Quantum Physics for Plants

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Quantum physics for plants, reported in *Nature*, and Biology News Net 12 April 2007. Plants are able to extract energy from sunlight with almost 100% efficiency because the transfer of light energy into the reaction centres that begin the process of photosynthesis happens almost instantaneously. The transfer process has been a mystery, but researchers at the US Department of Energy's Lawrence Berkeley Laboratory have found evidence that it is a quantum mechanical effect. Graham Fleming, who led the study, described their results: "We have obtained the first direct evidence that remarkably long-lived wavelike electronic quantum coherence plays an important part in energy transfer processes during photosynthesis. This wavelike characteristic can explain the extreme efficiency of the energy transfer because it enables the system to simultaneously sample all the potential energy pathways and choose the most efficient one."

Biology News Net commented: "The photosynthetic technique for transferring energy from one molecular system to another should make any short-list of Mother Nature's spectacular accomplishments. If we can learn enough to emulate this process, we might be able to create artificial versions of photosynthesis that would help us effectively tap into the sun as a clean, efficient, sustainable and carbon-neutral source of energy." Gregory Engel, who was also involved in the study, commented: "Nature has had about 2.7 billion years to perfect photosynthesis, so there are huge lessons that remain for us to learn. The results we're reporting in this latest paper, however, at least give us a new way to think about the design of future artificial photosynthesis systems."

Biology News Net

Editorial Comment: A plant which cannot select the right energy spectrum and then transfer such energy efficiently is destroyed by the same energy, long before it can evolve. The coexistence of both a selection and quantum transfer process is proof of deliberate and intelligent creation, not 2.7 billion years of mindless natural processes. If bio-technologists are able to learn the "huge lessons" of how to design an artificial photosynthetic system they will have doubly proven it takes brilliant understanding and creative engineering to make a system that selects and then extracts energy from light at near perfect efficiency. The photosynthetic method for transferring energy is a spectacular accomplishment but the glory for this should go to the Lord Jesus Christ through whom and in whom all things were created, (see John 1:3, Colossians 1:16) not to a false god named Mother Nature. (Ref. design, technology, energy)

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