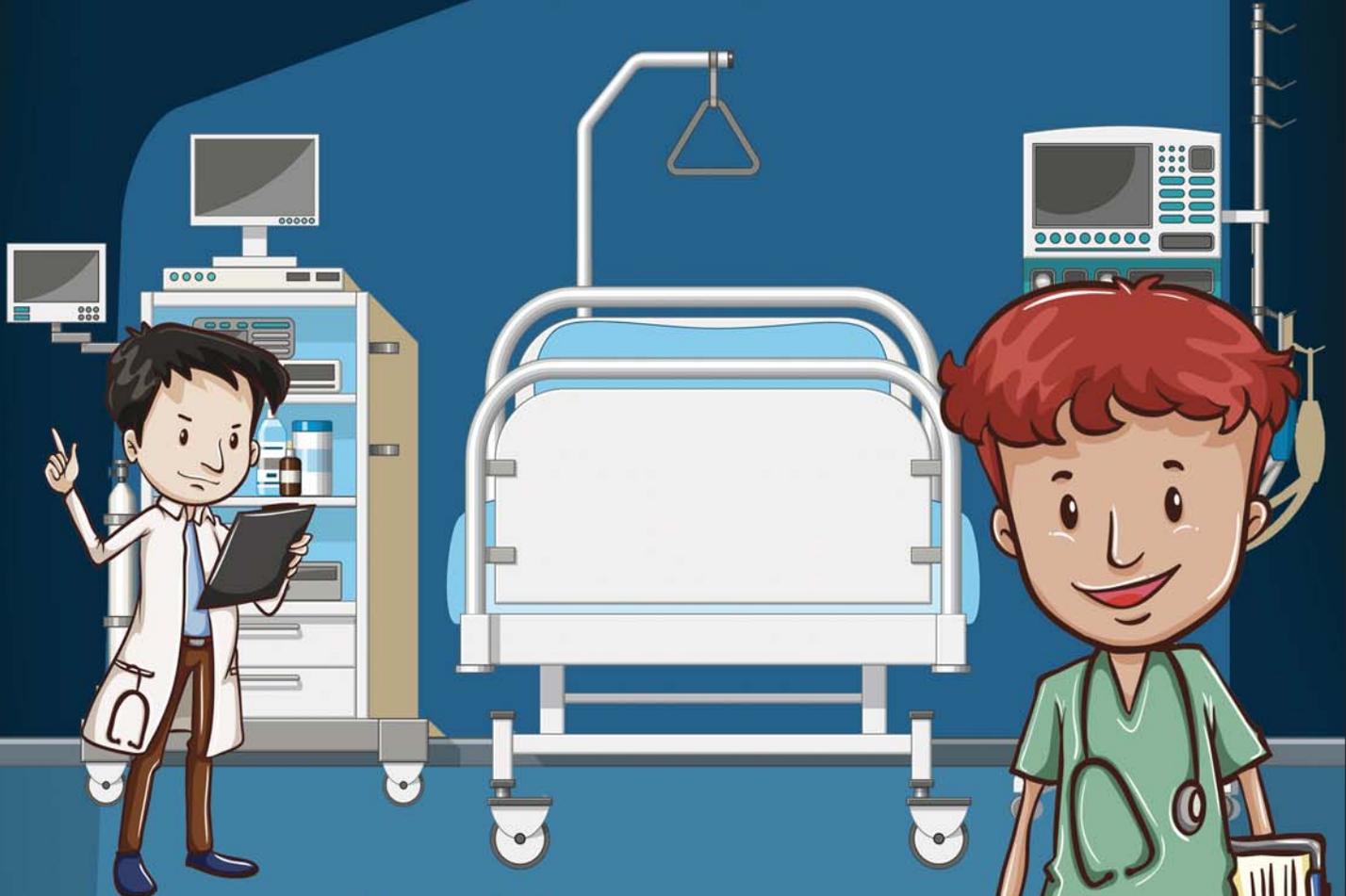


Human Body & Forensics Guide



WinterPromise

Ebook Version Printing Instructions: If you'd like to print this resource in its entirety, print the pages single-sided in color or black and white, and hole-punch or bind on the left side.

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Human Body & Forensics

Science for 3rd-7th Grade

Welcome to Your Science Program!

