapered end will be the base of the tooth. While holding onto the tapered end, carefully press the top part of the tooth onto the table to produce a flat side. Note: Vary the size of the teeth. The teeth at the very front are normally bigger than the other incisors and have a perfectly straight top edge.

To make a premolar, roll the clay piece into a ball. Pinch one end into a taper then flatten one side of the tooth. Do not flatten as much as an incisor, however! Next, take a piece of card paper and draw a semi-circle shape onto it, then cut it out. This will be a useful tool for when you're constructing the molars. Gently press the edge of the curved part across the premolar. Make another line right beside it to imitate the ridges of a premolar. Refer to online photos or references.

To make a molar, roll a larger piece of clay into a ball. Pinch one end into a taper. Do not flatten the side of the tooth. Instead, gently press down on the top to make a flat platform. Use the semi-circle tool to make one two lines on the molar; they should intersect to form an X shape.

Repeat these steps for the remaining teeth then lay them to dry on some card paper.

As the teeth are drying, add food coloring to the first part to make the clay a pinkish red. Make a horseshoe base for the top jaw then another one for the bottom jaw. Use a corner of the semi-circle tool to cut slits into the jaws where the teeth will be placed. By now the teeth should be a little bit dry. Carefully knead out an opening for each tooth as you place them into the jaw slits. Once the teeth are placed into the slits knead the gums to snugly fit around the teeth.

Kids can even reference their own teeth to make their models unique, since most kids in this age will be going through the phase where their teeth begin to fall out. Send the finished models home or have children use their teeth models to help them discuss dental health and hygiene facts with the rest of the class!

## 16. BONE STRENGTH

Anyone feeling a bit thirsty? Remember this activity before you go reaching for that cold can of cola! This activity may require some time to pass before you get the final result but, before you do this activity, talk about bone density and the startling effects that cola can have on important bones in your body—like your teeth, for instance!

This activity requires bones to show the effects of certain chemicals on bone consistency. You will need to dedicate some preparation time to this activity, preferably three or four days before you plan to demonstrate in class. Make sure you save up a few bones from a chicken carcass after a home dinner. Note: Even though we are aware of hygienic concerns that teachers may have, this activity will not require children to handle the actual chicken bones. These will be contained in a bag at all times and will only be used for demonstrative purposes.

Place the chicken bones in a pot of boiling water with two teaspoons of baking soda and continue boiling until all the meat and skin has detached from the bones. Drain the pot then let the bones dry. Once the bones have cooled down and are dry, use a bristle brush to scrape off any remaining meat. Fill a bucket with water and add 1 part bleach or hydrogen peroxide to four parts water. Place the bones inside and soak overnight or until they appear bright white. Once the bones are dry, place one half in an air-tight zipper seal bag. The other half will be used for the experiment.

Fill a zipper seal bag with cola. Place the other half of the chicken bones inside and let soak for about a week. By the end of the week, the chicken bones should be black and a bit flexible. Drain out the cola from the bag and keep the bones secured within.

When you present to the class, point out that a normal bone is hard and strong like the first set of chicken bones. Pass the bag around so that children can have a look and feel over its structure. As the students are investigating the bones, mention that healthy bones have plenty of minerals like calcium, which keeps bones healthy and strong. The less minerals bones have the more soft the bones get. Softening of bones can lead to easy bone breakage, the inability to move, soreness, pain and other symptoms of OSS-TEE-o-POR-O-sis (osteoporosis) in humans. This happens naturally as we age but at a much slower pace and only if we're not careful to keep our bodies active and mineralized!

Our diets can affect our bodies in a lot of different ways. A variety of bone-building foods as well as daily exercise are important to maintaining healthy bones. It is super important that children get a healthy variety of bone-building foods and exercise from the time they are very small to their teenage years since their bodies (and bones!) are constantly growing. Ingesting healthy foods and having plenty of exercise during youth is shown to help with bone structure later in life. If adults wait until much later in life to start eating healthy and exercising regularly, their efforts will be less effective on an already damaged bone structure, which is why it is important to start early!

To illustrate the effects of diet on our bones, pass around the bag with the cola-soaked bones and inform the children about the procedures you went through to make the bones this way. Ask children to guess at why the bones appear and feel different than the healthy bones. If the

children mention fizz, let them know that fizz is only carbon, which is the element that makes up the most chemical composition in our bodies. The culprits are, rather, the caffeine and the phosphorous that exist in cola and some other sodas. Excessive phosphorous deposits can deplete important minerals from bones, causing bones to deteriorate. These bones, therefore, are proof of this! Not only will you educate your children about the importance of diet and caffeine intake but you'll also allow your children to visually and tactilely experience bone density concepts.

17. NEWSPAPER SKELETON



This is an advanced activity for fans of the environmentally-conscious and innovative craft R60550 Newspaper Builders! This project is sure to “wow” your students! The amazing skeleton model featured in the workshop (we'll call him Carl!) is made up of various lengths of newspaper rods.

Newspaper rods are made by rolling sheets of newspaper up lengthwise and securing the ends with tape. The kit includes everything needed to construct Carl, including specially designed connectors that hold important parts of the body together, such as the pelvis, shoulder blades and skull, a detailed construction guide and a variety of

newspaper rod connectors for repeated use! This will help students get a sense of where all the parts of the skeleton go in relation to each other. A great challenge activity that will definitely hold their attention for a long time!

18. STRAWS AND CONNECTORS HUMAN HAND

Create a big model of a human hand! Start by using a picture of the bones in a human hand on page 22 of the handout or use Roylco's 5911 True to Life Human X-rays as reference. Examine the picture and come up with a plan to recreate the hand using R6085 Straws and Connectors.



For our purposes, we want to focus on the fingers (rather than the 6 bones of the wrist). Measure all of the finger bones,

focusing on the metacarpals and phalanges. Count out five straws. Tip: Use different colors for each finger. Cut lengths of straws to match each of the bones in the hand then use connectors to join the bones together to make individual fingers. To finish off the model, attach the fingers to the wrist. To make a wrist, we'll use the template on page 22. Trace and cut out a strip of card about 25 cm long and 2.5 cm wide.



Punch four holes in a tight row, about 2 cm apart along the length of the card, using the template as a guide. Add a fifth hole about 3.5 cm from the last hole. Add one final hole near the end of the strip. Loop the strip so that the first and last holes overlap. Working from the inside of the loop, slide a connector through the hole and attach the smallest colored straw finger onto it from the outside of the paper wrist. Slide a connector through the inside of the second hole and add the second smallest finger. Slide a connector through the inside of the third hole and attach the longest finger. Finish off the fingers by sliding a connector through the inside of the fourth hole and attaching the second longest finger.

Add the thumb to finish the hand. Keep in mind that the thumb has a different structure than the fingers; it is good to include the trapezium, or the bone that attaches the thumb to the wrist to emphasize the difference between it and the rest of the fingers. You can position the hand by arranging the straws on the connector “knuckles.” Ask children to label the different bones in the hand. Once you finish the hand, try making a model of the foot!

19. COLORFUL SKELETON MOLD

Use Roylco's R48010 Skeleton Mold to learn about the skeleton and how it supports the body.

Fill the mold with plaster of Paris. To make working with plaster easy, add two cups of the powder to a plastic bag. Pour in one cup of water (use a little less if you want a muddier consistency). Seal the bag and knead the contents with the palms of your hands until combined. Work quickly--plaster of Paris combines with water to produce a chemical reaction that heats the clay and turns it solid in a short amount of time. Warning: Do NOT use bare skin to work with Plaster of Paris. Use gloves and wear an art smock while preparing the mixture. Fill up just the skeleton portion of the mold, or fill the whole thing. Let dry overnight then pop out of mold. Use a spoon to scoop out the plaster of Paris if it's sticking to the inside of the bag. Let the mold dry another 30 minutes before painting.

Paint all similar bones in the same color. For instance, paint all of the ribs blue, the leg bones yellow and the skull purple. When complete, ask students to list all of the major bones and what color they painted them.

Our Skeleton Mold is designed to be very flexible. You can use play dough, plasticine or air dry clay right on top of the mold to sculpt a human body. Flip the mold over. Gently press clay over the skeleton. Sculpt the clay with your fingers and press down to get as much detail onto the clay as you can. Children can also construct their own clay bodies over top of the skeleton mold. Rub the middle of the mold with some vegetable oil before placing the clay over top. Use colored clay to make the face, body and clothes. Children will learn how the skeleton acts as the structure of our bodies while creating their artwork. If you're using air dry clay, let the clay dry overnight and then peel it off the mold in the morning. This way, you'll have two views of the human body: You'll see the body and when you flip it over, and you'll get to see the impression of the skeleton.





### 21. MACARONI SKELETON

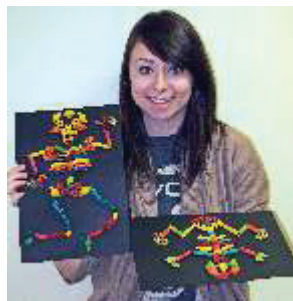
This unique art activity is probably well-known since it is almost always used as an anatomy art activity for students in younger grades. The basic concept is to take different types of pasta and arrange them in the shape of a skeleton on a piece of black construction paper. This is a great activity for getting children to exercise those little fingers as they arrange the different types of pasta onto the paper.

Use special guides such as printouts of basic skeletons for the children to reference. Separate the students into manageable groups. Give each group of children 2 or 3 copies of these printouts for them to share. Choose printouts that show skeletons in various poses. Get children to visualize the important bones that make up the structure of our bodies and how these bones are placed in relation to one another.

