

A microscopic image showing numerous small, red, spherical bacteria, likely poliovirus particles, clustered together on a dark blue, textured background. The bacteria are arranged in various patterns, some in dense groups and others more sparsely.

Biography

Dr. Jonas Salk

by Cliff Clark

Read to Find Out

Why did people fear the disease called polio? How did a man named Jonas Salk find a way to prevent it?

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STRATEGIES & SKILLS AT A GLANCE Comprehension

- Strategy: Generate Questions
- Skill: Draw Conclusions

Vocabulary

- cautious, crisscrossed, disguised, fade, faint, jealous, wisdom

Vocabulary Strategy

- Word Parts: Word Families

CONTENT-AREA VOCABULARY

Words related to the field of medicine
(see *glossary*)

NATIONAL CONTENT STANDARDS Science

- Science and Technology

Word count: 1,198**

8

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**The total word count is based on words in the running text and headings only. Numerals and words in captions, labels, diagrams, charts, and sidebars are not included.

Dr. Jonas Salk

by Cliff Clark



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Introduction

Dr. Jonas Salk is remembered as a great scientist. He is also remembered for saving the lives of millions of children in the United States and around the world. He was the first scientist to find a way to prevent a disease called **poliomyelitis**, or polio. During the 1940s and 1950s this disease made thousands of people ill. During this time Dr. Salk and other researchers were looking for ways to prevent polio.

A **virus** causes polio. You catch it the same way you catch a cold, but it is far more dangerous. There was faint hope for the victims of polio. There was no way to prevent it. Dr. Salk's work changed this.

This photograph shows Dr. Jonas Salk in his laboratory at the University of Pittsburgh. He is checking a sample of virus-laden fluid used in the production of his vaccine. ➔



Chapter 1

The Polio Scare

During the 1940s and 1950s there was a serious **outbreak** of polio in the United States. People were very frightened. Most of those who got this disease were children. The most frightening thing about the disease was that no one knew how it spread. People did not know how to protect themselves or their children.

Scientists didn't know why, but polio seemed to spread faster during the summer months. Many public swimming pools and beaches were closed during this outbreak as a way to prevent the spread of polio.

Cities closed beaches in the summer to stop the spread of polio. ➔



Franklin D. Roosevelt, ↻
U.S. President from
1932-1945, had polio.
Despite this he led
the United States
through the Great
Depression and
World War II.



Children were very cautious when they went outside because they were afraid they would get sick. Polio is especially scary because a small number of people who became ill were **paralyzed** for life. People with paralysis cannot move their arms, legs, or other parts of the body. Some people died from polio.

Perhaps most of the fear came from the fact that not much was known about polio. Even today, scientists don't know much more about it than they did in the 1950s.



👉 Thanks to the polio vaccine kids today can enjoy summer activities.

When someone is infected with the polio virus, the person begins to feel weak. Other **symptoms** of polio are a stiff neck and muscles, trouble breathing, and fever.

