**2.0 – Notes (Chapter Opener)**

* Unicellular organisms are usually microscopic in size because cellular activities are performed most efficiently at that size.
  + If these unicellular organisms were many times bigger, diffusion and osmosis could take several minutes instead of a fraction of a second.
  + And, organelles in a huge cell would have trouble accessing the resources they need.
* That is why bigger organisms have many cells.
  + Diffusion and Osmosis can still happen in a fraction of a second and a specialized cell may be better adapted to performing the cell’s tasks.
* Some multicellular organisms have only a few types of specialized cells.
* Humans have hundreds of different types of specialized cells.
* The basic needs of large, small and microscopic organisms are met at the cellular level.
* Protists: These are simple organisms that are neither plant nor animal and are composed of one or a few cells. They have some similarities to plants or animals in that they can produce their own food (algae) and some can move themselves around (paramecia), while others can do both (euglena).
* All living things are made up of cells.
* It is the activity of cells that allow each living thing to meet its basic needs.
* The obvious structures of living things (jaws, teeth, eyes, limbs, fins and wings; leaves, stems and roots) may appear to be meeting the basic needs.
  + These structures are just working together to supply the organism’s cells with the water, oxygen, and nutrients that the cells need to carry out their activities.
* The visible structures of organisms may look very different and they make it possible for the organism to get what it needs from its environment.
  + They also ensure that the necessities of life are processed to get to the cells.
* The real work of survival happens within the cells.
* The coordinated activity involved in getting the oxygen, water and nutrients to the cells happens without any awareness on the part of the organism.
  + This is true for your own body too.
  + You may taste the food you eat and notice the temperature of your drink but you rarely breathe consciously.
  + Once the oxygen water and food are inside your body the various parts of the body take care of the processing.
  + You are unlikely to notice any of this activity unless something goes wrong.
  + Yet without these activities taking place within you, survival would not be possible for you.