Before the children begin their activity, ask them to pull out the pasta piece from their pile of pasta that best resembles a fibula or a skull, for instance. Encourage children to use a different type of pasta piece to signify the fibula or skull when making their own macaroni skeletons. Once their skeletons are fully formed, use white glue to paste the pieces down onto the construction paper.

Use our R2111 Color Macaroni to add some flair to your macaroni skeleton art!

For skeleton reference, use Roylco's 59251 What's Inside People or use the diagram on page 20 of the handout.



To extend the activity, ask students to use the same "bone" noodle pieces to recreate the skeletons of animals. This is a great way to show how similar and different we are from our furry friends! For reference, check out Roylco's R59250 What's Inside Animals.

### 22. MACARONI FROG SKELETON

For this activity, use the same amount of macaroni that was used for the Macaroni Skeleton. Use a basic template of a frog skeleton like the one we've provided on page 23 for reference.



Arrange the pasta onto the black construction paper according to the diagram. You can even ask students to arrange their human skeleton from macaroni first, and then before they start pasting everything, scramble up the macaroni they've chosen to make the frog skeleton instead! Paste the

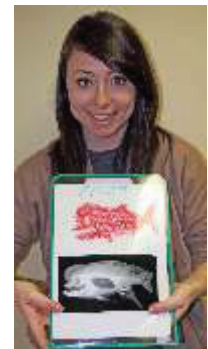
pasta onto black construction paper using white glue for great results. Use the artwork to compare to the macaroni human skeleton art and talk about the range of similarities and differences between the two.

### 23. X-RAY TRACING

A great way to learn about ourselves is to learn about other animals. Introduce comparative anatomy to your students through x-rays! Start with Roylco's R5910 Animal X-ray and Picture Cards. Let children look through the x-rays—put aside the picture cards until later. Draw their attention to specific, easy to recognize bones like the skull, fingers, spine and teeth. Ask students to describe how they are similar and how they are different.

Ask students to guess what the animal is. Is it a bird, fish, reptile or mammal? How can you tell? Can you recognize any of the animals just by looking at their skeleton?

Turn their explorations into an art experience. Hand out tracing paper and crayons. Ask students to pick an x-ray and lay the tracing paper over top. This is a great activity to do on a light table or classroom window. If you're working on a window, we suggest that you use masking tape to hold the x-rays and cards in place. Let children sketch and color in with their crayons. Once complete, examine the tracing paper beside the x-ray. Bring out the picture cards to reveal what the animal looks like. How does the child's drawing relate to the photo?



We've created our x-rays with a special protective coating on top, so don't worry about getting crayon on them. Simply wipe off with a damp cloth.

### 24. STRING SPINE

The backbone is made of 26 bones. These bones, or vertebrae, are each shaped like a ring. There are different types of vertebrae in the spine and each performs a different

function.

The cervical vertebrae are the first seven vertebrae at the top of the spine, at the back of your neck below the brain. They are flexible and support and turn the head and neck.

The thoracic vertebrae are twelve vertebrae that hold the ribs in place.

The lumbar vertebrae are built for power and flexibility. These five vertebrae carry the most amount of body weight and are therefore subject to the largest forces and stresses along the spine. The sacrum is made up of five vertebrae that are fused together to form one single bone. For this activity, you will need yarn, two paper clips, R2152 Straws to String, R2195 Little Shape Beads, R5601 Plastic Lacing Needles™ and for the last part of the activity, R62011 Body Poetry: Yoga Cards.

Take a piece of yarn and cut it to 21" or 53 cm in length.

You can have the students work in groups to measure the length of one another's spine and cut the yarn to that length. Cut the yarn a bit longer than your measurement so you can leave room for the paper clips on each end. Tie a paper clip to one end of the yarn. Thread the yarn through an R5601 Plastic Lacing Needle™ which will make it easier to string the beads over the yarn. Use our R2152 Straws to String and cut them in half to use as the vertebrae. Use the R2195 Little Shape Beads for the discs. Try choosing a differently colored straw



for each type of vertebrae. Use the following guide:

- 7 straws for the cervical vertebrae.
- 12 straws for the thoracic vertebrae.
- 5 straws for the lumbar vertebrae.
- 5 straws for the sacrum vertebrae.

Once you have finished the Straws to String Backbone, tie the other paper clip to the other end. The students can pin the backbone to the collar of their shirts and the top of their pants. They can proceed to do the exercises using the R62011 Body Poetry: Yoga Cards. Point out to the students how their Straws to String backbones are moving, bending and twisting as they are performing the various exercises.

## 25. BENDABLE BEAD BUDDY

Check out the instructions featured on page 24 of the handout to make your own flexible Bead Buddy! Combine three or more of our great versatile products, R2170 Brilliant Beads, R2183 Fancy String Beads and R2195 Little Shape Beads with pipe cleaners to demonstrate how flexible our bodies are!

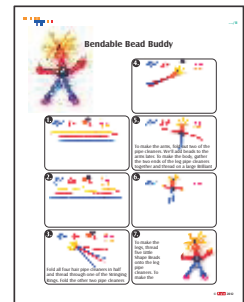
Take three long pipe cleaners of similar length. Cut the first pipe cleaner into 4 parts. Use a Stringing Bead for the hairpiece and string all four pipe cleaners through. Turn the bead so that its holes are facing sideways and curl the



pipe cleaner ends upward to make some crazy hair.

Thread the remaining two long pipe cleaners through the bead, bend at the middle and point them opposite from the hair. Insert all four ends of the long pipe cleaners into a large Brilliant Bead for the head, and another Brilliant Bead to use as the neck collar. Take two pipe cleaner ends and turn them out sideways to form the arms. String four Little Shape beads on both arms and finish with a loop through a Stringing Bead.

Pull the remaining two large pipe cleaner ends through a big Brilliant Bead which will form the torso. After that, take the two ends and separate them into legs. String 5 Little Shape Beads through and loop the ends through a Stringing Bead to finish.



Explore a range of poses with the flexible bodies and give your students something they can take home too!

Instruct the students to bend their elbows and knees while standing up. Tell them that their hinge joints are doing the bending. Next, have the students spread out and have them swing/rotate their arms. Tell them that the bones moving from their shoulders are connected by ball and socket joints. Get one student to pose at the front of the class with a bent knee or bent elbow (or both) and instruct the other students to recreate the pose with their Bendable Bead Buddies. Ask students to identify the type of joints that are being moved.

You can use the following guides as definitions.

Joints are the places where two bones meet. Some joints move and others don't. Moving joints allow the body to twist, bend, and move in different directions. Some moving joints, like the ones in your spine, move only a little. Other joints move a lot. For joints to work properly and move freely they need a fluid called synovial fluid.

Fixed joints do not move at all. The skull is made up of fixed joints.

Hinge joints can only bend in one direction. Elbows and knees have hinge joints which let you bend and then straighten your arms and legs. There are many smaller hinge joints in the fingers and toes.

Ball and socket joints allow for lots of movement in every direction. They are made up of two bones around the end of the bone that fits into the small cup-like area of another bone. These joints are located at the hips and shoulders.

## 26. POSEABLE PEOPLE STENCIL JOINT ACTIVITY

Teach children about the importance of exercise using our R55401 Poseable People Stencil or R55402 Poseable People Pack. These articulated stencils pivot at the neck, waist, hips, elbows, wrists, knees and ankles and can be used as basic models for creating action-packed art!

Use our R62014 Einstein Exercises cards to get your students moving! Have your students try out some basic to challenging exercises from the kit. Emphasize the importance of exercise and that it is important for energizing our hearts, which pump blood to our brain and other important organs. This rush of blood helps to stimulate organs to work efficiently and effectively in keeping the



body healthy.

Based on the exercise routines, encourage children to use the stencils to make up their own action exercise poses! Place the stencils in the required pose then place on top of a piece of paper and trace it out. Children can color in their illustrations and add in a setting or do multiple poses.

Challenge older children to describe their illustrated pose; what positions are the arms and legs in? How would they instruct someone to recreate the pose?

### THE BODY SYSTEMS

#### 27. BALANCE BODIES

Balance Bodies are another great activity for children to get a sense of the body's constant movements. Even if we aren't constantly in motion, our blood must circulate, our nerves must shoot messages back and forth to the brain and other functions must continue to occur. As a result, there is constant movement.

Demonstrate the body's system functions while using the magic of physics to make a fantastic balancing doll. Unpack a kit of R76305 Balance Bodies and distribute the boy/girl dolls to each of your students. They can choose to make themselves or a friend. Construct the Balance Body using the detailed instructions provided.

Before assembling the Balance Body, children should illustrate themselves in full color on one side of the upper body card and draw in the brain-nervous system or another important body system on the other side of the Balance Body. Once the Balance Body is assembled, it will spin and show both the outside and inside of the body. Our bodies are all similar in this way, as our internal systems all work to keep us healthy overall. Our organs are an important part of this.

#### 28. KID PUZZLE PIECES

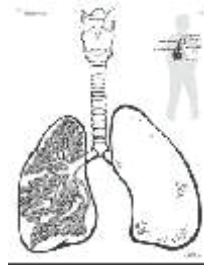
Use R52024 Kid Puzzle Pieces for this project. It comes in a classroom pack of 24. Each kid gets her or his own Kid Puzzle piece but before decorating, discuss with your class about one particular organ, such as the heart or lungs. Everyone has them! So that should be the first thing that your students draw onto the puzzle pieces. They can then draw their own likenesses around the organ. Once the pieces are done, connect each one together in a long line to represent the diversity of our outsides with the unity of our insides.

