



The Rainbow and the Worm: The Physics of Organisms

By Mae-Wan Ho

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This highly unusual book began as a serious inquiry into Schrödinger's question, "What is life?", and as a celebration of life itself. It takes the reader on a voyage of discovery through many areas of contemporary physics, from non-equilibrium thermodynamics and quantum optics to liquid crystals and fractals, all necessary for illuminating the problem of life. In the process, the reader is treated to a rare and exquisite view of the organism, gaining novel insights not only into the physics, but also into "the poetry and meaning of being alive."

This much-enlarged third edition includes new findings on the central role of biological water in organizing living processes; it also completes the author's novel theory of the organism and its applications in ecology, physiology and brain science.

Contents:

- What Is It to Be Alive?
- Do Organisms Contravene the Second Law?
- Can the Second Law Cope with Organized Complexity?
- Energy Flow and Living Cycles
- How to Catch a Falling Electron
- Towards a Thermodynamics of Organised Complexity
- Sustainable Systems as Organisms
- The Seventy-Three Octaves of Nature's Music
- Coherent Excitations of the Body Electric
- The Solid-State Cell
- 'Life is a Little Electric Current'
- How Coherent Is the Organism? The Heartbeat of Health
- How Coherent Is the Organism? Sensitivity to Weak Electromagnetic Fields
- Life is All the Colors of the Rainbow in a Worm
- The Liquid Crystalline Organism
- Crystal Consciousness
- Liquid Crystalline Water
- Quantum Entanglement and Coherence
- Ignorance of the External Observer

- Time and Freewill

Readership: Sixth-form and undergraduate students in physics and biology; biophysics, biochemistry and quantum mechanics undergraduates.

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Editorial Review

From Scientific American

"The layman may not understand half of this book, but he will understand more than he expects to or may feel he has any right to. The author, whether discussing 'quantum-entanglement', or 'energy-flow', 'dynamic order' or life as 'collective response to weak signals', has the gift of making the reader dream."

From [The New Yorker](#)

"The book is recommended to all scientists who are interested in understanding life. It shows that life is more than a complex chemical reaction and, written by an author who understands life not only through the narrow tube of our ratio, that life is worth living with loving care. The book can be easily understood, because it is written in a way that the basic scientific terms are repeated step by step before they are used for discussing the essential questions. Fifty years after Schrodinger's "What is Life?", this book is a worthy instalment, since it intensifies the original matter of Schrodinger."

Review

"... 'what is life?' Mae-Wan Ho presents an interconnected system of proposals, experimental results and conjectures which go a long way towards providing an entirely new answer to this question. It is based on research which is mainstream in its theoretical physical foundations, though innovative in some of its techniques. This makes the book highly important, and if she is right it would be revolutionary." Network

Users Review

From reader reviews:

James Sellers:

Why don't make it to be your habit? Right now, try to ready your time to do the important action, like looking for your favorite reserve and reading a publication. Beside you can solve your short lived problem; you can add your knowledge by the book entitled The Rainbow and the Worm: The Physics of Organisms. Try to the actual book The Rainbow and the Worm: The Physics of Organisms as your close friend. It means that it can to be your friend when you feel alone and beside that of course make you smarter than ever. Yeah, it is very fortuned in your case. The book makes you far more confidence because you can know everything by the book. So , let me make new experience and knowledge with this book.

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