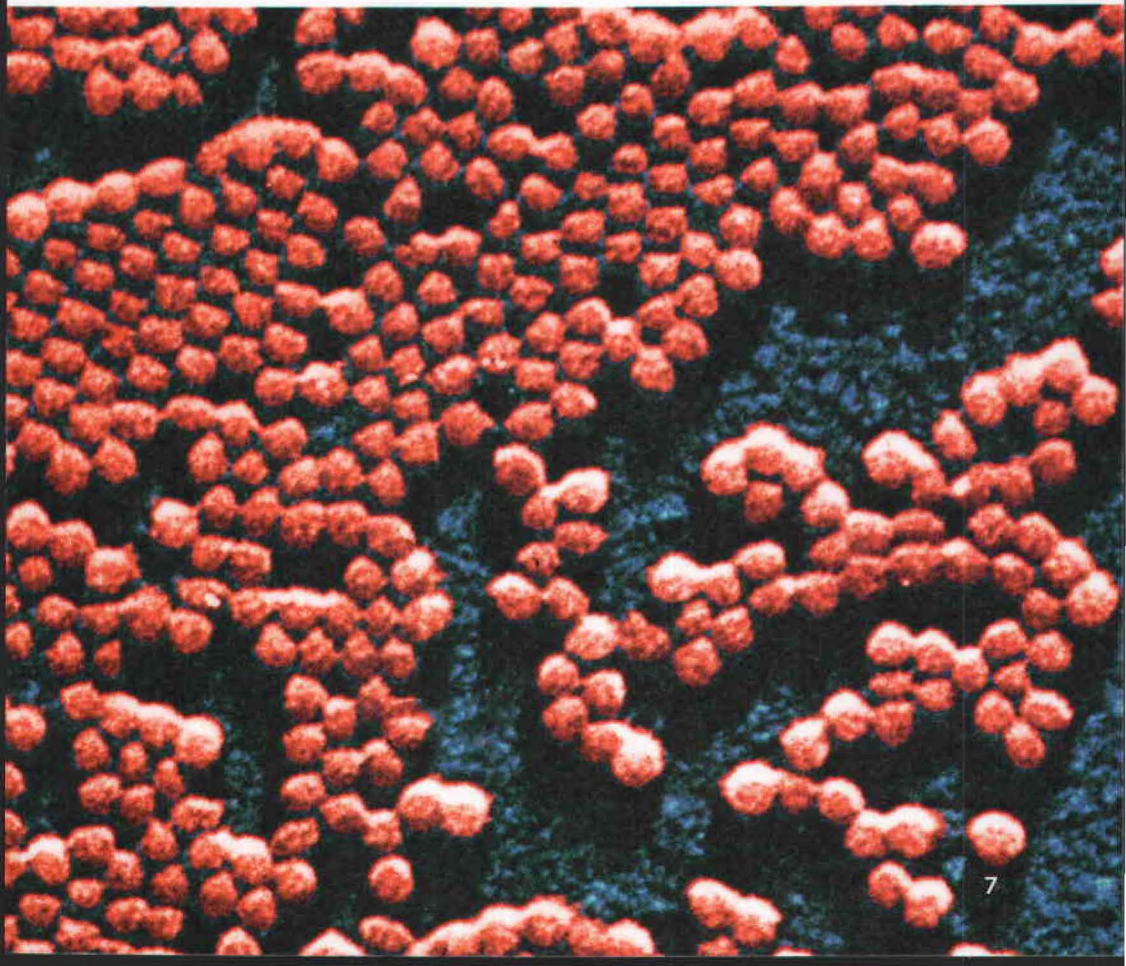
Children with mild polio **infections** were usually able to recover almost completely. After they got better, they were able to live normal lives and do things that other children could do.

Other children who got polio had to stay in the hospital for a long time. Some had to stay in the hospital for more than a year.

Some people who had polio had to use a wheelchair or wear big metal braces on their legs to help them walk. Some children were able to take the braces off after a few years, but others had to use them for the rest of their lives.

But the summers filled with fear were about to change. A scientist named Jonas Salk was working on a **vaccine** to prevent polio.

🕒 This is what a virus looks like under a **microscope**. Viruses are so tiny that people can only see them through a microscope.



Chapter 2

The Race for a Vaccine

Jonas Salk was born in October 1914 in New York City. Jonas's parents were immigrants who had come to the United States for a better life. They encouraged their children to study hard. They hoped to see them succeed.

Jonas was the first in his family to go to college. He went to the City College of New York to study law. A short time later he became interested in medicine instead.



🔗 This photograph shows Jonas Salk with his wife and sons.

How a Vaccine Works

The body has a system that protects it from viruses. It's called the **immune system**. When a person has a disease caused by a virus, the immune system fights it off. The next time the same virus infects that person, the immune system remembers the virus and quickly destroys it.

A vaccine is given to a person in order to prevent a disease. It makes the immune system remember and fight one kind of virus without causing the disease.



Jonas Salk was studying medicine when he got a great opportunity. He was invited to study **virology**, the study of viruses. His teacher was Dr. Thomas Francis, a well-known scientist. Dr. Francis was trying to find a way to make a vaccine that would prevent **influenza**.