#### 29. NECKTIE RESPIRATORY SYSTEM

Create a model respiratory system that fits on your body. Pages 26 and 27 have templates for this activity.



Photocopy the esophagus and lungs. Trace the outline onto card paper and cut out the necktie. The easiest way to cut into the opening is to fold the sheet in half. Start from the fold and cut out the inside of the tie. When you're done, cut an opening in the back of the neck loop so students can wear it around their neck. Color in and label the artwork and tape or glue the lungs and esophagus onto the necktie using the image guide in the handout for reference.



Learn about major parts of the respiratory system:

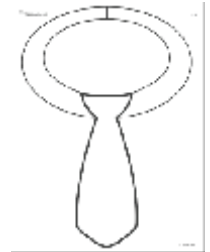
The esophagus is the muscular tube that transports food from the mouth to the stomach.

The larynx is called the "Voice Box." This specialized organ is used for breathing, making sounds and preventing food from entering the trachea.

The trachea, also called the "Wind Pipe," connects the larynx to the lungs. It's used to pass air from the mouth/nose to the lungs and back again.

The lungs process the air we breathe. They take the oxygen from the air and transport it into the blood while taking the waste gas, or carbon dioxide, from the blood and out of the body.

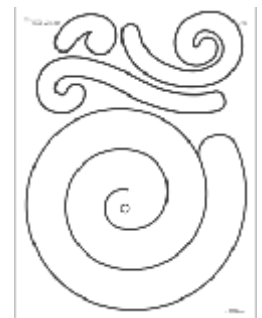
Bronchioles are tiny little lobes in the lungs that regulate the flow of gases into and out of the blood.



#### 30. PAINT BELLOWS LUNGS

We breathe about 25 times every minute without even thinking about it. Let's create a model to really study how the lungs work. Your lungs are very complex organs, but at their most basic, they take in fresh oxygen and expel waste carbon dioxide. There are no muscles in the lungs, so the muscles around and below the lungs do all of the work. When we are stressed or panicked, we use our chest muscles to take in short, quick breaths. When we are relaxed, laughing or working efficiently we use the muscles in the bottom portion of our abdomen to take in larger, more controlled breaths. Use this art idea to demonstrate the difference!

Trace the variety of shapes and spirals featured on page 28 of the handout onto card paper. Cut the shapes out. Lay the large spiral in a paint tray and spritz lightly with Roylco's 5419 Paint Bellows or place the other shapes on the large spiral beforehand. To make a beautiful, speckled pattern, remove the caps from the paint bellows and then squeeze and draw up a small amount of paint into the bellows. Aim the bellows



at the spiral in the tray and squeeze and release the bellows to spritz out a light mist of paint. Arrange the shapes over the spiral and draw a second paint color into a second Paint Bellow. Spritz more paint over the shapes. When complete, remove the shapes to reveal their "shadow."

Lungs work in a similar way to the paint bellows. Squeezing the bellows is similar to our diaphragm muscles, which rise



up in our chest to compress our lungs. Releasing the bellows is similar to relaxing our muscles—air draws into the bellows just like it draws into the lungs.

Demonstrate the difference between short, quick breaths and deep abdominal breaths. Use an empty paint bellow to show this. Short breaths are a lot more work and far less efficient than deeper breaths.

### 31. BLOOD CONTENTS

Your blood circulatory system is like your body's highway! That's a good visual analogy for your students! The bloodstream is an integral part of your body as it allows for the transfer and passage of nutrients to different parts of your body.

A blood cell is like a mailperson. It delivers and supplies all the important (and some junky) material needed for your organs, tissues and bones to function properly. But what is the bloodstream made of? There's plasma (the fluid that carries the blood cells through), white blood cells (cells that help fight off infections and other bad cells), red blood cells (cells that carry oxygen and iron to organs and tissues) and platelets (special cells which help clot up any area that's been injured and is excessively bleeding). But how can you visually represent these blood contents? Use long thin clear plastic bags and fill with a bit of water. Hold up the open end in one hand and then dump in the following. Talk about each ingredient as you add to the tube:

- i. Plasma represented by Corn syrup
- ii. White blood cells represented by Mini white marshmallows
- iii. Red blood cells represented by Whole wheat Cheerios®
- iv. Platelets represented by White rice

Secure the end of the bag once it is half-filled. If you tilt the tube from side to side, you can give children a glimpse of what the bloodstream looks like as it's flowing.

### 32. I MADE MY HEART RACE

The heart is a muscle located a little to the left from the middle of the chest, and it's about the size of your fist. The heart pumps blood through the body. The blood provides the body with oxygen and nutrients it needs and carries away waste.

The right side of the heart receives blood from the body and pumps it to the lungs. The left side of the heart receives blood from the lungs and pumps it out to the body. Before each beat, the heart fills with blood. The muscle then contracts (or squeezes) to squirt blood through the veins and arteries and throughout the body.

You can make a simple tool to demonstrate how often your heart beats! Note: Keep in mind that this

technique does not work for everyone. Use the templates on page 29 of the handout. Cut strips of paper 6 cm x 1.5 cm and fold in half. Bend the ends out a little so that it isn't making a rigid V-shape but more of a relaxed open-book shape. Turn one hand so that the palm faces up. Place the paper strip on the inside of the wrist, just below the thumb where you can feel your pulse.



Each time the heart beats you will see the paper move. This is caused by the contraction or squeezing of the heart. Count the number of times the paper moves (or the heart beats) in one minute. You should count between 70 and 100 heart beats. Make this part easier by counting the number of beats in a 6 second time span and adding a zero—this will give you approximately the number of beats per minute. Pick one or two students that are able to demonstrate how it works and have the class work with them to count the number of beats per minute.

Record the number of beats per minute on the I Made My Heart Race template badges on page 30 and color in. Cut out the hearts, place a roll of tape on the back of the heart. Students can paste the badge over their heart area to proudly display their exercising accomplishments!



Just like any muscle in the body, the heart benefits from exercise. Once you have an approximate number of beats per minute at a relaxed or resting state, exercise your body and see what effect it has on the heart. To raise the heart rate, increase the oxygen circulation and get the mind and body ready for learning, Roylco has developed R62014 Einstein Exercises! It combines cardiovascular activities with balance exercises to increase blood flow and oxygen to the brain while focusing students' attention on tasks. Do one of the suggested exercise routines for 15 to 20 minutes. Check the heart rate again with the slip of paper. What happened? You'll see that the heart rate has increased which means there is more blood and oxygen flowing to the brain!

### 33. HOW MUSCLES WORK

Movement would not be possible without our muscles. There are three types. Each type performs a different function:

Skeletal muscles are attached to the bones. They are used in voluntary movement, which means that you control what they do such as kicking a soccer ball, waving your hand or smiling.

Smooth muscles are known as involuntary muscles or muscles that operate on their own. They are found throughout the body, such as along the stomach, blood vessels, digestive system, the eyes, lungs, and help to move food through the digestive system, regulate blood flow, decrease the size of the pupils when there is too much light and help with breathing.

Cardiac muscles are the third type of muscles which are also known as MY-oh-KAR-dee-UM (myocardium). They are only found in the heart and they help to pump blood through the heart's chambers.

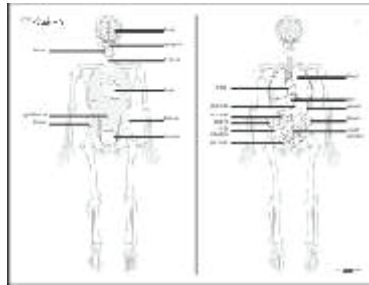
To make a muscle sleeve, use the arm muscle rubbing from our R48025 My Incredibly Amazing Body and put a piece of R15213 Color Diffusing Paper on top. Rub on top with crayons. Once students have finished with the rubbing, cut it out. Cut along the sides of the bicep



muscle so that it can bulge up when the entire sleeve is folded. Tape the muscle sleeve around the inside of the student's arm using masking tape. You can also make arm bands by cutting out strips of paper and attaching them to either end of the paper muscle. The top should wrap just under the shoulder, and the bottom strip of masking tape wraps around the forearm, just below the elbow. Have the student bend his or her arm and point out how the biceps muscle bulges and pushes up.

### 34. SALT CLAY HUMAN ORGANS

Ever wonder what organs actually look like? Children are fascinated with the inner workings of their bodies especially because it's something they can't see but yet is definitely a part of them! Our product R48002 My Size Insides features 15 organs that are vital for bodily functions. Give the shapes to each child so that they can use it as reference for their sculptures. Alternatively, use the diagrams on page 25 to reference the appearance and placement of organs. Note: Organs do not have to be life-sized.



Each child can make a single organ using our special salt clay. Using their hands and fingers to exercise their sculpting abilities will greatly encourage mind to body interaction and help children get a real feel for their art! Leaving the clay to dry will add another dimension to their projects as they can then paint the organs. After the organs are dry, combine all the organs together and instruct the groups to arrange the organs in the correct order on a desk or on a printout of the human body. Enlarge the skeleton diagram on page 20 to fit on 11 x 17" paper or larger and use as a guide for placing the organs. Note: Organs will have to be smaller to fit onto the printout.

