

Carbon:

The most revolutionary course in biology of all time begins. Learn about covalent and ionic and hydrogen bonds. What about electron orbitals and the octet rule, and what does it all have to do with a madman named Gilbert Lewis. It's all contained within [Music] Carbon is willing and interested to bond with lots of different molecules like hydrogen, oxygen, phosphorus, nitrogen, or to other molecules of carbon. It can do this in infinite configurations, allowing it to be the core atom of complicated structures that make living things like ourselves. Life is entirely based on this element. Carbon is the foundation of biology. The little Lewis dot structure that we use to represent how atoms bond to each other is something that was created by a troubled mad genius. It's not some abstract scientific thing that's always existed. It's a tool that was thought up by a guy, and it was so useful that we've been using it ever since in biology, most compounds can be displayed in lewishish dot structure form.

Water:

All life as we know it is dependent upon there being water around. scientists and astronomers are always looking out into the universe trying to figure out whether there is life elsewhere. they're always getting really excited when they find water someplace particularly liquid water., but why do we think that water is necessary for life. why does water on other planets get us so freaking excited. Water has the highest cohesion of any nonmetallic liquid. Water adheres weakly to the wax paper or teflon, but strongly to itself.. cohesion is the attraction between two like things, like attraction between one molecule of water and another of water.. adhesion is attraction between the water molecules and the glass molecules.. These properties lead to one of my favorite things about water (H₂O) the fact that it can defy gravity. Henry Cavendish was the first person to recognize hydrogen gas. hydrogen gas as a distinct substance and to determine the composition of water. Cavendish did not understand what he discovered because he didn't believe in chemical compounds and explained his experiments with hydrogen in terms of a firelike element called "phlogiston".

Biological Molecules:

We're going to talk about the three most important molecules on the Earth. these are the molecules necessary for every living thing on earth to survive. they are essential sources of energy and the means of storing that energy. and for this classification, we have to thank a little known English physician who dedicated his life to the study of human Pee. and he was the first to discover that our stomachs contained hydrochloric acid.. Prout was the first person to discover the chemical composition of pure urea, the main component of urine. in the presence of water, urea gives off ammonia, which is why your Pee smells. Prout went so far as to say that in order to be healthy, you needed to eat all three of these things. in plants., cellulose is the most common structural compound on the planet. it's just a bunch of glucose molecules bound together. and it's very difficult to digest. cows can do it., but humans certainly can't. polysaccharides are also really good for storing energy and not just structurally, but just as an energy store. bread is made up of starch, the most simple of which is called amylose.

Eukaryopois (Animal Cells):