Each week your student will work through several resources. These resources are designed to be done orally together with the parent, but could be done independently if the student is older and accustomed to working on their own. Most students should be able to complete “Lab Reports” in “Your One-of-a-Kind Human Body” on their own, and can complete science activities and experiments together with a parent or sibling. Younger students may be able to dictate “Lab Report” answers to a parent. These journal assignments are a necessary part of reinforcement for what students are learning, although younger students can do just those assignments that seem most suitable.

Each week there are suggested activities, some of which should be completed. There is a lot of content in the activities, so we encourage you to try to do at least one or two of them each week. Many of them are very simple to complete and require limited supplies. Any needed supplies beyond common items such as art supplies or household supplies are listed in the back of the guide.

This program has been deliberately designed to be an easy-to-accomplish program, one whose content is a good complement to the breadth of our themed programs.

Book List:

Human Body & Forensics Science Program Guide
Your One-of-a-Kind Human Body (includes journaling)
Human Body for Every Kid
The History of Medicine
Detective Science

Winter Promise

Human Body & Forensics

Science for 3rd-7th Grade Overview of Topics



YOUR BODY & ITS SYSTEMS

- Week 1: Your-One-of-a-Kind Body
- Week 2: Your Body, Built of Cells
- Week 3: In and Out of a Cell
- Week 4: The Cell Cycle
- Week 5: Your Skeletal System
- Week 6: All Your Movable Joints
- Week 7: All Your Rigid Bones
- Week 8: Your Muscular System
- Week 9: What's It Like in Your Skin?
- Week 10: Your Stylin' Hair
- Week 11: Your Nervous System
- Week 12: Your Incredible Brain
- Week 13: Your Cardiovascular System
- Week 14: Your Circulatory System
- Week 15: Upper Respiratory System
- Week 16: Respiratory System - Lungs
- Week 17: Respiratory System - Oxygen
- Week 18: Your Digestive System
- Week 19: Your Endocrine System
- Week 20: Your Lymphatic System
- Week 21: The Reproductive System

YOUR FIVE SENSES

- Week 22: Your Sense of Taste
- Week 23: Your Sense of Hearing
- Week 24: Your Sense of Sight
- Week 25: Your Sense of Smell
- Week 26: Your Sense of Touch

THE HISTORY OF MEDICINE

- Week 27: First Steps in Medicine
- Week 28: First Discoveries in Anatomy
- Week 29: The Microscopic World
- Week 30: Anesthesia Kills Pain
- Week 31: Cleanliness vs. Infection
- Week 32: Discovering Germs
- Week 33: Nutrition Prevents Disease
- Week 34: X-Ray Power!
- Week 35: Harnessing New Treatments
- Week 36: New Medical Frontiers



Human Body & Forensics

Your One-of-a-Kind Body

Week 1

DAY 1	DAY 2
<p>READ & COMPLETE:</p> <p><u>Your One-of-a-Kind Human Body</u> Read Chapter 1 - Pages 4-5 "Your One-of-a-Kind Human Body"</p>	<p>READ & COMPLETE:</p> <p><u>Your One-of-a-Kind Human Body</u> Read Chapter 2 - Pages 8-9 "Your Body of Systems"</p> <p><u>Detective Science</u> Read - Pages 1-6</p>
<p>JOURNALING:</p> <p><u>Your One-of-a-Kind Human Body</u> Complete Lab Report - Page 6</p>	<p>JOURNALING:</p> <p><u>Your One-of-a-Kind Human Body</u> Complete Lab Report - Page 10</p>
<p>YOUR CHOICE OF ACTIVITIES:</p> <p><u>Your One-of-a-Kind Human Body</u> Life-Size Body Art - Page 7</p> <p>Supplies: large piece of paper, scissors</p>	<p>YOUR CHOICE OF ACTIVITIES:</p> <p>None</p>
<p>Notes</p>	

Journaling

This year your student will gather information or write about (a form of narrating back) what they have learned. These interactive journaling pages are included in the resource, "Your One-of-a-Kind Human Body." These pages allow them to keep track of experiment results, data and information, discoveries, activities, etc.

This resource is consumable, so you need one per student. The answer key to this resource is in the back of this guide.



