Editorial
Inaugural Issue

Decipherment of the Secrets of DNA

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ABSTRACT

DNA Decipher Journal (ISSN: 2159-046X) is published by QuantumDream, Inc. and devoted to the decipherment of the Secrets of DNA. It is a journal in which biologists, physicists, mathematicians and other learned scholars publish their research results and express their views on the origin, nature and mechanism of DNA as a biological system and entity and its possible connection to a deeper reality. This Inaugural Issue contains six (6) articles exploring the principle of linguistic-wave genetics, DNA as quantum biocomputer, holography associated with DNA, genetic pathways during evolution and DNA as topological quantum computers. It also contain one (1) Commentary on the recent experimental findings of Montagnier's group on DNA waves and water. Further, in this editorial the herein authors also discuss their preliminary thoughts on the coding of DNA and the hexagrams of I Ching based on the principle of existence.

Key Words: DNA, triplet codon, coding mechanism, decipherment.

1. Background

The current state of Central Dogma of molecular biology first articulated in 1958 and later re-stated in 1970 by Francis Crick (1958, 1970) is shown in the following diagram (source: Wikipedia):
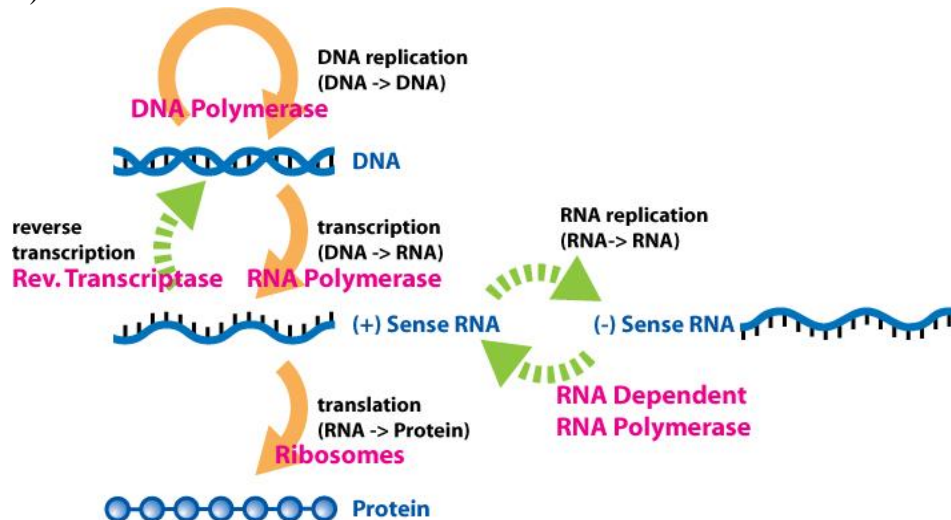
From the perspective of evolutionary biology, it is widely believed that life was first RNA-based before becoming DNA-based (see, e.g., King, 2011). However, there are still many unanswered fundamental questions on the origin, nature and mechanism of RNA/DNA as discussed below.

In the early eighties of the 20th Century, the herein first author had asked and tried to answer some of these questions: (1) whether each code position of the triplet codon has unique meaning; (2) whether the triplet codon is intrinsically connected to the three dimensionality of space; and (3) whether the four bases, A, T, C & G are intrinsically connected to the four dimensionality of spacetime. Indeed, he thought that he had found the answers to these questions and wrote two unpublished papers. On reflection, the premises and conclusions in these papers were perhaps premature and/or immature just as he was young and immature himself. However, his passion to try to discovery answers to these questions plus many more such as those listed below has remained very strong.

Thus, when in late November 2010, Peter Gariaev and Matti Pitkanan submitted a DNA related paper to the Journal of Consciousness Exploration & Research (http://jcer.com) which does not cover research on DNA, it was decided to launch DNA Decipher Journal in order to provide a platform and fair playing field for exploring many mysteries associated with DNA.

