



SCIENCE

STUDENT BOOK

▶ **7th Grade | Unit 8**

SCIENCE 708

The Human Anatomy: Part I

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LIFEPAC Test is located in the center of the booklet. Please remove before starting the unit.

Author:

Virginia Fross Maghan
Judith Hunt Cobb, M.Ed.

Editor-in-Chief:

Richard W. Wheeler, M.A.Ed.

Editor:

Lee H. Dunning, M.S.T., M.S.Ed.

Consulting Editor:

Harold Wengert, Ed.D

Revision Editor:

Alan Christopherson, M.S

Westover Studios Design Team:

Phillip Pettet, Creative Lead

Teresa Davis, DTP Lead

Nick Castro

Andi Graham

Jerry Wingo

Don Lechner



804 N. 2nd Ave. E.

Rock Rapids, IA 51246-1759

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The Human Anatomy: Part I

Introduction

In Genesis 2:7 and 8 the Bible states, "And the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul. And the Lord God planted a garden eastward in Eden; and there he put the man whom he had formed." In this LIFEPAAC® you will study one of God's most fascinating creations, the human body (Genesis 1:27), "So God created man in his own image, in the image of God created he him; male and female created he them."

The human body is made up of billions of cells. Cells combine to make up the different systems of the body. In this LIFEPAAC you will study the muscles, the skin, and the skeleton. These structures work together to form the framework of the body. You will learn also about the brain, the spinal cord, and the nerves. They work together to form the human nervous system.

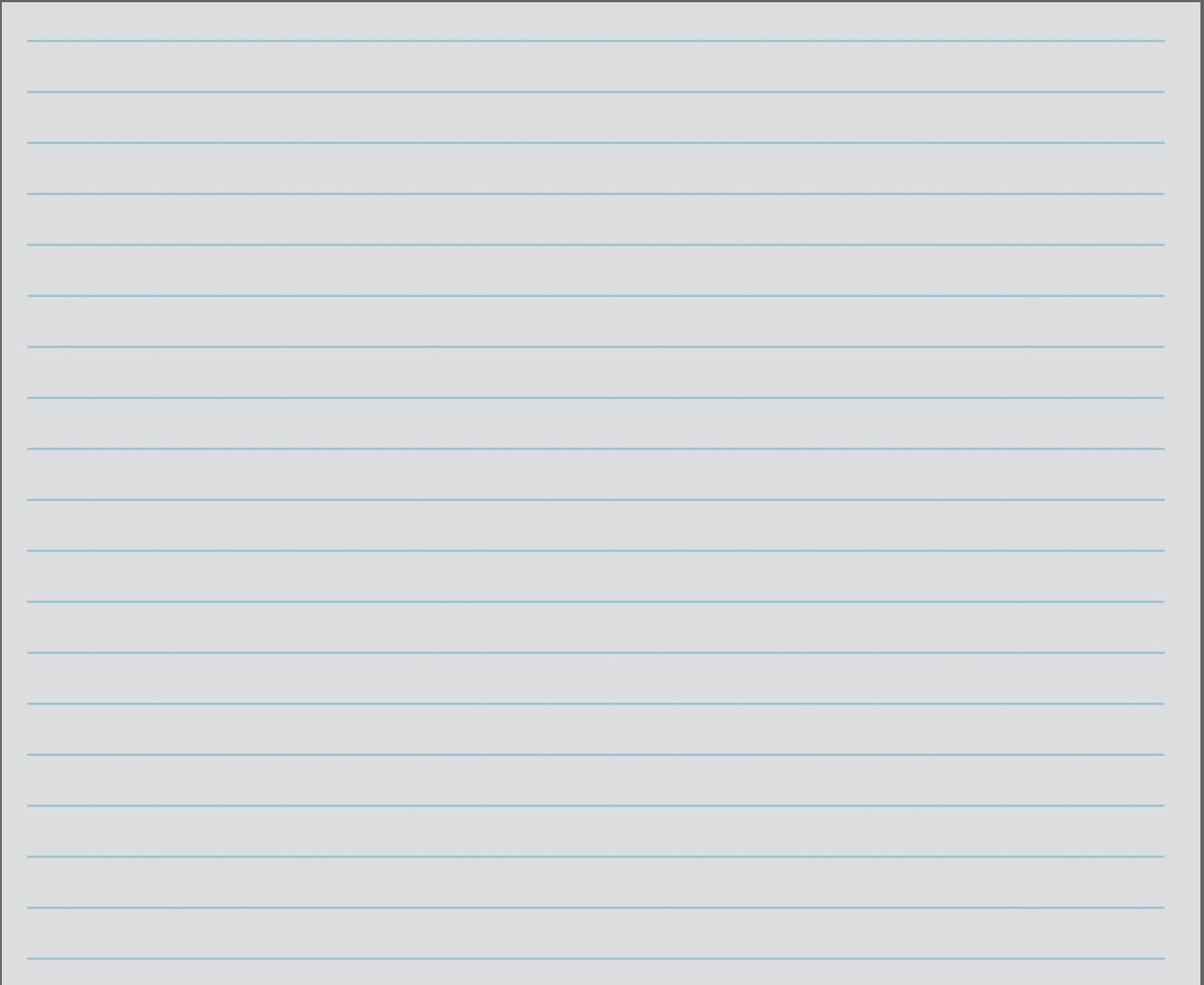
God has given you five senses so that you can truly appreciate the beauty of the world He has created. You will enjoy this LIFEPAAC because you will learn about *you*.

