

For these lessons I use *Encyclopedia of Body: From Complex Body Systems to Health and Genetics* by Miles Kelly. These lessons are written for 3rd and 6th grade. Adapt language and concepts as needed to the correct age of your child and cover more than included in the lesson if your child shows interest.

Title of Lesson 1: Building Blocks of the Body: Cells

Standards Taught: 3.HD.2, 6.HD.1		
Materials: <i>Encyclopedia of Body: From Complex Body Systems to Health and Genetics</i> by Miles Kelly Building Blocks This image Microscope Microscope Slides showing animal and plant cells	Preparation:	Implementing the Lesson: Ask your child to use the building blocks to make you something amazing. Give them time to work on their project and get it just right. Then, ask them to explain what they built to you. Praise them for their work and point out some of your favorite parts. Next, ask your child what would happen if you removed a block from the middle of their creation. Talk about how it would probably break, not work, or not look the same. Set the building aside, promising your child you will not break their creation. If possible, put it on display somewhere in your home with high visibility. Explain that, like their creation, we are made up of smaller parts. Instead of blocks, though, we are made of things called cells. Most of these cells are so small you cannot see them without a very strong microscope. They help our bodies to think, work, grow, repair, stay healthy, and even have children. They also hold our DNA, the instructions that tell our bodies how to work and what we will look like. There are lots of different types of cells, each with its own job inside of our body. Like the bricks in the block creation, our bodies need every single cell type to work correctly. Read through the cell facts appropriate to your child's age on pages 22-23 of the book and answer any questions your child may have. Point out the illustration of the cell and name the different parts and jobs in basic language. Next, explain that, unlike blocks, our cells are living things. They work, grow old, and die. However, before they die, they go through a process called cell division. Show your child the image on page 25 of the book. Explain that cells can split in half, creating two cells, each holding the information your body needs. These new cells then continue the work of the old cell. This is how your body heals after a cut, gets taller, and grows new hair or nails. Finally, explain that every living thing is made up of cells, though the cells of plants and animals are different. Show your child the image of the plant cell and place it beside the image of the animal cell in the book. Ask them to point out the differences between the two and discuss how plants and animals are different and have different needs (e.g. plants get their energy from the sun while animals eat food). Allow your child to observe the slides under the microscope and compare and contrast the cells.

Title of Lesson 2: Building Blocks of the Body: Tissues

Standards Taught: 3.HD.2, 6.HD.1		
Materials:	Preparation:	Implementing the Lesson:
<i>Encyclopedia of Body: From Complex Body Systems to Health and Genetics</i> by Miles Kelly		<p>Review with your child the lesson on cells and how they make up and help our bodies. Point out that, like our brick creation, cells stick together to build something bigger: tissue. Tissue is created when a group of the same types of cells stick together. These groups of cells make up the different parts of our bodies. Some types of tissues include organ tissue, epithelial (skin) tissue, muscle tissue, nerve tissue, and connective tissue. These different types of tissues make up different parts of your body.</p> <p>Read through the facts on pages 18-19 of the book with your child. Point out the images and explain that these are lung and liver tissues under a microscope. Ask your child to point out the differences between the tissues. Explain that these differences make each specific tissue especially good at doing the job that our bodies need them to do. For example, the epithelial tissue is really good at creating a covering, which makes it perfect skin tissue, because it can protect our bodies.</p> <p>Using the analogy of building blocks, point out that your child likely used blocks to create small parts, which they then attached all together to create one big structure. Our bodies use small cells (like bricks) to build tissue (the different small parts) which builds our entire body (finished structure).</p>

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Title of Lesson 3: Building Blocks of the Body: Organs

Standards Taught: 3.HD.2, 6.HD.1		
Materials:	Preparation:	Implementing the Lesson:
<p><i>Encyclopedia of Body: From Complex Body Systems to Health and Genetics</i> by Miles Kelly</p> <p>A hands-on organ model of your choice.</p> <p>Examples can be found here: Example 1 Example 2 Example 3 Example 4</p> <p>This image</p>		<p>Ask your child a few questions about cells and tissues to review the previous lessons. Allow them to use the book for reference if needed. Answer any questions they may have and emphasize the fact that cells stick together to create tissue, which creates different parts of our bodies.</p> <p>Remind your child of the different types of tissues that were discussed in the previous lesson, explaining that today we are going to learn about organ tissue. Tell your child that organ tissue is unique to the organ it is creating. Explain that organs are the part of our bodies that have a specific job and are self-contained, or work on their own. Remind your child of the pictures of the liver and lung tissue, explaining that both the liver and the lungs are organs. Explain that organs each have a special job within our bodies. The liver, for example, helps to make chemical our body needs. The lungs help us to breath.</p> <p>Teach your child the information on pages 20-21 of the book. Focus on the chart on page 21 and ask your child to point to the area of the body where each organ is as you explain what it does for that body. Emphasize that each organ is made of cells and tissue unique to that part of the body. The brain is made of brain tissue, etc. Point out that there are a few organs that our bodies can live without, but that others are necessary to survival, like the heart, brain, lungs, kidney, and liver. Without these, our bodies cannot work properly and will die. If you would like to cover more on skin see pages 38-39 of the book.</p> <p>Give your child the interactive organ model and the image. Ask your child to place each organ in the correct place on the model. As they work, ask your child to tell you the purpose of each organ. Consult the book and online resources as needed to help with correct placement.</p>

