

### Follow-up Activities

- Encourage your students to study how the brain learns. With a stopwatch, time how long it takes for a student to put together a simple puzzle (less than 15 pieces). Time the student again as he/she assembles the puzzle for a second and third time. Discuss with the class why the times differ. What's happening in the brain?
- Create a class bulletin board display, showing the three main parts of the brain. Backed up by additional research, create three columns, one for each brain part, and have students list the types of activities for which scientists believe each part is responsible.
- Show children different images of the brain. You may be able to obtain MRI's or CT scans by calling your local teaching hospital or a neurologist's office.

### Suggested Internet Resources

Periodically, Internet Resources are updated on our web site at [www.LibraryVideo.com](http://www.LibraryVideo.com)

- [www.kidshealth.org/kid/body/mybody\\_SW.html](http://www.kidshealth.org/kid/body/mybody_SW.html)  
The "KidsHealth" Web site developed by the Nemours Foundation is an interactive journey through the human body.
- [www.brainpop.com/health/nervous/brain/index.weml](http://www.brainpop.com/health/nervous/brain/index.weml)  
The Brain POP Web site has movies and printable activity pages dealing with the brain and the nervous system.
- [faculty.washington.edu/chudler/colorbook.html](http://faculty.washington.edu/chudler/colorbook.html)  
This "Neuroscience Coloring Book for Kids" page offers printable coloring pages of important images of the brain and nervous system.

### Suggested Print Resources

- Barbor, Marcus. *The Human Brain: Build Your Own Model of the Amazing Human Brain*. Running Press, Philadelphia, PA; 1999.
- Cromwell, Sharon. *Why Do I Laugh or Cry? and Other Questions About the Nervous System*. Rigby Interactive Library, Crystal Lake, IL; 1998.
- Sandeman, Anna. *Brain*. Copper Beech Books, Brookfield, CT; 1996.
- Simon, Seymour. *The Brain: Our Nervous System*. Morrow Junior Books, New York, NY; 1997.



## All About the Brain

Grades K-4

This guide is a supplement, designed for educators to use when presenting this program in an instructional setting.

**Before Viewing:** Research in learning suggests that it is important for the teacher to discover what the students know — or think they know — about a topic, at the start of a new unit, so that their accurate conceptions can be validated and reinforced, and their misconceptions identified and corrected. Therefore, after reviewing the pre-viewing discussion questions provided for your class, create an "Everything We Know About..." list. Preview key vocabulary words and have students raise additional questions they hope will be answered by this program. Most importantly, students should be told that as "science detectives" they must listen closely, so that after viewing the program, they will be able to tell whether or not the facts/beliefs they put on their list were scientifically accurate.

**After Viewing:** After a brief discussion about the program, challenge your "science detectives" to prove or disprove the accuracy of the facts they put on their "Everything We Know About..." list. Discuss what else they learned and use the followup questions and activities to inspire further discussion. Encourage students to research the topic further with the Internet and reading resources provided.

### TEACHER'S GUIDE CONSULTANT

Conrad M. Follmer

25 years as a K-5 Science & Math coordinator for a Pennsylvania public school system, currently an independent consultant to elementary schools.

### TITLES

- ALL ABOUT BLOOD & THE HEART & EXERCISE
- ALL ABOUT BONES & MUSCLES
- ALL ABOUT CELLS & BODY SYSTEMS
- ALL ABOUT HEALTH & HYGIENE
- ALL ABOUT NUTRITION & EXERCISE
- ALL ABOUT THE BRAIN
- ALL ABOUT THE HUMAN LIFE CYCLE
- ALL ABOUT THE SENSES

Teacher's Guides Included  
and Available Online at:



800-843-3620



Teacher's Guide and Program Copyright 2001 by Schlessinger Media,  
a division of Library Video Company

P.O. Box 580, Wynnewood, PA 19096 • 800-843-3620  
Executive Producers: Andrew Schlessinger & Tracy Mitchell  
Programs produced and directed by Fabian-Baber, Inc.

All rights reserved

K7086  
V6187



## Program Summary

There is nothing we do that does not involve the brain in some way! The brain is a part of the nervous system, which is the control and communication system for the entire body. This system includes an extensive network of special fibers called nerves that run throughout the entire body. Another part of the nervous system is called the spinal cord, which is a thick bundle of nerves that runs from the base of the brain down the back inside the bones of the spine. Nerves are made of cells called neurons, which are able to send and receive messages. Messages from nerves in the body travel up the spinal cord to the brain and then commands from the brain return back through the nerves to tell our body parts what to do.