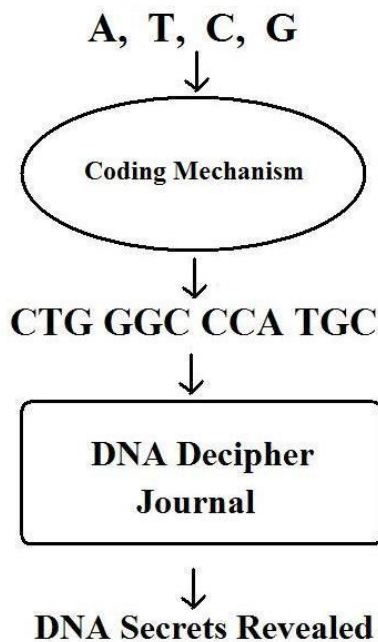## 2. Purpose and Mission

Figure 1

As illustarted in Figure 1, DNA Decipher Journal (ISSN: 2159-046X) is devoted to the decipherment of the Secrets of DNA. It is a journal in which biologists, physicists, mathematicians and other learned scholars publish their research results and express their views

on the origin, nature and mechanism of DNA as a biological program and entity and its possible connection to a deeper reality.

The current policy at this journal is editorial selections of submitted papers for publication and editorial invitation for publication under the advisement of an editorial Advisory Board, members of which are under selections. All papers published by this journal are either subject to open-peer-review ("OPR") in the same issue or open to OPR in subsequent issues.

In particular, this journal a scholarly platform for exploring, among other things, the following mysteries associated with DNA/RNA:

(1) How A, U, C, G and A, T, C, G became the four bases/letters of genetic language? Why just four? Were they due to random chance as commonly accepted/believed or were their selections somehow guided by some kind of intelligent force or field?

(2) Why the RNA/DNA codon is triplet? Was it again just random chance or was deeper principle involved? In other words, does each code and/or code position in the triplet codon has certain meaning?

(3) Why the coding of amino acids by the RNA/DNA codons are degenerate?

(4) Are there further coding principles and/or mechanisms involved in forming the RNA/DNA sequences?

(5) What are all the functions of DNA? How does DNA perform all these functions?

(6) Is DNA a program of a quantum biocomputer? How does this biocomputer compute?

3. Contents of the Inaugral Issue

In the first Article entitled "Principles of Linguistic-Wave Genetics," Peter P. Gariaev and his co-authors treat the subject of wave genetics. It is suggested that to create an organism two genetic programs are required. The first one is geometric, i.e. a scheme, how to design the body. The second program is in the form of a meaningful text which contains instructions and explanations how to use the first program, how to understand and build the organism. These programs exist in the form of "DNA video tapes", which are used by the genetic apparatus, acting like a bio-computer. When the bio-computer reads these video tapes, sound and light images appear that constitute the movie program of the development of the organism. When the creation of a grown-up organism is completed, the movie ends. Then the second movie starts, which contains the instructions for maintenance of the organism for indefinitely long time. Unfortunately, the videotapes containing information about a perfectly healthy organism, get corrupted with time, errors accumulate (DNA mutations). The instructions accumulate errors and the organism gets sick, grows old and dies. It is very likely that these DNA video tapes can be renewed and corrected. With this new understanding of how our genetic apparatus works,

completely new technologies for healing a person and extending a person's life become feasible. And this is the essence of wave genetics and its practical applications to come.

In the second Article entitled "DNA as Basis for Quantum Biocomputer," Peter P. Gariaev and his co-authors discuss DNA as quantum biocomputer based on experimental work carried out in Moscow at the Institute of Control Sciences, Wave Genetics Inc., Quantum Genetics Institute and theoretical work from several sources are described in this work. It is suggested that: (1) The evolution of biosystems has created genetic "texts", similar to natural context dependent texts in human languages, shaping the text of these speech-like patterns; (2) The chromosome apparatus acts simultaneously both as a source and receiver of these genetic texts, respectively decoding and encoding them, and (3) The chromosome continuum of multicellular organisms is analogous to a staticdynamical multiplex time-space holographic grating, which comprises the space-time of an organism in a convoluted form. Thus, the DNA action (as theory predicts and experiment confirms) is that of a "gene-sign" laser and its solitonic electro-acoustic fields, such that the gene-biocomputer "reads and understands" these texts in a manner similar to human thinking, but at its own genomic level of "reasoning". Further, DNA molecules, conceived as a gene-sign continuum of any biosystem, are able to form holographic pre-images of biostructures and of the organism as a whole as a registry of dynamical "wave copies" or "matrixes", succeeding each other.