### 35. KIDNEY FUNCTIONS

Demonstrate the importance of a very natural and significant filtration system—your own kidneys! These organs help to keep your body free of toxins and wastes by filtering your blood through special meshes of tissue. Show how this is done by grabbing a glass jar, some cheesecloth and a cup of muddy water. Stretch the cheesecloth across the jar opening and secure the edges with an elastic. Then pour the water onto the cheesecloth-covered opening. The clear water that comes out in the bottom represents the blood that passes through the kidneys and comes out clean. The rest of the stuff goes where? You guessed it: to the bladder and to the urinary tract where it's expelled from the body.

### 36. ZIP LOCK STOMACH CONTENTS

Remember the digested oatmeal? As if we couldn't gross you out any further, here's another way to show how food gets broken down in your stomach. Ask your students how big they think their stomachs are. Allow for responses and explanations why before telling them that the stomach is only about the size of your fist. The stomach is also not part of the stomach area. The stomach organ is totally separate

from your intestines, where the majority of food is digested.

Your stomach is basically like a preparation place for your food to get mushed up. The stomach releases acidic fluids that are made up mostly of hydrochloric acid. This type of acid is a highly corrosive or destructive type of acid in its true form. Because of this, your stomach has a protective lining that keeps the acid from burning any other tissues in the body. Any food that gets trapped in the stomach is then broken down to a mushy substance. Your stomach also has muscles in it that help to knead the food down into a pulp.

To demonstrate this, combine toast, a peeled banana and orange juice into a Ziploc® bag. Seal the bag then pass it around to all your students. Instruct audience to willingly massage the contents of the bag. Make sure you really squeeze those stomach contents together! Now the food's all ready for the intestines!

Be sure to talk about the size of our stomachs in relation to the amount of foods we eat. The small size of your stomach is the reason why many nutritionists say that a meal should only consist of what you can fit in the palm of your hand. The smaller portions will help your stomach digest food more efficiently and effectively.

### 37. SALT CLAY INTESTINES

Use salt clay to represent the intestines! Distribute copies of the template on page 19 in the handout that show the placement of the large and small intestines and the stomach. Distribute R52004 Card Characters to your students. The card characters will help children to visually demonstrate how and where parts of the intestines connect.

Start by kneading the salt clay into a smooth consistency. Add some red food coloring to the salt clay to die it red or pink. Use different shades of red to differentiate between the esophagus, stomach, small and large intestines. First start by rolling the salt clay into thin long tubes (you will need more than one tube to help arrange the intestines consistently). This will be the small intestine and the esophagus. For the stomach, create a kidney-bean shape. Don't forget to add a beginning and end pipe (known as the duodenum). The large intestine is a thicker and smaller version of the small intestine, and ends with the rectum.

To connect the pieces, start with the esophagus. Press the esophagus down onto the card character from the mouth area to the stomach. Attach the stomach to the end of the esophagus then match the duodenum with the start of the small intestine. Attach the other pieces of the intestine together to make a squiggly design. Gently press the clay together to keep it within the card character's outline. Finish the small intestine at the bottom left corner of the card character's digestive area. Attach the large intestine from the bottom left. Lead it up to the top left corner, then to the top right corner, down to the bottom right corner and halfway towards the left to make a near-enclosed box. Attach the rectum to finish.

With a visual representation of the digestive system, students will get a better understanding of how food is digested and how it travels through the digestive tract. Students can then color their card character in if they wish.

### 38. NYLON SOCK DIGESTIVE TRACT

For this activity, you'll need to have a strong stomach! Besides that, you'll need a basic sheer nylon sock, an apron, a plastic spoon, a covered workstation (with newspapers or



paper towels), some hot water in a cup and oats in a bowl. Start by making some oatmeal. You can add the hot water to the oats in front of the kids to show them what food looks like when it's been in their stomachs for a while. Add one Dixie cup of hot water to one Dixie cup of oats. The hot water represents saliva while the oats represent food that's chewed up in our mouths. The oats should turn into thick guppy chowder.

Next, cut across a shin of the sock. The sock represents the digestive tract which food travels through. The part of the sock that slips the foot is what you'll use for this activity. Hold onto the open end of the sock and spoon all of the oatmeal mixture into the sock. Once it's completely filled, tie the open end with an elastic. Turn the nylon sock upside down so that you're holding the toe end; the tied end should point straight into the oatmeal bowl.

Then, start kneading! While holding the nylon sock upright in one hand, create a chokehold with your free hand and push the oatmeal through the sock. This is the part that children may want you to replay several times; we'll give you more ideas for this activity in just a bit. Now, as you're kneading, you're going to tell your students that the digestive tract is lined with muscles that help pump the food through. That's what your hands are doing right now.

Whatever comes out of the sides of the sock (as you can obviously see) are the nutrients that the body absorbs from the food. Talk about the little absorption cells that line the intestines. These are called cilia and they help transfer these nutrients to the bloodstream. Basically, they strip away all the best parts of the food until we're left with whatever remains after you've reached the bottom of the sock. Untie the elastic at the end and pull out the ball of compacted oatmeal to show to your class. It's excretion! Not so yummy now, is it?

Some other great ideas are to use a variety of foods that consist of the everyday North American diet to push through the "digestive tract." Remember to add water to represent saliva before you stuff everything into the digestive tract. Push fast food through the nylon sock and you'll see how hard and sticky it gets! Push steamed fruits and veggies through and you'll see how easily they pass through. Great for replay value!

### 39. MY AMAZING HUMAN BODY LIFE-SIZED CHILD'S BODY

With the Amazing Human Body activity, children will get to combine their knowledge of organ systems with art materials to create a life-sized version of what's inside everyone's bodies! Our R48025 Incredibly Amazing Human Body product has it all: rubbing plates of 8 body systems that are separated into the major body part areas (such as the head, arms, leg, torso, etc.) and miniature versions of the complete body systems that your students can reference in their own activities. Let children observe the body system images to see how the organs are organized in relation to their own bodies.

For this activity, you will need to find paper that is roughly the length of a child, which is about 45 to 50 inches (115 cm to 130 cm). You can get butcher's paper or use several Bristol board sheets taped together for this activity as well as additional sheets of paper for children to do their rubbings on. This activity is a great way to combine everything they've learned so far about organs and body

systems and to help them visualize how the inner body looks like. Divide your class into groups of 3-4 children. Each group can pick one body system to work on (doubles are fine too). Ask each group to briefly describe why their body system is important to the rest of the body's function. Keep it short but informative and help the students along if they aren't completely sure of the facts about their body system. After discussion, have each group pick one person to be traced. The remaining students will be doing the tracing. The child to be traced should lie down onto the outstretched paper while the remaining children trace every part of the first child's body with thick marker.

Show the students how to avoid staining their colleagues' clothing by placing the palm of their hands against the part of the body that's being traced. That way if any marker gets too close, it can be washed off skin easier than off cloth. Once the tracing is complete, hand out crayons to the groups so that they can make their rubbings of the entire body system.

Encourage them to use different colors to make their body system really pop out. The body system rubbing plates are head to toe illustrations, but if your students wish to draw their colleague's faces, they may finish their rubbing illustrations at the neck. Cut out the rubbings and paste onto the outlined body. Children can use their miniatures to see how all of the parts of the body system fit together. The interactivity of this project is another thing the students will enjoy as they learn to communicate with each other and make observations about the art they make. For your students' projects, hang up the artwork for the entire class to see or use as life-sized models to help you teach your children about the various body systems and their functions.

### 40. MY INSIDE OUT BOOK

Use R52004 Card Characters to make an Inside-Out booklet! Each child gets about 3-4 card characters and can draw one body system on each of them. The final card character should be an illustration of the student. Place the body system card characters one on top of the other with the student's self-portrait on the very top. Punch holes through one side of the card characters and secure with binding rings or string. Use the reference guides in the R48025 My Amazing Human Body kit to give your students an understanding of the different body systems.

### 41. BIG HUGE FINGERPAINT KID

For this activity, students will get to see that all bodies are the same underneath, regardless of skin color, face shape, hair color and other appearance features. Using our 75401 Big Huge Fingerpaint Kids, children can fingerpaint their own likenesses onto one side of the paper. This tactile approach will emphasize mind to hand coordination and help children to "self-reference" or identify with their own appearances. Provide your students with a variety of fingerpaint colors to use. Once they are finished with their illustrations, leave the paper to dry overnight.

Turn the Big Huge



Fingerpaint Kid paper over to the blank side the next day. This next step is optional. You can substitute for printouts, but this adds another level of fun to this activity. Hang up or tape a cotton t-shirt to your classroom board. Get your students to pop out the grip card organs from our R48002 My Size Insides and stick them in order onto the t-shirt. Double check with the images we provide in the kit guide to make sure your students have identified the proper placement for each organ. Next, give back the Big Huge Fingerpaint Kids to your students and have them turn the paper over to the blank side.

Using pencil crayons or markers, all students must draw and color the organs that appear on the t-shirt onto the paper. Move around your students' desks and give your students guidelines on where to place certain organs, what organ they should draw next and what colors they should use to identify the organs with. Based on your students' illustrations, you will see which organs are more detailed and which are more so simple representations, however, they will be able to realize how the organs are placed in relation to one another using the guides we provided. A great way to show how similar our bodies are on the inside.