Objectives

Read these objectives. The objectives tell you what you will be able to do when you have successfully completed this LIFEPAAC. When you have finished this LIFEPAAC, you should be able to:

1. List the parts of the cell.
2. Draw and to label a cell.
3. Write two ideas of the cell theory.
4. Prepare a slide.
5. Define organ, tissue, and system.
6. Describe the difference between absorption and excretion.
7. Label the diagram of a bone.
8. Explain why the joints need cartilage.
9. List the three skin layers.
10. Explain the difference between voluntary muscles and involuntary muscles.
11. Label a diagram of the eye.
12. Label a diagram of the ear.
13. List the five senses.
14. List the four tastes.
15. Explain the function of an axon and a dendrite.
16. Diagram and label a neuron.
17. Explain the function of a synapse.
18. Explain the function of the spinal cord.
19. Explain the difference between stimulus and response.
20. List four functions of the body that the cerebrum controls.
21. List four functions of the body that the cerebellum controls.

Survey the LIFEPAK. Ask yourself some questions about this study and write your questions here.

A large rectangular area with horizontal blue lines for writing. The lines are evenly spaced and cover the entire width of the box, providing a template for handwritten notes or questions.

1. HUMAN BUILDING BLOCKS

The human body is made up of very tiny particles called *cells*. These cells are so small that they can be seen only with a microscope. Though our bodies are made up of different kinds of cells, all cells have the same

characteristics. All cell structure is similar, and all cells carry on certain life **functions**. Cells work together to form tissues, organs, and life systems.

SECTION OBJECTIVES

Review these objectives. When you have completed this section, you should be able to:

1. List the parts of the cell.
2. Draw and label a cell.
3. Write two ideas of the cell theory.
4. Prepare a slide.
5. Define organ, tissue, and system.
6. Describe the difference between absorption and excretion.

VOCABULARY

Study these words to enhance your learning success in this section.

function (funkʃən). The purpose or job.

heredity (herədɪ). Qualities of your body and mind that you get from your parents.

Note: All vocabulary words in this LIFEPAC appear in **boldface** print the first time they are used. If you are not sure of the meaning when you are reading, study the definitions given.

