

# Origin of Life: A Consequence of Cosmic Energy, Redox Homeostasis and Quantum Phenomenon

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## ABSTRACT

Origin of life on earth transpired once and from then on, it emerges as an endless eternal process. Matter and energy are constants of the cosmos and the hypothesis is that the origin of life is a moment when these constants intertwined or interacted. Energy from the cosmos interacted with inorganic matter to support matter with retention of this riveted energy, as energy to be circulated within the primitive channelized structures to conserve energy by the materialization of the proton homeostasis mechanisms developed from the obtainable inorganic matter. The driver for these processes as we now confirm, exists in the quantum world and through quantum phenomenal processes could have combined these constants to create the magic of life. Primitive earth was a chemical reactive system that triggered a macromolecular evolution by means of open thermodynamic systems, driven by cyclic gradients of temperature, electromagnetic radiation and chemical potentials which sustained life and proto-consciousness in the first life forms driven by the quantum processes. The origin of life is always an intriguing topic but the purpose for finding the cause should never be inclined towards obliterating it; for if that is the case, the further we seek, the farther it will go.

**Key Words:** redox homeostasis, quantum, cosmic energy, proto-consciousness, cell-soul pathway

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## 1. Introduction

Life on earth is said to have begun approximately 4 billion years ago when the earth's surface cooled to support liquid water (Ward and Brownlee, 2003). But before the origin of life there was matter and energy; matter in the universe organized itself from a microscopic state to a macroscopic state i.e. from the sub atomic particles to atoms to molecules and then to micro- and mega-structures. Energy created matter; as easy it is to say so difficult it is to prove, but is the basis of all origination. Pair production is a

process by which massless sub atomic particles convert to particles with mass and can explain the organization and reorganization of matter. In 1934, these calculations were demonstrated in an  $e^+ - e^-$  pair production in photon-photon collisions (Landau and Lifshits, 1934). Energy has prevailed since the creation of the universe; the cosmos created the stars, the galaxies, the supernovas, etc., everything as part of the energy transforming cycle that supported the laws of nature. This cosmic energy should therefore be deemed as the cause of life on earth which may have occurred

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due to a sudden transference in the regular cycle that subsisted then.

Cosmic energy may be connected and thus forms a matrix within the entire cosmos and by means of structured matter can elicit life (Pereira, 2015a). Evolution began much after the existence of energy and matter and its unanimity and therefore the answer to the origin of life lies much before the emergence of viruses, bacteria, archae and eukaryotes, which required the presence of water and organic compounds. For life to emerge there had to be a right blend of energy and matter, where the properties of energy and matter played an important role. The cosmic energy by some means entombed itself within matter; energy was stored with the chemical bonds which we now understand through the studies in chemistry and biochemistry. These studies are based on the creation and destruction of bonds between atoms and molecules which are derived from quantum mechanics (Pearson, 2008). Based on these interactions, living systems like non-living systems are dependent on quantum states at the level of their chemical bonding.

In order to understand this relation between quantum interactions within chemical bonds, nano-technological advancements are being considered which probe electric and proton-based signals within biological systems (Maysinger *et al.*, 2015; Nouailhat, 2008) that can help understand the origin of life from a different perspective. Information for the formation and progression of the universe is stored in atoms as charge and spin, with the electron providing low energy to support life and the nuclear constituents such as protons and neutrons providing high energy for the stars (Teilhard de Chardin, 1959). The properties of matter and energy were therefore not emergent, but were constants that subsisted right from the beginning of the cosmos and may have been the designers for creation. Quantum physics studies are related to the properties of the quantum world which is made up of sub-atomic particles that somehow are programmed to arrange themselves in patterns; consciously or intuitively (Vedral, 2011). Similarly, inorganic chemistry and the emergence of organic chemistry can also reveal similar type of patterns formed by means of the chemical bonds between atoms and molecules, which occur consciously or intuitively (Earley, 2008).

