

SPIRITON

The Fundamental Particle of Life

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A monthly newsletter on Science and Spirituality

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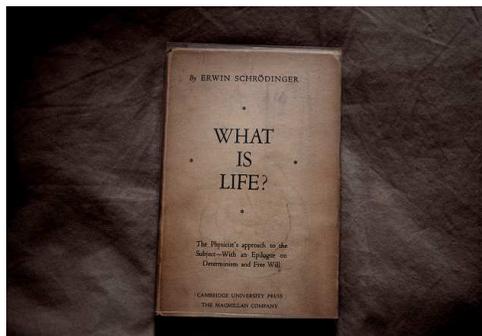
What is life?

Life is a mystery. Though life is seen all around us in different forms, from different species, each having different levels of complex functioning, no one really knows what it is. Biology, the study of life, has made exponential progress over the last century; nevertheless, it is unable to elucidate on this fundamental question of 'what is life'. One proposal is that life is controlled by the brain and 'We are our brains'.ⁱ The brain is responsible for virtually every vital function in the organism and when certain portions of the brain are excised out, normal functioning is disrupted. However, if such was the case, would the organisms belonging to the other four kingdoms, such as Monera, Protista, Plantae and Fungi (in a five-kingdom system) not be considered alive? With the possible exception for plants, which have been argued to have nervous-system like processes,ⁱⁱ these organisms are very much alive without a brain in control; they grow, seek nutrition, produce offspring and eventually die. Therefore, while the brain is obviously an important organ, it is not a requisite for life.

Soon after the discovery of the structure of the deoxyribonucleic acid (DNA) molecule, it gradually became popularized that the DNA is the secret of life.ⁱⁱⁱ These DNA molecules consists of multiple copies of a single basic unit, the nucleotide, which comes in four different forms: adenine, thymine, cytosine and guanine or A, T, C and G respectively. In every cell, this DNA exists as extremely long chains with As binding to Ts and Cs binding to Gs, forming

as the genome. Every organism within a species has a similar genome, while every living entity, has a unique expression and regulation of different genes and sequences of DNA that allows them to be unique. As such, it is not surprising that the DNA was attributed to life. But is this really life?

The DNA is nothing but a complex biochemical, which can be synthesized in the laboratory. If this is life, then it should be possible to synthesize life in the laboratory. However, not even a single living cell, or rather, not even a drop of milk can be synthesized in the laboratory.

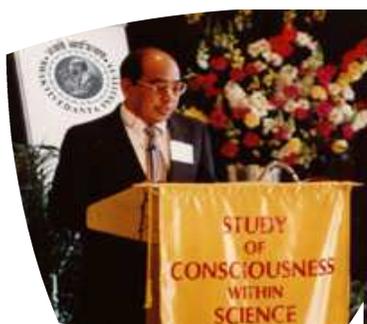


Renowned physicist Erwin Schrödinger's classic book entitled, "What is Life?"

long double helix structures. Functional sections of DNA are characterized as genes and the entire script of the DNA is known

In 1944, the renowned physicist Erwin Schrödinger published a book entitled, "What is Life?"^{iv}. Based on a series of public lectures, Schrödinger's book explains and extrapolates on physical laws that could govern life, and the challenges it encounters in the process. In the book, he also speculates that living matter or life is likely to be governed by other laws of physics, which when revealed would form an integral part of science. This understanding is in-line with the premise of this newsletter.

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Quote

"According to Vedanta, the living being or life is beyond molecules. Its ontological nature is non-molecular or non-material and it is spiritual." by Dr. T. D. Singh



Is Genome Life?

by Dr. T. D. Singh

In 1990, the Human Genome Project formally began as an international effort to sequence the entire genome of humans.^v In 1995, the genome of bacterium *Haemophilus influenzae* was produced and in 1998, the genome of the first multicellular organism - 97 million base pairs of DNA sequence of the roundworm *Caenorhabditis elegans* - was published.^{vi} In Feb 2001, Celera Genomics, the commercial sequencer led by J. Craig Venter, and the Human Genome Project consortium, the publicly-funded group led by Francis S. Collins, announced their 'first drafts' of the human genome. The human genome project was completed in 2003.^{vii} Can we now answer, what life is?

But researchers are in their next task — annotating the genes, determining each gene's role and how it interacts with other genes. The most serious impact of genomics may well be on how we view ourselves and each other. It requires our constant vigilance, lest we may lose sight of who we are, why we are here, what we wish to become and what the purpose of our life is.

Determining the structures of all of the gene products in a cell doesn't explain the lively workings of the cell. In the last 50 years, we have filled in huge details about living systems and can even manipulate their bodily structures in many astonishing ways. But we still do not know what life is. Even with the human code in hand, life's mystery seems far, faraway.

The Human Genome Project, though

extremely useful, is related to only the physical aspect of a human person. It is inadequate to describe the complete human person since a person is far more than a mere collection of molecules or genes, however sophisticatedly organized. A person is much more than his genome.

Genes are the coded instructions to make organisms' bodily structures, and the genome is the library of these instructions. But even an entire genome by itself is not alive. Life is much more than the genome.

Werner Ar-

ber, the Nobel Laureate microbiologist from the University of Basel, Switzerland remarked,

"I think that life could be beyond the assembly of biomolecules."^{viii} Dr. W. French Anderson,^{ix} one of the leading geneticists in the world and father of Gene Therapy, also expressed, "Can we alter our humanness by this kind of manipulation? Can we alter what is uniquely important to us as a human race by engineering our genetic machinery?" He felt that it is not possible to change one's humanness by genetic engineering because of the presence of "that non-qualifiable, spiritual part of us that makes us uniquely human."