Title of Lesson 4: Building Blocks of the Body: Skeletal and Muscular System

Standards Taught: 3.HD.2, 6.HD.1		
Materials:	Preparation:	Implementing the Lesson:
<p><i>Encyclopedia of Body: From Complex Body Systems to Health and Genetics</i> by Miles Kelly</p> <p>Tent, easy to set up and any size</p> <p>Space to put up the tent</p>	<p>Pull the pieces of the tent out and lay them on the ground in the space you want to set it up</p>	<p>Ask your child to review what they learned about organs in the previous lesson. Point out that all the organs, except the skin, are on the inside of our bodies. Explain that organs are not the only things inside our bodies, though. Ask your child if they can name anything else that is inside of their body and explain why those things are important.</p> <p>When your child reaches bones or skeleton, tell them that is what we are learning about today. Explain that our bodies are held up by our skeleton. The skeleton is made up of bones throughout our bodies from our head to our toes. Without these bones, we would simply be a bag made of skin in a heap on the floor.</p> <p>Show your child the tent. Ask your child if, in its present state, the tent would make a good place to stay safe if it began to rain. Why not? Explain that the tent, lying on the ground, is not put together yet. It needs its skeleton to hold it up and make it work the way it is supposed to. Show your child the tent poles, explaining that these are like the bones in our bodies. Help your child insert the poles and put up the tent. Ask your child to describe how the tent looks different with the poles in it. Go over the information on pages 46-49, 54-55, 60-61, and 62-63 with your child. Point out the image on page 46, showing where the skull, ribs, and pelvis are. Ask your child to point to each of these areas on their own body. Next, ask your child what would happen if one of their bones was injured or missing. Pull one pole out of the tent. Point out that the tent may have fallen or may be standing but not working as well as it could. Explain that each of our bones has a specific job and, without it, our bodies wouldn't work as well.</p> <p>Next, point to the parts of the tent pole that disconnect. Explain that these help the poles fold down to be easy to transport. Tell your child that our bones have something that works like this, too. However, rather than coming apart completely, they work like a hinge on a door, allowing our bones to move and bend. Ask your child to stick their arm straight out and keep it straight. Then, ask them to touch their nose without bending their arm. Explain that our bodies have joints, like the disconnecting parts on the tent pole, which allow them to bend. Now allow your child to touch their nose while bending their arm. Ask them to point out the joints they used as they touched their nose. Explain that there are joints in their fingers, wrist, elbow, and shoulder. Read through pages 64-65 with your child.</p> <p>Finally, ask your child to pick up the tent pole and experiment. Can the tent pole move on its own? Does it bend and turn without help from something else? What about your arm? Can you move it without someone picking it up? What's the difference? Explain that our skeleton is connected to our muscles, which allow our brains to tell our bodies to move. Without muscles, we would not be able to walk, talk, or even breathe. Read the information on pages 76-77 and show your child the image on page 77. Explain that, throughout our bodies there are muscles that tighten and relax to allow us to move. These muscles are attached to the bones by tendons (show the image on page 74). Together the skeleton, muscles, tendons, and brain work together to help our bodies move. Ask your child to hold the tent pole in their hand. Then, ask them to perform a curl with the hand holding the tent while placing their opposite hand on their bicep as they do. Point out that as they move their arm they can feel the muscle moving and tensing up.</p> <p>Allow your child to put the tent back together and sleep in it for the night or ask them to help you clean it up.</p>

