

Quest for a Creatorless Origin of Life - 13

Biochemists, in their study of the chemical structure of the complex molecules in organisms, have noted that most of their structures are built up from only four kinds of molecules - sugars, amino acids, nucleic acids, and hydrocarbons.

They have discovered a great number of possible forms of these biochemicals, particularly of the sugars and amino acids. There are more than a hundred sorts of sugar: 3-carbon, 4-carbon, 5-carbon, 6-carbon and 7-carbon. These all occur in varying forms of chain, branch, and ring shaped molecules. But only a small number of these occur in living organisms.

This presents another huge problem for those seeking a spontaneous origin of life. A creatorless formation of life would have to wait for the chance formation - in some concentration - of the correct sugars to be present with other required components - not likely!

Another troublesome fact is that many of the molecules in living organisms, while they are made up of the same numbers and kinds of atoms, have different physical shapes, occurring in right-handed and left-handed forms. Structurally, they are mirror images of each other like those of our hands and feet.

For example, the right-hand form of the biological hydrocarbon, carvone, occurs in caraway seeds and is responsible for its scent. But the left-hand form of the same chemical carvone, which is in the variety of mint plant *Mentha spicata* or spearmint, has the completely different characteristic scent of spearmint oil.

The difficulty comes with the fact that in the case of the sugars only one of each of these mirror-image chemicals will work in an organism. When the commonly occurring 5-carbon sugar is made in the lab from simpler chemicals, it usually produces equal amounts of the right-hand and left-hand forms of that sugar, which would be the same in any "primordial soup" of chemicals.

This fact reduces even further any likelihood of the exact combination of chemicals and conditions coinciding to produce a living organism spontaneously. Adding to the difficulty is the impossibility of having any concentration of the required form of sugar, since it is produced in equal amounts.

But even if these chemicals were present and in the conditions needed to combine, and a cell could be formed, it could not survive without a cell membrane. The inside of a cell is mostly water, and the outside is typically water. So without that membrane the cell would quickly lose its internal structures which keep it alive.

The membrane which holds the cell together is made of a lipid, a family of biochemicals which are fatty acids and repel water. The simplest lipids are chains of hydrogen, carbon and oxygen. The lipid which is used in the cell membrane has additional atoms of phosphorus and is called a phosphoglyceride.

Each molecule is shaped like a capital U. The pointy ends repel water, so are called hydrophobic. The rounded ends of the molecules are attracted to water and are called hydrophilic. When phospholipids are put in water, the laws of physics work to rearrange the molecules so they line up side by side in a double layer to form miniature spheres. Creatorless origins people have suggested that this is how the first cell got its membrane. But there are more difficulties.....