"We do have a religious, a spiritual aspect

to our being. This would be difficult to quantitate, but it exists."^x

It seems that biologists will have to change their views of life being comprised strictly of matter only. Laplace also thought that the physical sciences of matter would be able to completely explain the Universe, but that view has changed. It seems that biological science is following in the footsteps of physical science and will begin to see the need to include spiritual elements in the study of life sciences. As John Eccles, the Nobel Laureate

in Medicine and Physiology remarked, "I maintain that the human mystery is incredibly demeaned by scientific reductionism, with its claim in promissory materialism to account eventually for all of

the spiritual world in terms of patterns of neuronal activity. This belief must be classed as a superstition... we have to recognize that we are spiritual beings with souls existing in a spiritual world as well as material beings with bodies and brains existing in a material world."^{xi}

Adapted from, Life Matter and their Interactions. Part of Chapter 3, From DNA to Genome: Is Genome Life? by Dr. T. D. Singh

Thus we can say,

Human Person ≠ Human Body or Human Genome.

Rather, according to the Vedantic worldview,
Human Person = Human Body + Mind, Intelligence & False Ego + Spiriton (Life Particle)

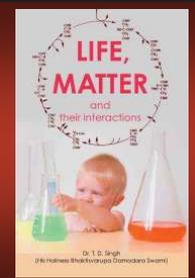
To generalize,

Living Being = Genome (Physical/ Material Body) + Mind, Intelligence & False Ego (Subtle Matter) + Spiriton (Life Particle)



LIFE, MATTER AND THEIR INTERACTIONS

Has life evolved from matter, or is it fundamentally different from matter? The author, T. D. Singh closely examines life, matter and their interactions, and presents an alternative and intuitive view of life beyond molecules, based on ancient Vedantic texts. paperback / 128pp
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While physical/scientific laws are generally based on inert matter, the ancient Vedantic traditions state that life itself is a spiritual particle, a spiriton, or in Sanskrit, the atma. If this were true, even hypothetically, then it may not be feasible to use the same 'tools' of the scientific methodology, which is largely based on studying inert matter, to experiment and understand something that is ontologically different. But as our understanding of the nature of spiriton increases, as Schrödinger predicted, it will add to and become an integral part of science.

The Vedantic paradigm states that with-

in every living entity, the spiriton is encapsulated by two layers of coverings or bodies: a gross covering and a subtle covering. The gross covering is what we see, encompassing the entire

".. the living force or the energetic particle that gives life to the entity is attributed to the spiriton. The presence of this particle accounts for it being alive." .

anatomy and physiology taught, studied and researched in our study of Biology. The brain together with the other organs, tissues, cells and the entire genome within each cell is part of this

gross body and this gross covering allows us to differentiate individuals, species, organisms, etc. Intertwined with this gross covering is the subtle covering, which consists of subtle elements, namely the mind, intelligence and the ego. While the subtle covering largely governs the gross covering, analogous to how software controls hardware, these two coverings influence each other and contribute to the overall well-being of the organism. However, it is vital to note that these are just coverings; the living force or the energetic particle that gives life to the entity is attributed to the spiriton. The presence of this particle accounts for it being alive.

By Dr. V. Krishnan-Kutty



References and Further Readings

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ⁱⁱⁱ Watson, James D. DNA : The Secret of Life. New York: Alfred A. Knopf, 2003, P.36.

^{iv} Schrödinger, Erwin. What is Life?. Cambridge: University Press, 1944.

^v Refer to Understanding the Genome, compiled by George Olshevsky, New York, 2002; "The Human Genome", Science, 291:5507, Feb 16, 2001; Science — Pathways of Discovery, edited by Ivan Amato, New York, 2002, pp. 57-72; and www.ornl.gov/sci/techresources/Human_Genome/home.shtml.

^{vi} R. D. Fleischmann et al., "Whole-Genome Random Sequencing and Assembly of *1-Isaemophilus influenzae* Rd," Science 1995, 269, 496-512; and "Genome Sequence of the Nematode *C. elegans*: A Platform for Investigating Biology," The *C. elegans* Sequencing Consortium, Science 282: 2012-2018 (1998).

^{vii} Genomic data is publicly available and can be viewed at www.ncbi.nlm.nih.gov.

^{viii} "Dialogue on Life and Its Origin", T. D. Singh and Werner Arber, Savijnanam — Scientific Exploration for a Spiritual Paradigm, the Journal of the Bhaktivedanta Institute, Kolkata, 2002, vol. 1. P. 8

^{ix} Dr. W. French Anderson is the Director of Gene Therapy at the University of Southern California's medical school where he also serves as Professor of Biochemistry and Pediatrics. A preeminent researcher in the field for more than two decades, he presided over the first experimental treatment of a human in 1990.

^x Anderson, W. French, "Genetic engineering and our humanness," Human Gene Therapy, 5: 755-759, 1994.

In the next issue...

SPIRITON
(ātma)

1. Is the quantum of life.
2. Exists in unlimited numbers.
3. Cannot be created or destroyed (conservation principle).
4. Possesses the property of consciousness and free will.
5. Has personality.

Themes to be featured in the future issues

- ◆ Life
- ◆ Consciousness
- ◆ Cosmology
- ◆ Faith
- ◆ Biodiversity
- ◆ Epistemology
- ◆ Axioms
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