

Cause for origin of species

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Spinning-liquid field as the missing item for understanding origin of life and species.

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Life is created by radiation, maintained by radiation, destroyed by oscillatory disequilibrium.

G.Lakhovsky „Secret of life”



Fig. 1 Jean-Baptiste Lamarck (1744 –1829)

The theory of evolution has been hotly debated more than 150 years. The official doctrine tells us, that neo-Darwinism overcame shortcomings of the Darwin's initial concept about evolution by natural selection by adding the laws of genetics

(Kutschera and Niklas, 2004). Lamarck's idea that environment can make profound changes in inheritance, recently has been introduced in mainstream biology with the name of epigenetics. Two molecular mechanisms acting here have been identified: 1) methylation of heterocyclic bases of nucleic acids, 2) phosphorylation of histones, which are involved in packaging of nucleic acids. Both processes can activate or inactivate gene expression (Jablonka, 2006, Fitzpatrick, 2006).

However, Darwinism received a catastrophic assault from Velikovsky in the XV chapter of book "Earth of upheaval" (1955). Velikovsky pointed out following things:

1. Breeders are not able to make new animal species.
2. The forms of life changed almost simultaneously throughout the world. Migration is not always the right explanation.
3. The absence of numerous intermediate varieties in any single formation.
4. The sudden appearance of whole groups of related species.
5. Sudden extinction of a whole group of species in the past.
6. Author of Ice Age theory Agassiz rejected Darwinism. Reason: in many instances the fish of extinct species were better developed and further advanced in their evolution than later species, the modern included. Among mammals too.
7. Geological record, however, shows, that origin of new species must have happened during the Earth's history.
8. Experiments disprove idea that evolution could be due to sexual selection.
9. Spontaneous mutations do not produce new species. However, it has been possible to increase mutation frequency of vinegar fly with action of x-rays or in other insects by elevated temperatures.
10. Alkaloid colchicine helps to produce cells with twice the normal number of chromosomes.

Velikovsky had the full right to write: "The past of mankind and of the animal and plant kingdoms, too, must now be viewed in the light of the experience of Hiroshima and no longer from the portholes of the Beagle". That is to say, physicists have to answer the question about causes of origin of species.



Fig.2 Immanuel Velikovsky (1895 –1979)

Velikovsky was well before his time; works about the profound influence of non-ionising radiation to biochemistry and biophysics of cells started to appear decades later (Kholodov, 1971, Dubrov, 1978, Presman, 1977). Interestingly, living matter reacts to all known physical factors: light, sound, electrical field, magnetic field, electromagnetic radiation, gravitation field (Mauclaire and Egli, 2010; Boonyaratanakornkit, 2005) and “spin-torsion” field (Maclane and Schmidt; Schmidt, 2010).

Recently we proposed biological activity of a hypothetical spinning-liquid field (Alksnis, 2011) as one of driving forces of the temperature and light-independent biological clock of biosphere. (Spinning-liquid field of the Sun probably has been optically measured by Bart Leplae (2011)). It was logical to assume, that the mentioned biological clock reflects processes, which had led to origin of life more than 3 billion years ago, when influence of astrogeophysical factors to Earth might have been stronger than today.

We could consider the action of a spinning-liquid field as non-ionising radiation which can influence the biosphere via changes in water clustering. Levels and forms of water clustering are directly connected to frequency of mutations.

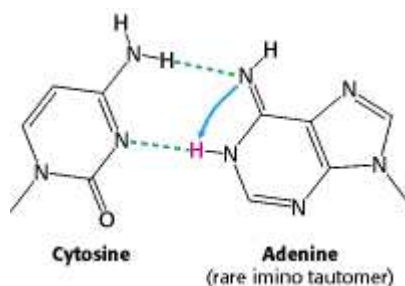


Fig.3 Mutation caused by rare imino tautomer of adenine. (Normally adenine must pair with thymine in the DNA helix).

Nowadays rate of spontaneous mutations in a T4 phage is about 10^{-7} per elementary fragment of DNA per replication. *E. coli* and *Drosophila melanogaster* have much lower mutation rates (of the order of 10^{-10} (Berg et al, 2002)). It is obvious, that with such low level of mutations, origin of new species is impossible. How it might have been four billion years ago?

