

The explanatory power of quantum physics is without parallel in the history of physics. Many theories on natural phenomena provided by classical physics and biochemistry are derived as approximations of theories of quantum physics. Size and shape of biological molecules along with their chemical affinity are known to obey quantum laws. However, the dynamics of biological systems is governed also by non-trivial quantum phenomena, which are indeed the matter of this book.

The book presents the superposition of states, quantum entanglement, quantum coherence, and statistical mechanics principles behind the thermodynamics at work in biological systems. The non-triviality of these phenomena relies on the efficiency they ensure to biological processes in spite of the elevated density of macroscopic interactions that biological systems experience with dynamical environmental factors.

Our book suggests that the modern quantum biology, emerged from the convergence of quantum physics and systems biology, could propel massive efforts in future research to innovate the existing approaches generating knowledge and bringing technological repercussions in the biotechnology applications and in the use of renewable energy sources.



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