Human Body & Forensics

Your Body, Built of Cells Week 2

DAY 1	DAY 2
<p>READ & COMPLETE:</p> <p><u>Your One-of-a-Kind Human Body</u> Read Chapter 3 - Pages 12-14 "Amazing Cells Function Amazingly"</p>	<p>READ & COMPLETE:</p> <p><u>Your One-of-a-Kind Human Body</u> Read Chapter 4 - Pages 18-20 "Going Inside a Cell"</p> <p><u>Detective Science</u> Read - Pages 7-8</p>
<p>JOURNALING:</p> <p><u>Your One-of-a-Kind Human Body</u> Complete Lab Report - Page 16</p>	<p>JOURNALING:</p> <p><u>Your One-of-a-Kind Human Body</u> Complete Lab Report - Page 21</p>
<p>YOUR CHOICE OF ACTIVITIES:</p> <p><u>Your One-of-a-Kind Human Body</u> Cell Model - Page 15 Make your first model choice today.</p> <p>Supplies: Various supplies, depending on model</p>	<p>YOUR CHOICE OF ACTIVITIES:</p> <p><u>Go Inside the Cell!</u> You can watch a video of the cell cycle by going to Youtube and searching for the video "Cell Structure and Function" by Amoeba Sisters. This is a kid-friendly presentation and will offer your student a really marvelous tour of the cell.</p>
<p>Notes</p>	

YOUR One-of-a-Kind Human Body!



Human Body Journal
Investigate Your Body's Amazing Systems!

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Ebook Version: This resource is designed to be printed double-sided. A section in the back should be printed in color.

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Systems and Senses

Did you know that you truly are one-of-a-kind? You're the only you! You have just this one body, so you'll want to take good care of it. Your body runs like a machine, with many working parts, and fuel requirements. This year you are going to learn all about how your one-of-a-kind human body machine works, and what you can do to make sure it is in good running order.

Your one-of-a-kind human body, like a machine, has many systems and senses that work together to keep your body doing all the things you want to do, whether that's mountain biking, baking a cake, ice skating, enjoying art, or cuddling up with or sleeping under a soft blanket.

Your one-of-a-kind body has ten systems and five senses. Your senses provide input about the world around you, and your systems allow your body to interact with our wonderful world, based upon this input. So if your sense of smell lets you know there are fresh-baked brownies in the house, your sense of hearing tells you the timer to take them out of the oven just rang, and your sense of sight tells you that they are ready to eat, sitting on the kitchen counter -- well, then, your muscular system can cut a brownie out of the pan and lift it to your mouth, where your sense of taste will happily enjoy the sweetness and your digestive system will tell you that you've enjoyed a nice snack! All the input you got from your senses has allowed your body to deliver a first-rate snacking experience!

SENSES

These five different senses, delivering input to your body are:

- Sense of Hearing
- Sense of Sight
- Sense of Smell
- Sense of Taste
- Sense of Touch

SYSTEMS

Once you receive input about the world around you, these ten systems use that input to interact with the world and make your one-of-a-kind machine run:

- | | |
|-----------------------|--------------------------|
| Skeletal System | Respiratory System |
| Muscular System | Digestive & Waste System |
| Integumentary System | Endocrine System |
| Nervous System | Lymph System |
| Cardiovascular System | Reproductive System |





STORAGE SPACE

Larger bones in the body contain bone marrow, where blood cells are produced. Bones also store calcium and phosphate for use by the body.

This study of the incredible human body is a scientific study of **human anatomy**. The study of human anatomy is divided into gross anatomy and microscopic anatomy. **Gross anatomy** is the study of the structures in the body that can be seen with the naked eye. **Microscopic anatomy** is the study of the tiny structures in your one-of-a-kind body that can only be seen with microscopes.

More than 99% of the human body is made up of just six elements: oxygen makes up more than half, and carbon, hydrogen, nitrogen, calcium, and phosphorus makes up most of the other half. Other trace elements are found in the body that add up to less than 1% of the body.

Adult bodies are over half water. About 11 gallons of fluid makes up the grown-ups you know. There are somewhere between 30 to 35 trillion cells in a human body. Wow! A little less than a third of a human body is made up of something other than cells: material like bone or connective tissue.