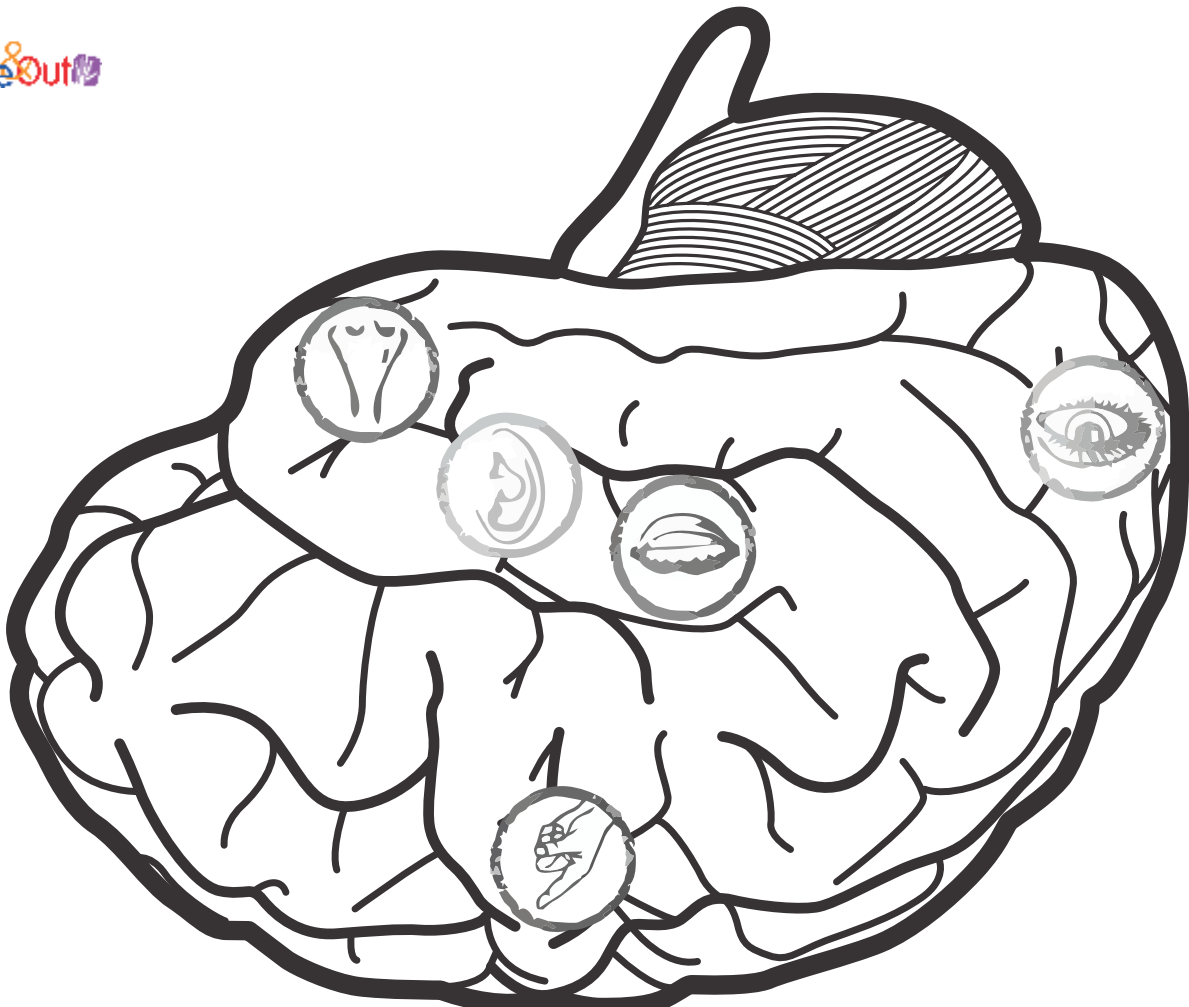
#### 42. BRAIN MOLDS

Now it's time for some brain surgery! Our R48011 Brain Molds are sure to be a hit with your students. Combine art with science to produce an art project that will not only educate your students, but fascinate them too! The brain molds come in 8 pieces, featuring both halves of the brain, the cerebrum and cerebellum molds. Make all 8 molds or make only the two brain halves. For one brain mold, you will need 2 envelopes of plain Knox® Gelatin, vegetable oil, 2 cups of cold water and 2 cups of hot water. Prepare a small plastic bin full of sand. Place the brain molds into the sand bin.

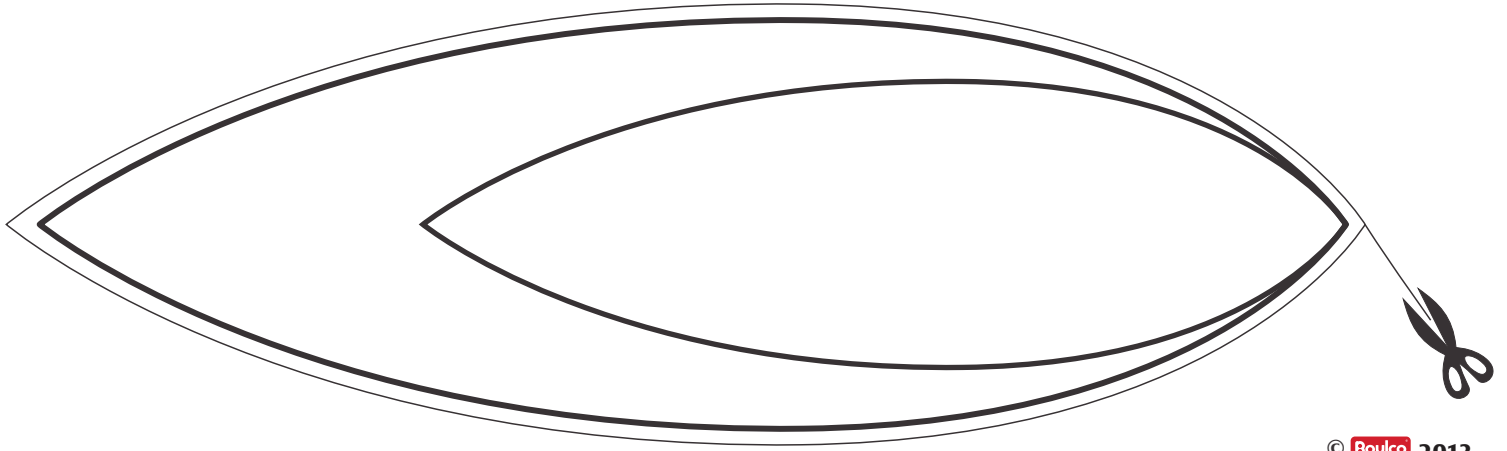
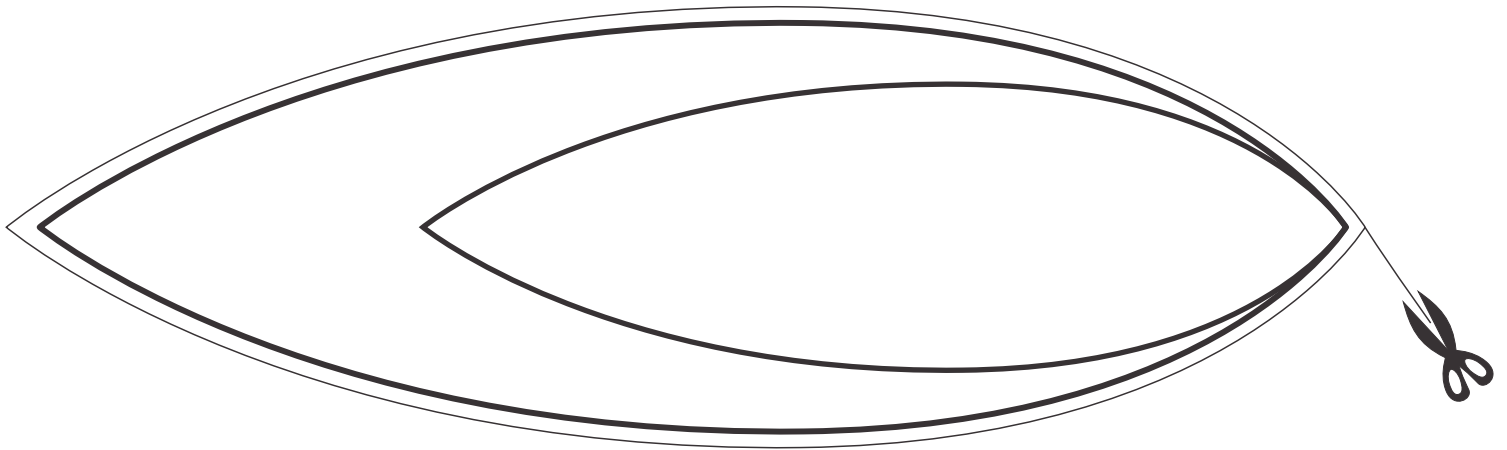
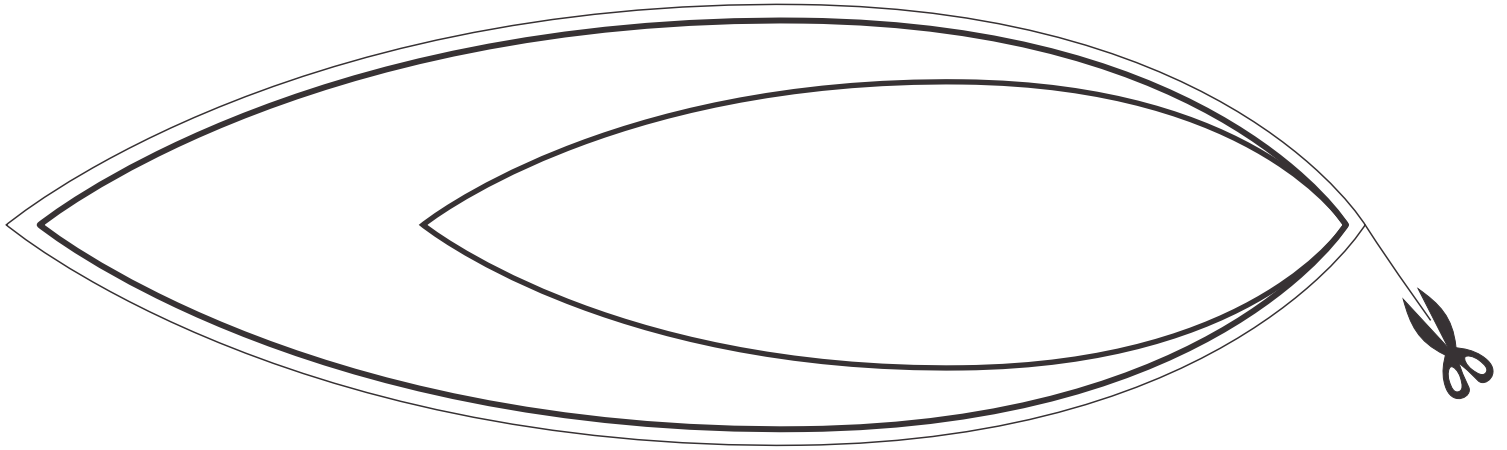
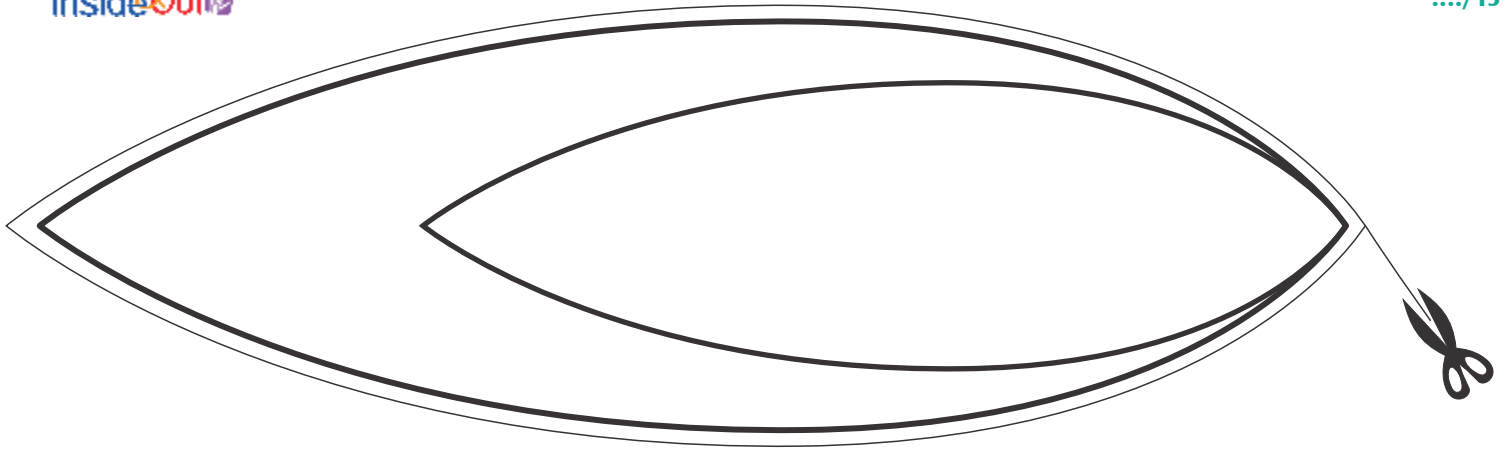
Mix the gelatin powder with the cold water. Stir until the gelatin is nearly dissolved, then add in the hot water and stir. The gelatin will start to thicken at this point. Spread a bit of oil around the inside of the molds to make it easier to remove the gel brain. Pour the full amount into one half of the brain mold. If you are making both halves of the brain mold, repeat the same steps for the second one. Place the bin into a fridge for 30 minutes to an hour. It will thicken to a dense jelly consistency. Wrap in plastic wrap if you plan to use it in several days. Note: Do not leave the gelatin brain out at room temperature for too long; the gel will harden and will be impossible to handle later.