Recently, theories associated with redox homeostasis have been considered as an

important aspect linked to the origin of life (Allen, 2010). On the other hand, quantum computation has unknowingly opened up a new array of hope towards understanding the origin of life from the perspective of organic and inorganic chemistries and the use of non-living matter to perform activities like living matter (Igamberdiev, 2007). Origin of life can therefore be based on the following constants; cosmic energy and matter which support the hypothesis that life emerged as a consequence of energy supporting redox homeostasis and quantum phenomenon. Whether this occurrence was by chance or by plan, is not known, but certainly was towards the instigation of life.

## **2. Redox homeostasis a quantum based process**

Mitchell's chemiosmotic hypothesis suggests that chemiosmotic coupling may have come into existence very early in evolution and the forces that drove this emergence could have shaped evolution (Mitchel, 1961). Many theories suggest that life originated in environments which created natural proton gradients; in the absence of oxygen, alkaline vents acted as electrochemical flow reactors which could have driven the conversion of inorganic molecules to organic forms (Martin *et al.*, 2008; Lane, 2010; Lane and Martin, 2012). The chemiosmotic theory proposes vectoral movements of protons and electrons across membranes that create a proton motive force for energy transduction. It occurs in the presence of a constant potential across a gradient that develops a charge (Mitchel, 1961). The proton motive force generated across simple vesicular structures may have been the reason for the confinement of cosmic energy within matter. Energy once taken-up by matter, may have elicited the energy feedback mechanisms as part of the energy conservation process. The energy conserving process in living organisms is known as oxidative phosphorylation and is a coupling of the Adenosine Triphosphate synthesis to the proton motive force generated by electron transfers (Sapra *et al.*, 2003).

Quantum phenomenon on the other hand is a non-local process which transmits information across space and time as random exchange of



energy between particle and the zero-point field (Svozil 2015). This energy exchange is one of the main causes of interdependence between the cosmic energy matrix and matter. Stored information during the quantum computation process can be accessed by resonance or entanglement within the quantum hologram in the zero-point field (Mitchell and Staretz., 2011) and could be cause of energy supplementations within the proton gradient mechanisms. Max Planck, postulated a theory, now known as the Planck postulate, which describes how all matter absorbs and re-emits photons i.e. quanta of energy, from and into the quantum foam of the zero-point field (ZPF) that pervades all matter and even the vacuum of space. This processing is done by a process called holographic processing and is stored holographic images (Haisch *et al.*, 1997). Quantum tunnelling is a concept derived from quantum computing wherein photons travel through specialized cell organelles and elicits signalling by means of movement and interaction of photons within the cell (Hameroff, 1998a; 1998b).

Emergence of life within matter is the point of conversion from non-local cosmic energy to localized energy which could have been mediated by quantum processes across the developing proton gradients within organizing matter. At that moment matter came alive and this new possibility gave it the ability to transmit, transduce and store this energy within its boundaries. A redox reaction is the movement of ions or one or more electrons from donors to acceptors, where the donor or reducer is an oxidiser while the acceptor or oxidant is the reducer (Acworth, 2003). Lifeless earth where matter and energy were two separate entities was made up of elemental matter which was in a constant state of organization and reorganization by the interacting bonds. Structures that were designed as result of these interactions, may have given rise to micro-pathways and by means of hydro-thermal based convection could have resulted in the instigation of a transmitting system at a quantum level. Inorganic elemental matter could have triggered quantum based energy processing and the creation of the first living conscious form.

It has been proposed that during the emergence of life, early living forms were housed in inorganic compartments composed of silica, silicates, carbonates and hydroxides along with metal sulphides which could act as catalyst,

generate electrons when excited leading to an electric potential as part of energy processing (Russell, 2007; Herschy *et al.*, 2014). Chaotic excitations in these early molecules and their quantum states could have resulted in early computations by a variety of quantum modes, chemically, through molecular orbital interactions, electromagnetically or by means of photon emission and absorption. Pribram put forth the holonomic brain hypothesis that proposes memory in biological systems may be due to interference patterns or entanglement resulting in a hologram (Pribram, 1999) as produced in lasers or a fibre optic system (Jeong, 2010). Entanglement of electrons released during the process of excitations can result in information storage which could have been the basis of consciousness or awareness in these first life forms; a form of proto-consciousness.