Title of Lesson 5: Building Blocks of the Body: Circulatory System

Standards Taught: 3.HD.2, 6.HD.1		
Materials:	Preparation:	Implementing the Lesson:
<p><i>Encyclopedia of Body: From Complex Body Systems to Health and Genetics</i> by Miles Kelly</p> <p>Stethoscope</p>		<p>Tell your child that today we are going to learn about another system that is inside of our body: the circulatory system. Explain that the circulatory system is made up of the heart, blood cells, and blood vessels. Ask your child to look at their fingernail and tell you what color they see. Then, ask your child to squeeze their nail between two fingers from the opposite hand and observe what happens. Point out that this makes the finger under the nail turn from pink to white. Finally, ask your child to release the squeezed nail and watch as it turns pink again. Explain that the finger turns white because blood is squeezed out of the blood vessels there. It turns pink again when the blood is allowed to return. This is called circulation.</p> <p>Go over the information found on pages 154-155 of the book. Explain that the heart and lungs supply blood cells, which float around in our blood vessels, with oxygen. Once the cells have oxygen, the heart pumps them out, sending them all over the body through blood vessels called arteries. Point out that the red lines on the body on page 155 are arteries and they reach every part of our body. While moving through the body, the blood cells leave the oxygen in different places and pick up carbon dioxide, which is harmful to us. The blood cells then travel back to the heart in blood vessels called veins, which are symbolized by the blue lines on the image. Explain that blood vessels with oxygen-rich cells in them are red while those without oxygen are purple or blue. Ask your child if they can see any veins on their body (wrists are a common area). If your child is especially interested in blood vessels or blood cells, cover pages 166-177.</p> <p>Next, ask your child to place their hand over their heart. Ask if they can feel anything. Give your child the stethoscope and work with them until they can hear their heart beating. Then, help your child find their pulse on their neck, wrist, and lower leg. Explain that when the heart pumps, it pushes blood throughout the body. When you feel your pulse on your neck, wrist, or leg, you are actually feeling the push from your heart. Go over pages 156-157, and 160-163 with your child, giving your child the model of the heart from the previous lessons. If your child is especially interested, cover pages 158-159.</p> <p>Finally, emphasize that, like our building blocks, the circulatory system is something that we need to build a healthy body. If our organs and other body parts cannot get the oxygen they need, they will die. The heart and blood vessels are important and we should take care of them. Briefly discuss how fatty foods can harm our heart and blood vessels by causing deposits to build up and block blood flow and how exercise and healthy foods help our heart to stay strong and our blood vessels to stay open.</p>

Title of Lesson 6: Building Blocks of the Body: Respiratory System

Standards Taught: 3.HD.2, 6.HD.1		
Materials:	Preparation:	Implementing the Lesson:
<p><i>Encyclopedia of Body: From Complex Body Systems to Health and Genetics</i> by Miles Kelly</p> <p>2 straws</p> <p>2 balloons</p> <p>Tape and/or rubber bands</p>	<p>Tape the straws together. Tape or rubber band a balloon to the end of each straw so that air will not escape if the other end of the straw is blown on. It's a good idea to stretch out the balloons before giving this to your child. For an illustration of what this should look like see this image</p>	<p>Ask your child to review the previous lesson, telling you what they remember about the circulatory system. Ask clarifying questions and allow them to answer, referencing the book as needed. Then, ask your child if they remember where the oxygen comes from that the heart helps to spread throughout the body. Remind them that this oxygen comes from the lungs. Explain that our bodies have another system, the respiratory system, which helps us to bring in oxygen and send out carbon dioxide, a gas that is harmful to our bodies. Remind your child that the blood cells pick up carbon dioxide from the body on the way back to the heart.</p> <p>Ask your child to take a deep breath in, hold it for a few seconds (not more than 5 seconds), and then let it out. Encourage your child to explain what just happened inside of their body. Show your child the image on page 201 of the book and point out the process of taking a breath. First, we breathe in through our mouth or nose. The air we breathe in then travels down our windpipe and into our lungs. Point out that we also have a diaphragm, which is a muscle that relaxes and contracts to help us breathe. Read the information on pages 206-207 with your child. Allow your child to hold/look at the interactive model of the lungs again. Then, ask your child to hold the straws with the balloons facing downwards, blow into the end of the straws opposite the balloons, and watch what happens. Explain that this is how our lungs work. As we breathe in, we push air into our lungs, which expand. When we breathe out, the air leaves our lungs, which contract. Go over pages 204-205 with your child.</p> <p>Explain that once the air is in our lungs, the heart oxygen clings to our blood cells and travels through the circulatory system. As blood cells return, they deposit carbon dioxide in the lungs, which we breathe out. If your child is especially interested in gas exchange, go through pages 208-209. You can also explore pages 210-213 for more information on coughing, hiccups, and vocal cords.</p> <p>Ask your child what would happen if our bodies did not have a healthy respiratory system. Remind them of previous lessons they've had about smoking or drugs or a time when it was difficult for them to breathe due to pollution, wildfires, or illness. Explain that our bodies need oxygen all the time. Without enough oxygen, our cells, tissues, and organs begin to die. Breathing only clean, healthy air helps our bodies to work their best because it protects our lungs and heart from things that may harm them.</p>

Title of Lesson 7: Building Blocks of the Body: Digestive System and Urinary System