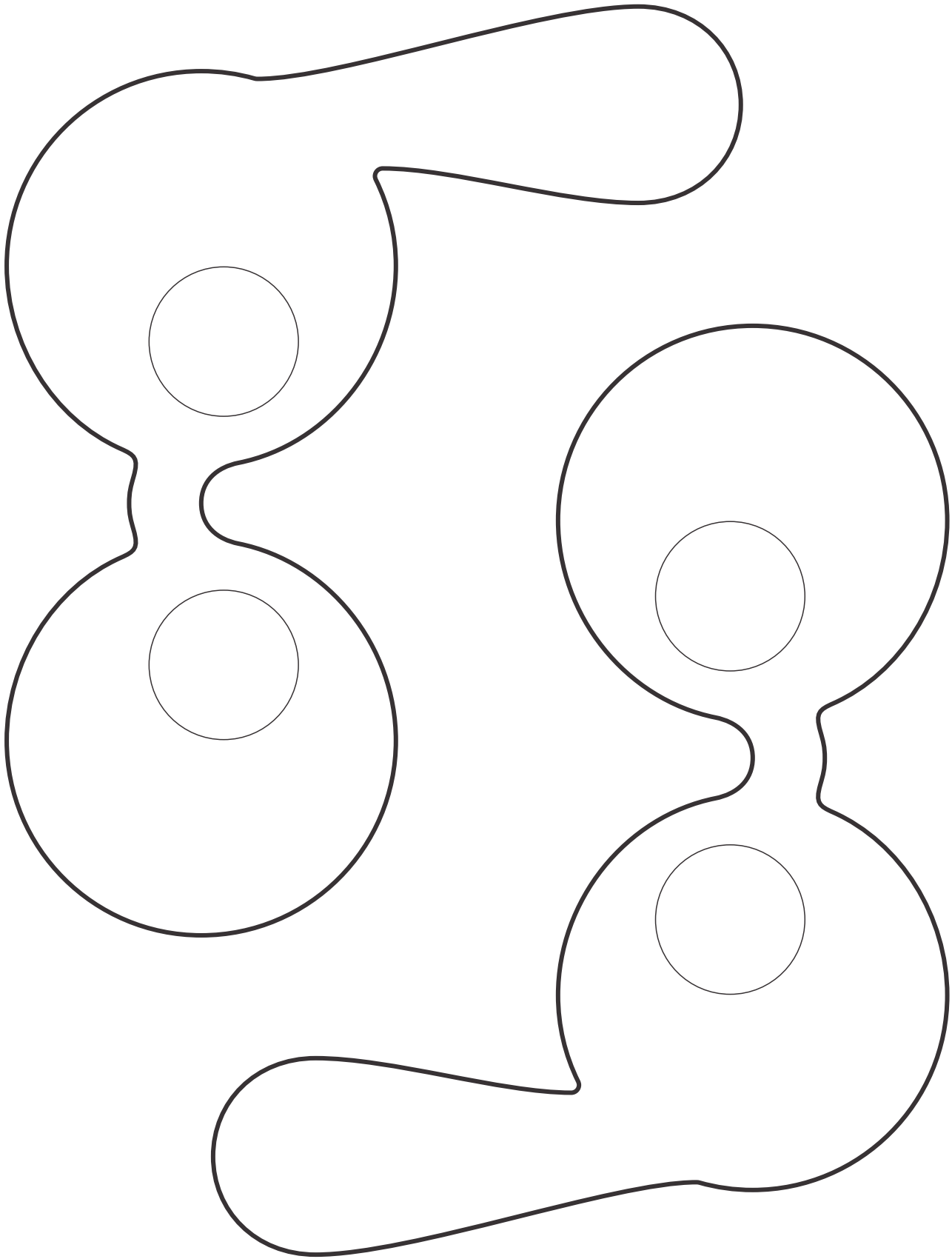
Talk to your students about the different parts of the brain and the different processes of each. Combine all the knowledge about the body that they've learned this far to relate the brain to the regulation of other body systems.

Place the gel brain halves together onto a paint tray. Place paper towels or newspapers around the work area to protect from staining as your students color the gel brain. Give your students pipettes which they can use to decorate the gel brain. Simply draw in some paint color into the pipette, insert the open end into the brain and squeeze out the paint into the gel brain. This technique will cause various parts of the brain to be distinguished from other parts. Discuss the names of these brain parts and their functions.













**Roylco**

## Best Ever Oven Bake **SALT CLAY**



Our clay recipe uses flour and salt with just a touch of vegetable oil for great texture! Add liquid watercolour paint to tint the clay. Once baked, the sculptures will last a life time! Mixing and clean up is easy—you need just one measuring cup and one bowl!