A human body has a torso, a head, a neck that connects the head to the torso, and two limbs: two arms and two legs. The skeleton is made out of bone and cartilage, and gives shape to your one-of-a-kind body. A spine protects your spinal cord, a bundle of nerves that connect the brain to the rest of the body. Blood vessels called veins move blood that is low in oxygen back to the heart from throughout the body. The blood pumps blood into the lungs to receive oxygen and drain back into the heart to be pumped out into arteries, taking oxygen to all parts of the body. Not only does blood carry oxygen, but it moves waste and hormones around the body, and is constantly filtered at the kidneys and liver. Muscles support bones and joints and allow your body to balance and move. Fat under your skin keeps you warm and stores energy reserves.

All of your body's systems interact with each other to maintain a stable state known as **homeostasis**. Your body works constantly to keep your body stable, providing the oxygen, warmth, and resources needed to work, play, and sleep -- all while making sure your body maintains safe levels of needs such as oxygen, sugar, calcium in your blood. Your systems constantly monitor and correct anything that affects your blood flow, energy supply, internal temperature, and more!



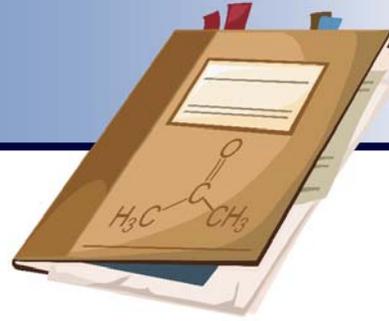
As the Creator Sees It: One-of-a-Kind You

God created and designed you to be a distinct person that He knows and loves. Before you were born, He knew if your eyes would be blue or brown, or green or gray! He knew how tall you would be, and whether you'd like to eat broccoli or dark chocolate. He designed you to enjoy the hobbies you pursue, and with the talents and gifts He wanted you to use for Him. He may have allowed you to face certain challenges in your body or mind, or to figure out how to do things with your body that don't come very easy for you. In short, He carefully designed -- and knows and very much loves -- the one-of-a-kind YOU!

Isaiah 43:1 reminds us of this truth. "But now thus says the Lord, he who created you, O Jacob, he who formed you, O Israel: "Fear not, for I have redeemed you; I have called you by name, you are mine." What an amazing truth!



Lab Report



Name It!

In each of the boxes below, list the systems, senses, and studies of the body.

TEN SYSTEMS

List the ten systems of the body.

FIVE SENSES

List the five senses of the body.

THREE STUDIES

List the three types of anatomy described in today's reading that scientists study.



Science Activity

Life-Size Body Art

Create a model of your one-of-a-kind human body!

What You Need:

- Piece of paper larger than your body (a paper tablecloth works, or large pieces of posterboard or white construction paper taped together)
- Scissors

What To Do:

- Lay still on the piece of paper and allow someone to trace around you to create your outline on paper.
- Cut out your outline from the paper.
- Draw your features and your clothes onto your body art. Don't forget your ears!
- Label each of the following body parts on your body art. You can do it creatively, if you'd like!

head	jaw	forearm	hip	thigh
hair	mouth	upper arm	leg	foot sole
eye	neck	elbow	knee	
eyebrow	torso	wrist	ankle	
nose	chest	palm	toe	
ear	shoulder	finger	toenail	
cheek	waist	thumb	heel	
forehead	belly-button	finger nail	shin	
chin	arm	knuckle	calf	

- Draw in any unique features you have such as a broken finger, freckles, birthmarks, etc.
- Be sure to label your artwork with your name, perhaps on the front of the shirt.
- Post up your amazing one-of-a-kind creation!





CHAPTER 2

Your Body of Systems



Ten Integrated Systems

You've already discovered your body functions because of ten different systems. They are the skeletal system, the muscular system, the integumentary system, the nervous system, the cardiovascular system, the respiratory system, the digestive and waste system, the endocrine system, the lymph system, and the reproductive system. Let's take a closer look at each of these.

