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**SYNOPSIS:**

Who would have imagined that an instrument invented four hundred years ago, based on the simple principle of light passing through a lens, could revolutionize our lives? Since the 1600's, when the first glimpse of the miniature world in nature was seen, the microscope has been aiding scientific discovery in a variety of ways.

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**CURRICULUM UNITS:**

Biology  
Biochemistry  
Chemistry  
Electronics  
Engineering  
Entomology  
General Science

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**CAREER OPPORTUNITIES:**

Biochemist  
Biologist  
Chemist  
Engineer  
Medical Scientist

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**PROGRAM OVERVIEW:**

From its rudimentary beginnings in the late 1500's, the microscope has evolved into a complex and sophisticated instrument. Two basic types are the simple and compound microscope. Both of these operate on the same principle: they use light, much like our eyes, they are termed optical microscopes. Future microscopes are being developed – ones that use sound waves, high voltage electrons and electron clouds. Aided by these microscopes, scientists are sure to make discoveries that will affect all our lives.

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**ISSUES AND CRITICAL THINKING:**

- 1) After viewing the program, ask students the following:
  - a) What is an optical microscope and how does it work?
  - b) What does it mean to magnify an object?
  - c) Name three ways the microscope has enhanced scientific understanding.
  - d) What is the magnification power of the electron microscope?
- 2) Examine a compound microscope and learn the name of its parts.
- 3) Study samples of tap water under a simple and compound microscope.
- 4) Have your students draw something as seen through a magnifying glass and a microscope.
- 5) Discuss how X-rays improved our ability to study specimens.

**BACTERIA-** Minute organisms that can be seen only through a powerful microscope.

**CONFOCAL MICROSCOPE-** A microscope that focuses on a laser beam on a specimen and can also see right into living cells.

**ELECTRONS-** A tiny particle that is too small to be seen.

**LASER-** An electronic device that produces a very strong beam of light.

**LENS-** A piece of glass or other clear material that is curved to make light rays move apart or come together.

**MICROBE-** A very tiny living form.

**RETINA-** The lining of the back of the eyeball, made up of several layers of cells that are sensitive to light.

**SCANNING TUNNELING MICROSCOPE-** A microscope that is capable of finding the slightest defects or flaws and can actually look at individual atoms on a surface impossible by any other means.

**SPECIMENS-** Things that show what the whole group is like, a sample.

The Wonders of Technology,  
Genetic Engineering,  
Biotechnology



Show Me Science

TECHNOLOGY: THE MICROSCOPE  
OUR WINDOW ON THE WORLD



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