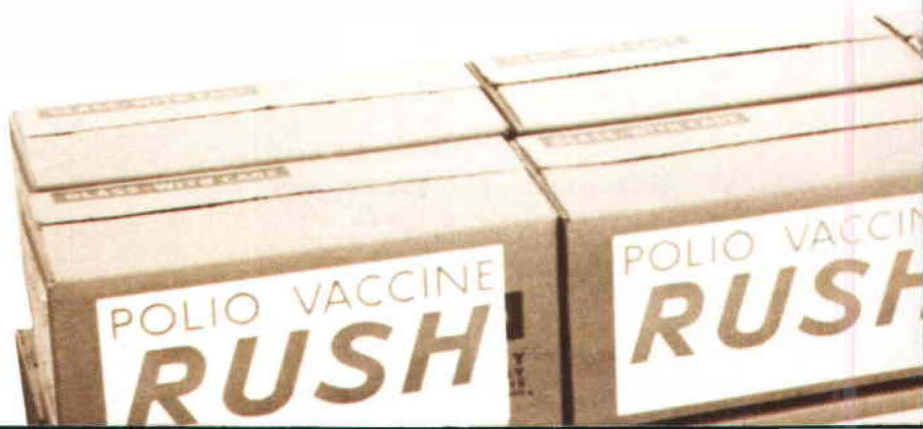
In 1919 millions of people all over the world died because of the influenza virus. The United States Army was interested in a vaccine for influenza to protect its soldiers.

Scientists use microscopes and other machines to study viruses.



Dr. Salk and Dr. Francis were successful in finding a vaccine for the flu. This vaccine saved the lives of many people.

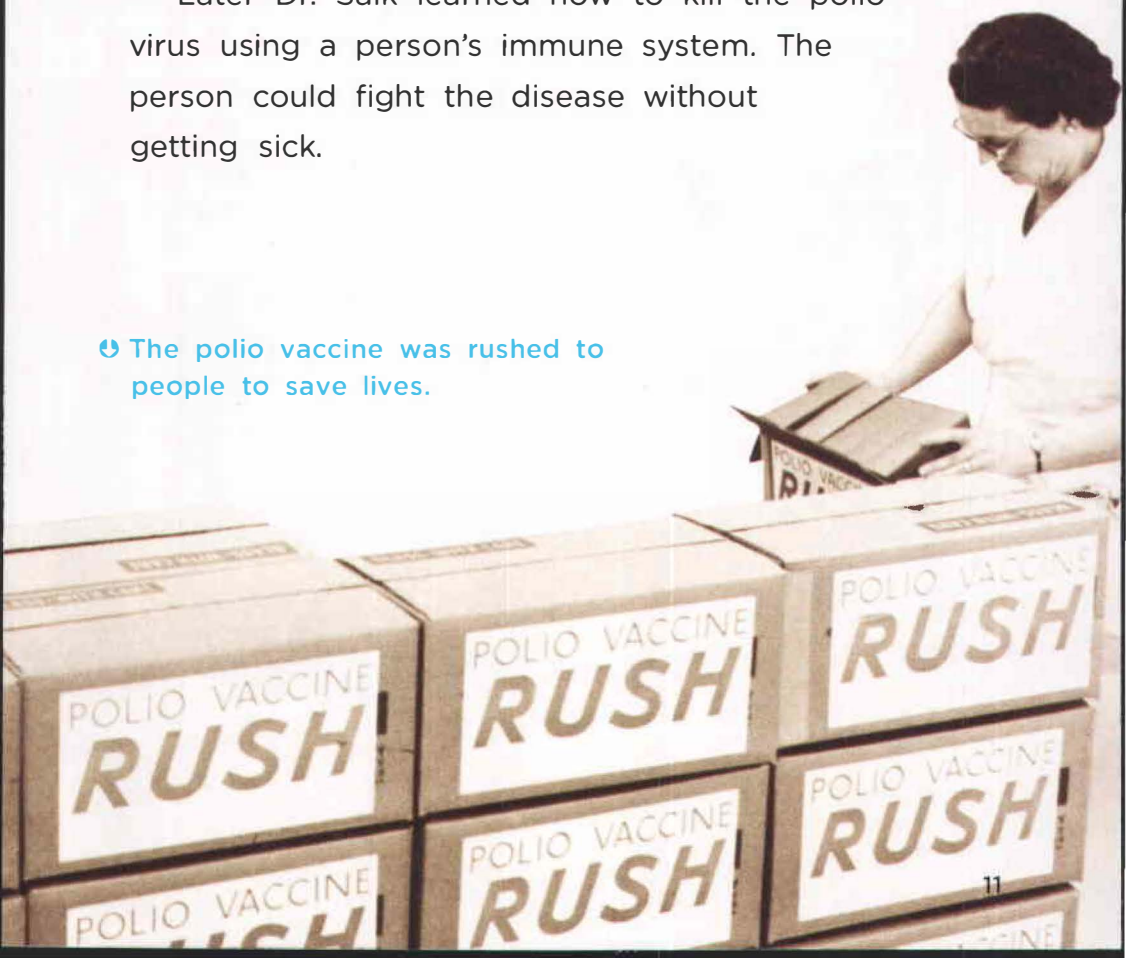
In 1947 Dr. Salk was invited to continue his work at the Virus Research Lab at the University of Pittsburgh. Scientists there believed that Dr. Salk had the wisdom to improve the flu vaccine and to find a way to prevent polio. Polio was infecting more and more people each year. Finding a way to prevent this disease was crucial.



