The chemical make-up of humans

Have you ever been curious about life and what are we made of and how we function the way we do? Well, then chapter two will be a great chapter for you because in this chapter we will be learning about life composition and structure. We will be learning about the chemical basis of life which include matter, elements, atoms, chemical bond, water properties and much more. You might be wondering why are we learning about chemistry in biology class but you need to keep in mind that biology is a branch of science that deals with the manifestation of life through the chemical interactions of non-living molecules which is why we need to explore some of the fundamental concepts of chemistry.

It is impossible to understand biology without the introduction to chemistry. But you might be wondering what chemistry is and how is it related to the context of life. Chemistry is basically the interpretation of composition, structure and the property of matter and what causes it to change it. The matter is anything that has mass and takes up spaces. All living and nonliving thing are made of matter and matter is made up a chemical element. There are 118 elements in the period table, and each has its own element symbol. Element properties is determined by its atoms structure and smallest unit of special atom continue to keep the property of an element. Compound are elements which are combined into a fixed ratio and its characteristic goes beyond its combined element. You might be wondering are element really that necessary for life and the answer is yes life required almost 25 chemical elements. We have a total of 92 elements and almost 25% of is an essential element which is required by the organism to lead a healthy life and to be able to reproduce. Macroelement is a type of

chemical element which is used in large quantities for the physiological process of the body. Which include NaCl, Ca, Fe, and many more. But at the same microelements are only used in small about which is also known as a trace element which is required by the organism but only in time spends of one minute. Microelements include Cu, Mn, Co, Z.

The matter is anything that is made of atoms. But what is atoms? Atoms are the smallest particle of elements and matter is made of only one unique type of atoms. Atoms are made of particle which is proton, electrons, and neutrons. Protons are the positive charge and electron are negative while neutrons have no charge at all which mean the neutral atom contains an equal number of element and protons. The atomic number is determined by the number of protons it contains. Changing atomic number can create a new element which means if you change the atomic number you are not going to have the same elements as before. The ordinary chemical cannot break down substance to another substance. Element is made of a pure substance which contains one kind of atoms. Daltons is the measurement used to measure the atomic mass which is the total number of protons plus neutrons. Any atom which has the same elements with different atomic mass are known Isotopes. Isotopes are the change which is caused when a number of neutrons changes, and they are also known as a “ Tracers.” There are two types of Isotope which are radioactive and heavy. In radioactive isotopes, the nucleus decays spontaneously while in Heavy isotopes it has a stable nucleus, but it has more mass than normal isotope for the elements.

Energy is the ability to cause change or the ability to do work. Potential energy is an energy which has been stored because of its location and position. Electron also has potential energy stored in them because of their position in the nucleus. Electron's state of potential energy is referred to as its energy level in the electron shell. All atoms have a specific place in electron shell and the first level always have two electrons which contains the lowest amount of potential energy. The other level are capable of holding more than two-electron and also have a higher energy level compare to the first level. It has been said that 90% of the time electron is found in the three-dimensional space. It also has different orbital and shapes. The chemical behavior of an atom is decided by the valence electron and when there is an element which is full of valence shell, they are called the chemically inert.

The bond formation all depends on the number of valence election it must gain, lost or shared by a similar condition. Ion is when an atom becomes charged by gaining or losing an electron. In chemical bond atom with incomplete valence shell stare electron with a specific atom. There are three types of chemical interaction which are covalent, ionic and hydrogen. The electron in the outermost shell are referred to as the valence electron. When there is a sharing of valence electron pairs between two atoms or when more than two atoms are heled together is known as a covalent bond. A covalent bond can be formed between an atom with the same element or different element, it doesn't matter what element they are. When there is a mixing of two or more different element it is referred to as a compound. The bonding capacity is all depended on the atom's valence. Any atoms which have an

affinity for their electron in a covalent bond is referred to as electronegative and when there is an unequal sharing of an electron in a molecule it will make those molecules a polar. There are two types of covalent bond which is polar and nonpolar. In nonpolar covalent bond electron are shared equally between the atom and in nonpolar covalent could be single or triple between two different atoms. A polar covalent bond is when there is unequal sharing between atom. When there is an attraction between two opposite charged ions, it is known as the ionic bond. There are two types of ion which is cations and anion. A positively charged ion is called cation and a negatively charged ion is refer as an anion. But there is an attraction between a positive and negative ion it will form an ionic bond which will form an ionic compound like sodium chloride. (NaCl). But this bond is just a weak chemical bond which can be broken down easily example the sodium chloride can dissolve in the water.

When a hydrogen atom is bonded to one molecule which is attracted to a negative area of different molecules that is called the hydrogen bond. A hydrogen bond is an electromagnetic attraction between polar molecules. A hydrogen bond is often very weak individual bond, but they can also be very strong is there are many H bonds. The electronegative partner in a living cell is often the oxygen or nitrogen atoms. Van der Waals is a weak attraction between molecules which happen between a transiently positive and negative area of the molecules. Van der Walls interaction can only occur when the atoms are closed to each other. Molecular shapes are often determined by the position of the atom in the orbitals. Molecules shape play a big role in biology because it is responsible for how the molecule of life is

recognized and will respond to one another. A chemical reaction is when there is making and breaking of the chemical bond but keep in mind that reaction only rearranges it does not destroy matter.

Work cited

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