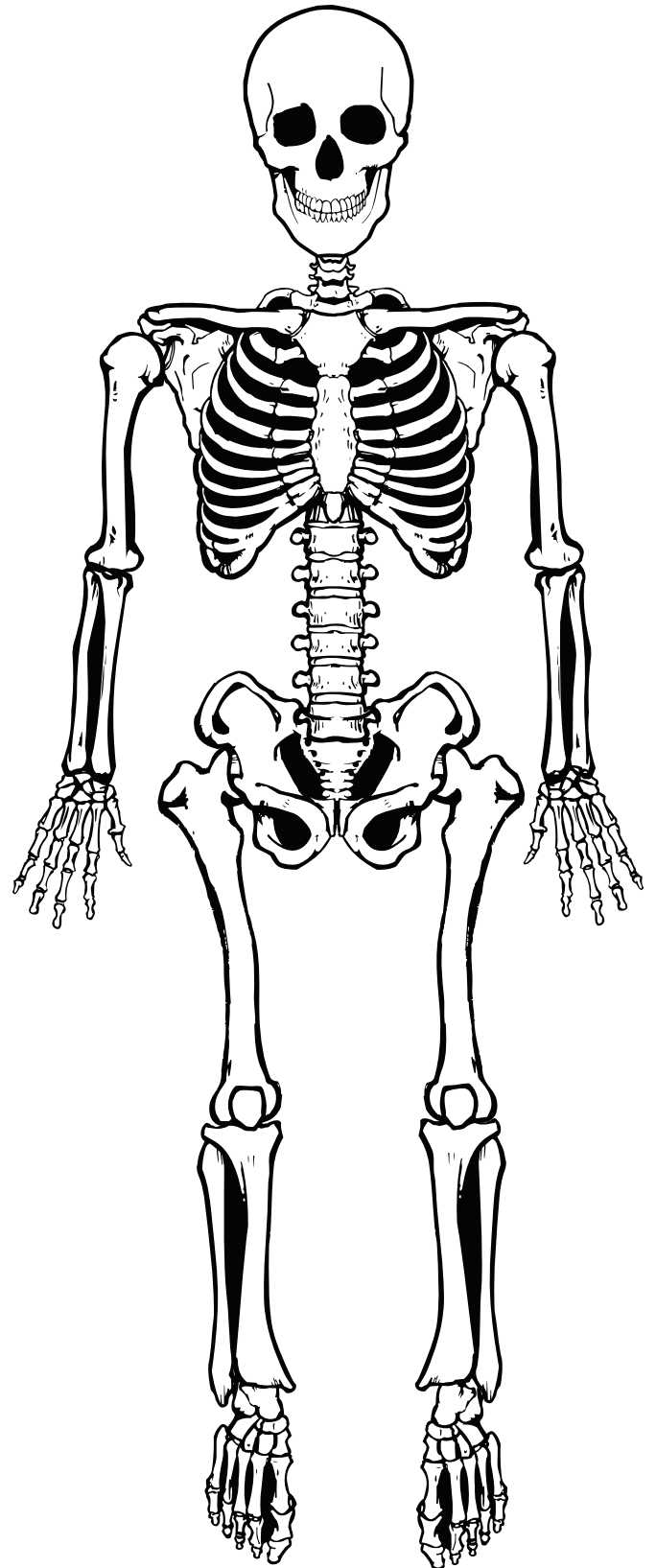
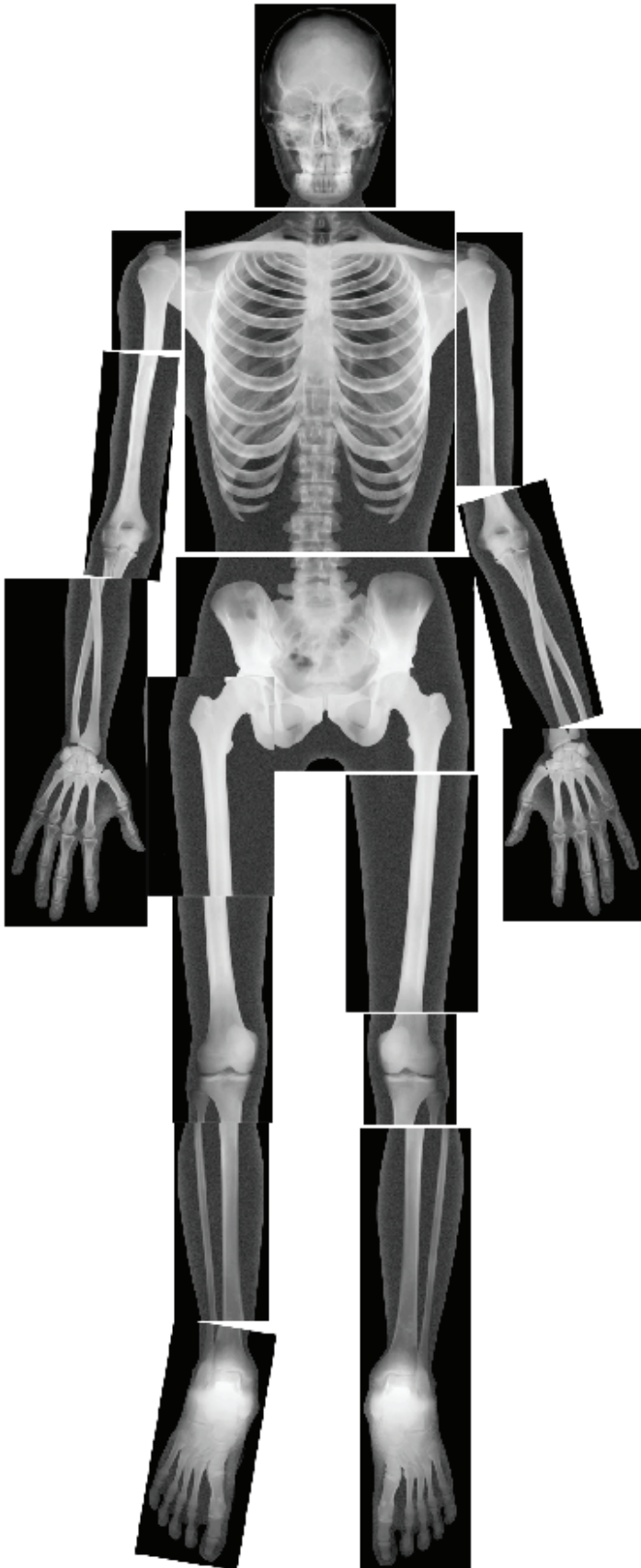
- 1 part table salt
- 2 parts all purpose flour
- 1 part water
- 10 drops vegetable oil
- Liquid Water Colour (optional)

Measure one part table salt and pour into a bowl. Use the same measuring cup to measure two parts of All Purpose flour. Pour into bowl and mix to combine. Use the same measuring cup to add one part water. finish off by adding 10 drops of vegetable oil. Note: If you add liquid water colour paint, subtract the amount from the water.