Dr. Salk used what he learned from his work on the flu vaccine and the findings of other scientists to make a vaccine for polio. Most scientists were not jealous of each other's work. They shared their discoveries. Salk learned some very valuable information from a scientist at Harvard University named John Enders. Enders had discovered a way to make the polio virus reproduce, or multiply, in a laboratory. This was important because it meant that scientists would be able to do many experiments on the virus.

Later Dr. Salk learned how to kill the polio virus using a person's immune system. The person could fight the disease without getting sick.

🕒 The polio vaccine was rushed to people to save lives.

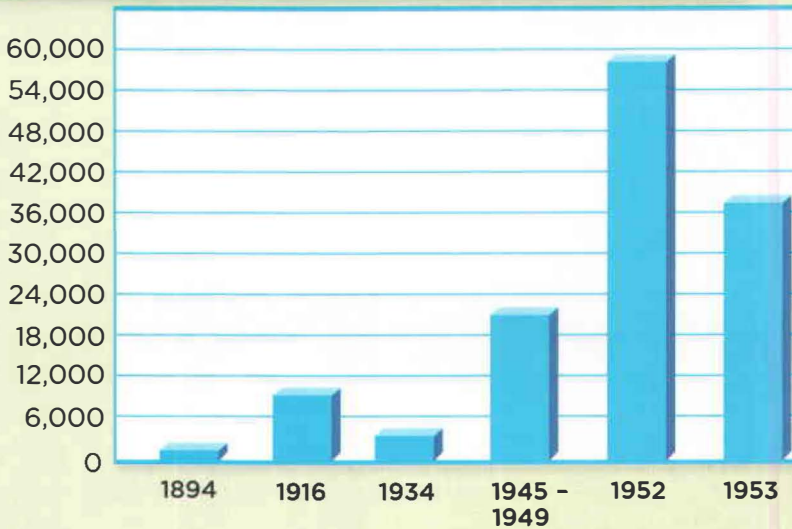


Chapter 3

Dr. Salk Finds a Polio Vaccine

It took five years of hard work for Dr. Salk to create the test vaccine for polio. In 1952 he actually tried the vaccine on himself, his wife, his children, and other volunteers. This test vaccine was made by using the dead polio virus. The vaccine worked because the immune systems of the people who received the vaccine built defenses against the live virus.

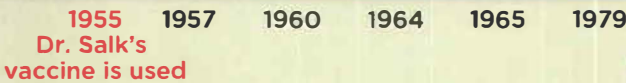
Number of Polio Cases in the United States



Children waited ↻
in lines to get
the polio vaccine
in the 1950s.



Dr. Salk published his study in a medical journal a year later. This was welcome news because 1952 was the worst year of polio in the United States. More than 50,000 people were infected.



In 1954 Dr. Salk and his former teacher Dr. Francis began an experiment. Some of the children in their experiment were given the real vaccine and others were given a **placebo**. The placebo was a fake vaccine. This experiment would prove if the polio vaccine really worked.