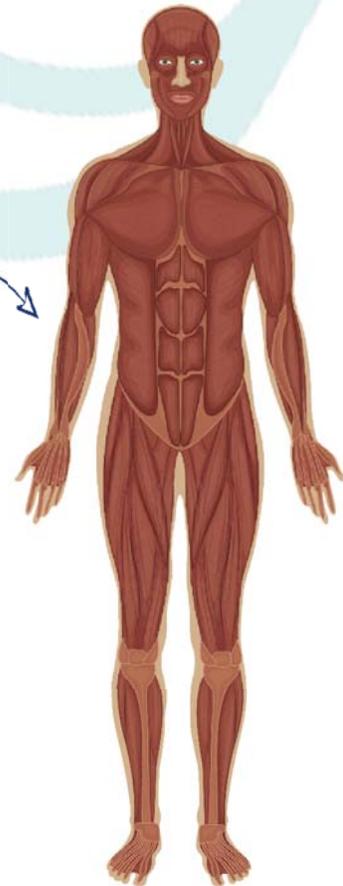


SKELETAL SYSTEM

Your skeletal system is made up of bones, ligaments, ligaments and cartilage that together create your skeleton. Bones made of bone tissue, a hard tissue created of bone cells. Adults have 206 bones in their bodies. Ligaments are connective tissue that connects one bone or bones to other bones. Tendons are similar to ligaments, but connect muscle to bone. Cartilage is elastic tissue that acts somewhat like padding to protect the ends of long bones and is also flexible, and so makes up some parts of the body that need to be able to bend or flex slightly.

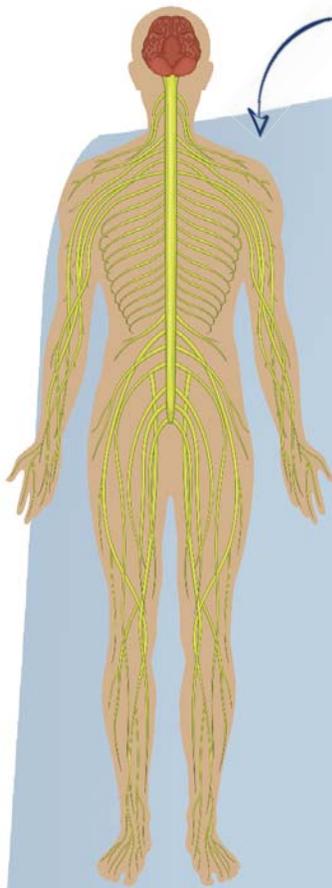
MUSCULAR SYSTEM

Your muscular system is made up of three kinds of muscles: skeletal muscles, heart muscles, and smooth muscles. Skeletal muscles are the ones that help our body move and are pictured to the right. Heart muscles are the specialized muscles of the heart. Smooth muscles are controlled by your nervous system, so are not able to be controlled by conscious thought.



INTEGUMENTARY SYSTEM

Your integumentary system is the one system that is largely visible to you. It is made up of your skin, hair, nails, and sweat and oil glands. Your skin protects your one-of-a-kind body from disease and injury and provides a lot of sensory information to your brain.

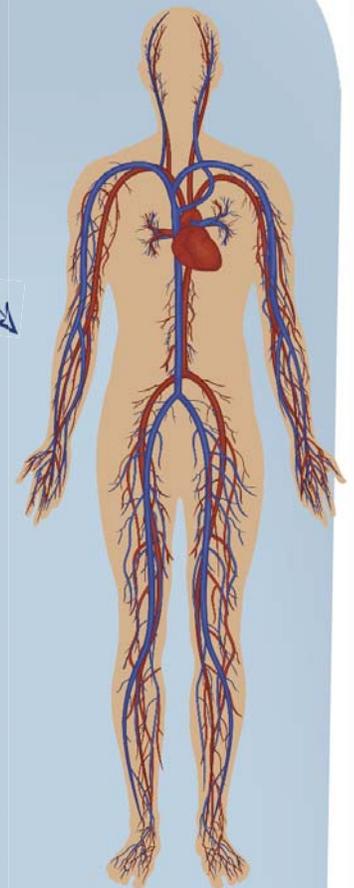


NERVOUS SYSTEM

Your nervous system includes your brain and spinal cord, which is the central nervous system, and the peripheral nervous system that includes your nerves and nerve cell clusters outside the brain and spinal cord. Your nervous system sends signal to and from different parts of your body.

