

## MICROSCOPES

Microscopes have come a long way since the Dutch first created compound and simple microscopes. A microscope is simply an optical device that magnifies objects. Many standard microscopes have built-in light sources to improve the view. We call them light microscopes. These compound microscopes have a lens in the eyepiece and more lenses closer to the specimen.

- You can learn about different microscopes available to purchase at this website.
- Interested in using a smart phone or computer to magnify objects? Get more information here.

 [homeschool scientists microscope](#)

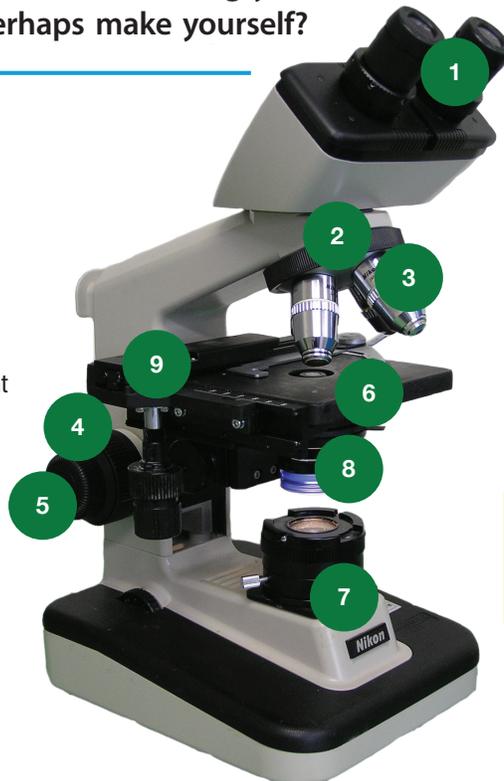


 [Wired cellphone microscope](#)



**What type of microscope will work best for you in exploring cell science? Is it something you buy, download, or perhaps make yourself?**

1. Eyepiece
2. Revolving nose piece (holds objective lenses)
3. Objective lens
4. Focus knob for coarse adjustment
5. Focus knob for fine adjustment
6. Stage or platform (holds the slides/specimens)
7. Light source
8. Diaphragm and condenser focuses the quality and intensity of light
9. Mechanical stage, optional part found on higher end microscopes to adjust slide



## Inquire & Investigate

### Ideas for Supplies ▼

- lenses from disposable cameras (remove battery first, then use insulated tools with the help of an experienced adult) or purchased lenses
- plastic tubes slightly wider in diameter than the lenses
- black opaque paper
- metal and plastic washers
- small light source
- 35 mm film canister or something similar in size
- glue gun

This project continues on the next page. →

## ACTIVITY!

Inquire & Investigate VOCAB LAB 

Write down what you think each word means:

**cell, biology, multicellular, nucleus, protists, spontaneous generation, and unicellular.**

Compare your definitions with those of your friends or classmates. Did you all come up with the same meanings? Turn to the text and glossary if you need help.

- **Research building microscopes on the Internet.** You may find blueprints to download or perhaps discover another idea for how to create one. Don't be afraid to be creative when figuring out a design for a microscope. Engineers learn about their own products by making mistakes and improving their own designs. Draw your design ideas in your science journal.
- **Once you have some ideas, try building your favorite design.** Test it out by looking at a variety of specimens. Can you use it to magnify samples for studying them?
- **Figure out how to make your design even better and build another microscope.** Will you use more lenses? Larger lenses? Maybe you'll find a different light source. Remember, people are still improving the functions of the microscopes scientists use in professional labs. There is always a better microscope to build.

To investigate more, research Stanford engineer Manu Prakash, who created a paper microscope called a foldscope that could withstand the hazards of the Amazon region in South America. He talks about the benefits of easily accessible, inexpensive microscopes here.

Does he inspire you to try some new ideas?

 Stanford Medicine foldscope