The experiment showed that Salk's polio vaccine actually worked. The children who received the real vaccine were protected from the virus. The results of the experiment were published and then made public in 1955. Eight years had passed since Salk began his work on a polio vaccine.

🔄 Today most children get a polio vaccine at a young age.



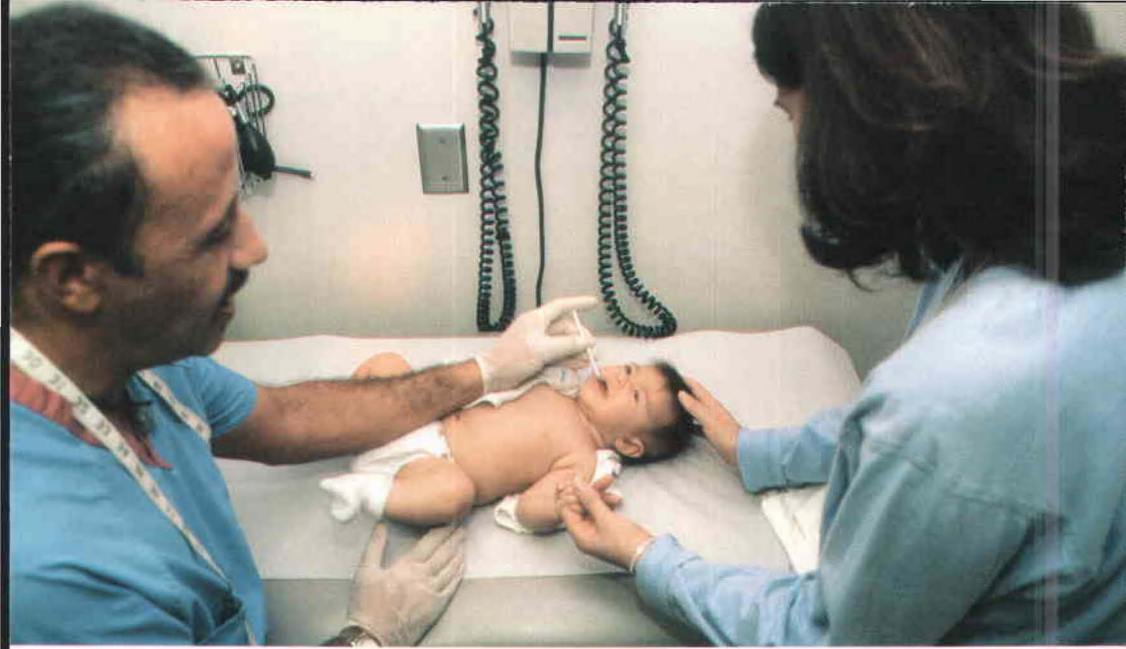
Salk's polio vaccine →
made him famous.



Dr. Jonas Salk became famous. He was a hero. His vaccine saved thousands of children from becoming crippled by polio.

Salk had no wish to make money from his vaccine. He refused to patent it. A patent gives someone the right to be the only one to make, use, or sell a new product or invention. Salk just wanted his vaccine to be available to as many people as possible.

Years later, in 1977, Salk was given the Presidential Medal of Freedom. This is the government's highest civilian award.



📍 Doctors can give an oral vaccine to children by mouth instead of as a shot.

The fear of polio infections began to fade each year after Dr. Salk's vaccine was introduced. By 1957 there were fewer than 6,000 cases of polio in the United States.

The work of other scientists crisscrossed with Salk's work. Several years later another virus vaccine was made. It was an oral vaccine—it could be swallowed instead of injected. These vaccines brought polio under control. Nearly 10 years after the first vaccine was made, polio had been almost completely wiped out in the United States.

Chapter 4

Polio Today

In the United States today, polio is just a memory. Only the people who had polio before Dr. Salk's vaccine remember how serious and scary it was. The last polio infection in the United States was reported in 1979. Now all babies in the United States get a polio vaccine.

🕒 In the United States today, children can enjoy activities without fear that polio might strike.



The Fight Against Polio

The government of China created a special day for children to get polio vaccinations. In 1993 and 1994, 80 million children were given polio vaccines. This was the biggest vaccination project in the world.