CARDIOVASCULAR SYSTEM

Your cardiovascular system is made up of your heart and blood vessels. The heart acts like a pump, circulating blood throughout the body to carry oxygen and nutrients out to the body, collecting waste products, and transferring immune cells or hormones throughout the body.

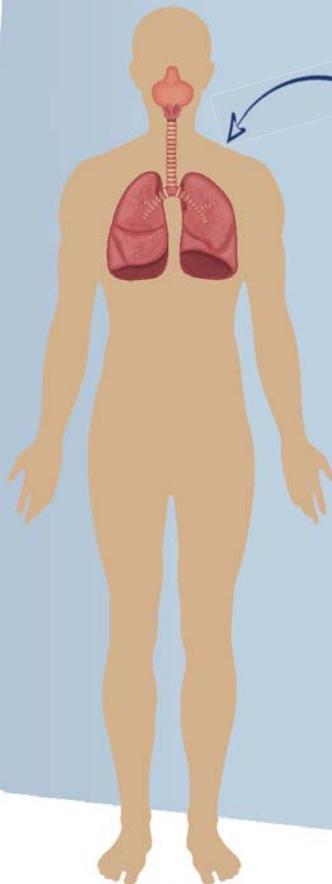


ENDOCRINE SYSTEM

Your endocrine system is made up of several glands -- pituitary, pancreas, adrenal, thyroid, parathyroid, and sex glands -- as well as hormones released by your body's organs and tissues.

LYMPHATIC SYSTEM

Your lymphatic system circulates the fluid in between cells, called lymph. This system is a key part of your immune system, as lymphocytes in lymph fight disease.

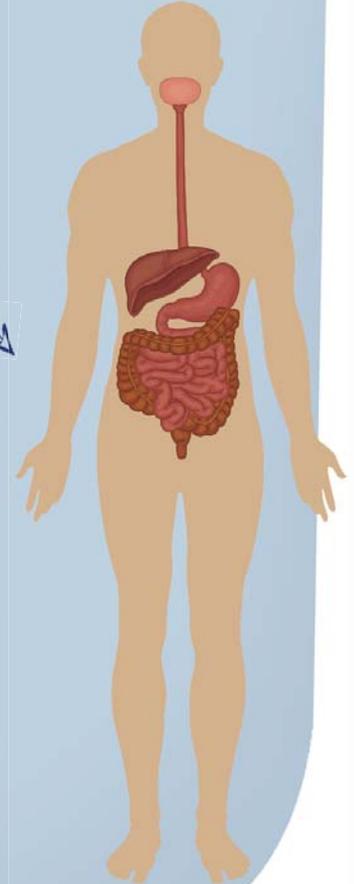


RESPIRATORY SYSTEM

Your respiratory system is made up of your nose, windpipe and lungs. This system takes in oxygen from the air when you breathe in, and lets out carbon dioxide and water when you breathe out.

DIGESTIVE & URINARY SYSTEM

Your digestive system breaks down food into molecules to be absorbed for your by your body, or excreted as waste. This system includes your teeth and tongue, esophagus, stomach, and your gastrointestinal tract, as well as your liver, gallbladder, and pancreas. Your kidneys and bladder remove toxic materials from the blood to produce urine from your body, carrying away waste molecules as part of your urinary system.



REPRODUCTIVE SYSTEM

Your reproductive system includes internal and external sex organs, and provides a place for a baby to grow inside of females.