Several theories are now available that support the emergence of consciousness from quantum based mechanisms (Hameroff and Penrose, 2014) and the involvement of the cosmic energy uptake in the form of electromagnetic radiation (Pereira, 2015b; McFadden, 2007; 2013). A recent pathway known as the cell-soul pathway has been proposed to be a hypothetical mechanism where a single cell uses the quantum phenomenon to convert external cosmic energy to internal energy, to store and use this energy as part of its conservation process (Pereira, 2015b) indicating that life and consciousness is quantum processed and may have driven the origination of living forms proceeding with evolution.

### **3. Quantum biologics led to the origin of life and consciousness in structured matter**

Consciousness has been shown to be quantum computed within the microtubular cytoskeletal structure by the ORCH-OR theory proposed by Hameroff and Penrose (Hameroff and Penrose 2014a). Structured matter like the microtubules process information based on the tubulin states at a quantum level. When enough tubulins get entangled to reach a certain threshold, a conscious event occurs which is terminated by the collapse of the wave function which is evident in the evolution of the cytoskeleton (Pereira, 2015c). The microtubules process this information within the wet, noisy environment of the cell by means of the Bandyopadhyay Coherence. The dipole characteristics within these structures mediate the computation and entanglement as electric or



magnetic at alternating currents of gigahertz, megahertz and kilohertz frequencies at room temperature (Sahu *et al.*, 2013a; Sahu *et al.*, 2013b) which could answer the decoherence problem of the ORCH-OR theory (Hagan *et al.* 2001; Hameroff and Penrose, 2014b). The Resonant Recognition Model (RRM) has also demonstrated higher frequencies in gigahertz to terahertz ranges within the microtubules suggesting that these higher frequencies are related to transmission velocities for solitons and excitons and are therefore purely electromagnetic in nature similar to a quantum information communication system (Cosic *et al.*, 2015).

Sub-atomic particles play an important role in quantum biologics and therefore there is a strong possibility of its engrossment during the emergence of life, where matter systematized itself structures to sustain these particles. Excitations and spin-characteristics of electrons can generate electron-based energy transfer which can be transmitted by means of structures and pathways as seen in quantum processors (Ardavan and Briggs, 2011; Cerletti *et al.*, 2004; Kouwenhoven, 1997) and also within biological structures (Arndt *et al.*, 2009; Frank and Christensen, 2008). Matter may have come to life due to a combination of quantum processing within the inorganic structures created during the formation and reformation process, which led to a form of primitive awareness. Tubulin found in the microtubules demonstrates excitations on absorption of light at 280 nm and fluoresces at 335 nm due to the presence of tryptophan which wholly depends on the polymerization of the microtubules (Rahnama *et al.*, 2011). A transition between the ground and excited state of the tubulin chain results in a biological dipole which is the reason for the transmission observed across these tubules providing a strong understanding of quantum-based information processing within these protein complexes (Craddock *et al.*, 2014). Simple interactions in primitive forms or the first living form would have had the capability of processing information in this manner and therefore given rise to a sense of proto-awareness or proto-consciousness within these limply designed structures.

Entanglement is a crucial element in quantum information processing (QIPC report 2008). Entanglement within structures such as the microtubules is now being considered as promoters of consciousness which could have been possessed by matter that came to life.

Condensation or formation of a condensate at low temperatures is a cause of information transfer and processing in quantum computation which has been demonstrated by Fröhlich at room temperature. According to Fröhlich, under appropriate conditions a phenomenon quite similar to a Bose condensation may occur in substances which possess longitudinal electric modes. The Fröhlich condensate results are based on the idea that biological systems are open and have considerable amounts of energy available by means of metabolic processes that cause non linear changes in molecules and larger biological subsystems (Vasconcellos *et al.*, 2012; Reimers *et al.*, 2009).

The Fröhlich model states that, when the energy supply goes above a certain level, the polar structure enters into a state of nonlinear vibration and stores energy in an orderly fashion that is expressed in a long range phase correlation of super fluidity and super conductivity (Fröhlich, 1970, 1972, 1975). These ideas have substantiated, that coherent behaviour of excited electrons observed in living systems are similar to coherent behaviours found in superconductors. The only difference is that in superconductors, this behaviour is observed with the help of Bose-Einstein condensation at temperatures near the absolute zero point (Niggli, 2014) while coherence in biological systems occurs at room temperature (Reimers *et al.*, 2009). Living cells can be viewed as both micro-factories with nano-machines performing individual tasks and biological computers whose nano-chips are the various proteins and peptides in addition to DNA and RNA (Davies *et al.*, 2013). Liquid water is a necessity for life and life emerged only when liquid water was available and therefore the early proton gradients may have sparked only with the availability of water (William, 2007; Russell and Kanik, 2010).