Standards Taught: 3.HD.2, 6.HD.1		
Materials:	Preparation:	Implementing the Lesson:
<p><i>Encyclopedia of Body: From Complex Body Systems to Health and Genetics</i> by Miles Kelly</p> <p>A treat your child enjoys</p> <p>Glass of Water</p> <p>Toothbrush</p>		<p>Begin by giving your child their treat and allowing them to eat it. Ask them to guess which body system we are going to cover today. Explain that we are going to learn about the digestive system, or the parts of your body that take food, like the treat, and turn it into energy for our bodies to use.</p> <p>Ask your child to tell you what happens to their treat after they eat it. Go over pages 216-217 with your child, explaining that the first part of breaking down food is chewing it with our teeth. The teeth grind the food into smaller pieces and allow saliva, a chemical we usually call spit, to begin breaking it down further. Remind your child of dental hygiene practices and encourage them to practice by brushing their teeth. Turn to pages 224-225 and use the image to explain that from our mouths, food goes down our esophagus and into our stomach. In the stomach, acid (chemicals) break down the food into even smaller pieces and makes it into a liquid. The acid in your stomach is what also gives you a tummy ache when you are hungry. The acid begins to attack the walls of your stomach, sending a signal that it needs more food. From the stomach, the liquid travels into the small intestine where the parts of the food you eat that are good for your body pass through into your blood cells. Foods that the small intestine cannot digest are pushed through your large intestine and out your anus (bum) through feces (poop). This is one way your body cleans out things that can harm you.</p> <p>Give your child the interactive models of the digestive organs and go through pages 232-245 with your child, pointing out the purpose of each organ as you do. Explain that your body works hard to balance the types of foods you eat into the vitamins and minerals you need. It is important to feed your body lots of healthy options so that it can use as much of your food as possible.</p> <p>Next, ask your child to drink a glass of water. Explain that, like food, this water will pass through their body, be filtered, and help remove waste. Read through pages 246-253 with your child, allowing them to use the organ model as needed. If your child is especially interested in the urinary system cover page 254. Point out that Heavenly Father has given our bodies a way to protect themselves from things that may be harmful. Briefly discuss the immune system and how our bodies learn to fight against and protect us from germs. More info. on the immune system can be found on pages 182-197.</p> <p>*The Magic School Bus Series has a great show about the digestive system.</p>

Title of Lesson 8: Building Blocks of the Body: Nervous System

Standards Taught: 3.HD.2, 6.HD.1		
Materials:	Preparation:	Implementing the Lesson:
<p><i>Encyclopedia of Body: From Complex Body Systems to Health and Genetics</i> by Miles Kelly</p> <p>This video</p> <p>A ruler</p>		<p>With your child, review all the things you've learned about the body so far. Give your child the interactive model of the brain from previous lessons and explain that this is the organ that controls it all. The brain is like the computer of the body. It tells our heart to beat, our lungs to breathe, and our stomach to growl. It tells our muscles to move and our bones to heal. It helps our senses to work and our bodies to stay balanced. It helps us to think, remember, and have feelings. It even helps us figure out what is happening in the world and how we react to it. Without our brain, our bodies would not work.</p> <p>Turn to page 92 of the book and explain that our brains are a part of the nervous system. It sends electric signals throughout our body through a series of nerves. Show your child the images on pages 92 and 103 and point out the nerves. Explain that the nervous system consists of our brain, our spinal cord, and our nerves. Ask your child to point to the part of their body where their brain is. Then, explain that the spinal cord is inside their body, running along their backbone, or spine. The spinal cord is like the freeway of signals between the brain and the body.</p> <p>Watch the video with your child, pausing to point out the illustration of nerves sending a signal from the eyes, to the brain, and back to the hand (when all the kids are in the hallway holding pipe cleaner models). Explain that this is what happens when our body wants to do something. Our senses send a signal to our brain along the nerves. The brain then figures out what to do about that signal (e.g. if we touch a hot stove, we need to move our fingers) and sends another signal back to the correct body part along the nerves needed. Some things our brain does automatically, without input. We breathe, balance, digest, our heart beats, and we blink without sensory input. Other things require that our senses help our brain figure it out.</p> <p>Allow your child to try the ruler test in the video. Try at least 5 different ruler drops to get a good study. Compare reaction times. Experiment with different hands, different hand positions, and different distractions. You may you're your child to hum, listen to music, or count at the same time the ruler is dropped. Point out that it takes some time from your eyes seeing to your hand moving and this time is when the signals are moving throughout your body. Explain that reaction time can slow down if our brain is trying to focus on too many things at once and that is why it takes longer to catch the ruler when we are distracted.</p> <p>Next, go through information appropriate to your child's age and interest levels on pages 94-151. You do not have to cover all of the information, but focus on what your child wants to learn.</p>