In the third Article entitled "Model for the Findings about Hologram Generating Properties of DNA, Peter P. Gariaev and Matti Pitkenan propose a model for hologram generating property of DNA based on Pitkanen's TGD. The model is developed in order to explain the characteristic features of certain replica patterns discovered by Gariaev. The proposal involves TGD notions of magnetic body, topological light ray, magnetic flux tubes and dark photons. The hypothesis is that a first method used by Gariaev to obtain the replica patterns makes part of the magnetic body of DNA sample visible whereas a second method would produce replica hologram of environment using dark photons and produce also a phantom image of the magnetic tubes becoming visible by the first method.

In the fourth Article entitled "The Tree of Life: Tangled Roots and Sexy Shoots," Chris King traces the genetic pathway from the first Eukaryotes to Homo sapiens. The picture conveyed by the significance of endosymbiosis, genome fusion and horizontal transfer as key evolutionary processes complementing the vertical transmission of the tree of life, makes clear that evolution is not just a matter of competitive survival of the fittest gene, individual, or species, but of dynamic survival of genes in a surviving ecosystem. Although the idea of selection of genes has been pivotal in defining the need to consider evolutionarily stable strategies under genetic variation in ways which have been subsequently confirmed time and time again in situations such as the sexual genetics of social insects such as bees and ants, social selection is by no means ineffectual, or much of sociobiology, including the biological basis of morality as an extension of reciprocal altruism, would cease to exist. King argues that it is not the 'selfishness' of a genetic element alone that results in survival of both a gene and its hosts, but dynamic feedbacks, and relationships which ultimately contribute to a massive sharing of information in the manner of parallel genetic algorithms fundamental to the replicative genetic process, which enable global forms of genetic and genome optimization central to the overall viability of life as complex systems.

In the fifth Article, Pitkanen proposes that DNA is a topological quantum computer ("tqc") which means that the braidings of braid strands define tqc programs and M-matrix defining the entanglement between states assignable to the end points of strands define the tqc usually coded as unitary time evolution for Schrodinger equation. The generalization of the second law allows understanding of the thermodynamical aspect of topological quantum computation. Based on this generalization, Pitkenan argues, one can understand why living matter is so effective entropy producer as compared to inanimate matter and also the characteristic decomposition of living systems to highly negentropic and entropic parts as a consequence of generalized second law. ADP-ATP process of metabolism provides a concrete application for the generalized thermodynamics and allows this process as a transfer of negentropic entanglement. Also Pitkanen suggests that DNA double strand for which sugar-phosphate backbone consists of XMPs, X= A,T,C,G containing negentropy carrying phosphate bonds can be seen as analogous to conscious brain with DNA strands representing right and left hemispheres.

In the sixth Article, Matti Pitkanen continues his proposal that DNA is a topological quantum computer ("tqc"). The topics discussed include: 1.How the basic gates are realized concretely? 2. How the braiding is realized concretely? What do braid strands identified as magnetic flux tubes look like? How the braiding operation is induced? 3. How magnetic flux tubes are realized? It is argued that gates can be identified as basic braid operations so that the question reduces to how braidings of magnetic flux tubes represent gates and what kind of particles represent the quantum states. It is also argued that color magnetic flux tubes connecting DNA nucleotides to the lipids of nuclear and cell membrane define braid strands and that braiding operations are induced by hydrodynamic flow around membrane generating 2-D flow of liquid crystal defined by the lipids. Further, the interpretation of flux tubes as correlates of directed attention at molecular level leads to concrete picture. Hydrogen bonds are by their asymmetry natural correlates for a directed attention at molecular level. Also flux tubes between acceptors of hydrogen bonds must be allowed and acceptors can be seen as the subjects of directed attention and donors as objects.

In the Commentary entitled "DNA & Water Memory: Comments on Montagnier group's Recent Findings," Matti Pitkenan comments on HIV Nobelist L. Montagnier's group's two recent articles challenging the standard views about genetic code and providing strong support for the notion of water memory. He argues that the results of the first article suggest implicitly the existence of a new kind nano-scale representation of genetic code and the second article makes this claim explicitly. Pitkenan explains that his TGD based model for the findings was based on the notion of magnetic body representing biologically relevant aspects of molecules in terms of cyclotron frequencies. Pitkenan argues that the findings of Montagnier's group allow a more detailed formulation of the TGD model and suggest a general mechanism for generalized transcription and translation processes based on the reconnection of magnetic flux tubes between the molecules in question.