Pronunciation Key: hat, āge, cāre, fār; let, ēqual, tērm; it, īce; hot, ōpen, ōrder; oil; out; cup, pūt, rüle; child; long; thin; /ʒh/ for then; /zh/ for measure; /u/ represents /a/ in about, /e/ in taken, /i/ in pencil, /o/ in lemon, and /u/ in circus.

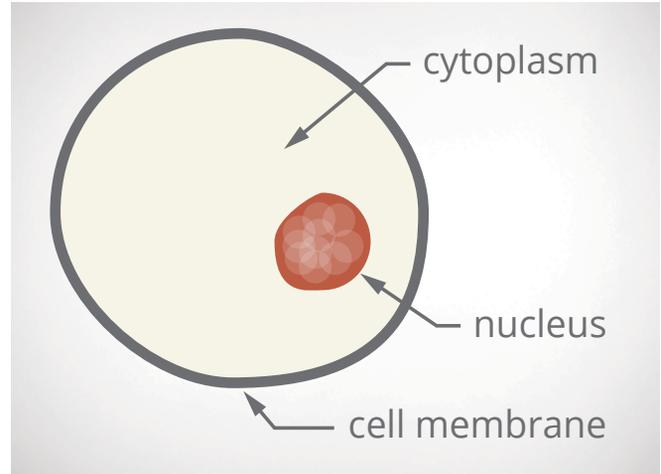
CELL STRUCTURE

The billions of cells that make up your body are classified into several different kinds. Even though cells are different, a “typical cell” will be studied.

Cell Membrane. The outside of the cell is called the *cell membrane*. The cell membrane is like an envelope with two layers. It is the door to the cell. The cell membrane is flexible, but strong enough to hold the cell together.

Cytoplasm. Just inside the cell membrane is the *cytoplasm*. The cytoplasm is a thick fluid that resembles egg white. The cytoplasm contains many smaller structures and materials. Many of the chemicals needed for the chemical reactions that take place in the cell are found in the cytoplasm.

Nucleus. The *nucleus* of the cell is found in the cytoplasm. It is the most noticeable structure



| A Typical Cell

in the cell. The nucleus is a dark, round object that is the control center of the cell. Most cells contain only one nucleus. However, some cells do contain more than one nucleus.



Complete this activity.

1.1 List the three parts of a cell.

a. _____

b. _____

c. _____

Write true or false.

1.2 _____ The nucleus is the outside of the cell.

1.3 _____ The body is made of billions of cells.

1.4 _____ Cytoplasm is the fluid in the cell.

1.5 _____ The cell membrane is liquid.

