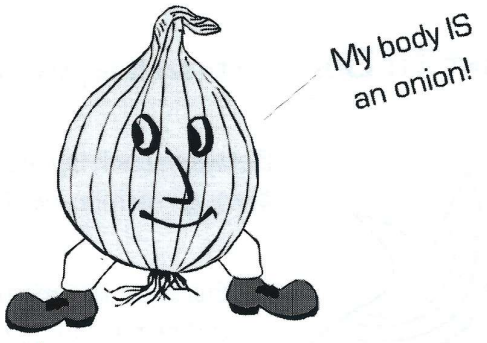
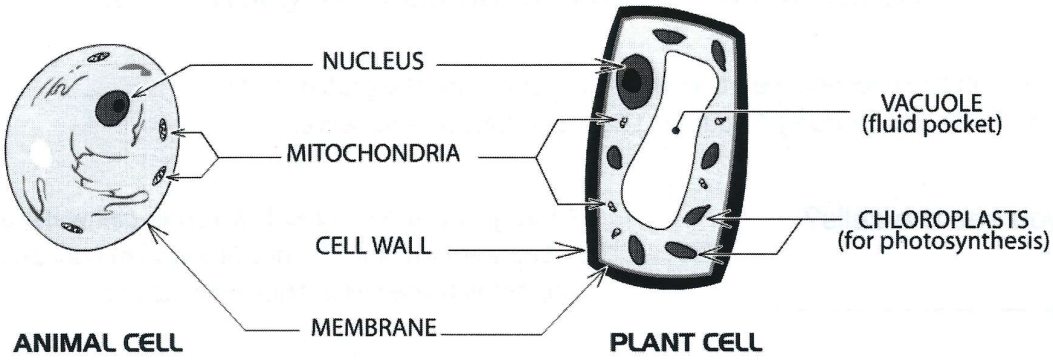
Cells in an Onion Membrane

How is your body like an onion?!



Like all living things, people and onions are made of tiny living building blocks called ***cells.***

Here are some enlarged pictures of cells:

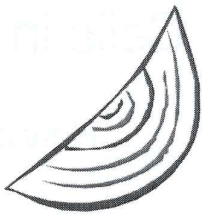


Think of a cell as being like a water balloon. The cell's ***membrane*** holds the ***cytoplasm*** the way the balloon holds the water. Bobbing around in the cytoplasm are the ***nucleus***, which tells the cell what to do, and ***mitochondria***, which turn food into energy for the cell. One difference between animal cells and plant cells is that plant cells have a tough cell wall. This gives the plant cell its shape and makes it easier to see under a microscope.

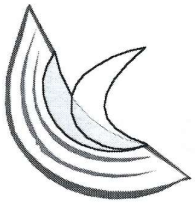
Of course, you are much more complicated than an onion! You have skin cells, blood cells, brain cells - over two hundred kinds of cells working together to keep your body alive. Can you see your skin cells or blood cells? No. No matter how hard you stare, they are too small to see, even with the pocket microscope.

But not all cells are too small! Today we'll look at cells in an onion.

WHAT YOU NEED: Use the pocket microscope. Also, you will need to provide an onion, a knife, and an adult.



WHAT TO DO: With adult supervision, cut a wedge from the onion.



Between each layer of the onion is a very thin, see-through membrane. Peel off one of the membranes.

Stretch the membrane smoothly over the end cap of the microscope. Moisture will make it stay.

Onion juice on your fingers could sting your eyes. Be careful, and wash your hands when you're done.

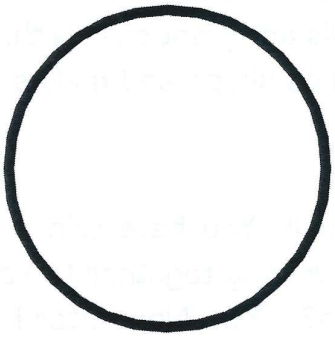
Look through the microscope at a light or the daytime sky (but not at the sun; that's dangerous.) Focus on the membrane and observe.