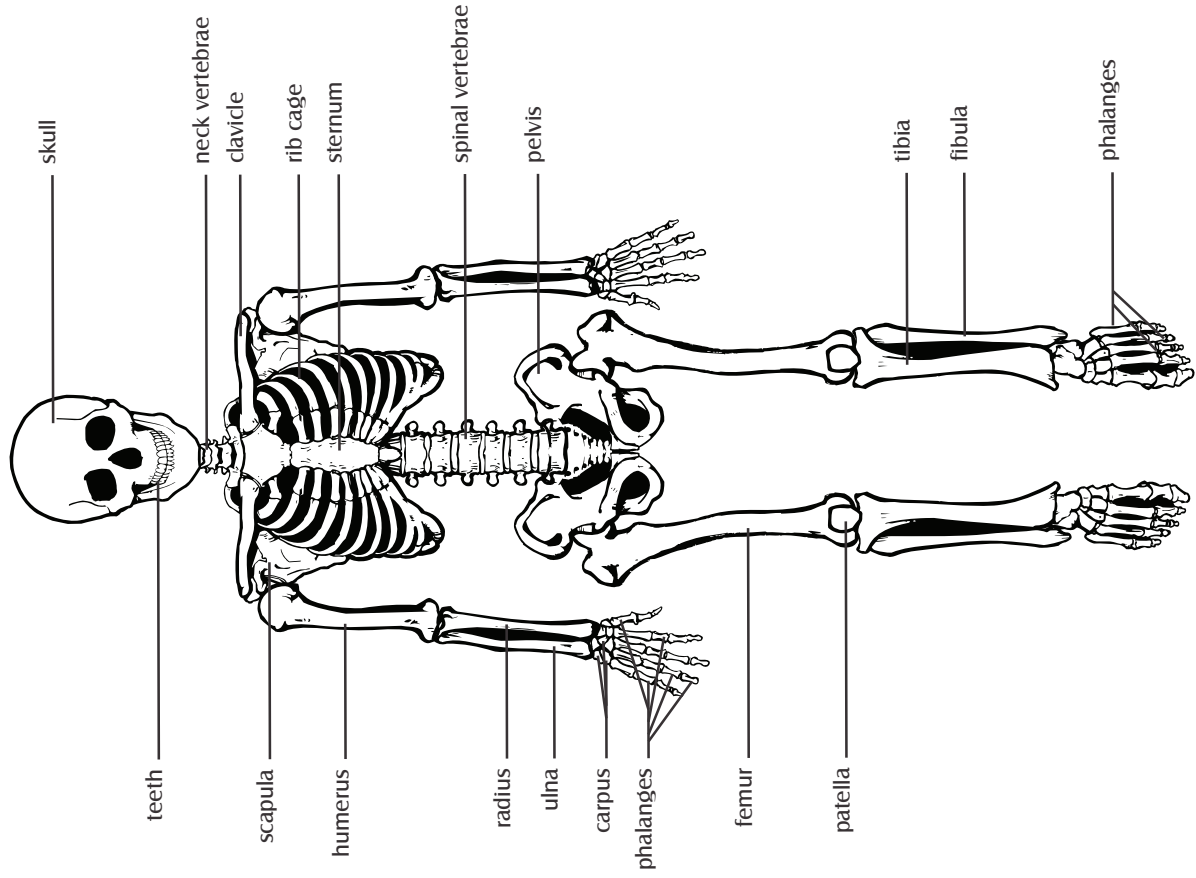
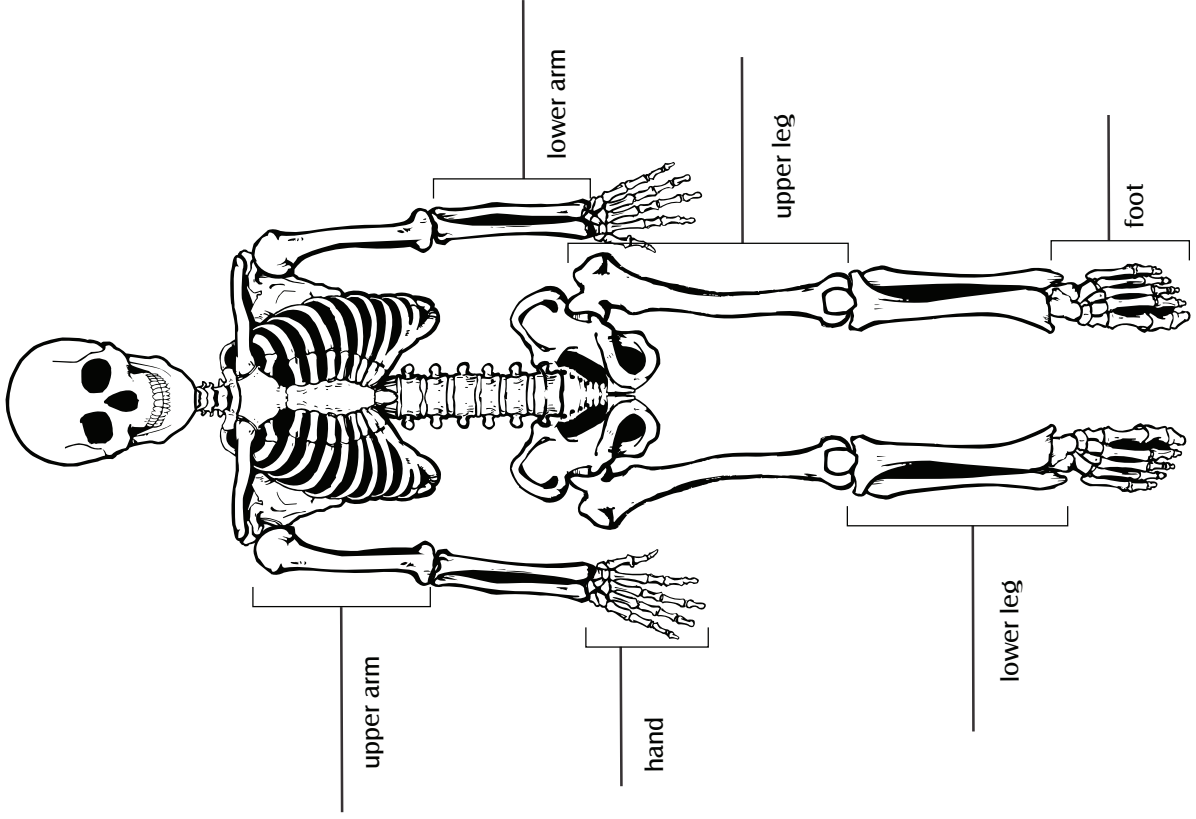
Mix tom combine. Tip: You can use a spoon, but your hands work better. The dough will be sticky at first. When it comes off your hands and away from the sides of the bowl, it's ready.

Bake at 200° until hard and dry. Tip: Bake for 30 minutes for each ¼" (0.5 cm).

Roylco's  
Human Body &  
InsideOut

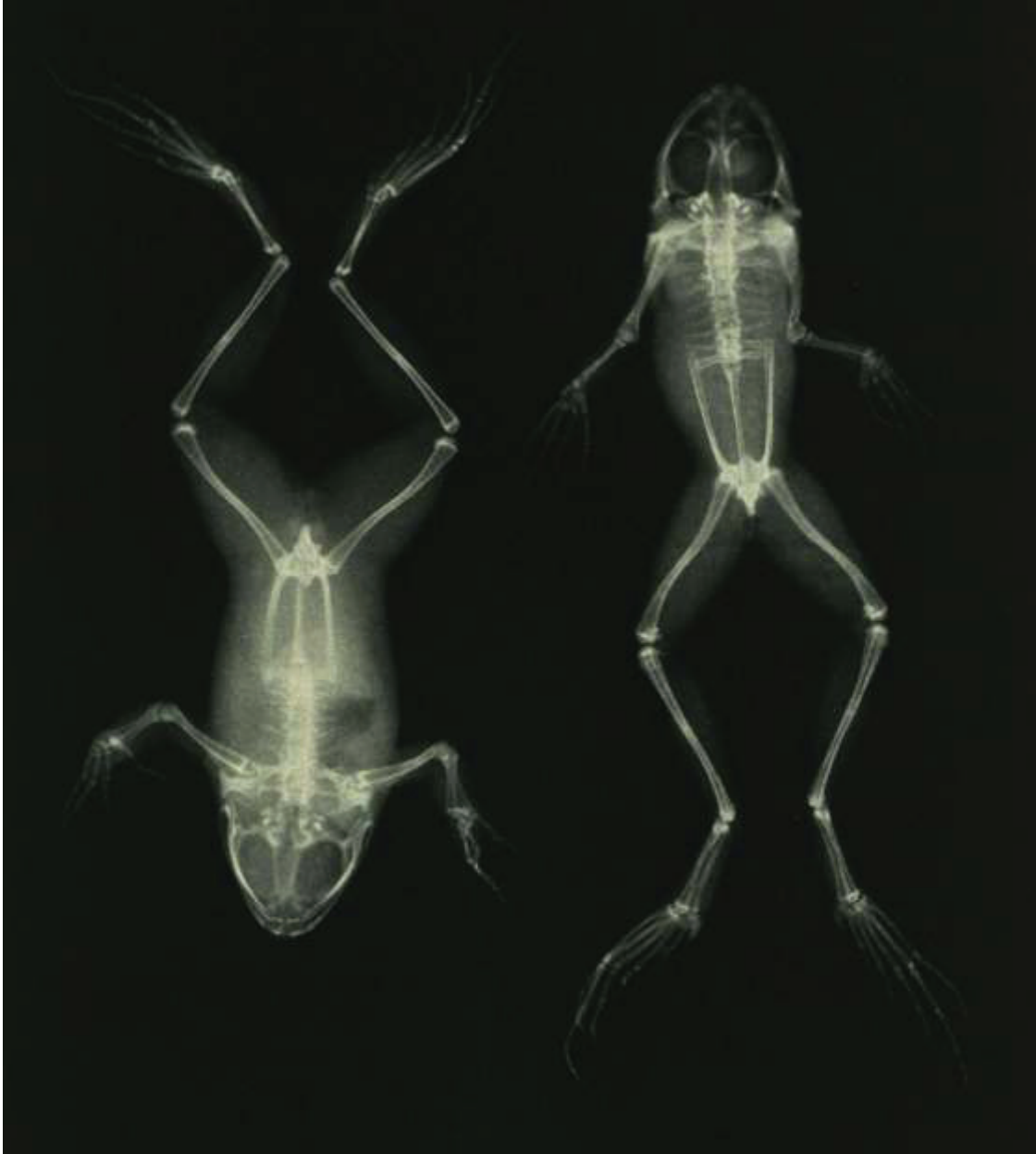


Measure My Bones











## Bendable Bead Buddy

Use your Bendable Bead Buddy to introduce bones and joints to your students.

1.



For each Bead Buddy, you will need:

- 3 pipe cleaners (12")
- 18 R2195 Little Shapes Beads
- 6 R2183 Fancy Stringing Rings
- 3 R2170 Brilliant Beads (2 big and 1 small)

2.



Make the hair. Fold one of the pipe cleaners in half and cut at the fold. Fold each of the two pieces in half and cut at the fold. You'll end up with four equal pieces

3.



Fold all four hair pipe cleaners in half and thread through one of the Stringing Rings. Fold the other two pipe cleaners in half and thread each through the same String Ring.

4.



Make the head. Bundle the four ends of the longer pipe cleaners together. Thread a big Brilliant Bead onto all four ends. Push to the top. Make a collar by threading a Stringing Ring onto the pipe cleaners. Finish with a neck by stringing on one of the small Brilliant Beads.

5.



To make the arms, fold out two of the pipe cleaners. We'll add beads to the arms later. To make the body, gather the two ends of the leg pipe cleaners together and thread on a large Brilliant Bead.

6.



To make the arms, thread four Little Shape Beads onto the arm pipe cleaners. To make hands, thread on a Stringing Ring to the end of each pipe cleaners and wrap the pipe cleaner around to the Ring to hold it securely in place.

7.



To make the legs, thread five Little Shape Beads onto the leg pipe cleaners. To make the feet, thread a Stringing Ring onto the end of the pipe cleaners and wrap to hold the Ring securely in place.

Flex and pose your new Buddy!