4. Possible Coding Mechanism Based on the Principle of Existence

The herein authors have recently put forward the principle of existence (Hu & Wu, 2010). Based on this principle, one may mathematically generate the DNA code as follows:

$$1 = e^{i0} = e^{i0}e^{i0}e^{i0} = e^{ix-ix}e^{iy-iy}e^{iz-iz} = \left(e^{ix}e^{iy}e^{iz}\right)\left(e^{-ix}e^{-iy}e^{-iz}\right)$$
$$\rightarrow \begin{pmatrix} A & T & G \end{pmatrix}_{+Condon}\begin{pmatrix} T & A & C \end{pmatrix}_{-Anticoden} \text{ etc.}$$

(4.1)

where x, y & z are hypothesized to be three parameters for coding information in each DNA strand/sequence and the following selections and mappings are used at the code level:

e^{ix} is allowed to have the value *+1, +i, -1 or –i* respectively at the code level

e^{iy} is allowed to have the value *+1, +i, -1 or –i* respectively at the code level

e^{iz} is allowed to have the value *+1, +i, -1 or –i* respectively at the code level   (4.2)

e^{-ix} is allowed to have the value *-1, -i, +1 or +i* respectively at the code level

e^{-iy} is allowed to have the value *-1, -i, +1 or +i* respectively at the code level

e^{-iz} is allowed to have the value *-1, -i, +1 or +i* respectively at the code level

Mapping: $\{+1,+i,-1,-i\} \rightarrow \{A,C,T,G\}$ (4.3)

Also see Figure 2 below:

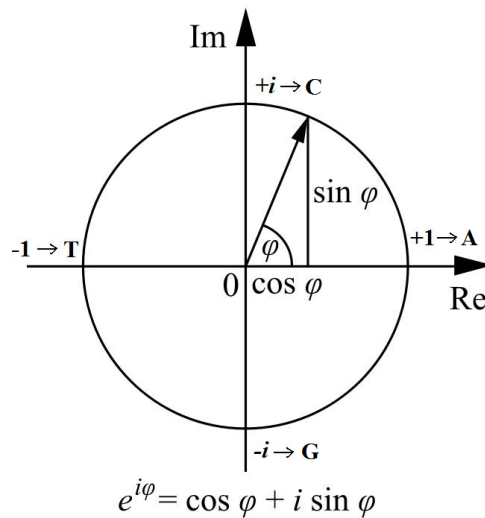$$e^{i\varphi} = \cos\varphi + i\sin\varphi$$

Figure 2

The above selections and mappings produce the 4^3=64 codons and anti-codons of DNA respectively.

In this coding system, {A, C, T, G} as a set have the following algebraic properties:

$$A + T + C + G = 0$$

$$A^2 + T^2 + C^2 + G^2 = 0 \tag{4.4}$$

$$\ldots$$

$$A^n + T^n + C^n + G^n = 0$$

where n=1,2,3,4,…

Further hypothesizing that x, y & z are three parameters encoding spatial information of a protein in a DNA strand, one may find meaning for each code position of the triplet codon and possible connection between the triplet codon and the three dimensionality of space. However, these are just preliminary hypotheses/speculations at this point.

5. Generation of Hexagrams of I Ching

There are many metaphysical discussions about the connections of DNA code and the Chinese I Ching. Applying the principle of existence (Hu & Wu, 2010), one may generate the hexagrams of I Ching as follows:

$$1 = e^{i0} = e^{i0}e^{i0}e^{i0} = e^{ix-ix}e^{iy-iy}e^{iz-iz} = \left(e^{ix}e^{iy}e^{iz}\right)\left(e^{-ix}e^{-iy}e^{-iz}\right)$$

$$= \frac{\left(e^{ix}e^{iy}e^{iz}\right)}{\left(e^{ix}e^{iy}e^{iz}\right)} \rightarrow \frac{\begin{pmatrix} e^{i\alpha} \\ e^{i\beta} \\ e^{i\gamma} \end{pmatrix}}{\begin{pmatrix} e^{i\phi} \\ e^{i\varphi} \\ e^{i\chi} \end{pmatrix}} \rightarrow \frac{\begin{pmatrix} \text{———} \\ \text{— —} \\ \text{— —} \end{pmatrix}_{\text{UpperTrigram}}}{\begin{pmatrix} \text{— —} \\ \text{———} \\ \text{———} \end{pmatrix}_{\text{Lower Trigram}}} \text{ etc.} \tag{5.1}$$

where x, y & z are hypothesized to be three parameters for coding information in I-Ching before the separation of the outer aspect and the inner aspect; α, β & γ are three parameters for coding information of outer aspect; ψ, φ & χ are three parameters for coding information of inner aspect; and the following selections and mappings are used at the hexagram/code level:

$e^{i\alpha}$ is allowed to have the value (collapse to) *+1, or -1* respectively at the code level

$e^{i\beta}$ is allowed to have the value (collapse to) *+1, or -1* respectively at the code level

$e^{i\gamma}$ is allowed to have the value (collapse to) *+1, or -1* respectively at the code level   (5.2)

$e^{-i\psi}$ is allowed to have the value (collapse to) *+1, or -1* respectively at the code level

$e^{-i\varphi}$ is allowed to have the value (collapse to) *+1, or -1* respectively at the code level

$e^{-i\chi}$ is allowed to have the value (collapse to) *+1, or -1* respectively at the code level

$$\{+1, -1\} \rightarrow \{\underline{\quad}\ (\text{Yang}),\ \underline{\ }\ \underline{\ }\ (\text{Yin})\} \tag{5.3}$$

The above selections and mappings produce the $2^6=64$ hexagrams of I-Ching.

In this coding system, {Yang, Yin} as a set have the following algebraic properties:

$$\text{Yang} + \text{Yin} = 0 \tag{5.4}$$

To accommodate "Changing Yang" and "Changing Yin," the following expanded selections and mapping can be used:

$e^{i\alpha}$ is allowed to have the value (collapse to) *+1, +i, -1 or –i* respectively at the code level

$e^{i\beta}$ is allowed to have the value (collapse to) *+1, +i, -1 or –i* respectively at the code level

$e^{i\gamma}$ is allowed to have the value (collapse to) *+1, +i, -1 or –i* respectively at the code level   (5.5)

$e^{-i\psi}$ is allowed to have the value (collapse to) *+1, +i, -1 or –i* respectively at the code level

$e^{-i\varphi}$ is allowed to have the value (collapse to) *+1, +i, -1 or –i* respectively at the code level

$e^{-i\chi}$ is allowed to have the value (collapse to) *+1, +i, -1 or –i* respectively at the code level

$$\{+1, +i, -1, -i\} \rightarrow \{Yang, Changing\ Yang, Yin, Changing\ Yin\} \tag{5.6}$$

The above selections and mappings produce the $4^6=4096$ hexagrams of I-Ching which include the Changing Yang and Changing Yin.

Therefore, the 64 DNA Codons and their corresponding anti-codons belong to a subset of the 4096 hexagram set.

In this expanded coding system, {Yang, Changing Yang, Yin, Changing Yin} as a set have the following algebraic properties:

$$Yang + Yin + Changing\ Yang + Changing\ Yin = 0$$

$$Yang^2 + Yin^2 + (Changing\ Yang)^2 + (Changing\ Yin)^2 = 0 \qquad (5.7)$$

$$...$$

$$Yang^n + Yin^n + (Changing\ Yang)^n + (Changing\ Yin)^n = 0$$

where n=1,2,3,4,…

6. Closing Remarks

This issue marks the beginning of the maiden voyage of DNA Decipher Journal as a platform and fair playing field for biologists, physicists, mathematicians and other learned scholars publish their research results and express their views on the origin, nature and mechanism of DNA as a biological program and entity and its possible connection to a deeper reality. We urge all genuine truth seekers to be open-minded and tolerant to each other. Let us also remind ourselves the fierce urgency of now. This is no time to engage in the luxury of silence or to take the tranquilizing drug of innocence. Now is the time to make paradigm-shifting progress in biological sciences & DNA research. Now is the time to rise from the dogmas of random chance and chaos of evolutionary biology to the sunlit path of living universe. Now is the time to lift Science from the quick sands of arrogance, close-mindedness & intolerance to the solid rock of sacred path to truth. Now is the time to make freedom, equality and opportunity to be heard a reality for all truth-seeking men and women.

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