Can you see the cells?

_____

What you are seeing is the tough cell walls and the cytoplasm within. The nucleus and mitochondria are too small to see with this microscope.

Draw and describe what the onion membrane looks like through the microscope.



ONION MEMBRANE

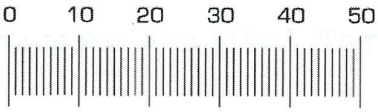
What is the shape of an onion cell?

_____

Are the cells all the same size and shape?

_____

How many onion cells would fit into a millimeter? Compare the cells, seen through the microscope, with the scale below, seen through the microscope.



This scale shows distance in millimeters

Fungus Forest



Would you like to see a microscopic forest that looks like it's from an alien world?

What You Need: Pocket microscope and 2 petri dishes. You will also need to supply half a slice of bread, 2 teaspoons of water, and some dust. Also a piece of tape.

What To Do: Tear your half slice of bread into two pieces that will fit in the petri dishes. Put the bread in the petri dishes. Pour a teaspoon of water on each and cover them with their lids. Now go find some dust - maybe in a windowsill or on top of a bookcase. Sprinkle a little bit of this dust on **JUST ONE** piece of bread, and reclose the petri dish. Seal it shut with the tape.

Put the petri dishes in a safe place where younger children or pets can't touch them. Keep track of which has dust and which has no dust.

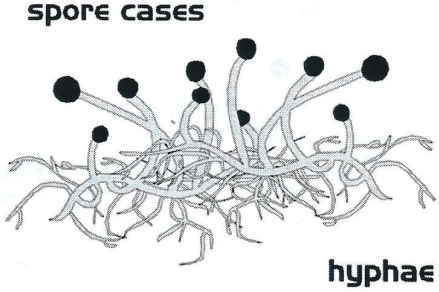
Write down the date you started this experiment:

_____

Every couple of days, come back and look at the petri dishes. Do this for about a week.

Molds are members of the fungus kingdom, just like mushrooms. Mold spores are very common in household dust. Does your bread mold show any of the features in this picture?

A Common Bread Mold



The **SPORE CASES**, in this example, appear as black dots or balls.

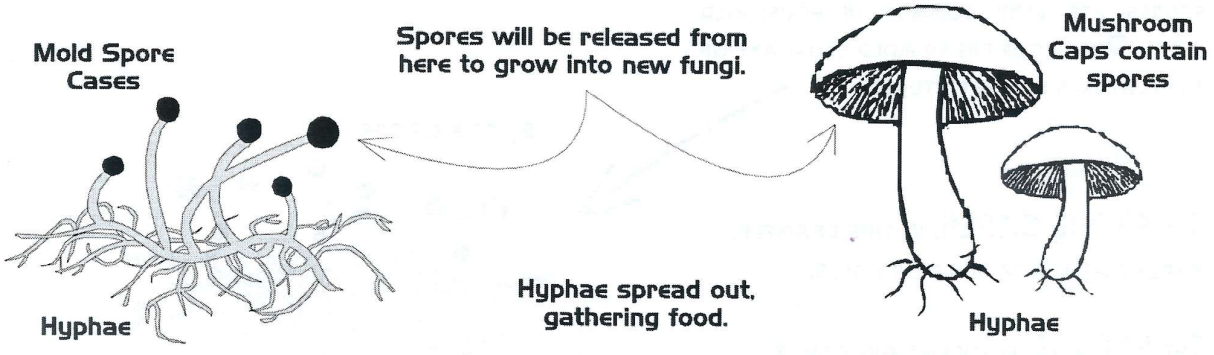
The **HYPHAE** look like grey fuzz. You may see other colors, too.

Inspect the bread both with and without the microscope. Focus in at different levels. Don't open the petri dish, and wash your hands when you are done. Record what you see in the chart below using words or drawings.

Fungus Growth Chart

OBSERVATION / DATE	DUST	NO DUST
1		
2		
3		
4		

A Fungus Among Us



When this experiment is over, you may put the petri dishes in the garbage.