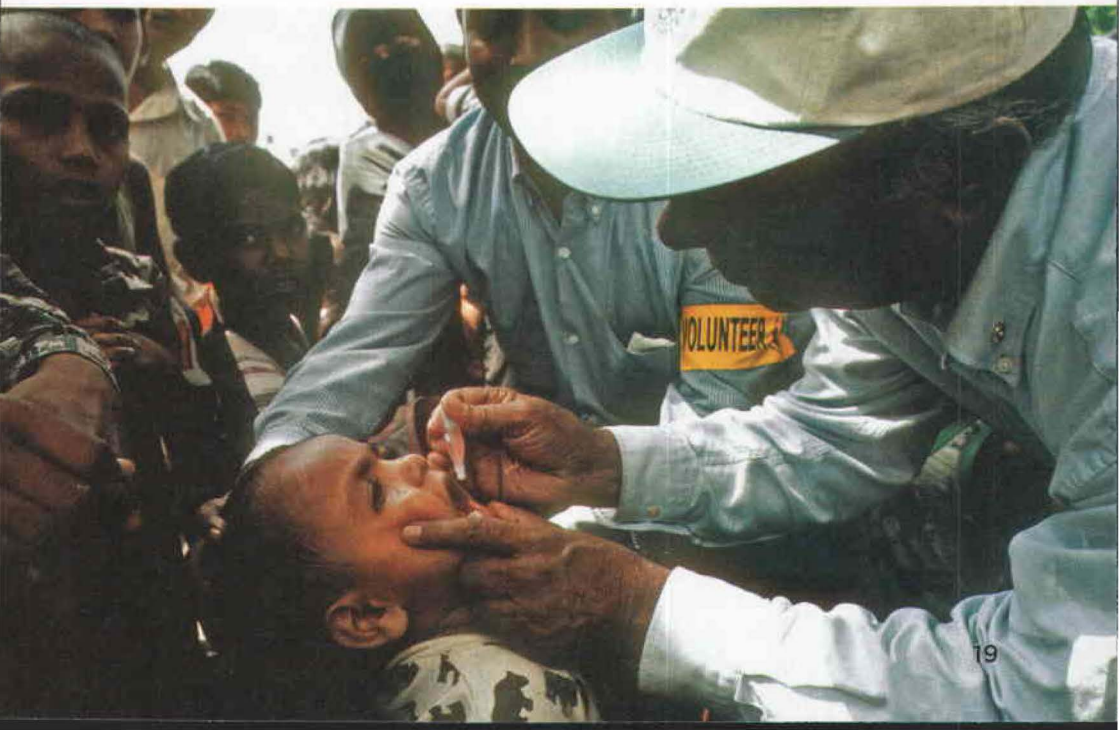


Today the world is almost free of polio. In 1988 only 10 percent of the children in the world lived in countries free of polio. By 2001 more than 70 percent of children lived in countries free of polio. The number of people sick with polio has gone down by 99 percent since 1988. Today there are fewer than 7,000 cases a year in the entire world.

The fight against polio continues today. Groups of doctors and volunteers are working around the world to reach children in poor countries and give them polio vaccines. Millions of children were vaccinated in China and India in the 1990s, and more than 500 million children in 94 countries received polio vaccines in 2001.

An organization called the Global Polio Eradication Initiative is carrying on Dr. Salk's work to make polio disappear from the world.

🔄 Groups from around the world are trying to wipe out polio in every country.





📍 Dr. Salk studied diseases at his institute in California.