The surface of the brain is gray in color and very wrinkled. The more wrinkled a brain is, the more information can be stored in it. Because the brain is the most important organ in the body, it is doubly protected. The surrounding bones of the skull act like a helmet, and between the skull and the brain surface is a thin layer of liquid that provides a protective cushion.

The brain has three main parts, the cerebrum, cerebellum and brain stem, each with a different job. The cerebrum is split into two halves and is the part of the brain that controls our thinking and decision-making. Different parts of the cerebrum are responsible for different tasks, like reading words, remembering faces, playing music and working with numbers. The cerebellum is the second largest part of the brain, located below and behind the cerebrum. This part receives signals from all of our muscles and sends messages back to coordinate body movements and balance. The brain stem is located at the back of the neck, joining the brain with the spinal cord. The brain stem controls movements that we don't need to think about, such as our breathing and the beating of our heart.

Sometimes nerves and muscles act before informing the brain. This is called a reflex action. If you were to touch a hot surface with your hand, the pain message in your fingers would cause you to immediately remove your hand. The brain is then informed, so that in the future, you might remember that painful experience and not repeat it. Faster and more complex than any computer, the human brain is truly amazing. The more we learn about the human body and how it works, the more amazing it appears!

## Vocabulary

The following words are included for teacher reference or for use with students. They are listed in the order in which they appear in the video.

**brain** — The wrinkled, gray organ that controls the actions of the body and allows us to think, learn and remember. The brain is made up of billions of nerve cells.

**system** — A group of parts that work together to do a job.

**nervous system** — The brain, nerves and spinal cord. The nervous system is responsible for controlling the entire body and keeping track of what is happening in, on and near the body at all times.

**nerves** — The special fibers made of cells called neurons, which are able to send and receive messages throughout the body.

**neurons** — The special cells that make up nerves.

**spinal cord** — The thick bundle of nerves that is the main pathway for information, connecting the brain with the rest of the body.

**skull** — The thick, hard bones that surround the brain.

**cerebrum** — The top part of the brain, where thinking and decision-making take place. Split into two halves, the cerebrum is the largest part of the brain and controls all the things that you do on purpose.

**cerebellum** — The area of the brain above the brainstem that is important for balance and posture.

**brain stem** — The part of the brain that is attached to the spinal cord. The brain stem controls basic things that keep us alive such as breathing. These things happen automatically, without us having to think about them.

**vertebrae** — The hollowed-out bones that make up the backbone and protect the spinal cord.

**reflex** — A quick reaction of the nervous system, sending messages to your muscles without involving the brain to take you out of danger in an emergency.

## Pre-viewing Discussion

Before students generate their list of “Everything We Know About...” this topic, stimulate and focus their thinking by raising these questions so that their list will better reflect the key ideas in this show:

- What is the brain?
- How does the brain help us see, hear, taste, smell and touch?
- What is the nervous system? Why is it important?

After the class has completed their “Everything We Think We Know About...” list, ask them what other questions they have that they hope will be answered during this program. Have students listen closely to learn if everything on their class list is accurate and to hear if any of their own questions are answered.

## Focus Questions

1. What body system does the brain belong to? What are the other parts of this system?
2. What is the job of the neurons?
3. What happens when we touch a surface, like sandpaper, for example? How and where do the messages travel?
4. Is it true that the larger the brain, the more intelligent the creature? Explain.
5. How do the surfaces of the brains of the squirrel and the dolphin differ? Why are these differences important?
6. What is the name of the largest part of the brain? Where is it, and what actions is it responsible for?
7. What is the cerebellum responsible for? Give an example of an activity in which the cerebellum is involved.
8. Why do you think it is true that the more you practice a physical move, like swinging a bat at a baseball, the better you become at that task? What is happening in the brain?
9. Why is the brain stem so important to our survival?
10. What is a reflex, and what makes it different from other physical activity? Why is it important?

## Follow-up Discussion

The most important part of this segment is to examine both the facts and beliefs generated by the class in their “Everything We Know About...” list. Research indicates that students will retain their previous misconceptions — in preference to the new information — until they actively recognize and correct their own errors. Because of this, it is important to lead students to the correct ideas while identifying and correcting any misconceptions from the class list. After reviewing the list, encourage students to share the answers they got to the questions raised, before viewing the program.

Raising a thought-provoking question is a good way to assess the overall depth of student understanding. A couple of suggestions are listed below:

- How do the parts of the nervous system work together to help us to kick a soccer ball?
- How does the nervous system work to keep us safe?
- What are some ways that you can protect your nervous system?