We can assume the following parameters for the case, if the Earth was approximately in the same place four billion years ago as now:

1. Period of self rotation of Sun at equator: 12 hours.
2. Period of self rotation of the Earth at equator: 6 hours.
3. Thickness of Earth's crust: five times lower, that now (cf. Sankaran, 2006).
4. Mass of liquid part of Earth: two times higher, than today.

We can use a draft formula for the spinning-liquid field:

$$[RLF_{eq}] = \frac{m * \omega_{eq}^2 * d * K_1 * K_2}{R^2}$$

Where

[RLF_{eq}] - Strength of rotating (turbulent moving) liquid field on equatorial level,

m- Mass of celestial body,

ω_{eq} - angular speed of rotation of celestial body by equator, rad/h

d- density, kg/m^3

K_1 - coefficient (characterises mode of turbulent motion),

K_2 - coefficient (characterises efficiency of emanation of rotating liquid field from volume),

R- distance from surface of celestial body on equatorial level, AU

Given the radial speed of rotation of the Sun four billion years ago (30 rad/h (now 0.59 rad/h)) we can roughly estimate: the invisible solar flux might have been 2585 times greater than today.

It is hard to estimate the increased influence of “Earth radiation” to biosphere due to larger liquid part of the Earth, faster Earth’s spin and thinner crust (better penetration from the mantle). For our analysis we can assume, that it could be enhanced some 25 times.

Influence of the Moon strongly depends on it’s distance (inverse cube law) (Alksnis, 2011A)- it was not less than 2 times higher, than today. In Fig.4 we have shown the total astrogeophysical influences to biosphere billions of years ago.

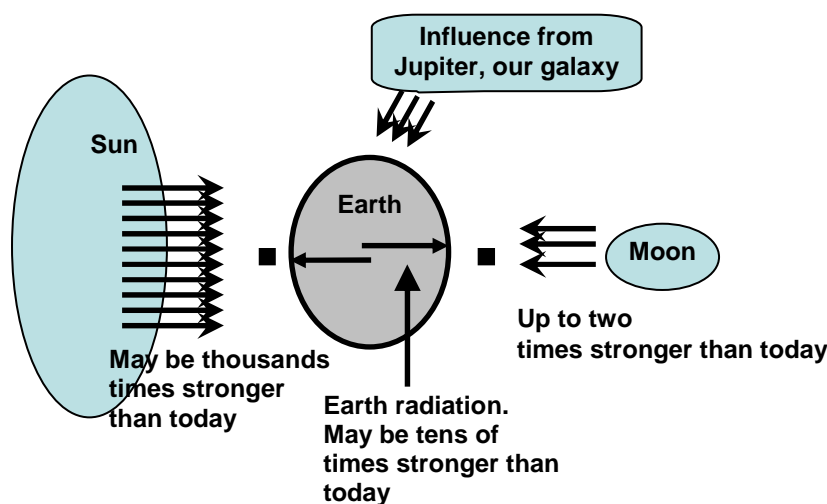


Fig. 4. Astrogeophysical influences to biosphere in the past.

Thus we see, that even ignoring the influence from Jupiter and the galactic centre, non-ionising radiation from the Sun, Earth’s mantle and the Moon may have shifted tautomeric balance toward forms, which today are rare and produce significantly more mutations, which facilitated the origin of new species. Other mechanism of mutations which could have acted here is the reaction of uracil derivatives with water or other molecules, which has been shown to proceed under influence of ultraviolet light (Varghese, 1974).

(We can remember here that the mythology of all cultures remembers, that first the Earth was habilitated by monsters, who later were destroyed).

The interesting concept of a “selfish gene” (Dawkins, 1976, 1989) which states, that each organism's body serves the purpose of a 'survival machine' for its genes, might be seen in a new dimension if we rethink the old data of discoverer of biological radiation Alexander Gurwitsch and his followers: after irradiation of solutions of nucleic acids they radiate back on a different wavelength (bioluminescence). This so-called secondary radiation produces a strong cell-dividing stimulation effect (Rahn 1936).



Fig. 5. **Alexander Gurwitsch** (1874–1954)

What if the heterocyclic part of nucleic acids can also react to the non-ionizing radiation of the proposed new physics?

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