The reason that water plays an important role in life is because in living systems it is known to support coherent dipolar excitations where the Fröhlich effect has a connection with long range propagation of signals in biological and non-biological materials as wave packets consisting Schrodinger Davydov solitons (Mesquita *et al.*, 2004; 2005; Fröhlich Centenary International Symposium, 2005). Excitations are of great importance in the migration of energy and for the quantum computation of early life. The Electro-Magnetic Information Transfer Through Aqueous Systems (EMITTAS) procedure has demonstrated information flow within biological systems which





suggests that aqueous systems play a key role providing the basis for recording, storing, transferring and retrieving clinically effective quanta of information able to yield the self-regulation and self-regeneration potentiality of an organism both at local and systemic level (Foletti, 2015; Foletti *et al.*, 2011).

#### 4. Cosmic energy, structured matter, proton gradients and quantum mechanics

Early earth contained cosmic energy, rapidly organizing matter, electron movements and quantum based processes, and a blend of these features made a significant change as matter transformed to form structures to support cosmic energy. The reducing-oxidising conditions of early earth may have had structures similar to those found in the present hydrothermal vents found on the ocean beds (Martin, 2008; Zierenberg *et al.*, 2000). These structures operate through a dynamic process called as hydrothermal convection and may have been the first initiators of proton pumping (Muller, 2009; Kurakin, 2011). The microtubular structures that currently form the cytoskeleton of biological cells could have been an outcome of these geometrical patterns that could possibly compute information by utilizing the abundant cosmic energy prevalent around. At that time the first primitive living forms could have incorporated a similar patterned network, designed to circulate the cosmic energy, as a beginning of proto-consciousness along with the energy conservation by means of the proton gradients and electron transfers. Serpentinization is a natural networking geometrical pattern found with these vents and is formed as a result of an exothermic hydration, carbonation and oxidation processes (Schrenk and Brazelton, 2013). Geometrical designs and patterns as integrated circuits within microchips, transistors and semiconductors can conduct, store, transmit and process information and may share a correlation with biological structures that could have behaved as integrated circuits (Halmann *et al.*, 1981).

Earth as a chemical reactive system may have resulted in a supra macromolecular evolution of in-animate open thermodynamic systems with boundaries made up of different molecules, driven by cyclic gradients of temperature, electromagnetic radiation and chemical potentials of environmental chemicals (Spitzer *et al.*, 2015) which may have sustained life and proto-consciousness. Life in hydrothermal

vents emerged due to the perfect combination of minerals containing Fe-S clusters which are embedded in active sites of critical enzymes including respiratory complexes and hydrogenase enzymes studied (Lane and Martin, 2012; Francis, 2015). Serpentinization of ultramafic rocks resulted in formation of the proton gradients as a medium to conserve energy via the reductive-oxidative reactions of these primitive elements and the utilization of the cosmic energy to be stored within the chemical bonds of a molecule present in living organisms – Adenosine Triphosphate (ATP). The production of Adenosine Triphosphate in current living organisms is mediated by the redox chain which involves the transfer of electrons between redox centres within the electron transport chain and the ATP-ase motor to convert Adenosine Diphosphate (ADP) to ATP; a combination of an electrical and chemical process (Herschy *et al.*, 2014; Martin *et al.*, 2008). Matter designed itself to incorporate and store energy and to utilize the energy for originating life which through the course of evolution was refined and reorganized to be enclosed within the domains of a biological cell.