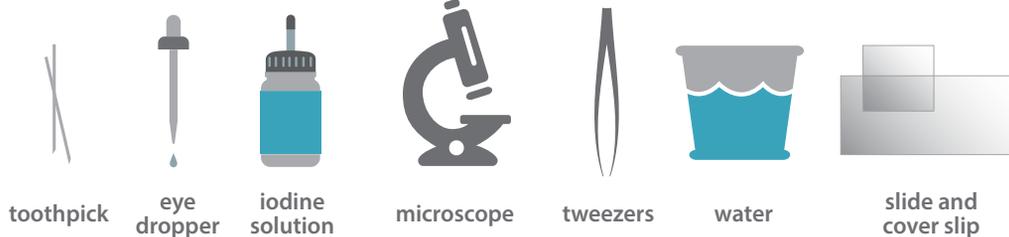


View 708 Cheek Cell, from the Grade 7 SCIENCE EXPERIMENTS Video



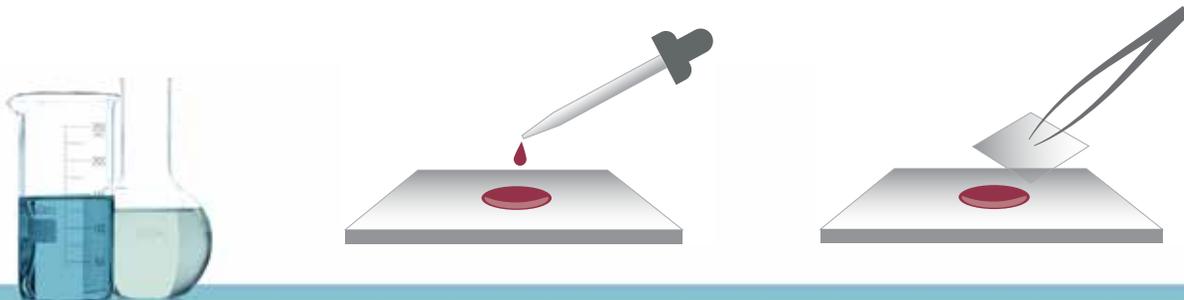
Try this investigation to look at a cell from your own body by using a microscope.

Gather these supplies for this exercise:

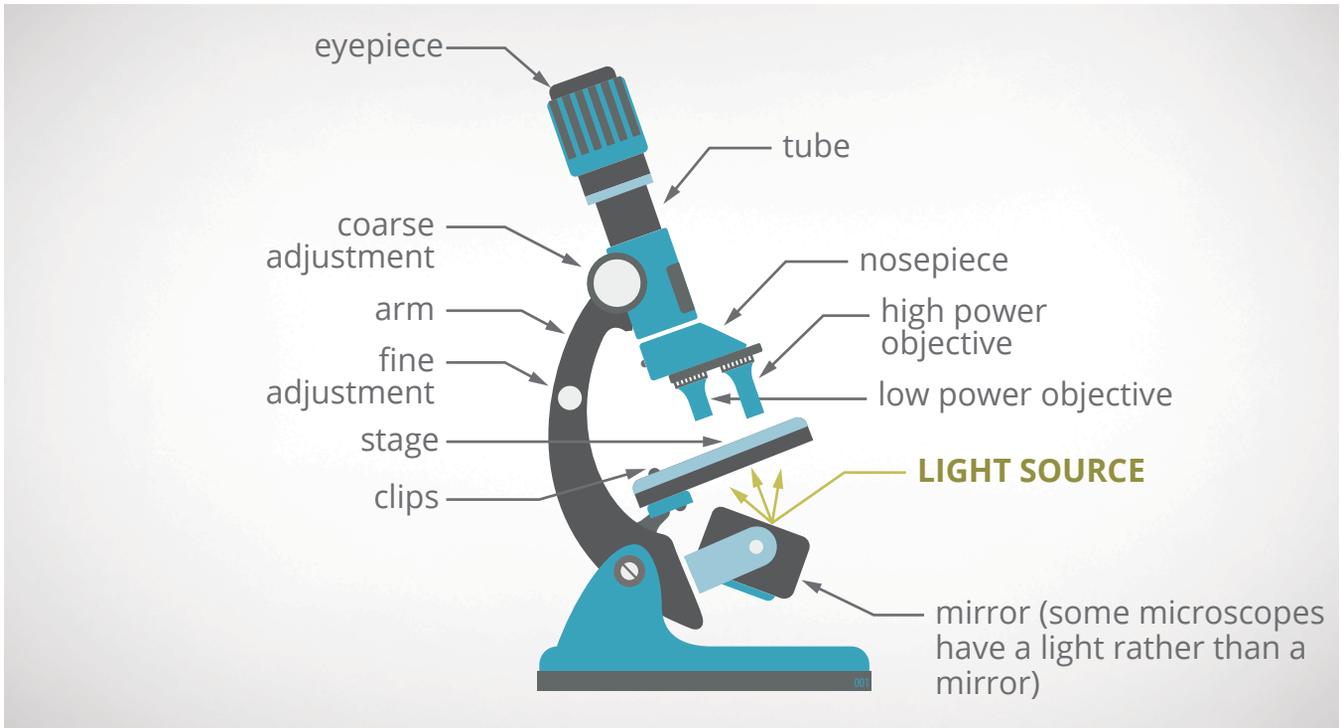


Follow these directions. Put a check in the box when each step is completed.

