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.