Quantum mechanics and quantum coherence plays an important role in chemistry and its entanglement determines the valence structures of the atoms and the form of covalent bonds (Lloyd, 2011; Rieper, 2011). As molecules become larger and more complex, quantum coherence becomes harder to maintain. Quantum computers harness the power of atoms and molecules to perform memory based functions. The superposition of qubits is what gives the quantum computer an inherent parallelism and this is what allows million computations in one go by means of entanglement (Sharma, 2015; Black *et al.*, 2002). Origin of life was possible due to biological based quantum computations which happened millions of years ago and as life evolved the complexity of these computations increased. Information processing within biological structures became more efficient by many orders of magnitude in comparison to what we know today. Biological cells are known to use a highly complex parallel architecture when compared to the parallel architecture observed in quantum computer yet known and the serial architecture as observed in today's computers (Walker *et al.*, 2009; Barabasi and Oltvia, 2004).

Conversion of cosmic energy to cellular energy and a reverse feedback mechanism can be understood by the proposed cell-soul pathway



that runs within each and every individual biological cell. The cell-soul pathway utilizes the oldest form of energy – electromagnetic radiation for selection, absorption, circulation and release of photons which can compute consciousness by means of the ORCH-OR reduction process within the microtubules of every living cell (Pereira, 2015b). Just like the cell-soul pathway which is an on-going cyclical process, the inorganic reducing environment of the primitive earth may have been a favourable environment for geometrically patterned serpentinized structures in the hydrothermal vents to absorb the cosmic energy or electromagnetic energy. These structures as an arrangement of matter could have resulted in information of inorganic vesicles which over-time developed an architecture that could hold the absorbed energy and through excitations could result in a cascade of excitations resulting in electron transmissions and information processing; the origin of life through proto-consciousness.

Origin of life needs a thermodynamic driving force along with the interactive trapping potential like the cell-soul pathway and that is where redox chemistry plays an important role. Electron transfer results in proton pumping and is the key to energy metabolism in every living system (Alberts *et al.*, 1994). Mac Kinnon and group have demonstrated this process by means of the K<sup>+</sup> specific ion channel filter which works by holding two K<sup>+</sup> ions bound to water structures induced by protein side chains demonstrates a solitonic nature of action potentials that could provide entangled connectivity between channels resulting in an electric potential (Morais-Cabral *et al.*, 2001). Besides redox chemistry, capture and storage of energy within matter is also critical i.e. cosmic energy utilization which is when there is a possibility of origination of life. A blend of these constants is critical for the computation to occur within structured matter similar to the microtubules present in biological cells or the patterned network of inorganic material within a hydrothermal vent.

Whether in classical or quantum computers, chips are designed from man-made compositions of inorganic material which through electron and quantum based networking transmit and compute information. Computation and information

processing requires a sturdy network for an uninterrupted electron flow. The material within these microchips are channelled in such a manner that they create micro-circuits which help the electrons to transmit information and store them (van der Meijis, 2005; Sharma, 2015; Montemerlo *et al.*, 1996). Quantum entanglement is a mysterious property that makes the quantum world spooky but is the only mechanism that helps understand the processing and storage of information in a quantum computer (Gael 2005), which has now been shown to occur within the microtubules (Hameroff, 1998b; Ali and Ypapin, 2014). Therefore, quantum entanglement may have subsisted much before the origin of life, but with the conception of structures designed by matter these states may have entrenched within these structures to bring matter to life.

## 5. Conclusion

Complexity in the universe grew gradually from gravity and nuclear powers in the cosmosphere, with all the information stored in atomic-nuclear structures. This process was intensified with the emergence of self-organizing macromolecular systems and reached a state of complexity with the emergence of the neural network and the conscious universe interconnection code with information stored in quantum holographic networks (Di Baiase, 2015). During the process, structured inorganic networks were replaced with organic matter which resulted in stronger computational process and better proton pumping for more ATP generation that was required for adaptation and awareness. Ionizing radiations were capable of changing all kinds of atoms and molecules and the absorption of non-ionizing radiations lead to electron excitations within atoms and molecules which may have led to energy transfer which we now understand as the photosensitization potential and through pathways such as the cell-soul pathway. Quantum processes occur at sub atomic levels of matter and were therefore prevalent in the universe from its origin. Origin of life is therefore a result of the organization and reorganization of matter to support constants such as the cosmic energy, matter and quantum processes that prevailed in the cosmos and mellowed with evolution.



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