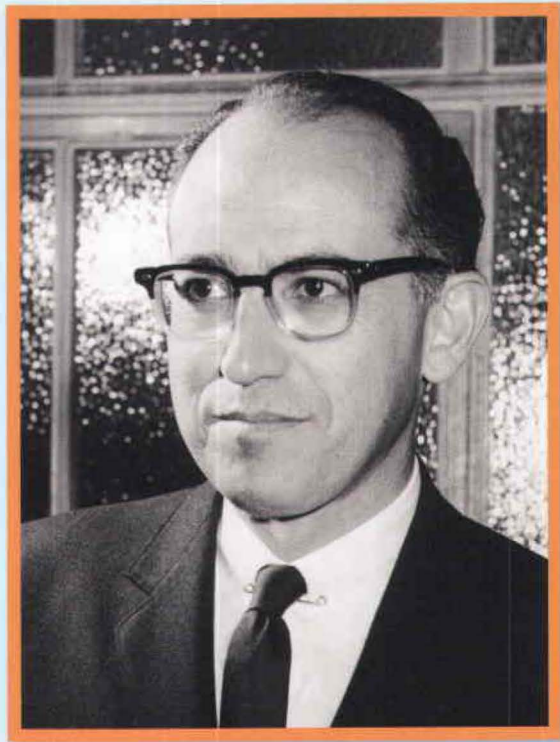
Dr. Salk founded the Salk Institute for Biological Sciences in California in 1963. For many years he studied the AIDS virus and worked on finding a cure for it. Dr. Salk died in 1995 at the age of 80. He wasn't able to find a cure for AIDS, but others will build on his work and continue to improve our lives.

Conclusion

Dr. Jonas Salk has an important place in scientific history for his work on polio and the flu. He is remembered for the creative solution he found to a very serious problem. Dr. Salk used his knowledge of viruses and biology to prevent a disease disguised in mystery. This disease was disabling thousands of children in the United States and around the world.

Dr. Jonas Salk's vaccine continues to protect children in the world almost 50 years later. Hopefully polio will disappear completely in the future.

Dr. Salk will always be remembered as the man who helped stop polio.



Glossary

immune system (*i-MYEWN SIS-tuhm*) a system in our body that fights infection (*page 9*)

infection (*in-FEK-shuhn*) a disease that is caused by germs entering the body (*page 6*)

influenza (*in-flew-EN-zuh*) the virus that causes an infection known as the flu. The flu is like having a very bad cold, but it can be deadly. (*page 9*)

microscope (*MIGH-kruh-skohp*) a device for looking at things that are too small to be seen with the naked eye (*page 7*)

outbreak (*OWT-brayk*) a sudden start of something such as disease (*page 4*)

paralyze (*PAR-uh-lighz*) to lose a person's ability to move arms, legs, or other parts of the body (*page 5*)

placebo (*pluh-SEE-boh*) a fake medicine that is given to a person to see if a real medicine actually works (*page 14*)

poliomyelitis (*poh-lee-oh-migh-uh-LIGH-tuhs*) the full name of the virus that causes polio. People with polio have weak muscles, a stiff neck, and a fever. It can also paralyze a person. (*page 2*)

symptom (*SIMP-tuhm*) something that someone feels when they have a certain disease or sickness. For example, a symptom of a cold is a fever. (*page 6*)

vaccine (*vak-SEEN*) a medicine that is given to a person, usually with a needle. A vaccine makes our immune system work to protect us from a certain virus. (*page 7*)

virology (*vigh-RAH-luh-jee*) the study of viruses (*page 9*)

virus (*VIGH-ruhs*) a microscopic creature that causes people to get sick. A virus has to get inside our bodies and multiply to make us sick. (*page 2*)

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Comprehension Check

Summarize

Use a Conclusions Chart to record clues and draw conclusions about Dr. Salk and the polio vaccine. Then use the chart to help you summarize the book.

Text Clues	Conclusion

Think and Compare

1. Look at page 4. Why were public beaches and swimming pools closed in the 1950s? (**Draw Conclusions**)
2. Do you think that doctors will be able to make the world completely free of polio some day? What else do you think people could do to eliminate polio in the world? (**Analyze**)
3. Why is it important for kids around the world to be safe from polio and other serious illnesses? (**Evaluate**)

Literacy Activities



Report on Salk

Pretend that you are a newspaper reporter reporting on Dr. Jonas Salk's new polio vaccine. Write an article telling about the scientist and how he developed his new vaccine. Remember to answer the *who? what? where? when?* and *why?* questions of good reporting.



The Medal of Freedom

Jonas Salk was awarded the Presidential Medal of Freedom in 1977. Use the library or Internet to find out about other winners of this award such as Rosa Parks, Jacques Cousteau, and Hank Aaron. Why did they receive the award? Why was what they did important?

Dr. Jonas Salk

People were scared of a terrible disease.
What did Dr. Jonas Salk do to save them
from catching this disease?



4.4 Week 2

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