



Cells

1. **cells**: the basic units of structure and function in living things.
 - a. Most cells too small to be seen with eye
 - b. **The invention of the microscope made it possible for people to discover and learn about cells.**
2. **microscope**: an instrument that makes small objects look larger.
 - a. Light microscope: uses lenses to focus light
 - b. Simple light microscope: has only one lens
 - c. Compound light microscope: has more than one lens
3. **Robert Hooke**
 - a. One of the first people to observe cells
 - b. **1663**: observed structure of thin slice of cork using *compound microscope* he built himself
4. **Leeuwenhoek**: Same time as Hooke. Observed tiny creatures that moved (he called them "animicules") now known as bacteria
5. **Schleiden**: in 1838: concluded that **all plants are made up of cells**
6. **Schwann**: in 1855: concluded that **all animals are also made up of cells**
7. **Cell Theory**:
 - a. all living things are made up of cells
 - b. cells are the basic unit of structure and function in living things
 - c. all cells are produced from other cells
8. **Microscopes**
 - a. **magnification**: ability to make things look larger than they are

1) the magnification of a compound microscope is equal to the magnification of both lenses multiplied together

a) magnification of a compound microscope with a lens that is 10X and one that is 20X is $10 \times 20 = 200x$, which makes the object appear 200 times larger!

- b. **Important concept:** The lens or lenses in a light microscope magnify an object by bending the light that passes through them
- c. **convex lens:** magnifies objects and is thicker in the center than at the edges
- d. **resolution:** ability to clearly tell the difference between the individual parts of an object. The "sharpness" of the image.
- e. **Electron microscope:** uses a beam of electrons (very, very, very tiny!!!!) to shine on the object. Gives the ability to see very tiny objects very clearly.