1. Gently scrape the inside of your cheek with the toothpick.
2. Place the scrapings on a slide and use the eyedropper to add a drop of water to them.
3. Add a drop of iodine solution to the water mixture on the slide.
4. Using the tweezers, cover the mixture with the cover slip.
5. Place the slide on the microscope stage (see microscope diagram on the next page). Focus the microscope by turning the focus-adjustment knobs.
6. See if you can find the cell membrane, the cytoplasm, and the nucleus.



Cheek Cell Experiment



| Typical Microscope



Answer these questions.

- 1.6 What did you see in the microscope? _____

- 1.7 Did you see more than one cell in the microscope? _____

Write the letter of the correct choice.

- 1.8 The dark center of the cell is the _____.
a. cell membrane b. cytoplasm c. nucleus
- 1.9 The outside of the cell is the _____.
a. cell membrane b. cytoplasm c. nucleus
- 1.10 The thick substance in the cell is the _____.
a. cell membrane b. cytoplasm c. nucleus

**Match these items.**

- | | | |
|------|--|---------------|
| 1.11 | _____ to make clear | a. microscope |
| 1.12 | _____ small particles that make
up the human body | b. cells |
| 1.13 | _____ used to see small things | c. nucleus |
| 1.14 | _____ used with a microscope | d. focus |
| | | e. slide |

CELL FUNCTIONS

Billions of cells work together to form and to maintain your body. The main **function** of the cell is to maintain life. In this section you will study many ways that the cell functions to maintain life. Every human body and mind is unique. No one else on this earth is like you. According to Ephesians 4:4 and 4:7 we are all parts of one body, we have the same spirit, and we have all been called to the same future. However, Christ has given each of us special abilities. Some people have been given special

ability as apostles. Other people have been given the gift of being able to preach well. Some have the special ability of winning other people to Christ. God loves you and has given you special abilities to do certain things best.

The cell theory. Scientists know that all living things are made of cells. They also know that all life activities are done by the cells. These scientific ideas are part of the *cell theory*. A *theory* is a set of ideas that helps explain something.

**Answer these questions.**

1.15 What is a theory? _____

1.16 Of what other theories have you heard? _____



Complete this activity.

1.17 Write two ideas of the cell theory.

Absorption and excretion. The cell membrane is not solid. It has tiny holes in it that allow things to pass in and out of the cell. Therefore, the cell membrane can control absorption and excretion. *Absorption* means to *take in*, *excretion* means to *send out*. In this LIFEPAK you will learn more about how the cells absorb food and oxygen and then how they excrete waste.

Growth. The nucleus of a cell is made of very complicated proteins. A *protein* is a substance containing nitrogen and other chemicals. These proteins control growth. They change the food we eat into living matter. DNA and RNA are two important acids found in the nucleus of the cell. DNA controls the **heredity**. Heredity is the reason that you may have blue eyes like your father and curly hair like your mother.



Complete these activities.

1.18 Describe the difference between absorption and excretion.

1.19 Name two things that the cell membrane controls.

a. _____ b. _____

1.20 Name two important acids found in the nucleus.

a. _____ b. _____

1.21 Name two functions of proteins.

a. _____ b. _____

Cell teamwork. Cells in the human body that are similar form groups of cells. These groups work together on a special job. Groups of cells that work together and look alike are called *tissues*. Your skin tissue is made up of skin cells. Muscle tissue is made of special cells. Your blood is a liquid tissue.

Two or more tissues together with a special job form an *organ*. Organs perform many life functions for your body. Your heart, your brain, and your stomach are organs. When several organs work together, a *system* is formed. As you work in this LIFEPAK, you will learn more about the systems in the human body.



Match these items.