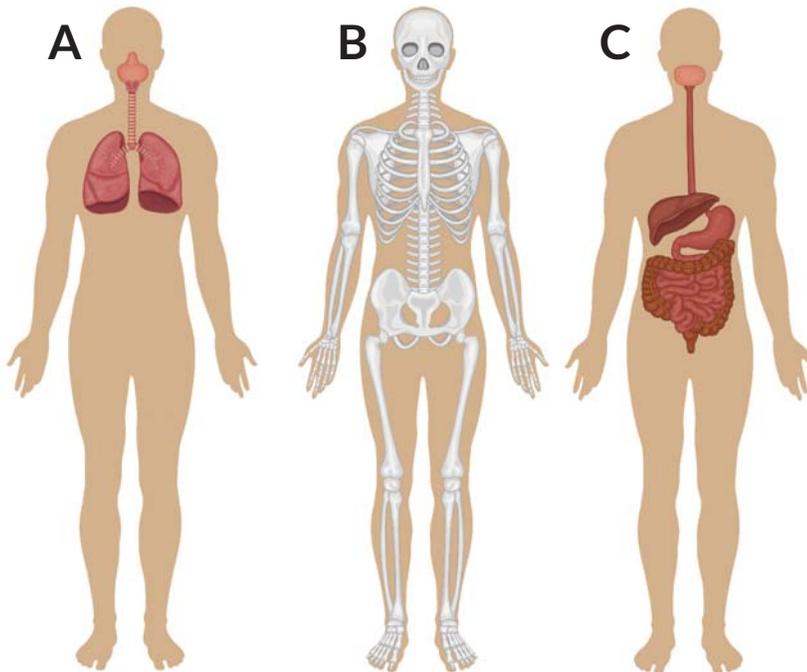


Lab Report

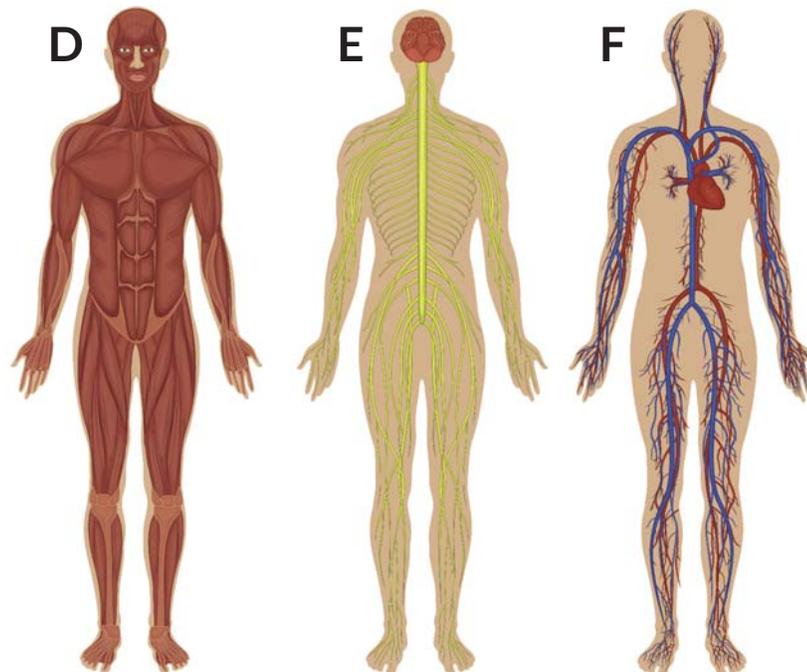


Which System?

Put the letter of each system pictured below next to the name of that system.



- Nervous _____
- Digestive _____
- Respiratory _____
- Muscular _____
- Cardiovascular _____
- Skeletal _____





CHAPTER
3

Amazing Cells Function Amazingly!



What You're Made Of!

It's time to begin your amazing journey through your one-of-a-kind human body. To begin, let's start with what you are made of. All living things are made up of cells. Cells are tiny -- very tiny! You would need a very powerful microscope if you wanted to see most cells. Your body has about 30-35 trillion cells that all work together to make your body machine work.

Most of these cells are filled with liquid. The outside of the cell has a flexible layer called the plasma membrane. It holds the cell together, but is thin enough to allow certain chemicals to flow in and out of the cell. This is crucial, since your body needs to have some chemicals delivered right to your cells.

At the center of each cell is the nucleus -- a "headquarters" for the cell. The nucleus in the center controls everything the cell does. All around the nucleus is a jelly-like substance called cytoplasm. The nucleus contains chromosomes shaped like thread. These thready strands are made up of DNA, the building block of cells. DNA is short for deoxyribonucleic acid -- a long name! DNA is like the instruction manual for your body. It tells the cell what to do.

Take a look at the cell model below. The cell functions because DNA is a chain of nucleotides (organic molecules) that carry the genetic instructions required for your body to grow, develop, and function from day to day. DNA resides in the nucleus of the cell, where parts of the DNA are copied and sent to the rest of the cell via RNA (ribonucleic acid), which creates proteins that help the cell function.

