The Creator's Origin of Life - 11

The chlorophyll molecule consists of 136 atoms of carbon, hydrogen, oxygen and nitrogen with one manganese atom. It is organized into five carbon rings attached to a carbon chain. That it is truly a complex structure can be seen in its chemical name, Magnesium [methyl (3S,4S,21R)-14-ethyl-4,8,13,18-tetramethyl-20-oxo-3-(3-oxo-3-{[(2E,7R,11R)-3,7,11,15-tetramethyl-2-hexadecen-1-yl]oxy}propyl)-9-vinyl-21-phorbinecarboxylatato(2-)-k2N,N ].

But it is not only this chemical expression that shows that chlorophyll has been engineered and artfully contrived by a highly intelligent mind. Consider how a green solution of chlorophyll behaves when exposed to light - it glows reddish-orange and gets warmer when it absorbs the incoming pulses of light energy called photons. What is happening?

The absorbed energy pushes an electron in one of the atoms of the chlorophyll out of its normal orbit around the nucleus into a higher energy orbit. The electron can stay there for only a very short time, after which it automatically drops back to its normal orbit. Dropping back releases the energy by sending out a photon of lower energy (orange-red) than the incoming one, with some heat, so that the total energy in and out remains the same.

This energy is of no help to provide food for a plant. But when a group of chlorophyll molecules are physically organized and embedded in the membrane of some tiny pancake-shaped structures in the leaf, things change. Associated with these stacks of thylakoids (from the Greek word for pouch-like), is an amazing chemical factory

Whereas animal bodies have various kinds of organs, individual cells in plants and animals have specialized structures called organelles. One of these, contained in the cells in the leaf, is called the chloroplast. In these, under a microscope, can be seen what look like stacks of little green pancakes.

Embedded in the surface membrane of each “pancake”, or thylakoid, are a group of chlorophyll molecules standing ready to receive sunlight. Unlike the free standing chlorphyll, these molecules are able to capture some of the incoming light energy, to be harnessed for producing food and making the plant grow.

They are able to do this by being organized with a group of proteins and other kinds of complex organic molecules which convert the light energy to chemical energy. They then convey that energy down a complex series of reactions which result in the production of the sugar called sucrose. This all occurs in each of these bean-shaped chloroplasts in the leaf - 400 of these microscopic organelles would fit end to end in one millimetre.

Each chloroplast has organized its groups of chlorophyll into what act like two-man tag team wrestlers. One “wrestler” is called photosystem I, and the other “wrestler” is called photosystem II. They work in coordination while the electron, which was excited by the light pulse striking the chlorophyll, is prevented from dropping back into its normal orbit.

When any of the chlorophyll molecules in either “wrestler” absorbs a pulse of light, it immediately sends the energy to the next closest chlorphyll molecule in the group and continues bouncing it towards the one closest to a modified chlorophyll molecule called the Primary Electron Acceptor. The trap is now set to catch and hold that evasive pulse of energy that came from the sun.