- | | | |
|----------|------------|-----------|
| a. organ | b. nucleus | c. tissue |
| d. cells | e. system | |

- 1.22** Tissue is made up of _____ .
- 1.23** Your blood is a liquid _____ .
- 1.24** Two or more tissues with a special job form a(n) _____ .
- 1.25** Several organs working together form a _____ .

Complete this activity.

- 1.26** In the space provided draw a cell. Label the three main parts of the cell.

Define these terms.

1.27 cell membrane _____

1.28 cytoplasm _____

1.29 nucleus _____

1.30 absorption _____

1.31 excretion _____

1.32 system _____



Review the material in this section in preparation for the Self Test. The Self Test will check your mastery of this particular section. The items missed on this Self Test will indicate specific areas where restudy is needed for mastery.

SELF TEST 1

Write the letter of the correct answer (each answer, 2 points).

- 1.01** The human body is made up of _____.
a. nucleus b. absorption c. cells d. neurons
- 1.02** The outside of the cell is the _____.
a. cell membrane b. cytoplasm c. nucleus d. absorption
- 1.03** The fluid in the cell is the _____.
a. cell membrane b. cytoplasm c. nucleus d. liquid
- 1.04** The center of the cell is the _____.
a. cell membrane b. cytoplasm c. nucleus d. organ
- 1.05** The instrument used to see small objects is the _____.
a. slide b. microscope c. cover slip d. eye piece
- 1.06** A set of ideas that helps explain something is a _____.
a. theory b. tissue c. system d. statement
- 1.07** Two or more tissues together with a special job form a(n) _____.
a. heredity b. brain c. organ d. neuron
- 1.08** Groups of cells that perform a special job are _____.
a. cytoplasm b. tissue c. nucleus d. membrane
- 1.09** Several organs that work together form a _____.
a. system b. tissue c. theory d. cytoplasm
- 1.010** Heredity is controlled by _____.
a. cell membrane b. absorption c. DNA d. RNA

Match these items (each answer, 2 points).

- | | | |
|-------|--|---------------|
| 1.011 | _____ to send out | a. focus |
| 1.012 | _____ set of ideas that help explain something | b. absorption |
| 1.013 | _____ groups of tissues working together | c. heredity |
| 1.014 | _____ to take in | d. excretion |
| 1.015 | _____ substance that controls growing | e. microscope |
| 1.016 | _____ make something clear | f. cytoplasm |
| 1.017 | _____ fluid in the cell | g. protein |
| 1.018 | _____ used to see small objects. | h. organ |
| | | i. theory |

Complete these sentences (each answer, 3 points).

- 1.019 The human body is made up of small particles called _____ .
- 1.020 The outside of the cell is called the _____ .
- 1.021 The darker object in the cytoplasm is called the _____ .
- 1.022 The cell membrane controls absorption and _____ .
- 1.023 Two important acids in the nucleus are RNA and _____ .
- 1.024 Your blood is a _____ tissue.
- 1.025 Several organs work together to form a _____ .

Write true or false (each answer, 1 point).

- 1.026 _____ All cells have similar characteristics.
- 1.027 _____ Tissues are made up of cells.
- 1.028 _____ Body cells can be seen without a microscope.
- 1.029 _____ Before using the microscope you must prepare a slide.
- 1.030 _____ Your body is made up of 150 cells.
- 1.031 _____ God is the Creator of your body.
- 1.032 _____ The cell membrane controls absorption and excretion.
- 1.033 _____ An object of any size can be viewed with the microscope.

Complete these activities (each answer, 5 points).

1.034 Describe the difference between absorption and excretion. _____

1.035 Explain how to prepare a slide. _____

Draw a diagram of a cell. Label the parts of the cell (this answer, 5 points).

1.036

Answer these questions (each answer, 3 points).

1.037 What structures make up tissues? _____

1.038 What structures make up organs? _____

1.039 What structures make up systems? _____

	SCORE _____	TEACHER _____	initials	date
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804 N. 2nd Ave. E.
Rock Rapids, IA 51246-1759

800-622-3070
www.aop.com